

NORTH - EASTERN HILL UNIVERSITY

SHILLONG-793001

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Fifteenth Meeting  
of the  
Academic Council

AGENDA

Friday/Saturday - 26th/27th November, 1982.  
Shillong

AGENDA FOR THE FIFTEENTH MEETING OF THE ACADEMIC COUNCIL.Contents

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ITEM NO. 1.

Confirmation of the Minutes of the 14th Meeting of the Academic Council held on 24/25th ~~May~~, 1982.

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The Minutes of the 14th Meeting of the Academic Council held on 24/25th June 1982 were circulated amongst the members with a request to give a comment, if any, on the Minutes. Since no comments were received from the members, the Minutes may be taken as confirmed.

2:1 Nomination of UGC Officers on certain Committees/Boards etc.

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D.O. letter dated October 1982 from the Chairman, UGC addressed to the Vice-Chancellor which is self-explanatory is reproduced below for information of the Council.

"I am writing this letter to you in the context of proposals made by Universities, off and on, regarding the nomination of UGC officers on certain committees/boards constituted by them for specific purposes. It would facilitate matters at our end if in such cases, the University sends a request to the Commission to nominate an officer instead of sending invitations directly to the officers concerned. This is specially important as the Commission would like to nominate the officer dealing with that programme or fully conversant with the scheme in question. I do hope that you would appreciate our point of view. On receiving your request, if any, we would nominate a suitable person.

With kind regards.

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2:2 Decisions of the Local Academic Council Meetings.

The Academic Council at its meeting held on 24/25th June 1982 had authorised its Local members to finalise the NEHU Ordinances and any other items of urgent nature. Accordingly the Meeting of the Local members which met on 12/14th July '82, 24-8-82 and 19-10-82 had considered/ finalised the following items and recommended to the respective Authorities/Bodies etc. for necessary action. This is for the information of the Council:-

1. First Ordinances presented by the Vice-Chancellor.
2. Amendment of NEHU Ordinances.
3. Regulations on size of class in Colleges.
4. Regulations of the NEHU Board of P.U. Education.
5. Work Load for teachers in the University/College.
6. Syllabi in :- Hindi/Anthropology/Sociology/Garo/Nepali/  
Bengali/Assamese/Course title in M.A.  
Education/Pisciculture/Home Science.
7. Conduct of MA/MSc/MPhil Examinations.
8. Affiliation of Mokokchung Law Colleges upto preliminary level.
9. Nomination of members to the BPGS in Home Science.

Item No. 3.

RATIFICATION OF ACTION TAKEN BY THE VICE-CHANCELLOR :

3:1 Representation submitted by the B.Ed. students admitted under the B.Ed. Ordinance (New Course) -

The B.Ed. students who were admitted under the purview of the B.Ed. Ordinance (New Course) have submitted a representation on the ground that Clause 5 of the B.Ed. Ordinance has tended to discriminate one category of B.Ed. failed candidates against another, viz., the B.Ed. candidates who failed to get a minimum of 35% in any one of the written course papers were not given an equal opportunity as afforded to those who secured a minimum of 35% in each paper of the written course but failed only because of want of aggregate of 40% and therefore put forth their grievances requesting the University authorities to amend or modify the above quoted Clause 5, particularly sub-clause (2). On careful examination, it is found that their representation is genuine and needs immediate decision and accordingly, with a view to settle the matter once for all so that the students may not necessarily suffer or fall victim to the incongruity inherent in the said Clause, the Vice-Chancellor in exercise of his powers conferred under sub-section (3) of Section 12 of the NEHU Act, has amended the same as follows :

In Ordinance 5(2), the words "or those who secure minimum aggregate in the written examination but fail to secure minimum 35% in one course", be added between the words "written examination" and "can repeat a course or courses."

The matter is placed before the Council for ratification of the action taken by the Vice-Chancellor in terms of Section 12(3) of the NEHU Act.

3:2 Condonation for late submission of M.Phil Thesis -

Mrs. A.D.Tham, M.Phil., Teacher Fellow of the Department of English, NEHU, was due to submit her thesis in December, 1981, but due to some unavoidable circumstances she could not submitted in time. The Vice-Chancellor, on the recommendation of her Supervisor has condoned the late submission of her thesis, as per the existing rules, to enable the candidate to complete her work.

The Academic Council may kindly ratify the action taken by the Vice-Chancellor.

3:3 Term of office of the members of the Boards of Under-Graduate Studies in Assamese, Bengali, Garo, Hindi, Nepali, Sanskrit and Statistics -

The term of office of the members of the Boards of Under-Graduate Studies expired on 29-11-82 as was extended by the Academic Council held on 26th and 27th April, 1982. But with the introduction of the new system of education in the University, the need for extending the term of the said Boards of Under-Graduate Studies is very essential for finalising the urgent matters. The Vice-Chancellor in terms of Section 12(3) of the NEHU Act, 1973, has extended the term of office of the members of the Boards of Under-Graduate Studies upto 31.1.83.

As such, the matter is placed before the Academic Council for ratification of the action taken by the Vice-Chancellor.

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Affiliation of Mokokchung Law College upto  
Preliminary level -

The local Academic Council which was held on 24th August, 1982, has RESOLVED to grant provisional affiliation to Mokokchung Law College with effect from 1981-82. Further, the Council RESOLVED that the said College give further admission to students only for 1982-83 and admission for 1983-84 should be taken with the prior approval of the Academic Council.

The matter is, therefore, placed for ratification by the Academic Council.

Item No. 4.

DEFERRED ITEMS :

The Academic Council at its meeting held on the 24th and 25th June, 1982, had deferred consideration of the following Items :

- (1.) Committee constituted by the Academic Council vide Resolution No. AC:11:81:48. (Annexure - I ).
- (2) Committee to frame a Regulation for recognition of the research laboratories as Centres to guide Ph.D. research under NEHU. (Annexure - III ).
- (3) Request for recognition of Fisheries Laboratory of the Institute for purpose of Ph.D. work by ICAR Scientist under NEHU. (Annexure - III ).
- (4) Draft recommendations of the Committee on Faculty Exchange Programme. (Annexure - IV ).
- (5) Report of the Committee appointed to work out the course structure of M.Phil programme for college teachers. (Annexure - V ).
- (6) Report of the Working Group on the proposal for a School of Earth Sciences in the NEHU. (Annexure - VI ).
- (7) Basic considerations, objectives and structure of the proposed Centre for Rural Development. (Annexure - VII).
- (8) Proposal of Prof. B.Das, Professor of Education, Nagaland Campus, Kohima. ( Annexure - VIII ).
- (9) Scheme for Legal Education . ( Annexure - IX ).
- (10) Minutes of the first meeting of the College Development Council. (Annexure - X )
- (11) To make the Examination Department of the University responsible for conducting End-Semester Examinations in the School as well as for maintaining all records relating to the M.A. Examinations. ( Annexure - XI ).
- (12) Request for lowering of fees for Ph.D. students (Sciences).( Annexure - XII ).

The above Items are placed again before the Council for consideration and decision.

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COMMITTEE ON SECTION 4 OF THE  
NEHU ACT

Committee constituted under Academic Council's resolution  
No.AC:11:81:48, vide Notification No. Conf/AC/11/Ets/81-  
1007, dated March 3, 1982.

Interim Report on Item (iv) of  
the term of reference

CENTRE FOR INTEGRATED RURAL DEVELOPMENT

The need for a Centre for Studies in Rural Development in the essentially agricultural backgrounds of the North Eastern Hills is considerably great. The developments in science and technology hardly find outlet to the rural masses, and, as a result, the technology has by and large continued to be traditional and the agriculture, through slash and burn practice. The planning machinery that works from the above, has not been able to involve the masses, and the social education is yet to make sufficient headway in evoking response. In operating the development schemes and inducting new technologies it is necessary to gain the confidence of the people and convert them into the leaders of their own progress. An understanding of the tribal concept of development, and the social constraints that often stand on the way, is essential in development planning in the hill areas. A pilot study of the ecology and development potentials of the area is also essential. It is high time that the North-Eastern Hill University that is responsible under Section 4 of its Act to impart instructions for the socio-economic development of the North-Eastern Hills takes initiative in training the agricultural graduates and extension officers in Rural Development and Planning.

It is the considered opinion of the Committee that the North-Eastern Hill University should establish a Centre for Integrated Rural Development in the School of Agricultural Sciences with headquarters at Medziphema (Chaspani) in

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Nagaland so that the College of Agriculture there can form the nucleus for the Centre and can be complimentary to the agricultural education imparted by the University; provided that the University is in a position to provide adequate infra-structural facility that could be required by the Centre. On the basis of experiments in Medziphema, the University should plan to establish such Centres in Meghalaya and Mizoram also in future.

The object of the Centre shall be to train the personnel to mobilise the village-folk for the purpose of rural development and to serve as an operative agency for practical training for the courses that the School of Agricultural Sciences shall offer in Rural Development and Planning involving, besides agricultural sciences, elements of forestry, Geography, Sociology, Cultural Anthropology, Local Self-Government and Public Administration, Economics and Planning as course components. The function of the Centre shall, thus, be two folds, viz., (i) to train the personnel to be employed by the appropriate authorities for the purpose of rural development and (ii) to serve as an operational wing of the School of Agricultural Sciences.

The method of operation of the Centre and its activities can be decided at the level of the School which can benefit by the experience of such Centres in Viswa-Bharati (Sriniketan), Gujrat Vidyapith and the Gandhigram Rural University.

The Committee is currently examining the requirements of such a proposed Centre and its possible structure, and its observations and recommendations shall form part of the next instalment of the report.

Sd/- J.B. Bhattacharjee,  
Member-Secretary

Regulations governing the recognition of the research laboratories as centres to guide Ph.D. research under NEHU

1. (a) Recognition as a centre for pursuing research leading to the Ph.D. Degree of this University maybe granted on the basis of a written request by the research laboratory concerned and on the basis of a specific recommendation and acceptance by the Academic and Executive Councils of the University.
  - (b) While granting such a recognition, the Academic Council, if it considers desirable, may refer the matter to the concerned School Board/Boards, for their considered opinion.
  - (c) Where considered necessary, the Academic Council may assess the research facilities in a given field of study, before recognition is granted.
2. The recognition of a scientist as a Ph.D. Supervisor would be made, taking into consideration the relevant Ordinances, on the basis of a written application through the Head of the Institution where he works, alongwith bio-data and other supporting documents. This application should be made to the Dean of the concerned School. The concerned School Board shall forward the recommended names to the Academic Council for its approval.
  3. The supervisor shall forward the name of the candidate who desires registration for Ph.D. to the Dean of the concerned School, alongwith the research synopsis. The School Board shall satisfy

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itself that necessary facilities are available for research on that particular topic, if necessary on the basis of a report by a Visiting Committee.

4. It shall be the responsibility of the concerned School Board to ensure that the candidate has fulfilled all the requirements as laid down in the Ph.D. Ordinances before the candidate is registered for Ph.D. and also at the time of submission.

5. The candidate to be registered would have to do full time research for the prescribed duration as laid down in the Ordinance. Part time research is not permissible.

Sd/- P.S.Ramakrishnan  
Chairman of the Committee

Request for recognition of Fisheries  
Laboratory of the Institute for  
purpose of Ph.D. work by ICAR  
Scientist under NEHU

The ICAR Research Complex for N.E.H. Region  
Shillong in their letter No. RC(E)17/79 dated  
February 12, 1982 has requested this University to  
recognise their Fisheries Laboratory in Shillong  
for Ph.D. research work.

The matter is placed before the Council  
for consideration.

Item No. 10

MINUTES OF THE 1ST AND 2ND COLLEGE DEVELOPMENT  
COUNCIL MEETINGS.

The College Development Council convened its first and second meeting on 23rd August, 1980 and 3rd October, 1981 respectively. In pursuance of the 1st meeting resolution, the Sub-Committee of the College Development Council visited the colleges and has submitted a report on them with recommendations.

The minutes of both meetings are enclosed in Annexure 6 and 7 and the Sub-Committee report at Annexure 8 as a reporting item in the Academic Council.

Approved

DRAFT RECOMMENDATIONS OF THE COMMITTEE ON FACULTY  
EXCHANGE PROGRAMME

The Committee on Faculty Exchange Programme constituted as per AC Resolution AC:12:82:02(h) read with the University's Notification No. A12-4/Conf/82-1191 dated 21.4.82 held two meetings, once on 6th May, 1982, and the other on 16 June 1982. The Heads of the P.G. Departments and the Principals of the affiliated colleges were requested to convey their views on the proposed programme. The Committee after careful consideration of all aspects of the programme recommends:

A: Visit of teachers from P.G. Departments, NEHU, to its affiliated colleges:

1. At the beginning of each academic year, and not later than 30 June, the Principal of a College may intimate the Head of the respective post-graduate Department if he requires any teaching assistance on any Honours course or part of a course. The proposal should specify (a) the topic(s) or part of the topic(s) that need to be taught; (b) Number of students offering the course; and (c) the name of the teacher who is teaching the course/topic(s)
2. In case the college happens to be situated outside the University campus/Headquarters, the Principal's proposal should also indicate the board and lodging facility to be offered to the faculty member during his stay at the college.
3. The College concerned shall meet the cost of local hospitality for the visiting teachers, and the University shall pay the TA and DA.
4. The duration of such a visit shall not normally exceed two weeks to avoid dislocation in teaching in the parent department.

B. Visit of teachers from the affiliated colleges to the NEHU Post-Graduate Departments:

- B1. The proposal for the visit of a college teacher to the P.G. Department shall be made by the Head of the concerned department.

The University shall maintain complete Bio-data of all the college teachers, indicating their qualification, experience and area of specialisation/teaching.

2. Such teachers who fulfill the requisite qualifications as stipulated by the UGC for appointment as Lecturers shall be invited.

The Department may invite only such teachers whose area of specialization/teaching fits in the course currently offered.

3. The University shall meet the cost of local hospitality for the visiting teachers, and the college concerned shall pay the TA and DA.
4. The duration of such a visit shall not normally exceed two weeks to avoid dislocation in teaching in the parent college.

Sd/- M.K. Khare  
Member

Sd/- J.B. Bhattacharjee  
Member

Sd/- T.S.B. Narasaraaju  
Member

Sd/- S.N. Guha Thakurta  
Convener

June 17, 1982.

Annexure V

Report of the Committee appointed to work out the Course structure of M.Phil Programme for College Teachers.

The report of the Committee on the subject indicated is placed at appendix for consideration of the Council.

The Committee met two times on 6th May, 1982 at 2.30pm and 28th May, 1982 at 1.45 pm. The Committee was of the view that, since 'the M.Phil programme for College Teachers' is meant, inter alia, to help the teachers develop more effective teaching skills, this aspect should form a component of the course content. "Since the ability of the teacher students to impart effectively the already existing knowledge to others is an important objective of this programme, it may be expected of teacher students to contribute to knowledge in the area of teaching; their field of specialization effectively to their students within the conditions prevailing in their colleges". The Committee also took note of the time available to college teachers for doing the course. The Committee submits the following recommendations.

1. The 'M.Phil Programme for College Teachers' leading to M.Phil degree (Special) will be exclusively for teachers with at least 2 years teaching experience of the constituent and affiliated colleges of MAU.
2. The programme will consist of course work and dissertation/project work. 50% of the total weightage will be allotted to the course work and the remaining 50% to dissertation/project work.
3. Students will be required to take at least three courses including one course on Research methodology and teaching. One of the three courses may be offered by another department. During the course work, students will be required to give seminars and write assignments from time to time. Besides the three compulsory courses, a student may take one optional course in English.
4. The programme will spread over a period of 3 semesters out of which the 1st semester will be spent for course work and the remaining 2 semesters for dissertation/project work, provided that a student may be permitted to submit his/her dissertation/project report within 5 semesters from the date of admission.
5. At the end of one semester, students will be assessed in the course work. If a student fails to clear any of the courses, he/she will be given one more chance to clear the course/courses in which he/she fails.
6. After completing the course work, students will be required to take up dissertation/project work under the supervision of a teacher on a topic

to be assigned by the Dept. Students may be allowed to carry out their dissertation/project work in their respective colleges. During this period they will be required to write assignments on topics allotted by the Dept. concerned.

- 7. At the end of the second semester, a student will be required to give seminars on the progress of his work. The performance of the student in his seminar will be assessed by the Dept. concerned.
- 8. The method of evaluation for the course work as well as the dissertation/project report will be the same as that provided in Sec. 12 of the Academic Ordinance.

The Committee feels that strengthening of the Faculty in the Depts. will be necessary before starting the programmes. It is also of the view that until there is a change in the present academic calendar of the University, the courses may be conducted during the period Feb/March to July/Aug.

R. Lalhantluanga  
Convener of  
the Committee.

Draft Ordinance on M.Phil Programme for College Teachers.

1. **Objective:** The 'M.Phil Programme for College Teachers' leading to M.Phil Degree (Special) is meant to help the teachers improve their teaching skills and subject knowledge as well as to introduce them to relevant research in their respective fields.
2. **Duration :** The programme will spread over a period of 3 semester out of which the 1st semester will be for the course work, the remaining two semesters for dissertation/project work, provided that a student may be allowed to submit his/her dissertation/project report within 5 semesters from the date of admission.
3. **Admission requirement :** Teachers of the constituent and affiliated colleges of Mafu with a minimum 2 years teaching experience may be admitted to the Programme on the recommendation of the department concerned. However, more than five students should not be admitted at a time in one department.
4. **Course work :** Students will be required to take at least 3 courses prescribed by the department concerned and approved by the School Board including one course in Research Methodology and (practice) teaching. (If required inter departmental courses may also be offered). This will be a full time course requiring attendance at the lectures and seminars. Besides the above 3 compulsory courses, a student may take one optional course in English. At the end of the 1st semester, the performance of the students will be evaluated. If a student fails in any of the courses, only one more chance will be given to clear the course/courses in which he/she fails.
5. **Dissertation/project work :** After completing the course work, students will be required to take up dissertation/project work under the supervision of a teacher on the topic to be assigned by the department and approved by the School Board/the Post Graduate Board of Studies. Students may be allowed to carry out their dissertation/project work in their respective colleges.
6. At the end of the second semester a student will be required to give seminars on the progress of his work. The performance of the student in the seminars will be assessed by the Dept.
7. 50% of the total weightage will be allotted to the course work and the remaining 50 % to dissertation/project report.
8. The method of evaluation of the course work as well as the dissertation/project report will be the same as that provided in Sec. 12 of the Academic Ordinances.

REPORT OF THE WORKING GROUP ON THE PROPOSAL FOR A SCHOOL OF EARTHSCIENCES IN THE NORTH-EASTERN HILL UNIVERSITY

The Vice-Chancellor of the North-Eastern Hill University had organised a Working Group of eminent earth scientists to discuss the matter of creation of a School of Earth Sciences in the NEHU and make specific recommendations in that regard. The following earth scientists participated:

- 1. Prof. K. Jacob, Retd. Prof. of Geology.
- 2. Prof. S.K. Sen, Head of the Department of Geology & Physics, IIT, Kharagpur.
- 3. Dr. D.K. Ray, Adviser (Minerals), NEC.

The following members of NEHU also joined the workshop to facilitate deliberations on inter-disciplinary aspects:

- 1. Prof. H. Junjappa, Dean, School of Physical Sciences, NEHU.
- 2. Dr. Y.S.T. Rao, Reader, Deptt. of Physics, NEHU.
- 3. Dr. R.K. Rai, Reader, Deptt. of Geography, NEHU.

The Group met in Shillong on the 10th and 11th May, 1982. They visited the Geology Department of Kohima Science College on the 12th May, and the NEHU Post Graduate campus at Kohima on the 13th. Discussions were held with the Chief Minister of Nagaland on the 13th afternoon to apprise him of the purpose and objectives of the workshop. The discussion with the Chief Minister of Nagaland was led by Dr. B.D. Sharma, V.C., NEHU. The participants returned to Shillong on the 14th, held further discussions and finalised the report.

The Group had earlier been apprised of the contemplations about setting up a School of Earth Sciences in NEHU. About three years ago, the Government of

Nagaland was given to understand that there was a possibility of the School being located at Kohima. The Geology Department of Kohima Science College, which has now been upgraded to Honours level and commencing from this year will adopt the three year degree course, could provide the nucleus for developing a Post-Graduate department. Alternatively, the NEHU campus at Kohima could also be considered as the locale of this contemplated department. It is also recognised that the main campus of NEHU at Shillong could be a favourable location for such a School of Earth Sciences, especially as the sister discipline of Geography is being taught at the Shillong campus at Post-graduate level. Since the School of Physical Sciences is also located at the Shillong campus the scope of inter-disciplinary interaction at Shillong is much better than what could be expected at Kohima. The Post-graduate Department now located at Kohima are those of English, Education and Commerce. During the discussions with the Chief Minister of Nagaland the question of Kohima Science College being taken over by the NEHU in pursuance of their earlier commitment as a constituent college came up. The NEHU could set up a Post-graduate Department on that base without waiting for the infrastructure to come up. The inspection of Kohima Science College revealed availability of adequate land and some facilities in the existing Geology Department; but the Group was apprise of the problems of faculty housing, dormitory etc. which would have to be augmented substantially before any new Department was opened. The NEHU campus at Kohima is located in temporary buildings, and new constructions are

yet to come at the site to be allotted. The Government of Nagaland have also decided to get this site vacated by NEHU and allot then another site where a number of residential houses are existing. However, this process of site transfer and priority location of the existing P.G. departments will be spread out over a period of several years, and no precise estimate of the same could be obtained. The Group is of the opinion that this matter of location of the contemplated department should be left to the NEHU administration.

Justifications for a  
School of Earth Sciences

Geoscience activity in the North East has been lagging far behind the national level. The deployment of Earth Scientists by the various central and state agencies is grossly inadequate. Even for the very first level of documentation, namely mapping, exercises done by the North Eastern Council reveal that about 250-300 geoscientists are to be deployed in the North Eastern Region to ensure basic documentation within this decade. As against this, the actual deployment is about 150 only. The State Directorates of Geology and Mining would in the coming two decades need about 150 geoscientists. The central agencies working in this area recruit on all-India basis, and the nett additional deployment if geologists/geoscientist according to the long-term plans may not exceed 10-15 a year. The regional universities teaching Geology have a total output of 23 students per year, and because of certain inadequacies these post-graduates do not fare satisfactorily in all-India competition. As such, the Group recognised that there is

not only a necessity for augmenting the post-graduate teaching facilities in geoscience in the region, but there is concurrently the necessity for development of a post-graduate department where a superior level of instruction in geoscience could be offered. It is also felt that planning for such a centre of excellence is essential in view of the late start and to cover the handicaps which are existent.

Since the status of knowledge about the resources and geological framework is still rather rudimentary, a vigorous and dynamic School of Earth Science is necessary, not only for developing cadre for studying the region, but also to stimulate more fundamental enquiries into the earth processes. It is also to be reckoned that all Universities have the responsibility of imparting comprehensive education in all branches of knowledge, and the NEHU which has already developed Schools of Physical, Social and Life Sciences, will have to bridge the gap in its structure by adding a School of Earth Sciences. Without concurrent teaching and research efforts in Earth Sciences, the full potentials of current efforts in the other Schools cannot be realised. It is, therefore, felt that NEHU will have to establish the School of Earth Sciences as early as possible.

#### THE SCHOOL OF EARTH SCIENCES. NEHU

The main feeder college will be the Kohima Science College, where an undergraduate course in Geology is offered. Under NEHU, no other college offers Geology.

Currently a two year Geology Honours Course is given. About six students will appear next year. Pass Course in Geology is offered to 20-30 students. Geology is also taught at P.U. level in this College. The existing facilities are located in a three-storied building where 3 lecture halls and 3 laboratories have been set up for geology teaching. This building also houses the Geography and Anthropology Departments. These disciplines are taught at P.U. and B.Sc. - Pass level. Honours courses in Chemistry, Mathematics, Botany and Zoology are also offered at Kohima Science College, but the intake of students is in 3-5 range. Commencing from this year (1982), the 3 year Degree course is to be introduced and the first group of three year B.Sc. Honours degree holder will come out in 1985.

For Geology Honours students a variety of subsidiary combinations is allowed by the College. Mathematics is not obligatory and various combinations from Physics, Chemistry, Mathematics, Botany, Zoology and Anthropology have been allowed. There is no restriction, but Chemistry is generally taken as a subsidiary by all students. At P.U. level also Geology can be one of the four science subjects, the remaining being various combinations of Physics, Chemistry, Mathematics, Biology, Anthropology and Geography.

Since no regulations have been imposed regarding course combinations, students with a wide range of science background are admitted to B.Sc. (Honours) Classes and will also be awarded the B.Sc. (Honours) Degree on successful performance in the annual examination. However, it is strongly recommended that (1) commencing from 1983, for P.U. students, Geology can be allowed as the fourth Science subject, if the three other subjects are Physics, Chemistry and Mathematics and (2) commencing from 1984, applicants for admission to B.Sc. (Honours) Course will have to take Mathematics and either Physics or Chemistry as the subsidiaries. This restructuring of the feeder course-combinations is absolutely essential to ensure that the Post-graduate Course in Geoscience as suggested in this report could be intelligible to the students.

Regarding the Post-Graduate Course, two possibilities exist. In view of the wide variety of subject - combinations, as obtaining at present and the 2 to 3 year Degree Course transition commencing from this year, there could be two approaches :

Variant A: A Post-graduate Department of Geosciences with a one year Preparatory course for the years 1983-84 to enable 2-year Degree holders to come to the P.G. Course, which is designed for 3 Year Degree holders. This preparatory Course can be discontinued after 1985.

Variant B: To adopt a 5 year integrated Course after P.U. with provision for a B.Sc. (Hons) Degree after the third year and M.Sc. Degree in the fifth year. This integrated course can commence from 1983, but must be supplemented by tutorial courses to ensure that deficiencies in the P.U. combinations are made up. Such arrangements will be needed for the period 1983-85.

In fact the above variants are not different. Variant A constitutes the last two years of Variant B. Variant B envisages a restructuring of the 3-Year Degree Course to provide a strong base of physical sciences and equip the students better for the P.G. course envisaged. In fact, it would be better and logical to orient the proposed 3-year Degree Course in such a manner as to facilitate a smooth integration into the 5 year course right now.

The course structuring for Variant A (2-Year P.G. component) is given in Annexure I. The first three years of the Variant-B or remodelled 3-Year Degree Course should offer Physics - Chemistry - Mathematics in the first two years in the same pattern as is done for the other Physical Sciences and the third year will be meant for Geosciences only. Such an arrangement will enable students from other Colleges and having Physics - Chemistry - Mathematics combination to seek admission. The course

structuring for the third year is set out in Annexure II. The two-year Degree students passing out in 1983-84 would be admitted to the Integrated course at the 3rd Year level. The 3rd Year course for these students will be a preparatory course specially designed to cover the gaps and deficiencies in the background. Since the new P.U. boys with appropriate combinations will be available only from 1984.

#### Faculty Structure

The Kohima Science College with Geology as a subject in P.U. and desirous of going for 5 year integrated Geoscience course will either take Physics, Chemistry, Mathematics group for B.Sc. or additional papers with Geoscience course in the first two years which will be specially designed for them. Planning for these course should start immediately.

#### Number of Seats

The Group recommends that there should be a provision for 15 seats to start with, but eventually it is envisaged that the number would rise to 20 and finally to 25. The registration to Geology Honours Course would be in the 3rd Year. For the first two years the course envisages general Physics - Chemistry - Mathematics instruction, and as such the question of limiting the number of seats even for the integrated course does not arise.

#### Faculty Structure

The Professor and preferably the first appointee should have a panoramic view of the contemporary geoscience and be aware of the geological problems of the North eastern region. The Group envision that the specialisation of the appointee should preferably be in one of these three fields : hard rock petrology/tectonics/historical geology. The total faculty strength may be 18 (5 Professors, 8 Readers and 5 lecturers). The phasing of recruitment should ideally be as follows :

	<u>1st Year</u>	<u>2nd - 4th Year</u>
Professor	2	3
Readers	3	5
Lecturers	2	3

The supporting staff requirements are indicated in Annexure III.

Laboratory, Equipment and Library

The envisioned requirements are indicated in Annexure V.

Financial Requirements

The tentative financial requirements/orders of investments are set-up in Annexure VI.

Sd/-  
(Prof. K. Jacob)

Sd/-  
(Dr. S.K. Sen)

Sd/-  
(Dr. H. Junjappa)

Sd/-  
(Dr. D.K. Ray)

Sd/-  
(Dr. Y.S.T. Rao)

Sd/-  
(Dr. R.K. Rai)

ANNEXURE - I

Post-Graduate Courses

- 400 Physics & Chemistry of Earth - 1
- 410 Physics & Chemistry of Earth including Marine Geology - 2.
- 420 Landscape evolution - 3
- 421 Geoscience Lab I - 4
- 430 Structural Geology
- 431 Structural Geology Lab
- 440 Sedimentation and Sed. Petrology
- 441 Petrography of Sedimentary rocks
- 450 Magnetism and Magmatic Petrology
- 451 Petrography of igneous rocks
- 460 Metamorphism and Met. Petrography
- 461 Petrography of Metamorphic rocks
- 470 Palaeontology
- 471 Palaeontology Lab.
- 500 Orogenesis
- 501 Mineralogy
- 510 Stratigraphy
- 520 Exploration Geophysics
- 521 E.G. Lab.
- 531 Exploration Geology and Geochemistry
- 531 -do- Lab
- 540 Geodata Analysis and G.A. Lab.
- 550 Groundwater & Enng. Geology
- 560 Mineral Deposits
- 570 Geodynamics
- 600 Project Work
- 610 Elective
  - Photogeology & Remote Sensing
  - Petroleum Geology
  - Coal Geology
  - Economic Geology
  - Environmental Geology
  - Recent Crustal Movements in N.E. India

ANNEXURE II

Third Year Course

300	The Earth structure Composition	(44 lectures)	50 marks
310	Earth Materials Mineralogy-Optical Mineralogy Petrology	(88 lectures)	75 marks
311	Lab (Mineralogy, Petrology)	(132 hours)	100 marks
320	Earth Process Structure, tectonics Geomorphology Ore genesis	(88 lectures)	100 marks
321	Lab (Maps, Photogeology)	(132 hours)	50 marks
330	The Geological Record Historical Geology Stratigraphy Palaeontology	(88 lectures)	75 marks
331	Lab Fossils	(88 Hours)	50 marks

ANNEXURE - III

Supporting Staff

	<u>1st Year</u>	<u>2nd - 4th Year</u>
1. S.S.O.	1	-
2. S.T.A.	1	1
3. J.T.A.	1	1
4. S.L.A.	2	2
5. J.L.A.	1	1
6. Superintendent	1	-
7. Stenographers	1	1
8. U.D.A./Storekeepers	2	1
9. L.D.A./Typist	2	1
10. Attendants	4	4
	<hr/>	<hr/>
	16	12

Total = 28.

## ANNEXURE - IV

List of Equipment and Library facilities

<u>Laboratory Equipment etc.</u>	<u>Cost (Rs. lakh)</u>
Microscopes - 15	2.0
Stereozoom - 1	0.7
Seismograph - 1	6.0
A A S - 1	5.0
Standard Chemical Laboratory with Spectrograph	2.5
Thin Section Lab	2.0
Geophysical Instruments	7.0
Remote Sensing Software	3.0
Photogeological Equipment	1.6
Office equipment	0.5
D.O. Equipment and stores	0.5
Survey Equipment	1.0
Geophysical Instrumentation Lab	2.0
Field Equipment and Tentage	1.0
E D P facility	2.5
Vehicle	1.5
Workshop	3.0
Photographic Equipment and Lab	0.5
Reprographic facility	2.0
	Sub-total 45.30
<u>Library</u>	
Books & Journal Back volumes	10.00
Equipment	1.50
	Sub-Total 11.50
	GRAND TOTAL 56.80 lakhs

ANNEXURE - VII

NORTH-EASTERN HILL UNIVERSITY  
RURAL DEVELOPMENT CENTRE

(A note on basic considerations, objectives and structure)

Context : A profile

Meghalaya : High participation ratio, i.e., more than 50% of population particularly in rural areas is a noteworthy feature of Meghalaya. Overwhelming part of the workers is engaged in agriculture (nearly 80%) which is mainly of subsistence type. The rural settlements are small, nearly 50% of villages has a population of less than 200 persons.

However the cultivated area due to terrain conditions, occupy hardly 5-10% of geographical area depending upon situations. Jhumming and terrace cultivation are principal agricultural practices. Only in some favourable situations like valleys, wet cultivation is practiced on a limited scale. Paddy is the principal crop, followed by potato, maize, arecanut and citrus fruits.

The area under forest is low, i.e., about 11%. It is still lower in the Khasi and Jintia Hills i.e., about 5% and rises to 10% and 20% in Garo and Mikir Hills respectively. A very large area is rocky, rugged terrain and fallow lands.

Meghalaya is rich in mineral resources particularly coal, limestone and sillimanite .

Nagaland : The major part of the population of Nagaland live in the thousand villages of the State. Nearly 50% of the villages of Nagaland have a population of less than 500 persons. Most of the Naga settlements are in between the height of 1200 m to 2,100 m. Agriculture is the main occupation of the people though only 50% of the total geographical area could be used for cultivation. And hardly 1/5th of cultivated area is under permanent agriculture, rest is under jhum cultivation. Terraces form the important element of permanent cultivation. Paddy is the major crop. Millets, potatoes, vegetables are other crops.

Contd/...

Mizoram : Population in Mizoram too, is dominantly rural. In the western part where relief is low, valleys are wide and not unhealthy, most of the villages are located in the valleys. But in the eastern part, the stream valleys are not hospitable due to their harsh climate. So in this section, hill crests and slopes offer sites for villages.

Jhum cultivation is the dominant economic activity. Extent of cultivable land ranges from 25% to 45%. Paddy is the universal crop. The other crops of importance are oilseeds and maize.

With this belief state-wise profile, it may be useful to look at the salient demographic characteristics of these north-eastern states, as revealed from the Census of 1981.

T A B L E : I  
Growth characteristics of Population, 1971-81

State/U.T. Districts	Total population, '81.	Percentage of urban population to total population		Percentage growth rate 1971-81		
				Total	Rural	Urban
		1971	1981			
1. Meghalaya	1,328,343	14.55	18.03	+31.30	+25.95	+62.74
a. Jaintia Hills	155,993	7.86	8.27	+37.36	+36.75	+44.46
b. East Khasi Hills	506,687	32.25	35.36	+33.11	+27.00	+45.96
c. West Khasi Hills	160,660	..	2.41	+44.91	+41.41	..
d. East Garo Hills	135,864	..	3.16	+32.29	+28.12	..
e. West Garo Hills	369,139	5.10	10.64	+21.46	+14.37	+153.46
2. Nagaland	773,281	9.95	15.54	+49.73	+40.44	+133.84
a. Kohima	251,416	26.01	27.18	+92.49	+89.45	+101.14
b. Phek	70,675	..	..	+58.49	+58.49	..
c. Wokha	55,271	..	14.43	+44.32	+23.50	..
d. Zunhebeto	60,641	..	11.25	+28.77	+14.28	..
e. Mokokchung	1,04,257	21.03	17.67	+25.84	+31.19	+5.74
f. Tuensang	1,52,276	..	7.44	+39.88	+29.48	..
g. Mon	78,745	..	9.28	+22.77	+11.38	..
3. Mizoram	4,87,774	11.36	25.17	+46.75	+23.89	+225.13
a. Aizawl	3,40,766	13.85	28.75	+48.73	+23.01	+208.67
b. Lunglei	82,589	9.69	21.52	+32.92	+15.50	+195.28
c. Chhaintipui	64,419	..	10.90	+56.58	+39.52	..
INDIA (Provisional)	658,140,675	20.22	23.73	+24.43	+18.96	+46.02

Contd/..

T A B L E : 2

Certain Social Indicators, 1971-81

States/U.T.	Density/Sq.Km		Sex Ratio		Literacy rate			
	1971	1981	1971	1981	Male		Female	
					1971	1981	1971	1981
1. Meghalaya	45	59	942	956	34.12	36.98	24.56	29.28
2. Nagaland	31	47	871	867	35.02	49.16	18.65	33.72
3. Mizoram	16	23	946	936	60.49	65.99	46.71	52.57
INDIA	177	221	930	935	39.45	46.74	18.69	24.88

Analysis of the above facts and figures bring out certain contours which perhaps indicate the framework of rural development in north-eastern states, viz.,

1. Much of the land resources are un-utilised or under-utilised,
2. Though agriculture is the dominant occupation, yet productivity is low and prevalent agricultural practices are wasteful. Example -
  - a) Cost of construction of terraces covering one acre only is Rs 10,000. whereas production of rice from one acre of terrace is hardly 400 Kg.
  - b) Widespread jhum cultivation is leading to serious soil erosion. One ICAR research has brought out that production of one ten of potato through jhum cultivation results in 2 tons of soil displacement.
3. Animal husbandry and fishing, two most important allied activities of agriculture, have been developed very little so far.
4. Forestry as an organised gainful occupation is almost non-existent, though for topographic conditions, it has significant promise.
5. Population growth-rate is substantial and future growth prospects is also high as sex-ratio is favourable.
6. There had been significant progress in literacy. particularly in case of female literacy in comparison to national average.

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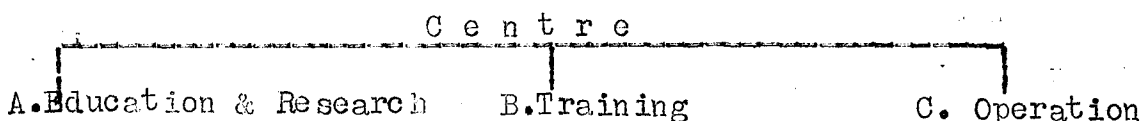
What Role Should NEHU Play ?

As an academic Body, NEHU's principal involvement in rural development process should be furtherance of studies and research related to rural development and dissemination of the knowledge.

In order to reach the effective level of communication and to promote acceptability of its ideas and models, the proposed Centre may take 'Gram-Vikas' or Village Development on selective basis. This operational arm of the University may be utilised in training and research also.

Structure of Rural Development Centre.

Therefore, the structure of the Centre should have three components, viz.,



A. Education & Research

At the first stage, the Centre could initiate a one-year Diploma Course in Rural Development Planning which may later on be developed into a two-year post-graduate degree course. At the present, science and agricultural graduates may be admitted into this Diploma Course. Sons and daughters of farmers' families with some basic education may also be admitted.

Course content (3 theory papers of 30 marks : Paper contents are to be organised from the following)

1. Social history
2. Social structure and local Govts.
3. Geography with particular emphasis on land-scape analysis and study of water-resources.
4. Ecology and Environment.
5. Soils and soil erosion
6. Minerals

Contd/...

7. Resource-analysis from cost-benefit view point.
8. Agriculture, horticulture.
9. Animal husbandry and Veterinary services.
10. Fisheries
11. Forestry
12. Delimitation of land-productivity zones.
13. Social behavioural patterns; manpower mobilisation
14. Settlement types & hierarchy
15. Methods of scheme formulation
16. Methods of scheme appraisal
17. Monitoring and Evaluation
18. Developmental organisations and network including management of village industries.
19. Cooperation, institutional financing and marketing.
20. Development Administration
21. Block-level planning.

Practical - 100 marks -

Methodologies of various types of survey  
Tabulation and processing techniques  
Thematic mapping  
Village development work.

Total Marks - 400

R e s e a r c h

In selecting themes priority considerations maybe given to applicability. In the first year, the following could be considered -

- a) Strategies for productive utilisation of rugged and barren areas of Meghalaya on selective sample study basis.
- b) Alternatives to Jhumming in Nagaland.
- c) Environmental problems of Southern Mizoram -vis-a-vis developmental planning.

B. TRAINING :

R.D.C., NEHU, could organise "short-term training for the benefit of officials and non-officials connected with development planning and administration. It also can provide training for unemployed youth in connection with TRYSEM under IRDP.

Contd/....

Following training courses are suggested :

**I. Development Administration (for B.D.O., Panchayat Officer, Secretary of Village Council, P.O. & A.P.Os-DRDA)**

1. Resource Inventory
2. Methodologies of Block Survey
3. Land-use Survey
4. Land-use mapping
5. Scheme formulation
6. Monitoring of progress
7. Evaluation
8. Rules related to institutional financing
9. Accounting procedures
10. Development Administration.

3 Months

**II. Development Techniques (for representatives of farm families)**

1. Techniques of land-surveys
2. Elementary principles of agri-engineering
3. Productivity analysis following typological classification of production zones
4. Horticulture, plantations and social forestry
5. Animal production and veterinary services
6. Pisciculture
7. Management of small industries
8. Organisation of infrastructural facilities under various conditions.
9. Drafting of progress reports.
10. Field visits.

4 Months

**III. Organisation/Management of Small Industries (for unemployed youth)**

1. Bee-keeping
2. Weaving
3. Dyeing, bleaching, design
4. Carpentry
5. Blacksmithy
6. Leather goods
7. Soap making
8. Elementary lesson on cooperative laws, credit rules.
9. Organisation of trade and marketing.

workshop oriented training -- 6 months

**IV. Development Management ( for BDO, AEO, P.O., A.P.O., Panchayat/Village Council Secretaries and Members).**

1. History and social characteristics of various tribes.
2. Tribal organisations
3. Village level development organisations
4. Resource mobilisation
5. Case-studies of social aptitudes.
6. Cooperative organisations.

Contd/...

7. Role of voluntary organisations in development
8. Mechanisms of public relations
9. Seminars with selected executives
10. Field visits.

(2 1/2 months)

### C. OPERATION

Purpose of the Operational Wing of the Centre would be (a) demonstration (b) to offer practical lessons in connection with training courses and (c) to act as feed-back to education and research.

Under Operational Wing, at the first stage, villages would be selected as per the resource situations, under 'Gram-vikas' or village development programme, to develop the principal activity in each of the selected villages, viz.,

1. To show that tree-culture could be remunerative.
2. To show that animal husbandry could be remunerative
3. To show that village industries could be remunerative
4. To show that replacement of present agricultural practices by proper land-use planning could meet both the needs of better production and conservation of resources.

The other role of Operational Wing would be to produce development literature in regional languages.

### Organisation

The Rural Development Centre should function under one Professor-Director, who should be chosen because of his established ability of formulating rural development plans, execution and evaluation.

To start with, in addition, two posts of Readers be created, One for animal sciences and the other for tree CULTURE.

A post of lecturer conversant with organisation and management of small industries would be helpful.

Existing faculty members of NEHU could meet the other requirements of the Centre on mutual terms.

Contd/..

Non-teaching staff complement might be -	
Research/Field Assistant	- 3
Stenographer	- 1
Typist Despatcher	- 1
Peon	- 2
Duplicating Machine Operator	- 1
Draftsman	- 1
Driver	- 1
Durwan	- 1

In addition, Officer-in-Charge (3) for three workshops at three states with minimum supporting staff would be needed. (Cost estimates may kindly be worked out by the University as per their pay rules. Equipments like Xerox, Ammonia machine, Survey Instruments and a vehicle are other requirements).

Complementary Assistance from other organisations. Possibilities are -

1. IRD programmes of the State Governments would meet the infrastructural requirements of providing training.
2. ICAR and KVIC could share training responsibilities.
3. North-East Council may fund research activities.

Headquarter of the Centre

University to decide.

There is a proposal that the Centre be located at Medziphema. It is true that University's Agriculture College is located there. Side by side, it may be considered, that Organisations located there viz., ICAR, Co-operative Training Centre, VIW Training Centre provide training courses semblances with some areas of training proposed to be the functions of the Rural Development Centre, NEHU. Therefore, at Medziphema, the proposed Centre might not bring out the impression of something initiating unique. On the other hand, if the Centre is located at Shillong that may give it the advantages of centrality. However, considered opinion of the University about the location should prevail. In addition to H.G. Sub-Centres at constituent State-levels should be developed in due course.

~~Form No. 22~~NORTH-EASTERN HILL UNIVERSITY  
DEPARTMENT OF EDUCATIONAL RESEARCH & STUDIES  
NAGALAND CAMPUS :: KOHIMAB. Das  
Professor of Education

D.O.No. ERS/Estt-7/82-83

June 4, 1982.

Dear Mrs. Mawlong,

During my recent visit to Delhi in connection with UPSC work, I had to halt at Gauhati for a few hours and during that halt I met the Committee under the Chairmanship of Smt. M. Saha at the VIP Guest House. The Committee has been appointed to report on the working of the NCERT. At this meeting the Field Adviser NCERT, Shillong told me that not much work for Extension Education, Population Education and Continuing Education had been done in this region. He requested me to organise a Workshop at Kohima. The expenditure will be borne by the NCERT.

In Delhi I met the Deputy Educational Adviser incharge of Continuing Education and he gave me to understand that little work had been done by our University where a Centre is in existence for this purpose. The Deputy Education Adviser said that this Centre should be activised and if possible transferred to Kohima. The staff sanctioned consists of a Director in the scale of Rs 1500-200, an Assistant Director in the scale of Rs 1100-1600 and a Project Officer in the scale of Rs 700-1300. Besides to above, there is a supporting staff of Stenographer, Clerk typist, accounts clerk and technical assistants in the scales approved by the concerned University. As you know there is a considerable amount of work to be done in this regard in this area and I do not know the difficulties for which these posts have not been filled and the work taken up as per the direction of the UGC. I had a discussion with my colleagues here and they felt that since Population Education and Continuing Education were part of the M.A. course here this scheme could be taken up on this campus more fruitfully. The Deputy Education Adviser has also requested me to organise one or two seminars/workshops on Adult and Continuing Education and Population Education

Contd/...

here at Kohima for which the expenditure will be borne by the UGC. A scheme is being prepared in consultation with my colleagues in the department and also at the College of Education and the SCERT and will be sent in due course to the Vice-Chancellor for approval. If UGC will immediately release seed money to the extent of Rs 20,000/- to enable us to organise the seminar/workshop.

I had submitted a proposal to the University for the purchase of audio-visual equipments for the Technology cell in the department. I had a further informed discussion with the UGC officials on this and they have agreed to provide funds for the purchase of Video-Cassette recorder and a close circuit T.V. for the department with a view to up-dating the knowledge in the branch and also for providing healthy recreational avenues for the students of the campus since such facilities do not exist in this town. Further with the operation of the INSAT Satellite, Kohima will be linked to the National look up and separate T.V. programmes as prepared by the N.E. Council would be available both for education and recreation. Such equipment will, therefore, be of great use to the students, teachers and even the public who could be exposed to programmes of adult education. The cost of a video-cassette recorder and a close circuit T.V. would come to about 1.5 lakhs and the UGC will provide this amount.

I would request you to look into all these matters and kindly take a decision at a very early date.

Yours sincerely,  
Sd/ B. Das,  
4.6.82.

Mrs. M.R. Mawlong,  
Registrar  
North-Eastern Hill University  
Shillong.

ANNEXURE-1

THE BAR COUNCIL OF INDIA

RAJNIT MAHANTY  
CHAIRMAN

AB/21, Lal Bahadur Shastri  
Marg, Facing Supreme Court  
Bldg., New Delhi-1.

BCI/D/1801/1982(LEpNR)

2nd June, 1982.

To

1. Vice-Chancellors of all Universities imparting Legal Education.
2. Deans, Faculties of Law of all Universities.
3. Chief Secretaries of all the States.
4. Education Secretaries.
5. Law Secretaries.

Sub:- Professional Legal Education -  
New Rules formulated by the Bar  
Council of India.

Dear Sir,

You will be glad to know that the Bar Council of India having the statutory responsibility under the Indian Advocate Act to determine standards of legal education for the purpose of admission to the Bar, have evolved after five years of consultation and deliberation with concerned authorities, a new scheme of legal education, a copy of which is enclosed for your information. This office has already sent copies of the same to every Law College and Universities in the country asking them to take early steps for its implementation. I am writing this not only to inform you of the proposed changes but also to seek your cooperation and advice for a smooth change over to the new system mitigating the problems and difficulties which are inevitable in the context of the prevailing situation in different States.

In this connection I would like to bring to your kind notice the following propositions for a clear appreciation of the new scheme:

1. The new Scheme evolved by the Council is applicable only to professional legal education and Universities and Colleges wanting to give liberal legal education are not at all affected by the scheme. In other words, law education for purpose of academic purposes only can continue independent of the new rules.

...2/

2. Under the new scheme professional law education can only be through full time day colleges with a minimum of 5½ hours instruction every day. There are norms laid down in respect of buildings, full time staff, library and related facilities. This would mean that those law colleges which do not satisfy these norms will be deemed to be non-professional law colleges after a two year change over period. It would also mean that if the Universities affiliating such colleges do not distinguish between professional and non-professional colleges, their law degrees are likely to be derecognised for the purpose of the Advocates Act. This may entail hardship to those preparing to join the Bar and, as such, Universities and State Governments are to take stock of the situation and prepare for appropriate action on an early date.

3. In order to avoid hardships and give sufficient time for the change over, the Council has already provided a two year period for Universities to decide their course of action. However, in order to change after two years, preparatory steps will have to be undertaken by the Universities and State Governments without any delay. The Bar Council and its Legal Education Committee will make every effort to solve difficulties in individual cases and assist Universities and Colleges to come up to the required standard of imparting professional legal education. However, if they fail to come up even by the academic year 1984-85 the Council will have to take the unpleasant step of derecognising them for purpose of the Advocates Act.

I am therefore writing this to you to impress upon you the necessity for reforms in legal education and the implications of the proposal and to seek your good offices for taking early steps in your State/University for necessary action at appropriate levels in a time-bound frame.

With regards,

Yours sincerely,

Sd/-  
(RANJIT MAHANTY)  
CHAIRMAN

Encl: As above.

KL

N.B. The appendices referred to in Explanation to Rule 11(1) are under preparation. It will be sent in due course of time.

## PART--IV

### **Standards of Legal Education and Recognition of Degrees in Law for admission as Advocate.**

*(Rules under Section 7 (h) and (i), 24 (1) (c) (iii), and (iiiia), and  
49 (1) (af), (ag) and (d) of the Act.*

(1) Save as provided in Rules 23, 24 and 25 of the rules hereunder a degree in law obtained from any University in the territory of India shall not be recognised for purposes of enrolment as advocate under the Advocates Act, 1961 from June 1, 1982 unless the following conditions are fulfilled:-

- (a) That at the time of joining the course of instruction in law for a degree in law the person concerned has passed an examination in 10+2 course of schooling recognised by the educational authority of the Central or the State Governments or possesses such academic qualifications which are considered equivalent to such 10+2 courses by the Bar Council of India.
- (b) The law degree has been obtained after undergoing a regular course of study in a duly recognised law college under these rules for a minimum period of five years, out of which the first two years shall be devoted to study of pre-law courses as necessary qualification for admission to three year course of study in law to be commenced thereafter. The last six months of the three years of the law course shall include a regular course of practical training.
- (c) That the course of study in law has been by regular attendance for the requisite number of lectures, tutorials, moot courts and practical training given by a college affiliated to a University recognised by the Bar Council of India.

2. A law college shall only be located at a place where there is a District Court or a Circuit District Court.

3. (1) Professional law education shall only be through whole time day colleges or University departments from the academic year 1982-83.

Provided such of the Universities which cannot implement the new rules from June 1, 1982 may continue the old system under intimation

to the Bar Council of India for a term not exceeding two years from 1982-83. After such intimation the said Universities shall comply with requirement of Rule 23.

Provided further that the students who have been admitted to the 1st year LL.B. before 1st June, 1982 can continue to receive their education through part-time morning/evening colleges as the case may be.

(2) A College will be deemed to be whole-time day college for the purpose of Sub-Rule (1) if the working time of the college or University department extends to at least 5½ hours continuously on every working day comprising of class room teaching which shall include at least 4 periods of one hour each and the remaining 1½ hours of the working day devoted for contact programmes with teachers, library work, tutorial work and similar curricular and extra-curricular work in the campus of the college.

(3) The library of the college or University Department shall remain open for at least 8 hours on every working day.

(4) The strength of part-time teachers shall not be more than 50 per cent of the total strength of the teachers.

(5) The Principal of the College shall ordinarily be full-time teacher in the College.

4. The medium of instruction shall ordinarily be English. Where the medium of instruction in law is not English, or where he has in fact answered the papers for the law examination in a language other than English, he shall as a condition of his enrolment be required to pass a written test on 'Proficiency in English' to be conducted by a State Bar Council except when he has passed such a test as a part of his course of instruction in law.

*Explanation:* The test above mentioned shall require the standards of a holder of Bachelor's degree of a recognised University.

5. Admission of a student to the course of instruction in law shall ordinarily be on the basis of merit. No student shall be admitted to the course of instruction in law unless he has *inter alia*, obtained 45 per cent marks in the aggregate in the qualifying examination for admission.

# THE BAR COUNCIL OF INDIA

## PREAMBLE OF THE RULES OF THE BAR COUNCIL OF INDIA IN PART IV

Whereas there is almost complete unanimity of opinion in the Country that Legal Education needs to be drastically altered and improved,

And whereas piecemeal changes introduced from time to time have not brought about any significant raising of standards and improvement in the quality of new entrants to the Bar,

And whereas it is the statutory obligation of the Bar Council of India to promote Legal Education and to lay down standards of such education for purposes of admission to the Bar,

And whereas the Legal Education Committee of the Bar Council of India has examined the problem in great depth in consultation with the Universities and State Bar Councils and made its proposals,

And whereas the Bar Council of India has considered the implications and merits of the said proposals,

And whereas it is now recognised the world over that apart from technical knowledge of law a liberal education involving exposure to other disciplines and fields of knowledge in particular the humanities is essential to enable a lawyer to make a useful contribution to social change and development.

This Council in exercise of its powers under Sections 7 (h), and (i), 24 and 49 (1) of the Advocates Act 1961 and all other powers enabling it so to do, make the following rules.

Provided that in the case of students of Scheduled Castes and Scheduled Tribes a relaxation of marks upto 5% in the qualifying examination may be given.

6 The students shall be required to put in a minimum attendance of 75% of the lectures on each of the subjects as also at tutorials, moot courts and practical training course.

7 Law Colleges and University Law Departments shall ensure that:-

- (a) multiple copies of prescribed and recommended readings are available in the library;
- (b) seating arrangements is provided for at least 15% of the students at a time in the reading hall;
- (c) the teacher student ratio is at least 1:40.

8. The maximum strength of students in any class (LL.B. I, II, III, IV or V) shall not exceed 320 in any given College or University Department of Law and the number of students in any section of each of such class shall not exceed 80. In other words no College or University Department of Law shall have on its rolls a total student strength of over 1600 students in all its 1st, 2nd, 3rd, 4th and 5th years put together.

## 9. BUILDING

(1) (a) The building of a college shall be available for its exclusive use, during the working hours of the college.

(b) The accommodation provided for classes, hostel, if any, and the residential quarters for the Principal and the teacher to be in-charge of the hostel, if any, will be separate.

(2) The college buildings shall consist of the following:-

(a) Class rooms:

A common room for men students;

A common room for women students;

A library hall with book shelves and reading tables;

Office rooms for the Principal and his office staff.

A teachers common room.

(b) Quarters for the Principal;

Quarters for the teacher in-charge of the hostel, if any, located near the hostel.

Quarters for other permanent teachers as and if required by the University.

(3) (a) All buildings shall be well lighted and ventilated and shall have adequate sanitary arrangements and water supply.

(b) All buildings shall be duly furnished.

(4) (a) If the college has no building of its own and it is proposed to be housed temporarily in a hired building, the college authorities shall create the building fund which shall be set apart and deposited in a Scheduled Bank or a District Central Co-operative Bank.

(b) This building fund of at least Rs. 2 lakhs shall be created through instalments as under :-

Initial	Rs. 1,00,000.00
First Year	Rs. 40,000.00
Second Year	Rs. 20,000.00
Third Year	Rs. 20,000.00
Fourth Year	Rs. 20,000.00

(c) Deposits so made in the name of the college shall be not withdrawn except when required for meeting the cost of the portion of the building already constructed.

(d) The buildings shall be completed within a period of 4 years from the date of the approval of affiliation is communicated to the Registrar of the University concerned.

(5) Provision shall also be made for a play-ground and adequate

facilities for games and sports shall be made available in the vicinity of the College Buildings.

#### 10. LIBRARY

- (a) The Library shall be adequately equipped with law reports, books, periodicals and reference books to meet the requirements of the courses of instruction taught in the College.
- (b) The library shall be in the charge of a qualified and trained librarian.
- (c) The minimum initial and recurring annual expenditure on the library shall be as below:

Initial	Rs. 50,000.00
First Year	Rs. 15,000.00
Second Year	Rs. 15,000.00
Third Year	Rs. 15,000.00
Subsequent Years	Rs. 10,000.00 per year.

11. (1) The courses of instruction for the preparatory for law degree course shall include the following 7 compulsory subjects :-

1. General English (Graduate Standard)	2 Papers
2. Political Science	1 Paper
3. Economics	1 Paper
4. History	1 Paper
5. Sociology	1 Paper
6. Legal Language including Legal Writing	1 Paper
7. History of Courts, Legislatures and Legal Profession in India	1 Paper

*Explanation:* The Bar Council of India in consultation with experts formulated tentative outlines of the courses in the preparatory stage and recommends them to the Universities imparting professional education in law. The suggested course outlines are attached to these rules as Appendices A to G,

(2) The courses of instruction for three years of the study in law sha" include the following 12 compulsory subjects:-

- |  |          |
|--|----------|
| 1. (a) General principles of contract  | 1 Paper  |
| (b) Special Contract   | 1 Paper  |
| 2. Torts   | 1 Paper  |
| 3. Family Law  |          |
| (a) Hindu Law  | 1 Paper  |
| (b) Mohammedan Law, Indian Succession Act and Indian Divorce Act   | 1 Paper  |
| 4. Law of Crime and Procedure  | 2 Papers |
| 5. Constitutional Law of India   | 1 Paper  |
| 6. Property Law and Easements  | 1 Paper  |
| 7. Evidence  | 1 Paper  |
| 8. Legal Theory (Jurisprudence)  | 1 Paper  |
| 9. Civil Procedures, Limitation and Arbitration  | 1 Paper  |
| 10. Administrative Law   | 1 Paper  |
| 11. Public International Law   | 1 Paper  |
| 12. Practical Training—Six months instruction which shall include court visits, documents, rules of courts, exercise in drafting, pleadings, work at Lawyers' Chamber and attendance at Professional Ethics lectures. The student shall be required to pass an examination in this course to be conducted by the University concerned. |          |

(3) Not less than 6 more subjects which may be chosen from the list hereunder and from amongst such other law subjects locally relevant as may be prescribed by the Universities at their option:

1. Equity
2. Company Law
3. Labour Law
4. Taxation
5. International Organisation

6. Bankruptcy
7. Law of Cooperation and Public Control of Business
8. Legislative Drafting
9. Military Law
10. Insurance
11. Trusts and other Fiduciary Obligation
12. Trade Marks, Copy Rights and Patents
13. International Economic Law
14. Criminology and Criminal Administration
15. Interpretation of Statutes and Principles of Legislation
16. Legal Remedies
17. Private International Law
18. Comparative Law
19. Law and Social Change
20. Law and Poverty
21. Law relating to Land Revenue, Land Reform and Rural Development
22. Law and Planning
23. Law relating to Local Self Government.

12. For each paper there shall be lecture classes for at least 3 hours and one hour of tutorial work per week.

13. The examination shall ordinarily be held at the end of every year. The University shall, however, be at liberty to hold examinations at the end of every 6 months. Suitable allocation of subjects for the period of one year or six months as the case may be shall be made by the University and the same be intimated to the Bar Council of India.

14. Every University shall endeavour to supplement the lecture method with the case method, tutorials and other modern techniques of imparting legal education.

15. Full-time teachers of law including the Principal of the college shall be holders of a Master's degree in law and where the holders of

8  
Master's degree in law are not available, persons with teaching experience for a minimum period of 5 years in law may be considered. Part time teachers other than one with LL.M. Degree shall have a minimum practice of 5 years at the Bar.

16. Universities shall establish or recognise only those colleges which have whole time day classes in law and have the requisite facilities and library as required by these rules.

17. The teaching load of full-time and part time teachers shall be according to the norms prescribed by the U.G.C. from time to time.

18. The salaries paid to the Principal, full-time and part-time teachers shall be according to the scales recommended by the U.G.C. from time to time.

Other benefits like D.A., C.L.A. (Compensatory local allowance) House Rent Allowance, Provident Fund, etc. shall be according to the norms prescribed by the University concerned from time to time.

19. A law college affiliated to a University shall by June 1, 1982 be an Independent Law College and shall cease to be a department attached to a College.

Independent law college means a full-time day college with a regular qualified full time principal and requisite staff and facilities as provided by these rules.

20. (1) No college started after the coming into force of these rules shall impart instruction in a course of study in law for enrolment as an advocate unless its affiliation has been approved by the Bar Council of India.

(2) An existing law college shall not be competent to impart instruction in a course of study in law for enrolment as an advocate if the continuance of its affiliation is disapproved by the Bar Council of India.

21. The Bar Council of India shall cause a law college affiliated or ought to be affiliated to a University to be inspected by a Committee to be appointed by it for the purpose, when :—

(a) An application for approval of affiliation of a new college is received by it; or

It *de facto* decides in order to ensure that the standards of legal education laid down by it are being complied with.

- (b) The application for approval of affiliation of new College shall be addressed to the Secretary Bar Council of India, and shall be sent only through the Registrar of the University concerned with his recommendation.
- (c) The College and/or the University concerned shall furnish all the information to the committee of inspection and the Bar Council of India as and when required, and shall co-operate with them in every possible manner in the conduct of inspection.
- (d) The committee of inspection shall submit a detailed report to the Bar Council with a clear recommendation as to whether the affiliation of new college be approved/disapproved or that of an existing college be withdrawn/continued or that certain directions be given for improvements to be carried out within the period to be specified.

The report shall incorporate the reasons for the recommendations.

- (e) If an unfavourable report is received, the Secretary of the Bar Council of India shall cause a copy of the same to be sent to the Registrar of the University concerned for his comments and explanations, if any. Such comments and explanations on the Report shall be sent by the Registrar of the University within a period of six weeks from the date of the receipt of the communication.
- (f) The Secretary of the Bar Council of India shall cause the Report and the comments/explanation of Registrar of the University concerned to be placed before the next meeting of the Legal Education Committee of the Bar Council of India.

If the Legal Education Committee is satisfied that the standards of legal education and/or the rules for affiliation or continuance of affiliation provided for in these rules by the Bar Council of India are not complied with and/or that the courses of study, teaching and/or examination are not such as to secure to persons undergoing legal education, the knowledge and training requisite for the competent practice of law, the legal

education committee shall recommend to the Bar Council of India the approval/disapproval of affiliation or continuance of affiliation as the case may be.

The legal Education Committee may also recommend that certain directions be given for improvements to be carried out within the period to be specified.

- (h) This recommendation of the Legal Education Committee along with the accompanying papers shall be placed before the Bar Council of India for its decision.

In the case the Bar Council of India disagrees with or modifies the recommendation of the Legal Education Committee, it shall communicate its views to the Legal Education Committee for its consideration before arriving at a final decision in the matter.

- (i) If the Council is of the opinion that affiliation of a college be disapproved it shall give notice of the proposed action to the Principal of the college and Registrar of the University to show cause within 30 days of the receipt of the notice and the Council shall take into consideration the reply received before making final orders.
- (j) The decision of the Bar Council of India shall be communicated to the Registrar of the University.

It shall be effective from the commencement of the next academic year following the date on which it is received by the Registrar of the University.

(1) The Council shall publish by notification in the Gazette of India and in prominent newspapers in India, the names of Universities whose degrees in Law are recognised under these rules with a list of Law Colleges under the Universities which are eligible to impart professional Legal Education as provided for under these rules and send a copy of the notification above referred to, to all the Universities imparting Legal Education and State Bar Councils.

Provided that for the purpose of sub-rule (1) above the existing University Law Departments and Law Colleges affiliated to universities shall be deemed to be professional law Colleges under these rules unless otherwise decided by the Council,

(2) Information about the non-recognition or derecognition of the degree in law of any University shall also be sent to all Universities in India imparting Legal Education and to all State Bar Councils.

23. (1) Those Universities and Colleges which are approved by the Bar Council of India as professional institutions under the new rules will commence professional legal education according to these rules from the academic year 1982-83. However, Universities wanting more time for changing over to the new Scheme may be allowed permission by the Council to run the existing three-year LL.B. Course for a period not more than two academic years. If such permission is granted they may continue to admit graduates for the existing LL.B. Course till and inclusive of the academic year 1983-84.

(2) Such Universities seeking time for the change-over must declare their intension to switch over to legal education under these rules latest by the academic year 1984-85 and send a report within a year from June 1, 1982 to the Bar Council of India on the steps adopted for the purpose.

24. (1) Students have joined the first year of the graduate course (B.A. B.Sc., B.Com., etc.) in 1982-83 or earlier will be eligible to pursue legal education under the old rules. The LL.B. course under the old rules may admit such students till the beginning of the academic year 1985-86.

(2) Admission to the LL.B. Course under the old rules will, however, be totally discontinued in such institutions after the academic year 1985-86.

Provided that such Universities may conduct examinations in 1st, 2nd or 3rd year LL.B. Courses to clear off the incumbents till such time the Universities may deem fit.

25. (1) If Universities located in States where the 10+2 school system is not yet in vogue propose to start the LL.B. Course under the new rules they will be free to do so.

(2) Universities in such States will also be allowed to continue with the existing LL.B. Course under the old rules until and inclusive of the academic year 1984-85.

**NOTE :**

The Rules above referred to professional legal education only for which the Bar Council of India has statutory responsibility under the

**Advocates' Act.** It is the expectation of the Council that Universities and Colleges in the Country will continue to impart liberal education in law and expand it to larger sections of people by developing correspondence programmes if necessary for the benefit of persons in different occupations and in public life so as to advance their occupational goals on the one hand and assist the rule of law and Constitutional Government on the other. This would mean that the Country may require not only the existing centres of liberal education in law working at convenient hours in the morning or in the evening, but also several more such institutions in the remote corners of our vast country. The rules now formulated are directed towards professional legal education and not towards other colleges which may continue within the framework of the University system in the Country.

Proceedings of the Board of Under-graduate Studies in Law held on 16.8.82 at 11 a.m. in Room No. 2 of the North Eastern Hill University Administrative Building :-

1. The Chairman welcomed Mr. H.N. Kalita, Principal Government Law College, Gauhati as new member of the BUGS (Law) Sri Kalita reciprocated.

2. The Chairman apprised that in the last meeting dt. 16.8.82 there was no quorum and only two members viz. Shri Sharma, Chairman and Mr. Marbaniang were present. Since the University authorities were keen to have the views of the two above members of the Board, an interim report was submitted by them and on the basis of which, the University authorities had already taken action intimating the decision to the Principals of all the Law Colleges under NEHU.

It was further clarified that the letter as suggested in the interim report should be written to the Bar Council of India under Rule 23(1) of the B.C.I.

3. The BUGS considered in depth the rules framed by the BCI under the Advocates' Act, 1961 laying down standard of legal education and recognition of degrees in Law for admission as advocate. After discussion in depth, it was decided that :

(i) The Law Colleges under the NEHU be exempted from the implementation of the above rules for the present keeping in view the local conditions including those of academic feeling channels leading to the LL.B. instruction.

(ii) The Vice-Chancellor, NEHU be requested to give representation in the Academic Council (the Law discipline has no Faculty at present) from the BUGS (Law) and for that purpose, the BUGS(Law) nominate Sri K.N. Sarma (Chairman) and Shri S.N. Phukan, Secretary, Law Deptt., Govt. of Meghalaya for this purpose.

(iii) A delegation of the members of the BUGS(Law) consisting of Sri A. Bussain, Sri L. Marbaniang, Sri H.N. Kalita and Sri K.N. Sarma may perhaps be sent to New Delhi to seek audience with the Union Law Minister and the Chairman, Bar Council of India to explain and apprise the special problems of the Law College.

under IILU in this regard. In view of the importance and urgency of the matter, Sri S.N. Thukra Secretary, Law Deptt., Government of Meghalaya and Sri Darsan Singh, Secretary, Law Deptt. Government of Nagaland have kindly consented to join the delegation in New Delhi on behalf of the respective Government.

4. It was pointed out by some members that progress on the reorganisation of the syllabus of LL.B. have not shown satisfactory results. It was decided to consider the matter in detail in the next meeting of the BUCS(Law) to be held in the first fortnight of December, 1982.

The Meeting of the BUGS(Law) held on 18.9.82.

The following members attended the meeting :-

<u>Names of members</u>	<u>Signature</u>
1. Sri K.H. Sarma	Sd/-
2. Sri Aftab Hussain	Sd//
3. Sri L. Harbaniang	Sd/-
4. Sri H.H. Kalita Principal, Govt. Law College, Gauhati - 1.	Sd/-
5. Sri S.H. Phukan Secretary, Law Macholaya, Shillong.	Sd/-
6. Sri Darshan Singh Secretary Law, Nagaland.	Sd/-

THE BAR COUNCIL OF INDIA

BCI/D/3025/1982(LE/SYLLABUS)

Dated 9th Sept. 1982.

(UNDER CERTIFICATE OF POSTING)

FROM :

Shri C.M. Balaraman,  
Assistant Secretary, Bar Council of India,  
AB/21, Lal Bahadur Shastri Marg,  
Facing Supreme Court Building  
New Delhi 1100001.

To

1. The Registrar, of all the Universities in India imparting Legal Education.
2. Deans of the Faculties of Law of all the Universities in India.
3. Principals of all the Law Colleges in India.
4. Secretaries of all the State Bar Councils in India.
5. The Secretary, University Grants Commission, New Delhi.
6. The Secretary, Ministry of Education, Deptt. of Education New Delhi.
7. The Secretary, Ministry of Law, Justice & Company Affairs, New Delhi.
8. Secretaries of the Departments of Education of all States in India.
9. The Registrars of all the High Courts in India.
10. The Secretary, Association of Indian Universities, New Delhi.

Sub: DETAILED COURSE OUTLINE OF THE PRE LAW STUDY OF THE NEW COURSE INTRODUCED BY THE BAR COUNCIL OF INDIA.

Dear Sir,

This is an continuation to my earlier letter No.BCI/D/1507/82 dated 12th May 1982 enclosing a copy of the new rules of the Bar Council of India which came into force from 1st June 1982 with reference to standards of Legal Education and recognition of degrees in Law. In my previous communication, it was indicated that the detailed course outline of those subjects which are prescribed for the first two years of the LL.B. course (Appendices A to G) in Rule 11(1) would be sent to all the Universities in due course. Please find herewith two copies of the same for

the use of Universities imparting Legal Education.

The Bar Council of India feels that the Practical Training is very important aspect of legal education and it should be given importance it deserves. The Council has now drawn up the scheme of Practical Training and the Council wants all the Universities imparting professional Legal Education should give due weightage to the practical training as suggested in the scheme. The Scheme of Practical Training is sent out at pages 35 - 37.

The Bar Council of India hopes that the Universities would adopt the enclosed course outline as far as possible so that uniform standard can be maintained throughout the country. The Universities are at liberty to develop and enrich the course contents to suit the requirements of each University.

It is also recommended that the Universities may think of including one or more law related subjects in addition to the 10 compulsory papers in the pre-law course if they consider it necessary.

Please acknowledge receipt of this communication and the enclosure thereto.

Yours faithfully,

Sd/-

C.M. BALARAMAN

Assistant Secretary.

Encls : As stated above.

Copy for information to :-

1. All members of the Bar Council of India
2. All members of the Legal Education Committee.

## THE BAR COUNCIL OF INDIA

I. Outline of courses for the subjects prescribed for the 2 year Pre-law Study of the new Scheme of 5 year Law education after 10+2 under Rule 11(1) of the Rules of the Bar Council of India in Part IV. are given as appendices (A to G)

II. The Practical Training Scheme (Serial No. 12 in Rule 11(2) approved by the Bar Council of India for adoption by Universities is set out in Page No. 34-36.

III. The recommended readings are tentative and not exhaustive of all the books prescribed for the various courses. The Board of Studies and Faculty of Law of each University will add and develop the appropriate reading materials for each course and keep modifying them as & to update the materials and make them relevant to the local requirements.

IV. The year of publication given against the books need not necessarily be of the latest edition. However, Universities are supposed to prescribe the latest edition of the book concerned.

V. It may be noted that the subject of Political Science has been expanded into three papers (Political Science I, II and III) instead of one as originally put in Rule 11 (1).

**SHYAM MOHAN BHIVASTAVA**

*Secretary*

**Bar-Council of India**

(100) (2)

**APPENDIX—A**

**1. GENERAL ENGLISH**

The object for introducing General English as a compulsory course in pre-law study emerges out of Rule 4 of Part IV on Standards of Legal Education. While insisting on 'Proficiency in English', the Bar Council of India expects the law graduates to have the minimum language skills necessary for effective legal practice in the trial and appellate Courts. The skills contemplated as essential to a lawyer are: communication skills (both written and oral) as well as skills of comprehension (learning by reading and listening).

There can be many methods and diverse materials in imparting those skills. It is expected that each University depending upon its resources and facilities available will develop the best possible strategies and incorporate them in the syllabi on English Language courses (English I and English II) so as to achieve the above skills in the student. The minimum expected by the course is to give a functional knowledge of the language for the purpose of communication and comprehension in legal business. This would require obviously emphasis on both General English, as well as English for legal purpose. The main focus, however, is on the use of English language for the purpose of understanding and transacting legal business.

The English Language course is conceived as comprising of two papers one each year of the pre-law study (English I and English II). The following syllabus evolved in consultation with Law and Language teachers is suggested to the Universities so that it may help them to structure their own syllabi in this regard.

**ENGLISH—I**

**(A) Grammar and Usage (Communication Skills)**

**1. Simple Sentences (one clause) (their phrase structure)**

**(i) tense and concord**

(ii) noun modifiers (determiners, propositional phrases, clauses)

(C) basic transformations

(a) passives

(b) negatives

(c) questions

2. Complex and Compound Sentences (use of connectives)

3. Conditionals

4. Reported Speech

5. Question-tags and short responses

6. Some common Errors

(B) Vocabulary (Communication Skills)

1. Legal Terms (relevant to the subject papers of an LL.B. Student)

2. Use of Legal Terms and idiomatic expressions

(C) Comprehension Skills

1. Reading Comprehension (Principles and Practice)

2. Listening Comprehension

(D) Composition Skills

1. Paragraph Writing

2. Formal Correspondence

3. Note-taking

4. Translation from regional language into English and vice-versa.

## ENGLISH - II

(A) Vocabulary

1. Foreign words and phrases (important Latin and English affixes)

- 2. Certain set expressions and phrases
- 3. One-word substitution
- 4. Words often confused.

**(B) Comprehension Skills**

- 1. Common Logical Fallacies
- 2. Comprehension of Legal Texts

**(C) Composition Skills**

- 1. Use of cohesive devices (Legal drafting)
- 2. Precise-writing, summarizing and briefing
- 3. Brief-writing and drafting of reports
- 4. Essay writing on topics of legal interest
- 5. Varieties of sentence structures and verb patterns
- 6. Translation (from English to regional languages and from regional languages to English)

**(D) Speech Training**

- 1. Reading aloud (knowledge of proper pauses)
- 2. Key sounds, their discrimination and accent
- 3. Consulting a Pronouncing Dictionary.
- 4. Rapid reading and Debating exercises.

**RECOMMENDED SOURCE MATERIALS**

- 1. Selected materials drawn from renowned Judgments
- 2. M.K. Gandhi—The Law and The Lawyers, Navjivan Publications, Ahmedabad, 1962.
- 3. Ishtiaque Abidi—Law and Language, University Publishers, Allgach, 1978.
- 4. Materials drawn from legal notices, petitions, appeals, court orders, statutes, bills, rules etc.
- 5. Any standard Text book on Structural English and Grammar

appropriate to the level of understanding of the students.

6. Hindi-English Glossar, Vidhi Sahitya Prakashan, Ministry of Law, New Delhi.
7. Denning—Due Process of Law, London, Butterworths.
8. M.C. Chagla—Roses in December, Bharatiya Vidya Bhavan, Bombay.
9. Burke Edmund—Impeachment of Warren Hastings, London G. Well.
10. M.C. Setalvad—Common Law in India, Haanlyn Lectures, Stevens and Sons.

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**APPENDIX-B**

**1. POLITICAL SCIENCE**

The three Political Science courses are designed to give students basic knowledge about theories of state, organisation and forms of government, notions of legal and political obligation, political ideologies, including Indian Political thought, theories of justice and international organisation and relations. The courses aim to give detailed grounding in approaches and notions relevant to the study of jurisprudence, criminology and penology, public law (constitutional and administrative law) and international law and organisation. The courses are designated: Political Science I, Political Science II and Political Science III. At least one course should be offered in each of the two years in pre-law phase. Political Science II & III are best offered in the second year.

**POLITICAL SCIENCE-I**

**(A) Political Theory**

1. Conceptions of State and Government.
2. Main Currents of Western Political Thought; Medieval Political thought (Natural law and natural rights), liberalism, socialism and marxism.
3. Main currents of Indian political thought; classical Hindu and Islamic conceptions of state; political ideologies in nineteenth Century (growth of liberalism); Gandhism, Sarvodaya, Marxist thoughts in India.
4. Conceptions of Political and Legal Sovereignty
5. The Totalitarian State:

**(B) Political Organisation**

1. Organisation of government: Unitary/federal/quasifederal;

KB

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(one-party democracies, military rule, presidential and cabinet forms)

2. The legislature, executive and judiciary; the doctrines of separation of power, parliamentary sovereignty, and independence of the Judiciary.
3. Conceptions of representation, public opinion and participation.

## POLITICAL SCIENCE II

### Foundations of Political Obligation

1. Conceptions of power, authority and legitimation.
2. How does power become legitimate power or why people ought to obey the state? Examination of classical (Hobbes, Locke, Rousseau) and modern (Max Weber, Marx, Emile Durkheim) approaches to the notion of political obligation.
3. Utilitarianism (both rule and act utilitarianism) as approaches to political obligation.
4. The problem of civil disobedience and political obligation, with particular reference to Gandhian and Neo-Gandhian thought.
5. The problem of obedience to unjust laws.
6. Why should we honour promises and contracts? (Foundations of promissory and contractual liability)
7. The problem of punishment: when is use of force by state against the citizen just and justifiable? (The basis of criminal sanction.)
8. The contemporary crisis of legitimation.

## POLITICAL SCIENCE—III

### International Relations & Organization:

This course is rather introductory. Its methods is descriptive and analytical. A course based on a more complex method may be taught, if so desired, at an advanced stage of the LL.B. course,

The course is divisible into two major parts: Part I, International Relations and Part II, International Organization.

**Part I: The world community; sovereign states, trans-national political parties, and transnational non-official organizations such as the churches, multinational corporations, scientific, cultural and other organizations. Components of national power; population, geography, resources, economic organization, technology and military force. Limitations on national power: international morality, public opinion, international law, fear of violence and destruction, war with conventional and nuclear weapons. Major sources of conflict: East and West and North and South rivalries, territorial claims, resources, population migrations, international trade, balance of payments and protectionism.**

**Avoidance of war and facilitation of peaceful change: alliances and balance of power approach; collective security and disarmament; diplomacy and peaceful resolution of conflicts by negotiation, mediation, conciliation and recourse to international organizations; arbitration and judicial settlement; the cultural approach and the UNESCO; promotion of international cooperation and the functional approach, the Specialized Agencies. The case for and against world government.**

**Part II: Inter-governmental organizations and their constituent instruments; the standard pattern of organization; the annual or periodical plenary conference, the committee or council to take decisions during the period between the plenary conferences, the secretariat. The special features of the I.L.O. and international financial institutions. The United Nations and its principal organs; the relationship between the United Nations and Regional Organizations, Specialized Agencies and international non-governmental organizations.**

#### RECOMMENDED SOURCE MATERIALS

1. Leslie Lipson—*Great Issues of Politics, An Introduction to Political Science*, New York. Prentice Hall, 1954.
2. G.N. Singh—*Fundamentals of Political Science and Organisation*. Allahabad, Kitab Mahal, 1956.

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3. K.R. Bombawall—Indian Politics and Government since 1885. Delhi Atma Ram and Sons 1951.
4. Hans Morgenthau—Politics Among Nations. The Struggle for Power and Peace. 2nd Ed. New York Knopf 1955.
5. Quincy Wright—Study of International Relations. New York, Appleton—Century Crofts 1955.
6. D.W. Bowett, International Institutions, London, Methuen 1954.
7. Percy Cohen—Modern Social Theory (Arnold Heinman 1976)
8. Denis Lloyd—The Idea of Law (Pelican, 1964)
9. D.D. Raphael—Problems of Political Philosophy (Macmillan, 19)
10. Roscoe Pound—An Introduction to the Philosophy of Law (Yale Uni. Press 1954)
11. Upendra Baxi—The Crisis of the Indian Legal System (Vikas, 1982)
12. H.L.A. Hart—Essay on Punishment & Responsibility (Oxford, 1958)
13. S.E. Finer—Comparative Government (Pelican, 1970)
14. Rajani Kothari—Democratic Polity and Social Change in India : Crisis and Opportunities (Allied publishers, 1976)
15. George Lich Theim—A Short History of Socialism (Fontana Collins, 1970)
16. U.N. Ghoshal—A History of Indian Political Ideas (Oxford 59)
17. K.P. Karunakaran—Modern Indian Political Traditions (Allied, 1962)
18. G.H. Sabine—A History of Political Theory (Fourth Edn. Oxford 1973)
19. G. Sawyer—Modern Federalism, London C.A. Watts 1969
20. S.P. Verma—Modern Political Theory, Vikas, 1980

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**APPENDIX—C**

**3. ECONOMICS**

The Course content of Economics for the Pre-law course may consist of two parts, *Part-A*—Economics: General Principles, *Part-B*—Indian Economics.

The object is not just to acquaint students with Economics as an academic discipline but to relate economic principles to the processes of law and to project their inter-relationships so that it may help better understanding of the subjects such as Contracts, Company Law, Taxation, Industrial Law etc. Besides, knowledge of economics is essential to a proper understanding of Jurisprudence, constitutional developments and planned development.

**PART—A: GENERAL PRINCIPLES**

- (a) Economics as a Science and its relevance to Law
- (b) Economics as a basis of Social Welfare and Social justice.
- (c) Free Enterprise, Planned Economics and Mixed Economies

**General Principles of Economics**

- (i) Demand and Supply
- (ii) Markets, determination of prices, business organizations;
- (iii) Labour and Wages;
- (iv) Capital and Money;
- (v) Saving, Consumption, Investment
- (d) International comparisons of developmental strategies and experiences,—Theories of economic growth and problems of development
- (e) Control of monopolies and prevention of economic concentration.

**(f) Banking and Fiscal Policy**

- (i) Resource Mobilisation and fiscal resources; Taxation;
- (ii) The role of credit and banking system; Rural money markets;
- (iii) International financial institutions;
- (iv) Technology and Economic growth;

**PART-B INDIAN ECONOMICS****I. Introduction to Indian Economy**

- (a) Trends in population growth
- (b) Estimates of National Income in India
- (c) Post-independence economic policies in India

**II. Poverty and Income Distribution**

- (a) Trends and inter-regional variations in the incidence of rural poverty.
- (b) Unemployment trends and employment generation schemes.
- (c) Labour, Productivity and Wages.

**III. The Logic of India's Development strategy**

- (a) Planning process.
- (b) Priorities between agriculture and industry.
- (c) Choice of technology.
- (d) The role of public, private and joint sectors.
- (e) Large, medium and small industries.

**IV. Problem of controlling economic concentration**

- (a) Regulation of the Private Corporate Sector (Controls, Licences, Quotas)
- (b) Anti-monopolies and Restrictive Practices; Regulations;
- (c) Deficit Financing

(12)  
(13)

- (d) Pricing
- (e) Labour Relations

**V. Foreign Investments**

- (a) International Investment
- (b) International Aid
- (c) International Corporations
- (d) Trends in new economic order

**VI. Export and Import Policies: Import substitution and Export promotion**

**VII. Agricultural Economics**

- (a) Basic characteristics of the economy and its transformation since Independence.
- (b) Evolution of Agrarian Relations. Integrated rural development
- (c) Commercialisation of Agriculture.
- (d) Economics of Farm Management.
- (e) Agricultural credit.

**VIII. Role of capital formation, credit and banking system.**

**RECOMMENDED SOURCE MATERIALS**

1. Alfred W. Stonier and Douglas C. Hague—The Essentials of Economics. London, Longmans 1955.
2. Rudder Datt and Sundram—Indian Economy. Delhi, S. Chand & Co. 1982.
3. A.N. Agrwala—Indian Economics, New Delhi, Vikas 1979.
4. Paul Samuelson—Economics—An Introductory Analysis (International Student Edition, Mc-Graw-Hill Book Company, Seventh Edition, 1961).
5. Fredrthue Lewis—Theory of Economic Growth (Unwin University Books 1954, 9th Impression, 1970).

6. V.Y. Gupta--Working of Stock Exchanges in India, Delhi, (Thomson Press, 1972.)
7. S. Ghatak--Rural Money Markets in India, Delhi, (Macmillan 1976.)
8. C.H. Hanumanthoe Rao & P.C. Joshi--Reflections of Economic Development and Social change Essays in Honour of V.K.R.V. Rao (Allied, 1979).
9. P.K. Chaudhri--The Indian Economy--Poverty and Development (Vikas, 1978).
10. C.T. Kurien--Planning, Poverty and Social Transformation (Allied 1976).
11. M. Dipton--Why Poor People Stay Poor--Urban Bias in World Development (Heritage Publishers, New Delhi 1980).
12. Myrdal, Gunnar--The Challenge of World Poverty (Penguin, 1971).
13. Lakshmi Narain--Principles and Practice of Public Enterprise Management (S. Chand, 1980).
14. Mahbub Ul Haq--The Poverty: Certain Choices for the Third World (Oxford, 1976).
15. H.W. Singer & J.S. Ansari--Rich and Poor Countries (Allen & Unwin, Third Edn. 82).
16. L.N. Rangarajan--Commodity Conflict--The Political Economy of International Commodity Negotiations (Croom, Helm Ltd. 1978).
17. V. Gauri Shankar--Taming the Giants. (Multinational Corporations in India)(Sterling, 1980).
18. I. Livingstone, (ed)--Economic Policy for Development (Penguin, 1971).
19. P.C. Joshi--Land Reforms in India (Allied 1976).

#### 4. HISTORY

The course detailed below is intended to give broad idea to the student about the main currents of social, political, legal and cultural movements in the course of Indian history, which influenced the legal system and its institutions. It is expected that the teacher instead of describing mere chronology of events will acquaint the student with the Indian cultural heritage in the above fields so that he may be able to critically appreciate the relevance of the present institutions of Indian democracy which are to be taught in the law courses:

- (a) Ancient Indian cultural heritage: social, political legal and in the area of religion and philosophy. (The teacher is expected to give special emphasis on study of village republics in Ancient India, the organisation of Central Government in Ancient India, experiments in decentralisation, ancient law givers and dispute resolution systems in ancient India—Pre Islamic period); Law in relation to culture.
- (b) The advent of Islam: inter-action between Ancient Indian cultural heritage and Islamic culture and the emergence of synthetic Indian culture. Innovation by Rulers of Medieval period in the area of Revenue Administration, District Administration, Court System.
- (c) Indian contact with the Europeans: Impact of European culture on Indian history and Indian National Movement; impact of European liberal thought on the Indian National Movement and Constitutional Developments in India upto 1857. Study of social reform movements in Modern India and its impact on legal culture.
- (d) Economic history of India during British period.

#### RECOMMENDED SOURCE MATERIAL

1. A.R. Desai—Social Background of Indian Nationalism, Popular

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Prakashan, Bombay (1948)

2. R.C. Majumdar--History of the Freedom Movement in India  
Calcutta Mukhopadyaya.
3. V.P. Menon--The Transfer of Power in India Bombay, Orient  
Longmans.
4. B. Shiva Rao--India's Freedom Movements, New Delhi Orient  
Longman, (1972)
5. Pattabhi Sitaramayya.--History of the Indian National Cong-  
ress, Bombay Padma Publications
6. Tara Chand--History of Freedom Movement in India
7. V.P. Menon--The Story of Integration of Indian States, Cal-  
cutta Orient Longmans.

- (c) power and political institutions.
  - (d) religious institutions.
  - (e) educational institutions.
4. Social stratification.
  5. Social control, order and stability.
  6. Coercion, conflict and change.
  7. Sociology as a critique of society.
  8. Law and Society, Sociology of Law, Sociology of legal profession.

#### **PART B: SOCIOLOGY OF INDIA**

1. The development of Indian Society
  - (a) Unity and diversity.
  - (b) continuity and change.
2. India as a plural Society: varieties of
  - (a) customs and ways of life.
  - (b) linguistic, religious and other communities.
3. Major institutions of Indian Society
  - (a) family.
  - (b) Caste.
  - (c) Village.
4. Tribe and caste in the traditional order.
5. Caste and class in contemporary India.
6. The backward classes.
7. Trends of change in Indian Society.
8. Indian Cultural Values and Development.

#### **RECOMMENDED SOURCE MATERIALS**

1. T.B. Bottomore, *Sociology, A Guide to Problems and Literature*, London: Allen and Unwin, 1962.

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2. Peter Worsley et al. *Introducing Sociology*, Harmondsworth: Penguin Books, 1970.
3. M. Haralambos, *Sociology, Themes and Perspectives*, Delhi: Oxford University Press, 1981.
4. N.K. Bose, *The Structure of Hindu Society*, New Delhi: Orient Longman, 1975.
5. David G. Mandelbaum, *Society in India*, Bombay: Popular Prakashan, 1972.
6. Kamesh Thapper (ed), *Tribe, Caste and Religion in India*, New Delhi: Macmillan, 1977.
7. Andre Beteille, *Inequality and Social Change*, Delhi: Oxford University Press, 1972.
8. Andre Beteille, *The Backward Classes and the New Social Order*, Delhi: Oxford University Press, 1981.

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## 6. LEGAL LANGUAGE INCLUDING LEGAL WRITING

It is said that Law has its own language though for communication it uses a medium understood by the people. The medium adopted so far has been English and, to a large extent, legislation and administration of justice continue to be through English. However, in some States the local language is slowly but steadily replacing English in legislation as well as in administration of justice in lower Courts. This is as it should be.

The present situation therefore demands competence from the Lawyer for using English as well as the local language for transacting legal business. In appellate Courts proficiency in English is very essential perhaps for quite some time to come.

The policy of the Bar Council of India in respect of medium of instruction reflects the above situation. The new scheme of Legal Education under 10 (2) (5) also consequently adopts a curriculum which develops in every prospective Lawyer proficiency in English as well as in the regional language for purposes of effective legal practice. It is with this end in view the Council has introduced a separate Course on Legal Language including Legal Writing independent of English. It is expected that in this course, proficiency in Hindi or other regional medium adopted for Legal Education will be imparted so that the person when enrolled will be competent to use that medium for his professional work. Admittedly mere knowledge of Hindi or other regional language is insufficient to transact legal business in that language. Therefore this Course on Legal Language and Legal Writing will include instruction to use the regional medium for developing proficiency with a view to transact legal work through that language.

It is not desirable nor possible to structure a uniform syllabus in this Course. It is up to the University which uses a medium other than English for Legal Education to evolve the syllabus for the course keeping in mind the objects spelt out above.

It is recommended that this course on Legal Language and Legal Writing may be offered in the regional language or in Hindi.

**7. HISTORY OF COURTS, LEGISLATURES  
AND LEGAL PROFESSION IN INDIA**

*1. Courts*

1. Administration of Justice in the Presidency Towns (1600-1773) and the development of Courts and judicial institutions under the East India Company.
2. Warren Hastings Plan of 1772 and the Adalat system of Courts -- Reforms made under the Plan of 1774 and re-organisation in 1780.
3. Regulating Act of 1773 -- Supreme Court at Calcutta -- its composition, power and functions -- Failure of the Court -- Act of 1781 -- Supreme Court vis-a-vis Mofussil Courts.
4. Judicial measures of Cornwallis 1787, 1790, 1793 -- progress of Adalat System under Sir John Shore.
5. Conflicts arising out of the dual judicial system -- Tendency for amalgamation of the two system of Courts -- The Indian High Courts Act, 1911 -- The Government of India Act, 1915 -- High Courts under the Government of India Act, 1925 -- High Courts under the Indian Constitution.
6. Development of Rule of Law, Separation of Powers, Independence of Judiciary.
7. Judicial Committee of Privy Council as a Court of Appeal and its jurisdiction to hear appeals from Indian decisions -- Abolition of the jurisdiction of the Privy Council to hear appeals from Indian decisions.
8. Court system generally under the Constitution of India.

*2. Legislature*

1. Legislative authority of the East India Company under the Charter of Queen Elizabeth, 1601.

2. Changes under Regulating Act, 1773—Act of 1781. Recognition of the powers of the Governor and Council to make Regulations by the British Parliament.
3. Act of 1813 and the extension of the legislative power conferred on all the three councils and subjection of the same to greater control.
4. Act of 1833—Establishment of a Legislature of an All-India Character in 1834.
5. The Indian Councils Act, 1861, Central Legislative Council and its composition, powers and functions; power conferred on the Governor.
6. Government of India Act of 1909—Government of India Act, 1919—Setting up of bicameral system of legislature at the centre in place of the Imperial Council consisting of one House.
7. Government of India Act, 1935—the Federal Assembly and the Council of States, its composition, powers and functions—Legislative Assemblies in the provinces and the powers and functions of the same.
8. Legislative Councils in the provinces, powers and functions of the same.
9. Law Reform and the Law Commissions.

### 3. Legal Profession

1. Legal Profession in Pre-British India—Role, Training and Functions.
2. Law Practitioners in the Mayor's Courts established under the Charter of 1726.
3. Organisation of Legal Profession under the Charter of 1774.
4. Legal Profession in Company's Courts.
5. Provision for enrolment of Advocates, Vakils and Attorneys under Legal Practitioner's Act, 1853.
6. High Courts under the Act of 1861 and provision for the enrolment of the advocates under the Letters Patent issued.
7. Legal Practitioners Act, 1879—Report of the Indian Bar Committee, 1923.

The Indian Bar Councils Act, 1926—The All India Bar Committee, 1951.

The Advocates Act, 1961.

Development of legal education.

History of Law Reporting in India.

#### RECOMMENDED SOURCE MATERIALS

Herbert Cowell. *The History and Constitution of the Courts and Legislative Authorities in India*—6th Ed. Rev. S.C. Bagchi, Calcutta, Macker, Spink, 1936.

Sir Courtenay Ibert, *The Government of India*, 2nd Ed. London, OUP 1907.

M.P. Jain—*Outline of Indian Legal History*. Dhanwantra Mechanical and Law Book House, Delhi.

A.B. Keith—*A Constitutional History of India, 1600-1935*, 2nd Ed. Allahabad, Central Book Depot, 1961.

Gwyer and Appadorai—*Speeches and Documents on the Indian Constitution, 19 5 - 1947* (2 Vols), London, OUP, 1957.

M.V. Pylee, *Constitutional History of India (1600--1950)*, Bombay, Asia 1967.

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### 8. PRACTICAL TRAINING

(The Practical Training Course in the final year shall comprise of 4 papers carrying 400 marks)

This training shall comprise of courses designed to develop legal skills and craftsmanship, namely :—

- |                      |                         |
|----------------------|-------------------------|
| (a) Legal Method     | (b) Legal Research      |
| (c) Conveyancing     | (d) Pleadings           |
| (e) Moot Courts      | (f) Professional Ethics |
| (g) Legal Aid Clinic | (h) Court Visits.       |

**(a) Legal Method :—**

A student should be taught how and where to find the law. He should in particular be made familiar with the technique of analysing fact situations locating relevant provision of the law and applying them. The course should include reading of cases, their analysis and finding out *ratio decidendi*. Rules for interpretation of statutes may conveniently be included in this course.

**(b) Legal Research**

This course should provide the student with the skills necessary to identify problems, design project proposals, evolve methodologies, analyse data and write research reports on small topics. Comparison of Legal methods with social science research methods may be made and the student be enabled to become critical consumers of social and natural sciences data.

**(c) Conveyancing :—**

- (i) Sale Deed, (ii) Mortgage Deed, (iii) Lease Deed, (iv) Gift Deed,
- (v) Promissory Note, (vi) Power of Attorney, (vii) Will.

General principles of drafting and relevant substantive rules shall be taught and a regular record of work done shall be insisted upon.

**(d) Pleadings : —**

(1) Civil : (i) Plaint (ii) Written Statement (iii) Interlocutory Application (iv) Original Petition (v) Affidavit (vi) Execution Petition and (vii) Memorandum of Appeal and Revision (viii) Petition under Article 226 and 32 of the Constitution of India.

(2) Criminal : (i) Complaints (ii) Criminal Miscellaneous Petition, (iii) Bail Application and (iv) Memorandum of Appeal and Revision.

**(e) Moot Courts :**

For the purpose of Moot Courts, groups shall be formed and cases involving several issues be assigned to each group. The Moot Courts will aim at imparting practical training in Court practice i.e. preparation of a brief and actual argument of the point involved. The cooperation of Courts and advocates may be sought specially in the matter of getting copies of the paper books of cases which have been decided by various courts.

The course shall emphasise points of court-craft and decorum.

Attendance at such moot courts shall be compulsory. Each student shall be required to maintain a regular record of his preparation for the moots.

**(f) Professional Ethics :**

Senior members of the Bar may be invited to give a course of six to ten lectures on Professional Ethics. Special attention may be devoted to the Bar Council of India norms and its application in specific situations.

The rules regarding attendance should be strictly enforced in these courses and appropriate marks be allocated for examining the students' proficiency. Evaluation may be made either on the basis of written examinations or on the basis of day-to-day work as recorded in a practical record book or *via-voce* examination or any one or more of these techniques of evaluation. Passing in these examinations or tests shall be an essential pre-requisite for the award of the LL.B. Degree.

**(g) Legal Aid Clinic**

It is desirable for every professional college of Law to have a Legal Aid Clinic as proposed by the Legal Aid Implementation Committee. The model scheme recommended by the Committee may be adopted for

the purpose. — Student participation in legal aid and para-legal services may be carefully evaluated and due credit given.

In Colleges where no Legal Clinics are functioning students may be involved in the work of the Local Legal Aid Committee under appropriately designed programmes.

#### (h) Court Visits

Visits—to Chambers of Senior Lawyers and Law Officers (including Prisons, Police Stations, Stock Exchanges, Legal Aid Camps, Tribunals etc) and Courts constitute an important aspect of Practical Training. To be meaningful they have to be organised for a continuous period sufficiently long to observe and understand the processes taking place in their proper context. The programme can be intellectually stimulating and professionally challenging if properly organised and integrated with the curriculum.

#### Note :

The specific organisation of the Practical Training programme which shall include the above courses extending to a period of six months and covering not less than four papers of 100 marks each depends on the Law School concerned. It is however expected that, being a professional programme the law education should adequately reflect the minimum clinical content as spelt out in the preceding paragraphs. There is need for separate record books being maintained by students on each of the Practical Training Courses and teachers with necessary experience assigned to handle the Courses. Besides giving practical skills to the students, the programme will help the Law School to enrich its curricular content and community relations.

The Faculty in each University will note the introduction of a variety of optional Courses like 'Law and Poverty', 'Law and Rural Development' etc. in the new curriculum which envisage a practical component in their teaching and will take necessary steps for integrating practical training appropriately with the theoretical courses.



Sub: New pattern of Legal Education from 1984-85 Session

The Bar Council of India revised the pattern of Legal Education in India to be followed with immediate effect. The course will be for 5 years duration and not for 3 years as it is followed at present. In the new course a student can take admission after completion of 10 + 2 in the new pattern of 10 + 2 + 3. Further, the Bar Council of India informed Law colleges to implement this new scheme forthwith. They allowed relaxation for 2 years from 1982-83 with due intimation to the Bar Council of India. We have written to the Bar Council of India informing our inability to switch over to the new pattern of 5 years from 1982-83 session.

In reply to the above request the Bar Council of India informed this University that they have granted exemption for 2 years i.e. for the Academic year of 1982-83 and 1983-84 session. The new system will commence from 1984-85 session (Please see Annexure ).

The BUGS in Law passed the following two resolutions on 18.8.82.

(i) "The Law colleges under the NEHU be exempted from the implementation of the above rules for the present keeping in view of the local conditions including those of academic feeling channels leading to the LL.B. instruction.

(ii) A delegation of the members of the BUGS(Law) consisting of Sri A. Hussain, Sri L. Marbaniang, Sri H.N. Kalita and Sri K.N. Sarma may perhaps be sent to New Delhi to seek audience with the Union Law Minister and the Chairman, Bar Council of India to explain and apprise the special problems of the Law Colleges under NEHU in this regard. In view of the importance and urgency of the matter, Sri S.N. Phukan, Secretary, Law Deptt., Govt. of Meghalaya and Sri Darshan Singh, Secretary, Law Deptt., Govt. of Nagaland have kindly consented to join the delegation in New Delhi on behalf of the respective Governments".

The matter is reported to the Academic Council for its consideration.

BCI/03517/1982(LE/NR)

THE BAR COUNCIL OF INDIA  
AB/21, Lal Bahadur Shastri Marg,  
Facing Supreme Court Building,  
New Delhi - 110001.

Dated 4th November, 1982.

The Registrar,  
North Eastern Hill University,  
Lower Lachauviere,  
Shillong - 793 001.

Ref: Your letter No. CDC/A-82-83/796 dated  
18th August 1982.

Sir,

Please refer to your letter noted above. The Council has considered your above letter at its meeting held on 15th and 16th October 1982. The Council also considered your request for grant of two years exemption for introducing the new pattern of legal education. In this context the Council has passed the following resolution:-

RESOLUTION NO. 131/1982

Resolved that the University be informed that the Bar Council of India is pleased to grant exemption for 2 years i.e. for the academic year 1982-83 and 1983-84 for implementing the new scheme of legal education. The University be further informed that it has to necessarily commence the new pattern of legal education from the beginning of the academic year 1984-85.

Please acknowledge receipt.

Yours faithfully,

Sd/- Illegible  
Secretary.

MINUTES OF THE FIRST MEETING OF THE  
COLLEGE DEVELOPMENT COUNCIL : NEHU, SHILLONG.

PLACE : Pro-Vice-Chancellor's Office Chamber

DATE : 23rd August, 1980 at 3 p.m.

The following Members attended the Meeting :

1. Dr. A.K. Dhan, Vice-Chancellor - Chairman
2. Prof. A.G. George,  
Department of English - Member
3. Professor K.K. Gupta,  
Department of Physics. - "
4. Professor M. Miri,  
Department of Philosophy - "
5. Shri K. Momin,  
Principal, Tura Government College. - "
6. Shri I. Yanger Ao,  
Principal, Fazl Ali College, - "
7. Shri Lalawia,  
Principal, Lunglei College. - "
8. Shri H.W. Sten,  
Lecturer, Sankardev College. - "
9. Shri B.B. Kumar,  
Lecturer, Kohima Science College, - "
10. Shri Rokamlova,  
Principal, Aizawl College. - "
11. Dr. L.N. Tluanga,  
Director, Education, Mizoram, Aizawl. - "
12. Shri Saingenga,  
Director, College Development Council, NEHU. - "

Apologies for inability to attend the meeting were received from :

1. Shri L.F. Sailo,  
Principal, Champhai College, Champhai, Mizoram.
2. Shri Keremwati Ao,  
Principal, Kohima Science College, Kohima.

.... 2/-

The Chairman welcomed the Members and he invited from Members items for consideration apart from the agenda. Some Members requested the Chair to explain the main function of the College Development Council. The Chairman read out Para No.5 of the recommendation of the UGC where the UGC laid down the objectives and functions of the College Development Council.

1. Agenda items No. 1 and No. 5 have been taken together. The Committee decided to form a small Sub-Committee consisting of the following members to conduct survey of all the affiliated Colleges :

1. Professor A.G. George,  
Department of English, NEHU.
2. Shri Keremwati Ao,  
Principal, Kohima Science College, Kohima.
3. Shri H.W. Sten,  
Lecturer, Sankardev College, Shillong.
4. Shri Rokamlova,  
Principal, Aizawl College, Mizoram.
5. Shri Saingenga,  
Director, College Development Council, NEHU.

It was further resolved that the Sub-Committee will meet the Vice-Chancellor before they set out to visit the Colleges. Members suggested that the following points should be noted among other things by the Sub-Committee while they do the survey work.

- i) The problems faced by the Colleges in relation to the State Governments like delay of pay bills of Teachers' pay by the State Government (i.e. Meghalaya State).
- ii) To explore the possibility of reducing the academic imbalances between Colleges.
- iii) Existing facilities for the students.
- iv) The nature of relation between the Colleges, the State Governments and the University Faculty Departments.
- v) The scope for UGC assistance to the Colleges for construction of Play Ground, Teachers' residences, College Buildings the terms and conditions for selection and award of Teacher Fellowship (Like 3 years teaching experience for the Teachers and Half Pay leave of StudyLeave).
- vi) To explore the need for refresher courses and the scope for Teachers' Exchange Programme between University and Colleges and also between Colleges.

vii) Problems faced by the Colleges on implementation of the UGC Schemes including non-receipt of matching grants from the Government side.

2. The Agenda item No. 6: The Committee suggested that the amount proposed on exchange of Faculties should be increased.

3. It was resolved that the College Development Council should meet again to chalk out the College Development Programme after the Sub-Committee completed the survey work.

The Meeting was closed with a vote of thanks to the Chair.

Sd/- Saingenga,  
Director  
College Development Council, NEHU  
Member Secretary

Copy to :

All Members with a request for a comment if there is any, with 15 days.

Minutes of the 2nd Meeting of the College Development Council held on 3rd October, 1981 in the Office Chamber of the Vice-Chancellor.

The following members were present :-

1. Dr. S.C. Banwar, Acting Vice-Chancellor.
2. Shri R.N. Upadhyay, Principal, Sankardev College, Shillong.
3. Shri Keremwati Ao, Principal, Kohima Science College.
4. Shri H.W. Sten, Lecturer, Sankardev College, Shillong.
5. Shri B.B. Kumar, Lecturer, Kohima Science College.
6. Shri Rokamlova, Principal, Aizawl College, Aizawl.
7. Shri Hranthanga, Director, Education, Mizoram.
8. Shri K. Sekhose, Director, Education, Nagaland.
9. Shri H.W.T. Syiem, Director of Public Instruction, Meghalaya.
10. Shri Saingenga, Director/Member Secretary, Shillong.

1. The College Development Council discussed the Report and Recommendations of the Sub-Committee of the College Development Council which visited all the affiliated colleges. The College Development Council accepted the Reports and Recommendation in principle. In order to implement The Recommendations, necessary fund had to be found. The Council therefore resolved that the University Grants Commission be approach to provide fund for the various schemes and programmes recommended for the proper development of the colleges. In this connection, it was discussed about the University Grants Commission's conditions of eligibility to apply for University Grants Commission's grants by the Colleges in tribal areas, i.e., the College should have at least 100 students. As colleges in this region are small, it was resolved to request the University Grants Commission to relax this condition so that all colleges under this University may be eligible to apply for University Grants Commission grants. It was further resolved that the University Grants Commission be requested to include Pre-University Course as collegiate education in this University as a special case till it is taken over by the School Board in view of the fact that the Pre-University Course is always a Collegiate education from the beginning.

2. The Council recognised the urgent need for organising Refresher Course for all the college teachers in the various

subjects. It was therefore resolved that the University Grants Commission be approached to Sanction money for this purpose.

3. The Council observed that the Faculty Exchange Programme could be successfully implemented only if the Colleges especially in the interior places are provided with Guest House. The Council therefore resolved that Guest House be constructed in the first phase, in three colleges - (1) Tura Govt. College (2) Kohima Science College and (3) Pachhunga University College. These Colleges being Arts/Science Colleges, they may further facilitate the problem of accommodation for external Examinees of Science Practical Examination.

4. As regards holding of Seminars, the Council wanted to have Seminars from college to college by turn to ensure larger participation instead of holding it collegewise. It was resolved that the University Grants Commission be approached for necessary fund.

5. As regards Question Bank system it was agreed that the Director, College Development Council should visit two or three Universities where Question Bank is used for College examination and the Council would decide from his report what action should be taken regarding workshop on Question Bank.

6. The Council recognised the need for having Remedial Course in subjects where the students are generally weak - i.e. English, Science subjects, Economics. It was resolved to approach the University Grants Commission to provide necessary fund for it.

7. The Council resolved that the various points raised on the syllabus by the Colleges be sent to the Board of Under Graduate Studies concerned for necessary action.

8. The need for Teacher Fellowship for the College Teachers was discussed. It was resolved that the University Grants Commission be approached to identify all the Post Graduate Departments of North-Eastern Hill University for the award of Teacher Fellowship in view of the

- (1) difficulty experienced by the College Teachers to find seat outside.
- (2) implementation of University Grants Commission Scale of pay in the colleges therebynecessitating for the teachers to obtain M.Phil degree within a fixed time.

9. In view of the need of a good Library, it was resolved that the University Grants Commission be requested to increase the Library Grant to colleges.

10. The Council accepted the proposal to organise Principals' Conference once in a year.

11. The Council agreed that there should be a conference of Directors of College Development Council in New Delhi to be sponsored by the University Grants Commission.

12. The Council resolved that all matters relating to the University Grants Commission, State Governments and the University in the Sub-Committees' recommendation be brought to the notice of the authorities concerned for necessary action.

13. The Council decided that colleges to be recommended by the University for University Grants Commission's assistance District-wise under the Vithplan be identified by the Director of Education/Director of Public Instruction especially for Kohima District and East Khasi Hills District.

Sd/- Saingenga  
Director  
College Development Council  
NEHU.

No.CDC/D.82/81-82/

3rd Oct., 1981.

Copy to :-

1. All Members of College Development Council, NEHU.
2. P.S. to Vice-Chancellor, NEHU.
3. Registrar, NEHU.

TOUR REPORT OF THE SUB-COMMITTEE OF THE COLLEGE DEVELOPMENT COUNCIL, NEHU.

1. In pursuance of the resolution of the College Development Council in its first meeting, a sub-Committee consisting of 5 members visited the affiliated colleges - 14 colleges in Meghalaya, 10 colleges in Nagaland and 9 colleges in Mizoram to assess the development needs of the colleges so that the Council may be able to draw up programme for college development based on the report of the Sub-Committee. The Sub-Committee included the following members :

1. Prof. A.G. George, (replaced by Prof. K.K. Gupta),
2. Shri Keremwati Ao, 3. Shri Rokamlova, 4. Shri H.W. Stan and
5. Shri Saingenga, all of them were selected from the members of the College Development Council.

2. The following members joined while touring Meghalaya colleges - Prof. K.K. Gupta, Shri Rokamlova, Shri H.W. Stan and Shri Saingenga and the tour was completed from 20.9.80 to 29.9.80. The colleges in Nagaland were visited by Shri Keremwati and Shri Saingenga from 1.8.81 to 8.8.81 and lastly the colleges in Mizoram were visited by Shri Keremwati, Shri Rokamlova and Shri Saingenga from 20.8.81 to 30.8.81. All the affiliated colleges had been visited except Saiha College the farthest college from Shillong Head Quarters which could not be reached due to heavy landslides in the area.

3. The Sub-Committee of C.D.C. received good response and cooperation from the Principals and Teachers of the colleges. In most colleges, the Sub-Committee could meet the Principals and teachers and had thorough discussions on various points, and in some colleges, students representatives also met the Sub-Committee. The idea of meeting the Principals, teachers and students in their own colleges is to find out their needs and see things with our own eyes the actual conditions of the colleges so as to get better information about the colleges and to work out college development programme based on the needs of the Colleges. The following points were raised and discussed with the Principals and the teaching staff :-

I. The need of having Refresh Course/Workshop for teachers:

In order to improve the standard of the colleges, the key role has to be played by the teachers. Good teachers means good teaching. The college teachers are a mixture of fairly senior teachers and junior teachers fresh from the University. It is therefore, felt necessary to find out the extent of the need for Refresher Course or Workshop for the teachers in view of the change in the syllabus and

the development that had taken place in the various subjects in course of time. It is also necessary to find out to what extent adequate facilities like text books are available for the teachers to cope with the new syllabus and to teach satisfactorily. It is also necessary to look into the need of inexperienced teachers to acquire the art of teaching effectively. For that reason, it is felt necessary to find out the specific needs or specific areas or topics to be emphasised in the Refresher Course or Workshop if it is going to be organised so that teachers may be able to help the students better. We further enquired into the time and place suitable for such Refresher Course/ Workshop.

II. Exchange of Faculties :

Another point discussed with the Principals and teachers was how far they welcome the idea of having exchange programme between University teachers and College teachers and also between college teachers themselves on short terms or long term basis as one way of improving the college standard.

III. Seminars:

The idea of having seminars on general topics or departmental seminars as a means to arouse interest among the students and teachers had been discussed. If they were keen to hold seminars, we enquired on what themes or subjects they would like to have the seminars.

IV. Workshop on Question Bank :

Another point discussed with them was the need for organising workshop on Question Bank. Perhaps the present system of setting questions has its own defects. Question set by some-one who does not teach the subject in the college, setting question from outside the syllabus, vague questions, the low percentage of pass in University examination, and perhaps for all these things Question Bank is the better alternative. The teachers themselves in the subject will come to the workshop and prepare exhaustive questions covering all topics, lay down the pattern of questions, and when such questions are finally approved by the University authorities, University questions will be selected out of these questions only. These questions will be circulated to all colleges. Perhaps this may improve both teaching as well as examination. Such Question Bank would be modified or changed from time to time. We explored how far the Principal and Teachers welcome the idea of switching over to the new system of using Question Bank in the final examinations.

V. Remedial Course :

We explored from the colleges whether there is a need for remedial course in the colleges and if so, what are the subjects in which the needs exist.

VI. Syllabus :

Perhaps the present syllabus in the college is not quite satisfactorily. We enquired from the teachers the difficulties and suggestions if they have any.

VII. U.G.C. Financial Assistance to the colleges:

We enquired what are the difficulties faced by the colleges in setting grants from the U.G.C.

VIII. Award of Teacher Fellowship:

We tried to find out what are the various difficulties faced by the teachers in receiving the award of Teachers Fellowship from the UGC.

IX. College Libraries:

We look into the present position of the College libraries and the extent of need for improvement.

X. Students' Facilities:

We also look into the existing facilities provided to the students and what are their priority needs.

XI. Problems faced by the Colleges in relation with the State Government, the U.G.C. and the University (NEHU) :

We enquired into the various problems faced by the colleges in their relation with respective State Government, the University and the U.G.C.

XII. Principal Conference :

Principals were asked to express their view on the need for ~~the~~ having Principal Conference.

XIII. Any other item :

We enquired whether they have any other point to discuss with the Sub-Committee.

A. MEGHALAYA COLLEGE

1. POST-GRADU-ATE TRAINING COLLEGE, SHILLONG :

i) Refresher Course:- The Khasi language teachers expressed the need for workshop on teaching of Methodology of Khasi language and also the need for text books in the subject. The suitable time for such workshop would be February and March.

ii) Faculty Exchange Programme:- The teachers welcomed the idea of the exchange programme.

iii) Library :- There was no separate building for the College Library. The Principal expressed the need for having a separate Library building. It may be pointed out also that the construction of the college building remained incomplete due to lack of funds.

iv) Students' facilities :- The College authority pointed out that the following three facilities were lacking :-

- a) students' common room which is essential
- b) Canteen
- c) Hostel

v) Relation with State Government and NEHU:- The College was under adhoc grant system. The College authority was keen to put the institution under deficit grant system or as government institution. In this respect, the College authority had already approached the State Government. The College authority also had approached the University authority to consider the Post-Graduate Training College as a constituent College of North-Eastern Hill University.

The Teachers complained that only part-time teachers in that College were given examinership and full-time teachers were not given such assignment by the University.

The BUGS in Education consist of members only from degree colleges and not from the B.Ed. colleges. The Principal of Post-Graduate Training College complained that while the Principal of St. Mary's College was a member of Board of Examiners for both the colleges of St. Mary's College and Post-Graduate Training College, the Principal of PGTC was a member only for the Post-Graduate Training College.

2. SYNOD COLLEGE:

The Sub-Committee met the Principal and the teaching staff and discussed the following points:-

i) Refresher Course:- The teachers welcomed the idea of having refresher course or workshop. The best time to have such course would be during the months of February and March. Such refresher course might be organised for every subject taught in the college.

ii) Workshop on Question Bank:- The Principal and the teaching staff were keen to have workshop on question bank.

iii) Syllabus :- The existing syllabus of P.U.C. Economics was not satisfactory. The teachers pointed out that the P.U. course was still the same as it was in P.U. one year course. Since the P.U. course not become a two year course the syllabus, therefore, should be suitable changed. For that reason the students had difficulty in taking Economics at the degree level.

iv) UGC Financial Assistance:- The UGC delayed the release of the UGC share of B lock scheme to the College and that was the reason why the first Contractor had to quit. Fresh tender had to be called. The College authority wanted that the UGC should release their share promptly.

v) Award of teacher fellowship :- The rules of the Teacher Fellowship to allow only confirmed teachers to apply was an obstacle to some teachers. The teachers of Synod College were not confirmed as yet. Again the application of teachers for study leave to avail teacher fellowship were not entertained by the Government of Meghalaya.

Relation with the State Government and NEHU:- The College wanted to open honours classes in Education, Economics and Khasi and to Government of Meghalaya did not sanction posts for opening honours classes in the subjects.

The Principal requested that his College should be permanently affiliated by the University.

The Principal complained that when teachers took leave the Government of Meghalaya refused to entertain a substitute in their place. As a result the teaching department suffered especially when it occurred during the days when classes were in full swing.

### 3. JOWAI GOVERNMENT COLLEGE:

The Sub-Committee discussed the following points with the Principal and the teachers.

i) Refresher course:- They welcomed the idea of having refresher course in various subjects. The Principal expressed his desire that NEHU organised such a refresher course in his College. The teachers of Political Science Department pointed out that if there is such a refresher course for Political Science, ~~the Government should~~ the Government on the following :-

Second Paper(Honours) - Topics (1) Sociology (2) Tribal Political Institutions In North-Eastern Region of India.

ii) Remedial Course :- The Principal and Teachers of Mathematics felt that remedial course in Mathematics were extremely necessary.

iii) Faculty Exchange Programme :- They welcomed the idea of having teachers exchange programme. They pointed out that it might be possible for University teachers and teachers from other colleges to come to the College. It might not be possible for them to go to other colleges without the permission of the Government of Meghalaya.

iv) Syllabus:- The Principal and the staff requested that whenever new syllabus is going to be introduced, the BUGS concerned or the University must circulate the proposed syllabus to all colleges inviting comments and suggestions.

The teachers of Mathematics pointed out that there were no prescribed text books in Mathematics and for that reason text books must be prescribed in Mathematics. Likewise teacher of Chemistry complained that there was no prescribed text books in B.Sc. Chemistry.

v) Relation with the Government and the University: There was a complaint that the Head of Department was not given charge allowances. The Government of Meghalaya did not allow any temporary appointment against leave vacancy thereby causing much hardship to the teachers and the students.

Teachers attending national conferences of academic nature were not paid any TA/DA by the State Government.

Eight teachers in the College were still continuing to serve under regulation 3(1) without regularising their appointments for more than 2 years.

No Commerce teacher in Jowai Government College were appointed as examiner.

The College was to be shifted to a new permanent site outside the town of Jowai. The complex for the College building and residential quarters were under construction at the time of the visit.

#### 4. ST. EDMUND'S COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points with them :-

i) Refresher Course:- They welcomed the idea of having refresher course in all the subjects. The teachers in language, for example Bengali expressed their desire to have experts in teaching of languages from Institute of Indian Languages, Bangalore or Hyderabad to help them in linguistic topic. The teachers in Economics expressed their concern that there were no prescribed text books in Economics and reference books were not sufficient. They further expressed their desire to have refresher course especially in Statistics.

ii) Faculty Exchange Programme:- They welcomed the idea of faculty exchange programme from University to College and not from the College to the University or to other colleges. The teachers felt that exchange programme might be practicable only in the form of extension of lectures to the Colleges by the University teachers on selected topics.

iii) Syllabus:- They expressed their difficulty in getting prescribed text-books for the various departments.

iv) Workshop on Question Bank:- The teachers felt that workshop on question bank was desirable.

v) UGC Financial Assistance:- The College authority felt that the conditions laid down by the UGC to apply for financial assistance were too rigid.

vi) Relation with the State Government and the University:- (a) The State Government had not released the deficit grant in time to meet the pay of the teachers. (b) Except in Physics, Chemistry, English and Language departments all other departments were understaff.

vii) Other items:- The teachers in Bengali department wanted that the BUGS in Bengali be revised.

The teachers in Alternative English felt that Alternative English should be treated as a separate department.

5. ST. ANTHONY'S COLLEGE:-

The Sub-Committee met the Principal and discussed the following points:

i) Faculty Exchange Programme:- Only one way and not both ways i.e. from University to the College and not from the College to the University or from the College to other colleges would be desirable.

ii) Remedial Course:- The Principal felt that remedial course for backward students was necessary. The College conducted such special classes for the backward students.

iii) Relation with the State Government and the UGC:- He expressed the difficulty in getting deficit grant from the State Government in time.

The College had no difficulty in getting grants from the UGC from time to time.

6. ST. MARY'S COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points:-

i) Refresher Course:- They were in favour of having refresher course. The departments of History and Political Science felt that topics relating to North-Eastern Region should be taken up in the refresher course. The most suitable time for organising refresher course could be from May to June.

ii) Faculty Exchange Programme:- They welcomed the idea of faculty exchange programme but only from the University to the College and not from the College to the University.

iii) Workshop on Question Bank :- They were in favour of having workshop on question bank.

iv) Syllabus:- (a) The teachers expressed their desire to have a revised syllabus in most of the subjects. (b) The teachers of Home Science Department requested that honours course in B.Sc. Home Science should be introduced.

The College expressed great difficulties in getting prescribed text-books.

v) Relation with the State Government:- (a) The Principal expressed the difficulties in getting deficit grants from the State Government.

(b) Difficulty in getting a sanction for creation of additional teaching posts for the College from the Government.

vi) Library:- The College had a Librarian and a good Library.

7. UNION CHRISTIAN COLLEGE:- They felt that refresher course should be conducted in all subjects especially where new topics were introduced in the syllabus. In Economics the teachers wanted to have a workshop on Statistics, topics like Micro-Economics.

ii) Faculty Exchange Programme:- They welcomed the idea of having faculty exchange programme provided that right teachers were available to meet the need of the College.

iii) Workshop on Question Bank:- They were in favour of having workshop on question bank. In the workshop the pattern of setting the questions also should be taken up so that questions might be set from all the important topics.

iv) Award of Teacher Fellowship:- As the pay scale of the teachers was lower in comparison to other colleges it was difficult to find a substitute (U.G.C. pay scale was not introduced).

v) UGC Financial Assistance:- The condition laid down by the UGC for the colleges to be eligible for receiving grants from the UGC was too high. The students population in the degree classes, could not come up to the strength of 100. Since the College catered the needs of tribal students special consideration should be given to such colleges, irrespective of the students population.

vi) Syllabus:- Teachers of History Department complained that the syllabus for B.A. was too vast.

Teachers of Geography department complained that books relating to North-Eastern Region were not available. Since these topics were included in the syllabus, refresher course or workshop on this topic was desirable

vii) Library:- The College expressed much difficulty in getting prescribed text books for the Library. The College had a good Library building.

viii) Students facilities:- Since the College was a residential College, the College needed a Canteen.

#### 8. SANKARDEV COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points:

i) Refresher Course:- They were in favour of having refresher course for teachers and if possible frequently in all the subjects.

ii) Faculty Exchange Programme:- They viewed the faculty exchange programme with caution and felt that this might not be practicable.

iii) Workshop on Question Bank :- They were in favour of having workshop on question bank.

iv) UGC Financial Assistance:- They felt that the amount of UGC grant for construction of play-ground to this area was too meagre.

v) Relation with the State Government and University :- The State Government did not create teaching posts as per University Ordinance causing great difficulty for the College. There was only one teacher in Mathematics for the last two years where two teachers at least should be appointed. Many departments were, therefore, understaff.

The University should help the College teachers by giving some grants to the Research Scholars to enable them to visit research centres like libraries outside their own headquarters i.e. in the form of T.A.

9. LAW COLLEGE (EVENING COLLEGE) :

The Sub-Committee met the Principal and teachers and discussed the following points:-

- i) Library :- They expressed difficulty in getting books for the Library although they had necessary fund for purchasing books.
- ii) Teaching staff:- All the teachers except the Principal of the College were part-time teachers.
- iii) Relation with the University:- The College was interested in starting LL.M. degree in the College. They expressed their desire to handover the College to NEHU for future development of the College, into a centre of Post-Graduate Department.

10. SENG KHASI COLLEGE:

We met the Principal and the teachers and discussed the following points:-

- i) Refresher Course:- They expressed their desire to have refresher course especially in Khasi Language.
- ii) Faculty Exchange Programme:- They welcomed the idea of faculty exchange programme provided this is done only locally and mutually without disrupting regular classes.
- iii) UGC Financial Assistance:- The strength of the students in the degree level was too small to be eligible to apply for UGC grants.

11. SHILONG COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points:-

- i) Refresher Course:- They expressed their need for having refresher course in all subjects. The teachers of Economics department wanted to emphasise on the following topics:- (a) Statistics (b) with the development of North-Eastern Region Economics system. The Education Department wanted to have workshop on the topic of Statistics and Measurements. Languages Department - Hindi, Khasi and Mizo stressed their desire to have workshop on teaching of Philology and Criticism. Chemistry Department wanted to have workshop on old concepts and new concepts.
- ii) Faculty Exchange Programme:- This programme was partly welcomed due to lack of teaching staff. They feared that the programme might disturb the regular classes. If the programme could be worked out on long term basis, it might be better.
- iii) Workshop on Question Bank:- They welcomed the idea of having workshop on question bank.

iv) Award of Teaching Fellowship:- The teachers expressed their difficulty in applying Teacher Fellowship as the State Government authorities concerned did not process or forward their applications.

v) Library:- They expressed their difficulty in getting books for the Library. Secondly, they expressed the need for having a qualified Librarian to look after the College Library.

vi) Remedial course:- They expressed their desire to conduct remedial course for weaker students and compulsory tutorial classes also should be introduced.

(a) They experienced financial hardship due to the delay in receiving deficit grants from the State Government.

(b) The teachers were not confirmed on due date. There were 7 teachers already due for confirmation.

(c) In most of the departments sufficient number of teachers were not appointed. For that reason they were understaff.

(d) The present system of allowing failed students to appear in certain subjects was rather detrimental to the improvement of the academic standard of students.

## 12. LADY KEANE GIRLS' COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points:-

i) Refresher Course:- They welcomed the idea of having refresher course especially in the following subjects: (a) Economics & (b) Education departments expressed their keen desire to have such programme on Statistics.

ii) Workshop on Question Bank:- They welcomed the idea of having workshop on question bank.

iii) Faculty exchange Programme:- They feared that faculty exchange programme might not work satisfactorily. It could bring only confusion to the students.

iv) Syllabus:- (a) Teachers of English department complained that the selection of "The New World" for B.A. Alternative English was too advance for B.A. level.

(b) The syllabus for P.U.C. Mathematics also was too vast.

v) Relation with the State Government:- (a) Most of the departments were understaff. The additional posts had to be created by the State Government.

(b) The College authority wanted that the rules for using grants for book bank should be relaxed for purchase of reference books in addition to the prescribed text books. (c) The college experienced much difficulty in view of the small grant received for Library.

13. MENDIPATHAR COLLEGE:

The Sub-Committee met the Principal and teachers of the College and discussed the following points:-

- i) Refresher Course:- They welcomed the idea of having refresher course in all the subjects.
- ii) Faculty Exchange Programme:- They were of the opinion that the programme might be good if arranged on long term basis.
- iii) Workshop on Question Bank:- They welcomed the idea of having workshop on the question bank.
- iv) Award of Teacher Fellowship:- Some teachers were interested in receiving the award of teacher fellowship especially in Political Science Department, North-Eastern Hill University.
- v) Library:- The number of books provided in the Library were insufficient. There was no full time Library staff to look after the Library.
- vi) Syllabus:- Teachers of History Departments complained that certain portions in the P.U. and B.A. courses were overlapping or unnecessarily repeated. They also complained that History course for B.A. was too vast.
- vii) Relation with the State Government:- They were keen to be placed under the deficit grants-in-aid scheme for the academic interest and improvement of the College.

14. TURA GOVERNMENT COLLEGE:

The Sub-Committee met the principal and teaching staff and discussed the following points with them:-

- i) Refresher Course:- They welcomed the idea of having refresher course in all the subjects. Care should be taken to cover the following topics in such refresher course.

In Economics + Statistics and Course system should be taken up.

In Philosophy - Philosophy of Mind should be taken up. Teachers expressed their difficulties in getting prescribed text-books. They demanded that psychology should be reintroduced as one paper.

In History topics relating to North-Eastern Region should be covered because text-books were not available. The course for B.A. was too vast and some of the books prescribed for British History were difficult for the students, especially by foreign authors.

Garo language and other MIL papers be given workshop on "How to teach or learn Indian languages".

- ii) Remedial Course:- Remedial course was desirable especially in English in view of the poor performance of the students in English. Common mistakes could be collected and used for the improvement of their English standard.
- iii) Faculty Exchange Programme:- This was desirable provided it continued for a full session at a time. Short term might only bring confusion to the students.
- iv) Syllabus:- Language or grammar be included in P.U. syllabus.

v) Relation with the State Government and NEHU:- Teachers experienced difficulties in getting through the State Government authorities to forward their applications for teacher fellowship or to grant study leave in time.

The College wanted the State Government to decide the shifting of the College to the new site as early as possible because construction of Professors' quarters depended on the decision of the Government regarding the new site.

The teachers complained that the fixation of their pay had not yet been implemented by the Government. This affected teachers' morale. The State Government should promptly give permission to the teachers to attend training courses where there was no financial involvement for the Government.

The State Government was yet to release its matching share with the UGC grants for the construction of Chemistry Laboratory. The Heads of Departments were not given charge allowances as expected.

The College experienced difficulty for receiving N.S.S. money in time.

### B. 'NAGALAND COLLEGES'

#### 15. DIMAPUR COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points with them:-

i) Refresher Course:- The teachers expressed their desire to have workshop for teachers in general. The Education Deptt. pointed out that in view of the changed syllabus to be followed from this session, workshop for teachers was necessary. They introduced experiment, in the syllabus and they did not know what kind of experiment to be taught.

ii) Facul' Exchange Programme:- They welcomed the idea of having the programme on a long term basis.

iii) Seminar:- Political Science and Commerce departments expressed their desire to have Seminar to review the curriculum. Commerce department wanted to have a seminar on the theme of State Enterprises in North-Eastern India.

Political Science Department suggested a seminar on the subject "How to teach subject better and effectively".

iv) Workshop on Question Bank:- They suggested that that instead of having workshop on real questions, we should work on model and pattern of questions.

v) UGC Financial Assistance:- The College was to receive grant of Rs. 1,50,000 for Library building. The UGC terms and conditions and the detail formalities were too stringent and lengthy. It took too much time to complete the transaction.

vi) Award of Teacher Fellowship:- Teachers experience difficulties in getting seat in the Institution/departments identified by the UGC for Teacher Fellowship. For that reason many departments in NEHU should be identified for Teacher Fellowship to help teachers of the area to complete M.Phil degree within five years. This became a necessity in view of the introduction of U.G.C. scale of pay in the Colleges.

vii) Syllabus:- The selection of the New World for Alternative English B.A. was too high a standard for B.A. level.

In B.Com. Alternative English there was no prescribed text books it was only "Unseen". This was regarded as insufficient. The Bengali MIL text book 'Kalantar' by Rabindranath Tagore was too difficult.

The syllabus for English was too small. For that reason the course was covered within a short time. The teachers of English department felt that the Rapid Reading might be replaced by a text book and the selection of Essays also might be changed.

The P.U.C. syllabus and B.A. syllabus for Assamese MIL needed revision.

viii) Relation with the State Government:- They expressed their desire to be placed under the deficit grant-in-aid scheme similar to that of Assam pattern. At present the College was under an ad-hoc grant scheme. There was uncertainty about the nature and amount of grant that might be forthcoming from the State Government.

x) Classes were held in a borrowed building. However, construction work was to begin soon in the College permanent site.

#### 16. PATKAI CHRISTIAN COLLEGE :

The Sub-Committee met the Principal and some teachers and discussed the following points with them.

i) Refresher Course: They expressed the need for having workshop for teachers to go through the new syllabus before starting the course. At present the Education department expressed an urgent need for such workshop.

ii) Workshop on Question Bank:- They welcomed the idea of having workshop on Question Bank. They pointed out that teachers in the subject must set question and not by outsiders. They complained that some questions set in Economics in the last examination were vague.

iii) Remedial Course:- They strongly felt the need for remedial course especially in English subject. Students were generally weak in spoken English.

iv) UGC Financial Assistance:- The Principal expressed that the UGC should review the conditions for applying registration under regulation 2(f) because the strength of the students in the degree level could not easily come up to 100, in tribal areas. For that reason, the College could not apply for anything from the U.G.C.

v) Patkai Christian College was a residential College.

17. KOHIMA LAW COLLEGE:

The Sub-Committee met the Principal and discussed the following points:-

i) The College was under ad-hoc grant-in-aid scheme receiving Rs. 35,000 per annum approximately. They were never certain the amount that might be released from year to year.

The College was an evening College in a borrowed building.

ii) Libra :- They expressed their difficulty in getting good books for the Library. They faced difficulty in getting list of books for the College Library.

iii) Teacher:- All the teachers including the Principal were part-time teachers. They expected to appoint one full-time teacher soon.

iv) College Land:- Although the Government of Nagaland allotted a plot of land for construction of the College building, there was no clear demarcation of the exact plot.

18. SCIENCE COLLEGE KOHIMA:

The Sub-Committee met the principal and teachers and discussed the following points with them:-

The College was a residential College.

i) Refresher Course:- They expressed the need for having workshop in the subjects where the syllabus had been revised.

ii) Faculty Exchange Programme:- This was considered desirable especially where teachers having specialisation in the subjects were available. A long term programme for example, six months duration might be better than short term programme.

iii) Workshop on Question Bank:- They expressed that workshop on question bank was desirable.

iv) Remedial Course:- They expressed the need for conducting remedial course in various Science subjects.

v) Award of Teacher Fellowship:- They requested that more P.G. departments under North-Eastern Hill University be identified by the UGC for the award of teacher fellowship in view of the urgent needs of the teachers for such facilities. Such facilities were not easily available from existing institutions identified by the U.G.C..

vi) UGC Financial Assistance:- They expressed the need for having additional hostels for boys and girls. As the college was a residential college and the College was located 8 km. out of the town, of Kohima, the students residing in town experienced difficulty to attend class from the town.

vii) Relation with the State Government and University:- (a) Both the University and the State Government authorities should follow the staffing pattern laid down in the University Ordinance strictly. Many depts. were under-staffed. (b) The University must enforce students attendance of 75% strictly. (c) The State Government be requested to relax study leave rules

for teachers. Teachers be allowed to take study leave with full pay upto three years in view of the fact that three years was required to complete Ph.D. (d) Teachers continuing on contract basis could availa teacher fellowship etc. and for that reason the State Government be asked to consider their case sympathetically in the interest of Education.(e) During University Final Examination, the O.S.D., NEHU, Nagaland Campus be asked to college answer scripts from the college within Kohima town area (f) They expressed the need for a separate Directorate to look after the interest of higher education.(g) Guest House in the Campus for Visitors from outside, was found necessary to implement any programme involving additional hands from outside. (h) A central workshop for the Science Departments be constructed in the college Campus.

viii) Students' Facilities:- College Cafeteria be constructed for the students.

19. KOHIMA ARTS COLLEGE:-

The Sub-Committee met the Principal and the teaching staff and discussed the following points:-

i) Refresher Course:- They expressed their desire to have refresher course in the subjects where the new syllabus have been introduced and in such programme, training regarding effective method of teaching also should be included.

ii) Faculty Exchange Programme:- They welcomed the programme provided that the expenditure would borne by the U.G.C.

iii) Seminar:- They welcomed the idea of having seminar. The teachers of Economics department wanted to have refresher course on Kyen's theory of out-put and employment which was introduced in the new syllabus.

iv) Workshop on Question Bank:- They welcomed the idea of having workshop on questions bank.

v) Relation with the State Government and UGC:- (a) They pointed out that there was no deficit grant-in-aid system for the private colleges of Nagaland. All of them were under ad-hoc grant-in-aid system. For that reason the College experienced hardship because the grant to be received from the State Government was uncertain and meagre. They were keen to be placed under deficit grant-in-aid system. (b) The College received matching grants from the UGC and they were yet to receive the 25% of the total expenditure from the State Government. They wanted the State Government to commit themselves for the Sanction of the matching share. (c) Due to lack of funds they could not provide hostels for boys and girls although this was extremely necessary. (d) They requested the University to pay the TA/DA to the expert members of NEHU when they attend the meeting of the Selection Committee to appoint college teachers. This was necessary because the College could not afford to pay and also because the inclusion of expert from NEHU had been demanded by the NEHU authorities.

20. NAGALAND COLLEGE OF EDUCATION:

The Sub-Committee met the Principal and the teachers and discussed the following points :-

- i) Refresher Course:- They expressed the need for having workshop in view of the new syllabus introduced from this session.
- ii) Syllabus:- The new syllabus included History and Geography while excluding Social Studies. They pointed out that Social Studies should not be dropped because Social Studies was a subject relevant with the School curriculum of Nagaland. They pointed out also that Education Statistics was excluded in the new syllabus and that should not be excluded.
- iii) Relation with the UGC, NEHU and State Government:- (a) The College submitted application and was still waiting for the registration to the UGC under regulation 2(f). (b) They suggested that practice Teaching examination should be for a longer period. It should be at least half of the regular period for each teacher, for better assessment.

There was no norms to standardise the internal assessment by the Examination Board. Such norms should be worked out.

- iv) Faculty Exchange Programme:- They welcomed the idea of faculty exchange programme.

21. MOUNT TIYI COLLEGE:

- i) Refresher Course:- They expressed the need for having refresher course especially in the following subjects - Political Science, Education and Economics. They complained that text books prescribed for Education were not available. Further the detail syllabus in B.A. Economics was not given. For that reason it was difficult to know the exact course to be covered in this subject.
- ii) Faculty Exchange Programme:- They welcomed the idea of faculty exchange programme. However, to provide accommodation would be a problem for other teachers to stay in the College. They suggested that Guest House should be provided for this purpose.
- iii) Seminar:- They welcomed the idea of having seminars. They had already submitted such scheme to the UGC. Political Science Department suggested that a seminar should be held on the Origin, Achievement and Failure of the U.N.O.
- iv) Library:- Classes were conducted in borrowed building. Books were insufficient. However, land had already been allotted for the College.
- v) Workshop on Question Bank:- They expressed the need for having workshop on question bank.
- vi) Students' Facilities :- The students lacked reading room and common room at present.

vii) Relation with the State Government, University and UGC:- The College was under ad-hoc grant-in-aid system. They expressed their desire to be under deficit grant-in-aid system. They complained that despatch of confidential papers by the University took a long time to reach the college. They requested the University to send all the important documents, examination papers, result sheet through the D.S.D., NEHU, Nagaland Campus.

They complained that it was difficult to pay the TA and DA of the members of the Selection Committee appointed by the University. They requested the University to bear the TA/DA of their own officers for attending the Selection Committee.

22. ZUNHEBOTO COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points :-

- i) Refresher Course :- They expressed the need for having refresher course especially in History subject.
- ii) Faculty Exchange Programme:- They welcomed the idea of faculty exchange programme but the period should not be more than two months provided the expenditure is borne by the UGC.
- iii) Seminars:- They expressed their desire to have seminars.
- iv) Workshop on Question Bank:- They appreciated the idea of having workshop on question bank.
- v) Library:- They expressed the need for more library books.
- vi) Students' facilities:- Hostels for boys and girls were the priority needs of the College students.
- vii) Syllabus:- Teachers of History Deptt. suggested that Regional History be included in History syllabus. The Alternative English for P.U.C. was too difficult for the students. Books for Economics were not available.
- viii) Remedial Course:- Remedial course was desirable especially in English subject in which the students were weak.
- ix) Relation with the State Government and University:- They desired to be placed under deficit grant-in-aid scheme so that more funds might be available. They expressed the need for having an examination centre in the College itself.

23. TUENSANG COLLEGE :

The Sub-Committee met the Principal and the teaching staff and discussed the following points :-

- i) Refresher Course:- They expressed the need for having refresher course. The teachers of Political Science wanted to cover the new topics introduced in the new syllabus. History teachers wanted to emphasize the need for presenting the subject effectively. Teachers in Economics wanted to include Banking in the Refresher Course.

- ii) Faculty Exchange Programme:- They welcomed the programme and one full session was considered to be better than short term.
- iii) Seminar:- Political Science teachers wanted to have a seminar on new approach to Political Science.
- iv) Remedial Course:- They expressed the need for having remedial course in English putting stress in language.
- v) Syllabus:- (a) History department wanted to include History of N.E. Region if possible. (b) Teachers of Political Science pointed out that the course included International Organisations and wanted to include National Organisations also.
- vi) Workshop on Question Bank:- They considered workshop on question bank to be desirable and pointed out that more questions should set in the University Examination, so as to cover more important topics of the syllabus.
- vii) Students' Facilities:- The College was in a borrowed building. They stressed the need for having reading room and common room for the students. The State Govt. had already allotted a plot of land for the College. The College was likely to be taken over by the State Govt. during the current session.
- viii) Relation with the State Government:- They expressed the financial hardship faced by the College in view of the small amount of ad-hoc grant received from the State Government.

Another problem pointed out was that they could not find qualified teachers for the English Department.

#### 24. FAZL ALI COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points:-

- i) Refresher Course:- They expressed the need for having refresher course in all the departments. They wanted that such course to be arranged college-wise. The need of refresher course was most urgent in Education Deptt. in view of the new syllabus introduced. The problem arose because books were not prescribed and the kind of equipments to be used for experiments were not mentioned in the syllabus. The UGC must be able to pay TA/DA at a higher rate for such refresher course, because the NEHU rate was inadequate to meet expenses.
- ii) Workshop on Question Bank:- This was desirable, however, much care should be taken at every stage till its implementation.
- iii) Relation with the State Government, UGC:- The UGC laid down certain norms to be fulfilled by the colleges to get financial assistance from the UGC. They suggested that the number of students (at present 100 in degree class) became a hindrance to small colleges in the tribal areas. This should be abolished.

UGC be asked to open teacher library for teachers to facilitate research work.

They pointed out that they have received grants for construction of play ground and no other grants had been received from the UGC. The UGC policy of grant on sharing basis was a problem. The UGC should give grant unilaterally.

The qualifying marks laid down by the UGC for teachers to admit themselves into M.Phil./Ph.D. should be relaxed (at present the marks percentage required is about 55%. This condition could not be confirmed).

The State Government should set up a separate Directorate for higher education/collegiate education to cater the needs of the colleges efficiently. The existing teachers' common room should be extended so that rooms might be partitioned departmentwise or preferably for individual teachers.

iv) Students' Facilities:- In the College additional hostels were required to meet the need of the students for accommodation. The college was located outside the town of Mokokchung.

Hobby centre be opened in the College.

C. MIZORAM COLLEGE

25. KOLASIB COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points :-

- i) Refresher Course/Workshop:- They expressed the need for having refresher course in all the subjects taught in the College. In Mizo M.I.L. certain topics like Hlado should be thoroughly discussed. In Economics, workshop for teachers was desirable because prescribed text books were not given. Some of the reference books by foreign authors were not available. In Education there were no prescribed text books and for that reason it was extremely necessary to have workshop for the teachers.
- ii) Faculty Exchange Programme:- A short term programme was preferred.
- iii) Workshop on Question Bank:- This was desirable. In setting questions, the questions must be set from all important topics instead of selecting from few topics only.
- iv) Remedial Course:- This was desirable in English because the students were weak in the subject.
- v) Library:- They experienced difficulty in getting books for the Library.
- vi) Syllabus:- The text prescribed for English particularly the Rapid reading was too difficult for B.A. class.
- vii) Relation with NEHU and State Government:- The University insisted that for issue of transfer certificate to 1st year students the prior permission of the University should be obtained. The College authority expressed the difficulty in getting the permission because it took a long time to get it from the University.

The college was in a borrowed building. It was under ad-hoc grant-in-aid system. The rules of ad-hoc grant-in-aid system on distribution of fees collected by the College between the State Govt. and the College was not in the interest of the College. It was suggested that 60% of the fees collected should go to the College and 40% to the State Govt.

26. CHAMPHAI COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points :-

- i) Refresher Course/Workshop:- They expressed the need for having refresher course and in such refresher course the following points should be noted:-

In Mizo MIL selection of poems should be included.

In History the first paper should be included.

**In Education the new topic namely, the experiments should be included.**

Refresher Course in Education and Economics should be taken up immediately.

Teachers complained that very often questions were set from outside the syllabus.

- ii) Faculty Exchange Programme:- They welcomed the idea of having the University teachers to come to the College. However, the programme should be for a short term. They feared that this programme could also bring confusion to the smooth functioning of the College.
- iii) Seminar:- They expressed the desire to have seminars on the following topics - Problems of teaching English, Problem of learning English, Problem of Higher education in North-Eastern Region.
- iv) Workshop on Question Bank:- They expressed the desire to have workshop on question bank.
- v) Remedial Course:- Remedial course was desirable especially in spoken English because the students had great difficulty in speaking the language.
- vi) Library:- There was a need for having a separate Library and a separate Library staff.
- vii) Syllabus:- The History syllabus in honours especially History of the Far-East was difficult to teach because no text books have been prescribed in the syllabus. In P.U.C. Third paper of Geography, there was no clear indication whether survey had been included or not in Practical. In Political Science honours, Fourth paper, the concepts were given and detail contents were not given. History (Pass Course) for B.A. was too vast.
- viii) Relation with the UGC, University and State Government :-

The grant received from the State Government was too insufficient to meet the needs of the College. The recurring grant came always late causing hardship to the College. The UGC scale of pay should be implemented for the College teachers and the Principal. The University should try to release P.U.C. result within the month of June and B.A. result in July every year, answer scripts be examined at Kohima and Aizawl instead of examining it at Shillong. Teachers coming to the University on examination duties should be given TA/DA at Shillong before they returned. Accommodation should be provided when teachers were called to Shillong on Examination duties. Teachers experienced difficulty in finding suitable accommodation view of the low rate of D.A.

#### 27. SERCHHIP COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points with them :-

- i) Refresher Course:- They expressed the need for having refresher course in every subject taught in College. The Mizo department felt that teachers in Mizo MIL taught the subjects in different ways. For that reason, teachers should have workshop to achieve uniformity in teaching.

In Political Science, the working of Political parties in India should be taken up in refresher course.

ii) Faculty Exchange Programme:- They felt that this programme might not be practicable, due to various difficulties like accommodation, etc.

iii) Workshop on Question Bank:- This was felt desirable.

iv) Library:- A separate library building and a full time Librarian were required in the College.

v) Syllabus:- In History of P.U. Course and B.A. Course there were repetitions in Indian History from 1757 - 1947.

In Political Science prescribed books were not available.

In Economics Second Paper for B.A.(Pass) too much importance was given to Money.

vi) Students' Facilities:- The Students needed the following facilities:

1) Girls' hostels, 2) Canteen, 3) College Bus because the College was located outside the town.

vii) Relation with the State Government and the University:- The State Government should revise the method of distributing fees collections between the State Govt. and the College. 60% of fees collected should go to the College and 40% to the State Govt. in the interest of the College. The amount of grant-in-aid received from the State Govt. was insufficient to meet the need of the College.

Heads of departments should be given charge allowance.

The College teachers were not appointed as examiners and they had not receive any request from the University to submit list of teachers to this effect. The College had not receive any N.S.S. funds from NEHU but they carried on N.S.S. work.

They expressed the need for appointing Vice-Principal in the College.

#### 28. LUNGLEI COLLEGE:

The Sub-Committee met the Principal and the teaching staff and discussed the following points:-

i) Refresher Course:- They expressed the need for having refresher course. Teachers of Education department complained that prescribed text books were not available.

ii) Faculty Exchange Programme:- They welcomed the programme for short term period.

iii) Seminar:- They expressed the desire to have a seminar on general topics having social importance.

- iv) Workshop on Question Bank:- This was desirable.
- v) Remedial Course:- They expressed the need for having remedial course in English and Science subjects and in particular Mathematics.
- vi) Award of Teacher Fellowship:- More departments in NEHU should be identified by the UGC for teacher fellowship, Applications of teachers for the award of Teacher Fellowship should be forwarded by the Principal to avoid delay. At present it was routed through the Government.
- vi) Syllabus:- The Physics syllabus in P.U.C. was vague.  
Revision of syllabus should be sent to the colleges in time.  
Text books were not recommended in Geography in Geography. The teachers of Geography were not clear whether Survey was included or not in P.U.C.
- viii) Relation with the State Government and University:- Communications from the University was always received late. Regarding setting of questions, the teachers of the subject must set the question to avoid regular errors like setting questions from outside the syllabus. The teachers faced difficulty to go to the University for marking the scripts. The University could not pay the TA/DA to the teacher at Shillong when they came for examination work. Again they were sent the money by Cheque. They requested that in future the money should be sent by Bank Draft only. They prefer the scripts to be sent to the examiners. The College teachers expressed the need for more residential quarters in view of the scarcity of accommodation at Lunglei. They wanted that the State Govt. should implement the Master Plan of the College.

The Education department expressed the need for the appointment of additional teachers in the department.

They requested that the State Govt. should implement the UGC scale of pay for teachers and Principal.

- ix) Students' Facilities:- The priority needs of the students were :-
- 1) A bigger Canteen
  - 2) Hostels for boys and girls
  - 3) More class rooms
  - 4) Extension of Indoor Stadium
  - 5) Foot-path-approach road from boys' hostel to the College.

29. HRANGBANA COLLEGE :

The Sub-Committee met the teachers and discussed the following points with them:-

- i) Refresher Course:- They expressed the need for having refresher course. The needs were more in Political Science and Education in view of the revised syllabus. They started Commerce Deptt. and the teachers expressed their need for refresher course. The Mizo MIL teachers expressed the need for having refresher course in order to achieve uniformity in teaching.

ii) Faculty Exchange Programme:- They welcomed the programme provided the expenditure is borne by others. Teachers from outside might not be able to come to the College for lack of accommodation.

iii) Workshop on Question Bank:- They welcomed the idea of workshop on question bank.

iv) Remedial Course:- They stressed the need for having remedial course especially to improve spoken English.

v) Library:- The College was in a borrowed building. They had no land of their own.

vi) Syllabus:- The prescribed text books in Economics Second paper was not available. In Education there were no prescribed text books causing much difficulty to teachers and students. In the new syllabus of Education, the contribution by some educators were included without mentioning the names of the educators. The experiment was introduced in the syllabus and teachers did not know what kind of experiment have to be performed.

### 30. MIZORAM INSTITUTE OF EDUCATION:

The Sub-Committee met the Principal and the teachers and discussed the following points:-

i) Refresher Course:- In view of the revised syllabus, refresher course was urgently necessary. Further the prescribed text books were not available.

ii) Faculty Exchange Programme:- They wanted to have the exchange programme and would like to have resource persons in English Departments from the C.I.E.F.L.

iii) Seminar:- They had already submitted a proposal to the UGC.

iv) Workshop on Question Bank:- This was desirable.

v) Syllabus:- In the revised syllabus social studies had been excluded. Since social studies was one of the subjects taught in Mizoram High Schools, this should be included again.

vi) Relation with the University:- They complained that in 1981 examination all the candidates who failed-ten in number failed in Psychology by one or two marks only. The candidate who top the list got about 60 marks in all other subjects and in Psychology he got only 36 marks. They requested this to be looked into by appropriate authorities. They wanted that examination roll Nos. should be randomized.

vii) Students' Facilities:- The University revised the syllabus and text books were not available. At the same time the students requested that the pass marks should be lowered from 35 to 30 in view of the above problem.

viii) Relation with the State Govt. and University:- Students complained that trainees who were in service were not eligible to apply for book grant. They wanted the State Government to relax this rule. The students requested that candidates who failed in Psychology only in the last examination by one or two marks should be reconsidered by the University authority.

31. ZIRTIRI WOMEN'S COLLEGE:

The Sub-Committee met the Principal-in-charge and the teachers and discussed the following points with them :-

i) Refresher Course:- They expressed the need for having refresher course. The need was more in Political Science and Education in view of the revised syllabus introduced from this session. In the syllabus of Education there was no marks allotted to practical paper.

ii) Faculty Exchange Programme:- They expressed that this programme was not practicable at this stage.

iii) Workshop on Question Bank:- They welcomed the idea of having workshop on question bank.

iv) Remedial Course:- They expressed the need for having remedial course especially in English, stress should be given on grammar.

v) Library:- The College urgently needed a separate Library. However, the College was in a borrowed building. Land for the College was yet to be donated.

vi) Students' Facilities:- Their priority need was a common room.

32. BACHHUNGA UNIVERSITY COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points:-

i) Refresher Course:- They expressed the need for having refresher course and the following points have to be noted.

(a) The teachers of Education department complained that in the new syllabus text books were not yet prescribed. The teachers had no clear idea about the course contents and how much weightage was to be given for practical examination. (b) The teachers of Economics department wanted to have refresher course especially for topics relating to Statistics and Mathematics. (c) Teachers of Political Science Department pointed out that in view of the fact that text books were not available for the revised syllabus, workshop was urgently necessary. Geography department pointed out that workshop must be held regarding the collective method introduced in the P.U.C. syllabus.

- ii) Faculty Exchange Programme :- They welcomed the programme and long term programme was preferred.
- (iii) Seminar :- They wanted to have a seminar on general interest.
- iv) Workshop on Question Bank :- They welcomed the idea of having workshop on Question Bank.
- v) Award of Teacher Fellowship :- Many teachers wanted to qualify themselves for M.Phil/Ph.D. degree. However, the college experienced difficulties in getting substitutes. For that reason they requested the University to extend the period of 5 years for further periods to qualify themselves and with full pay for three years.
- vi) Remedial Course : Teachers expressed the need for having remedial course in English and Mathematics. As the existing teaching staff had already full load of work, they suggested that additional teacher should be appointed in the subjects for the purpose.
- vii) Library :- The new library building was going to be completed soon. Furnitures were required urgently for the new library.
- viii) Syllabus :- The syllabus of Physics was not given in detail. The course contents was, therefore, vague.
- ix) Students' Facilities :- The students need a Canteen in view of the fact that the college was located outside the main town area.

Book grant had been distributed in cash to the students. The books purchase should be returned to college library.

Hostel Warden expressed the need of the following articles for the hostels :- (1) Radio, (2) Sewing Machine for mending their own dress, (3) Typewriter for learning (4) Improvement of the approach road.

x) Relation with the University and the State Government :- Some teachers had taken back from the college by the Mizoram Govt., without any arrangements for their substitute. They suggested that the substitute should be arranged before a teacher could be taken out from the college so that the college might not suffer.

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The college Principal should be delegated power to purchase chemicals and other laboratory materials.

The teachers should be allowed to attend national seminars and conferences on duty leave.

33. AIZAWL COLLEGE:

The Sub-Committee met the Principal and the teachers and discussed the following points.

i) Refresher Course :- They expressed the need for having refresher course and more urgently in the following subjects.

Political Science, Education and Economics in view of the revised syllabus in these subjects. The teachers of Political Science pointed out that in the refresher course the following topics may be included :- Modern Political System, Government and Politics in India, Theory portion and Sociology.

The teachers of History department complained that text books for honours fifth paper were not available. In History the period was given but the details were not mentioned.

Economics text books were not prescribe and for that reason it was extremely necessary to have a refresher course in this subject. In Political Science honours sixth paper three possible choices were given but the teachers confined only to Public Administration because they could not teach the other two possible alternative effectively. For that reason workshop was necessary for sixth paper.

In Education the new syllabus was vague. Marks were not allotted for the various topics or division. Practical was introduced, but how to conduct was not explained. The syllabus included the study of Education but the Educators were not mentioned. Moreover, no text books were recommended.

(ii) Faculty Exchange Programme : - The programme could be worked out for a short-term period.

(iii) Seminar :- They requested the University to conduct seminar on research methodology in Mizoram in collaboration with the Research Department of the Govt. of Mizoram. If necessary the Research Department could be asked to share the financial responsibility also.

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For holding seminar in Mizoram - History of North-Eastern Region (India) Economics of North-Eastern India, Education of North-Eastern areas. How to teach effectively in college could be included.

iv) Remedial Course :- Remedial course was considered to be desirable in English and Economics. For example Economics - terminology could be included.

v) Relation with the University :- Paper evaluation should be arranged in Aizawl in view of the fact that accommodations were not available in Shillong and going to Shillong was a time consuming job.

Remuneration were sent too late by the NEHU.

Regarding questions of Economics honours - teachers complained that too many questions were set from probability. Probability should be treated as only one topics.

#### PRINCIPALS CONFERENCE :

All Principals expressed their desire to have Principals' Conference once in a year.

## RECOMMENDATION OF THE SUB-COMMITTEE:

The Sub-Committee of College Development Council convinced itself that the various problem faced by the affiliated colleges could be solved provided necessary co-operation and facilities are extended from all sides - teachers and Principals, the University. teachers and authorities, the three State Governments and the UGC.

1. From the above report, it was clear that workshop/ refresher course for teachers is necessary and may be organised immediately. Such workshop was justified by the facts that (a) the prescribed text books were not available in many subjects; (b) the courses prescribed were not clear; (c) completely new topics had been introduced in the syllabus; (d) certain uniformity in teaching had to be achieved; (e) successful workshop could help removing regional imbalances.

The workshop be organised for various subjects and more urgently such workshop should be organised in those subjects where revised syllabi were introduced recently, i.e., - Economics, Education and Political Science. Then workshop on other subjects would follow in course of time. It was found desirable to organise workshop in all the subjects taught in college - remembering the specific needs already pointed out by the teachers themselves.

The place of such workshop could be held in Shillong in most subjects. However, in major subjects efforts should be made to organise them in the three campuses to give full benefits to the teachers in the far flung area of the three States.

For every subject, the workshop should consist of the following resource persons :-

1. One teacher from NEHU.
2. Chairman of the BUGS in the subject concerned.
3. Two resource persons in the subject or with specialisation in the paper concerned, and one of them preferably from outside.

The success of the programme would depend on the availability of fund from the University/UGC.

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Each workshop would require expenditure under the following heads :-

1. TA/DA of teachers.
2. TA/DA of resource persons.
3. Honorarium/Remuneration for resource persons.
4. Stationaries
5. Preparation of the venue.
6. Reading materials, i.e., books for teachers.

As per UGC guidelines, programmes approved by the College Development Council were supposed to be financed by the UGC. It is, therefore, necessary to find fund to implement any course that may be recommended.

For long term policy, the Sub-Committee suggested to have full-time teachers in certain subjects in the scale of pay of Reader to organise such workshop and seminars and to render special assistance and advices to the colleges. The UGC be asked to sanction such posts.

2. Regarding Faculty Exchange Programme, it appeared that there were reservations on its implementation. Teachers expressed that short term programme might simply create confusions. The methods of teaching, the teachers pronunciation, etc., might bring difficulties to the students themselves. On the other hand, long term exchange programmes also might bring difficulties to the teachers concerned and their families. Many colleges, could not welcome the programme due to accommodation problem.

The Sub-Committee suggested that the programme could be tried only locally according to the college needs and conveniences. For distant colleges, perhaps, extension lectures could be arranged on one week programme. To work out the programme, sufficient fund should be made available to meet expenses on items like TA/DA of the teachers concerned.

3. Seminars - The Sub-Committee would like to suggest the following points on holding of seminars in colleges. Seminars should be held in the respective colleges. Since the colleges were generally poor, lump-sum grant should be given for holding seminars. The rate of the grant should be fixed by the Council. Secondly, the Principals of the colleges be entrusted to form seminar Committee to conduct out the seminar.

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4. Question Bank :- The Sub-Committee suggested that the Director of College Development Council be authorised to examine further into the pros and cons of the system of question bank by visiting at least three universities to acquaint himself thoroughly with the actual application of the system. He may submit report to the members for comment before the College Development Council takes a decision on this.

In the meantime, the various irregularities and complaints on setting questions received by the Sub-Committee be reported to Examination Department for future guidance.

5. Remedial Course :- The Sub-Committee recommended that remedial courses in Mathematics, English and Economics should be organised.

Perhaps this could be taken up by appointing a small committee subject-wise consisting of teachers from the colleges to be chaired by the Head of the Department concerned or a senior teacher of the P.G. Department. Since the implementation of the remedial course would require additional expenditure on remuneration/honorarium of the teachers to be engaged, necessary fund had to be allocated. The Council may decide (a) the nature of the composition of the committee to work out guidelines for Refresher Course, (b) the rate of honorarium to be paid to the teachers engaged in the work.

6. Syllabus :- The Sub-Committee suggested that all the points raised above by the teachers of the colleges be brought to the knowledge of the respective BUGS concerned with a copy to Assistant Registrar(Examination).

7. UGC Financial Assistance:- The UGC terms and conditions for financial assistance to the colleges appeared to be too difficult for the colleges. The Sub-Committee suggested that this should be brought to the notice of the UGC by the College Development Council or the University.

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8. Award of Teachers Fellowship :- The Sub-Committee suggested that the College Development Council should move the UGC for identification of more P.G. Departments of NEHU for award of teachers fellowship. At present only Political Science Department had been identified. Perhaps, the College Development Council or the appropriate authorities could determine which Departments should be identified by the UGC.

9. Library :- Most of the colleges were deprived of the facility of college library. As there was no sufficient number of fund for library building or library books, the affiliated colleges could not build up collegiate education effectively. Perhaps, the University had to insist on having a separate library building, sufficient number of books, separate staff to look after the library. Further, to meet the requirements of the text books for the colleges, the Director, College Development Council be authorised to get the information from the colleges.

The Sub-Committee suggested that means should be explored by the College Development Council to build up a standard college library for colleges having permanent site for colleges.

10. Students facilities :- The basic facilities required by the students for a proper atmosphere of study were not available in most of the colleges. For example, Hostels for boys and girls, Common Room, Reading Room and Books to read, playground, canteen, indoor stadium, These physical facilities could not be provided by the college authorities due to lack of fund. The Sub-Committee suggested that the College Development Council should try to find out sources of fund for the improvement of colleges for these items.

11. Relation with the State Governments/UGC/NEHU :- The Sub-Committee wanted the College Development Council to bring the various points raised above by the colleges to the knowledge of the State Governments, UGC, NEHU, Departments concerned.

12. The Sub-Committee suggested that the University to continue to hold Principals Conference once a year as desired by the Principals.

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TO MAKE THE EXAMINATION DEPARTMENT OF THE UNIVERSITY RESPONSIBLE FOR CONDUCTING END-SEMESTER EXAMINATIONS IN THE SCHOOL AS WELL AS FOR MAINTAINING ALL RECORDS RELATING TO THE M.A. EXAMINATIONS.

The School of Social Sciences at its meeting held on 8th June, 1982; decided that the University should make the Examination Department responsible for conducting end-semester examinations in the School as well as for maintaining all records relating to the M.A. examinations on the following grounds :-

1. At present end-Semester examinations are conducted by the Departments individually, the Departments are also responsible for the maintainance of all records relating to examinations and assessment. However, given the present infrastructure in the Department, this involves work which the Department finds it extremely difficult to cope with.

2. Examination work requires a degree of Secrecy and impersonality which cannot be ensured if it is done entirely in the Department.

3. Although, according to the Ordinances, it is the Dean of a School who is responsible for conducting examinations and maintaining records there of, it is well known that the Dean's office is too inadequately equipped to take on this important function. Besides, in any case, it may be a sound idea to centralise all the Masters Degree examination work of the University in the Examination Department. For this, the University might consider setting up an independent unit in the Examination Department under a separate Assistant Registrar.

The matter is placed before the Council for consideration.

Copy of letter No. NEHURSA/R/2/82, dated April 23, 1982 from Kali Prasad Sarma, Secretary, NEHURSA, Shillong, addressed to the Registrar, NEHU, Shillong.

Sub:- Request for lowering of fees for Ph.D. students( Science).

Ref:- NEHU Ordinances relating to fees payable by students.

Madam,

With due regards, I, on behalf of the NEHURSA, would like to put before you an humble request for lowering of different fees payable to the University by Ph D. students of NEHU. We feel that the fees prescribed for Ph.D. students of NEHU are comparatively higher than those in other universities. In the following text, I would like to justify our request and draw your kind attention.

1. Laboratory fees for Science students in NEHU is Rs 200.00 per year the same being Rs 75.00 only per year in the University of Hyderabad and even less in Aligarh Muslim University. Moreover, there is no clear statement in the 'Ordinances relating to fees payable by student' as to for how many years a Ph.D. student should pay his laboratory fees. The same for AMU writes : "the fees to be paid for 2 years only from the date of their enrolment" and the similar facilities are available in other sister institutions. We appeal before you to see the case sympathetically and bring the laboratory fees of our Ph.D. students at the same level as those in other universities.

2. Ph-D. examination fee in NEHU is as high as Rs 300.00. But the same in University of Hyderabad is only Rs 100/-. Similar amounts are being charged in other institutions, but in NEHU only we find that the Ph.D. students are taxed more. I, on behalf of the Ph.D. students of NEHU, request you to look at our day-to-day hardships and prescribe a moderate amount maintaining the trends followed in other universities.

Contd/...

3. Laboratory Caution money for Science students and Library Caution money in this University, according to our opinion, are higher than those in other sister universities. The caution deposits for Laboratory and Library are Rs 50.00 each only in the University of Hyderabad and a little high in AMU. The security deposit, as a whole, in Jawaharlal Nehru University is Rs 40.00 only. (ref laboratory caution deposit in NEHU = Rs 200.00 and that for library is Rs 100.00). We feel again that the university authorities may do some amount of justice to the students of their own by bringing down various academic fees payable by the students.

Hon'ble Madam,

This is only an appeal before you to see that we are not streamed out of the general facilities available to the students of our country and, therefore, request you to bring down the fees at par to the other universities, if not to a lesser amount looking at the high cost of living in North Eastern Region and rather meagre universities accommodation facilities here. We feel that we are justified in our humble claim and also realise that NEHU, being a Central University will do its best to be in same line with its sister organisations.

Looking for your early sympathetic consideration.

Thanking you,

5:1:1 To consider the Report of the Committee  
on the amendment of M.Phil/Ph.D.  
Programmes -

The Academic Council in its meeting held on the 26th and 27th April, 1982, had constituted a Committee for M.Phil/Ph.D. Programmes in the School of Physical and Biological Sciences where a credit programme extending over one semester is to be instituted for all research scholars desirous of going up for M.Phil or Ph.D. degrees.

The report of the Committee is placed as Annexure - XIII for consideration of the Council.

MINUTES OF THE MEETING OF THE DEANS AND HEAD OF THE  
DEPARTMENTS OF SCIENCES TO CONSIDER THE AMENDMENT ON  
M. PHIL/PH.D. PROGRAMMES

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1. M. Phil/Ph.D. programme shall consist of a total of three courses including the common course to be offered at the school level students can opt courses offered by other Departments also.
  2. These courses shall generally be completed within one semester but in any case the duration shall not extend beyond two semesters.
  3. M. Phil/Ph.D. students may opt for one specialised course offered for the M.Sc. programme provided the student has not offered the same course as part of his/her M.Sc. programme.
  4. Since the course will/shall not itself lead to a degree, the evaluation of the course programme should be internal.
  5. Each course should have at least three lectures per week.
  6. A minimum of 40% marks is to be obtained in each course while the minimum average of all the courses should be 50% to be eligible for M. Phil/Ph.D. programme.
  7. In case a student is to clear a course or courses he/she may repeat the same course/courses or opt for alternative courses. In case the candidate prefers to be examined in the same course/courses not cleared, a repeat examination is to be given at the end of the subsequent semester.
  8. It is recommended that suitable amendments are made in the existing M. Phil/Ph.D. academic ordinance to incorporate the above suggestions.
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5:1:2 To consider the decision of the North-Eastern  
Hill University Research Scholars' Association -

The NEHURSA in its meeting held on 21st June, 1982 had proposed for consideration of the Academic Council an Ordinance relating to its bi-annual publication entitled "NEHURSA BULLETIN".

The draft Ordinance is placed as Annexure - XIV for consideration of the Council.

ORDINANCE RELATING TO NEHURSA BULLETIN

1. A Bulletin will be published by the Editor of the NEHURSA, on behalf of the Association which will highlight the activities of the Association and will represent the thoughts and aims of the research scholars of NEHU in general.
2. The Bulletin will be published twice in a year, one in the end of each semester and each of the issue will bear the reports/activities of the research fellows during the semester.
3. The Bulletin will be published in English and in addition the issue at the end of second semester will contain the annual report from the General Secretary about the mode of functioning of the executive body.
4. The first issue (first semester) of the Bulletin must be published before 15th of December each year and the second/final issue should be out before 30th June of each year or before the next executive committee takes office.
5. A three membered Editorial Board with one Chief Editor will be appointed by the Executive Committee of NEHURSA in consultation with other members of the Association. The Board will decide about contents of the Bulletin and will be solely responsible for the facts and figures of magazine. The Board may take help from the Deans of different Schools, faculties and some experienced personnel in the University regarding the nature and contents of the Bulletin from time to time and in addition it may request some distinguished persons from the University for their contribution in the Bulletin.
6. The aim and objectives of the Bulletin will be to reflect the day-to-day activities of the research scholars of all Departments and to project the thoughts and ideas of the students of the region, to popularise the ideas of research among the people of the region by publishing healthy articles about the achievements of research throughout the globe.

Contd/...

It will be the endeavour of the Bulletin to maintain the sense of national integration among the researchers and people of the region and also to look for exploration of the local indigenous talents for the growth of the society. It will also try to popularise science and humanities and their achievements among the people of North-East Region.

7. The Bulletin will contain articles about research and its impact upon society, science and research and socio-economic developments policy and planning of research in India, science and environments, scientific fictions, etc. Articles on research, freedom and social progress of the people of North-Eastern Region will be specially encouraged.
8. The Bulletin will comprise of three (3) sections. One section for all science, one for humanities and one for general sections with popular articles and articles of general interest.
9. The Name of the Bulletin was unanimously accepted by all the members of the Association and it will be called as "NEHURSA BULLETIN".
10. It was also decided that the Vice-Chancellor of the University will be the Patron of the Bulletin.

To consider the Minutes of the Board of Post Graduate Studies in Commerce and also the Syllabus in Statistics for M.Com. Course.

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The Academic Council consisting of the Local Members at its Meeting held on 19th October 1982 had decided to recommend the consideration of the subject quoted above which is placed at Annexure XV to the Regular Academic Council in view of the absence of experts in commerce in the meeting. The matter is therefore placed for consideration of the Council.

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Item No. 5:3

To consider some points regarding Pre-Ph.D.  
Course of the Junior Research Fellows of the  
Department of Botany and Department of  
Zoology -

Placed as Annexure - XVI is a letter received from the  
Junior Research Fellows of the Department of Botany and  
Department of Zoology regarding Pre-Ph.D. course for  
consideration of the Academic Council.

DEPARTMENT OF COMMERCE  
NORTH EASTERN HILL UNIVERSITY  
NAGALAND CAMPUS, KOHIMA.

Minutes of the Third Meeting of the Board of Post-Graduate Studies in Commerce held on 29th May, 1982 at 10.a.m. The following were present:-

1. Prof. P.K. Ghosh
2. Prof. S.N. Mehrotra
3. Shri T. Vihienuo
4. Dr. K.S. Chaudhari (By Invitation)
5. Shri H.R. Ghosh Roy (By Invitation)
6. Dr. B.K. Tandon (In the Chair)

The following regretted their inability to attend the meeting :-

1. Dr. R.C. Saxena
2. Dr. C.L. Anand
3. Dr. D.N. Upadhyaya

The following business was transacted:

1. The minutes of the Second Meeting of the Board of Post-Graduate Studies in Commerce were read and confirmed.
2. The Board, after through deliberations, unanimously resolved the following :-
  - (a) That the Course structure as shown in Appendix be adopted for M.Com. Course.

(b) That all Graduates in Commerce of North-Eastern Hill University any other recognised University shall be eligible for admission to M.Com. course.

(c) That atleast 50 percent of the paper setters and examiners at the end semester examination shall be external.

The meeting was desolved at 4.00 p.m. with a vote of thanks to the Chair and the members present.

Sd/- B.K. Tandon  
Head  
Deptt. of Commerce

COURSE OBJECTIVES :-

The Committee recommends that the objectives of the M.Com. Course should be essentially to prepare students for teaching and research in educational as well as business organisations besides making them conversant with the function of staff specialists in business firms.

COURSE OF STUDY :

SEMESTER I

- C 101 Business Economics
- C 102 Government and Business
- C 103 Statistical Analysis
- C 104 Accounting and Control

SEMESTER II

- C 201 Indian Financial System
- C 202 Organisational Management
- C 203 Quantitative Techniques and Business Decisions
- C 204 Business Forecasting

SEMESTER III

- C 301 Industrial Economics

The students in the third semester will opt any one of the following specialisation groups :

GROUP 'A' FINANCE

- O 311 Financial Markets and Institutions
- O 312 Business Finance
- O 313 Corporate Planning

GROUP 'B' MARKETING

- O 321 Principles and Practice of Marketing
- O 322 Sales Management
- O 323 Market Research

GROUP 'C' HUMAN RESOURCE MANAGEMENT

- O 331 Personnel Management
- O 322 Industrial Relations
- O 333 Labour Legislations and Welfare.

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GROUP 'D' TRADE

- O 341 International Trade and Monetary system
- O 342 Foreign Trade Policy and Control
- O 343 Export Marketing

SEMESTER IV

Q C 401 Manpower Planning and Development

The students in the IV Semester will opt any one of the following specialisation groups :

GROUP 'E' ACCOUNTING AND AUDITING

- O 411 Management Accounting
- O 412 Management and Internal Audit
- O 413 Financial Reporting and Control

GROUP 'F' TAXATION

- O 421 Corporate Tax Planning
- O 422 Direct Tax Laws
- O 423 Sales Tax and Excise Duties

GROUP 'G' INSURANCE

- O 431 Principles of Insurance
- O 422 Actuarial Science
- O 433 Life Insurance and General Insurance

GROUP 'H' PUBLIC ENTERPRISES IN INDIA

- O 441 Economics of Public Enterprises
- O 442 Organisation and Structure of Public Enterprises with social reference to India
- O 443 Public Enterprises Management.

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M.COM. FIRST SEMESTER

C 101 BUSINESS ECONOMICS

1. Introduction to fundamental concepts of the economics of the firm and of the industry; study of demand function, cost functions and product functions:
2. Demand analysis and forecasting-demand determinants, demand distinctions, demand forecasting.
3. Cost analysis-cost concepts and classifications, cost measurement, cost-output, relationship, cost of multiple products cost ~~xx~~ and profit forecasting.
4. Product analysis-product functions, simple and multiple relations, product line policy.
5. Resource allocation and capital management-administrative aspects of capital management, demand for capital, supply of capital, capital rationing, appraising project profitability.
6. Profit management - nature and management of profit of profit planning and control.
7. Introduction to macroeconomics for management decisions, Study of determination and operation of the economic activity national income, employment, price level, aggregate consumption investment and asset building.

BOOKS RECOMMENDED :-

1. Mansfield E. : Micro-economics: Theory and Application-
2. Banmol W.J. : Economic Theory and Operations Analysis
3. Kaldor H. : Essays in Value and Distribution
4. Shapiro, E : Macro-economics Analysis
5. Evans M.K. : Macroeconomic activity.
6. Joel Dean : Managerial Economics
7. Erwin Easer, Nemmers : Managerial Economics

Note:- Further reading will be suggested in the Class

1. Social Responsibilities of Business.
2. State regulation of business-rationale and philosophy
3. Role of public private and joint sectors.
4. Typology of Government controls-Industrial policy, license control of capital issues.
5. Rationale, philosophy and appraisal of the control of monopolies and restrictive trade practices
6. Import control and export promotion-an evaluation
7. Regulation of private foreign investment and foreign exchange.
8. Foreign collaboration and investment guide lines.

BOOKS RECOMMENDED :-

1. Abraham : Big Business and Government
2. Bowen H.H. : Social Responsibilities of Business
3. Clark, John M. : Social Control of Business
4. Indian Law Institute : Government Regulation of Private Enterprises
5. Prithi S.P. : Business and Government
6. Vakil C.N. : Industrial Development of India Policy and Problem.
7. Relevant portion from the Acts.

Note :- Further readings will be suggested in the Class.

C 103 STATISTICAL ANALYSIS

1. Nature and significance of the study of Statistics.
2. Measure of central tendency and variability and their use.
3. Graphical representation of the frequency distributions:
  - (a) Histogram
  - (b) Frequency polygon
  - (c) Cumulative frequency graph
  - (d) Cumulative percentage curve and
  - (g) Ogive curve.
4. Theoretical distributions:
  - (a) Binomial probability
  - (b) Normal distribution
  - (c) Poisson distributions.
5. Moments (first four) Skewness and Kurtosis
6. Correlation:
  - (a) Simple correlation analysis (Spearman's coefficient of correlation and their limitations)
  - (b) Partial and Multiple correlation.
7. Interpolation and extrapolation.
8. Index number-problems and its construction
9. Sampling theory and designs.
10. Tests of significance.

Concept of standard error, confidence level, confidence intervals (for Mean, Median, standard deviation, percentage and correlation)

't' - Test

'f' - Test

'z' - Test and  $X^2$  - Tests

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11. Probability :-

Definition of probability

Theorem of probability (Addition and Multiplication)  
and simple numerical problems based upon those theorem.

BOOKS RECOMMENDED :

1. Creighton and Cowden : Applied general statistics
2. Neiswander W.W.A. : Elements of statistical methods
3. Smith : Business and Economics statistic
4. Bowley A.L. : Elements of statistics
5. Ghosh and Choudhary : Statistics - Theory and practice
6. Yule and Kendall : An Introduction to the theory of statistics.
  
7. Wagh A.E. : Elements of statistics
8. Cannon : Statistics in Theory and Practice
9. Gupta B.N. : An Introduction to modern statistics.
  
10. Gupta C.B. : Statistical Methods

Note:- Further readings will be suggested in the class

C 104 COST ACCOUNTING AND CONTROL

1. Objects and significance of cost accounting, methods of cost accounting.
2. Direct costing and responsibility, Accounting including overhead accounting. Cost and production decision. Cost aspects of pricing and pricing policy.
3. Standard costing and variance analysis, material, labour and overhead variance.
4. Marginal costing - significance and application.
5. Process costing, unit costing, job order units costing, contract costing.
6. Cost volume, profit analysis and capacity utilisation.
7. Cost audit need, importance and mechanism.

BOOKS RECOMMENDED

Ghosh P.K.	: An introduction to cost Accounting
Backer	: Cost Accounting
Buston	: Costing for Control
Bigg W.W.	: Cost Accounts
Bajpai	: Fundamental of Costing
Gupta R.L.	: Cost Accounts
Bloeker & Weltmer	: Cost Accounting
Harper	: Cost Accountancy
Ray	: Problems and Costing
Sharma	: Advanced Cost Accounting

Note: Further readings will be suggested in the class.

## PROPOSED STATISTICS COURSE FOR M.COM.

1. Treatment of Data (No. of lectures = 5)
  - a) Frequency distribution, Graphical representation of data
  - b) Measures of Central Tendency - Mean, mode, median
  - c) Measures of dispersion, S.D. and M.D.
  - d) Moments of higher order and coefficient of variation.
2. Theory of Probability (No. of lectures = 11).
  - a) Rules and Axioms of Probability
  - b) Conditional probability and Baye's Theorem.
  - c) Mathematical Expectation
  - d) Probability distributions - 1) Binomial 2) Poisson 3) Normal  
4) Hypergeometric & 5) Log-Normal.
3. Theory of Correlation & Regression (No. of Lectures = 9).
  - a) Two variable case
  - b) Multivariate case
  - c) Estimation and properties of OLS estimates.
  - d) Predicting power of regression model.
4. Theory of Estimation & Testing of Statistical Hypothesis  
(No. of lectures = 9).
  - a) Sampling dist. of sample mean and variance
  - b) Point estimation
  - c) Interval estimation
  - d) Properties of estimates
  - e) Formulation of test hypothesis
  - f) Applications of test Statistics - t-test, Z-test,  
F-test and  $\chi^2$  - test.
5. Analysis of variance (No. of lectures = 4)
  - a) One way classification
  - b) Two way classification
6. Index Number Theory (No. of lectures = 4)
  - a) Construction of C.P.I.
  - b) Construction of whole sale Price Index
7. Analysis of time series (No. of lectures 4)  
(Periodogram & Correlogram analysis and Spectral  
Analysis will be excluded).

Recommended Texts :

1. Preliminary Reading :

- a) Moreney, Facts from Figures, Penguin Publ. Sussex
- b) Hoel, Elementary Statistics, Wiley

2. Principal Texts;

- a) Croxton & Cowden, Practical Business Statistics, Prentice Hall.
- b) Hoel & Jessen, Statistics for Business & Economics, Wiley
- c) Freud & William, Modern Business Statistics, Pitman, London

3. Reference Texts :

- a) Hoel, Introduction to Mathematical Statistics, Wiley
- b) Goon, Gupta, Fundamentals of Statistics, World Press, Calcutta.
- c) Yule & Kendall, Advance Theory of Statistics, Charles & Griffin.

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To

The Vice-Chancellor,  
North-Eastern Hill University,  
Shillong.

Sub:- Some points regarding pre-Ph.D. Course for your  
kind consideration.

Respected Sir,

We, the CSIR and UGC and other JRF, Research Fellowship holders for the year 1982 have the following problems regarding the pre-Ph.D. We are hopeful that you will be kind enough to go through the problems, solve them and suggest such relevant measures as it would come to our immense benefit.

Now with regard to our research work, we have the following problems:

All of us started our research experiments, we have set our experiments, prepared mediums, chemicals and other pre-requisites for research work. Now at this juncture if we are to concentrate on pre-Ph.D. we have to abandon the so far done research experiments, mediums etc., as Pre-Ph.D. would hamper the smooth running of the experiments. This would mean a great toll on our time, money and labour. Once we finish the Pre-Ph.D. we will have to start the research experiments again from the beginning, at the expense of time, money and labour.

Rules: Progress Report - The preparation of a report on research work done during the year ending 31st August shall be an essential part of the fellows work for demanding for 2nd half of the financial year.

Publication: CSIR and UGC rules and regulations provides us a pre-requisite that at the end of two years, the progress report of the Junior Research Fellows will be assessed with published/accepted research papers in a standard journal and if found satisfactory the fellowship would be enhanced to Rs 700/- p.m. Now our point is that when Pre-Ph.D. takes off six months from the given 2 years period, with left over time of 1 1/2 years, it becomes impossible to prepare a paper for a standard journal. Of this 1 1/2 years time, again six months are needed to prepare the paper, communicate with journal etc., so, as the things stand, we are left with only one year time to do research experiments and publish papers for further increments. For many of us, one year time insufficient as we are doing seasonal works like flowering plants, breeding fishes etc., which occur once a year in a particular season. Once the season is gone we have to wait for another year for the particular season. Again, for your kind consideration, Sir, some of these seasonal works are being done at different locations outside the campus like Nagaland (Kiyasatuo), Arunachal Pradesh (T. Yanger), Cachar (H.A.Nuri) North-East India at large (S.Ahmad), Cherrapunjee (R.S.Khiewtam) etc., All of us are doing monthly observations.

Contd/...

In our previous discussion with you, we have been told that pre-Ph.D. is supposed to be a measure to make us understand what we are going to do in research. Pre-Ph.D. is supposed to be systematic approach to Ph.D. But may we put forward the following words in regard to the so called preparatory courses:

(a) A preparatory course for Ph.D. have already been provided to us in terms of M.Sc. research projects. In M.Sc. research problems already we had an idea of pursue of a research problem and problem oriented special classes. That way, we have been familiar to the pre-requisites of research works. Now we feel at home with our problems as we know how we should proceed. Now a preparatory course in terms of Pre-Ph.D. is a mere reshuffling of M.Sc. knowledge at the expense of our time, money and labour.

(b) As we have started with research problems, already we are going through such relevant books, réprints and journals as we feel important for our work. A Pre-Ph.D. course (for which we have consulted our guides) provides us a course which has no relevance to our research problems, and the guides cannot help it because they are bound to the list of courses provided to them.

Last but not the least, we like to bring to your notice the administrative fault with regard to Pre-Ph.D. course. Many of us joined for research 6 to 10 months ago. At that time no teacher or guide told us about a Pre-Ph.D. course although previous year students had the course. But we cannot be held responsible for this misunderstanding and we cannot succumb to it at the cost of our experiments and time.

We are hopeful that you will be kind enough to consider our problems cited above, which will bring us an immense benefit.

With profound regards,

Yours sincerely,

Junior Research Fellows,  
Department of Botany, Zoology,  
NEHU

Copy to :-

1. Dean, School of Life Sciences.
2. Head, of the Department of Zoology.
3. NEHU Research Scholars Association.

5:4:1 Panel of examiners for the Department of  
Philosophy -

The panel of Examiners for examining the M.Phil dissertation of the candidates of the Department of Philosophy is placed before the Academic Council for consideration and recommendation of the panel to the Executive Council for approval.

The panel will be tabled by the Chair.

5:4:2 Panel of Examiners for the Department of  
Philosophy -

The panel of examiners for examining the Ph.D. thesis of Miss Bina Mohanti of the Department of Philosophy is placed before the Council for consideration and to recommend the panel to the Executive Council for approval.

The panel will be tabled by the Chair.

5:4:3 Panel of Examiners for the Department of Botany -

The panel of Examiners for examining the Ph.D. thesis of Shri K.M.Kurvilla of the Department of Botany is placed before the Council for consideration and recommendation to the Executive Council.

The panel will be tabled by the Chair.

5:5:1 To consider the Report of the Committee on the introduction of Courses in Shorthand and Typewriting.

The Academic Council in its meeting held on the 16th of February, 1982, had constituted a Committee to go into the details of introduction of courses in Shorthand and Typewriting. The Committee has submitted its report which is placed as Annexure - XVII for consideration of the Academic Council.

Subject: Introduction of Courses in Shorthand and Typewriting in Colleges

The first meeting of the Committee set up to work out the details of the proposal to introduce courses in shorthand and typewriting in the affiliated Colleges of this University took place on 22.5.82 at 3.30 p.m. at the Centre for Adult and Continuing Education. The following members were present :-

1. Shri B.V. Roy, Director, PCTC, Shillong - Chairman
2. Shri K. Sukumaran Nair, Lecturer  
Department of Economics - Member
3. Shri C.P. Tewari, Centre for Adult &  
Continuing Education, NEHU, Shillong. - Member
4. Shri D.S. Roy, C/o St. Edmund's College,  
School Department, Shillong. - Special  
Invitee

Shri D.S. Roy, who has been conducting courses in Stenography for a considerable period of time in Shillong, was requested to attend the meeting by special invitation. The Head of the Department of Commerce from St. Anthony's College, Shillong and Dr. R.N. Tandon, Adviser, Manpower, NEC, Shillong could not attend the meeting.

The members discussed a draft scheme for introduction of typewriting and stenography courses in the affiliated Colleges of NEHU presented by the Chairman. It was decided that, to begin with, the scheme may be implemented on an experimental basis in one of the Colleges of each of the constituent units of the University viz. Meghalaya, Nagaland and Mizoram. For the sake of convenience, it was recommended that courses may be started in Colleges located in the capitals of these States/Union Territory.

Organisation: The Principal of the College (preferably Colleges having Commerce Department) will be responsible for arranging the necessary facilities such as accommodation etc. and the overall supervision of the course. However, the organisational responsibility for the course will be borne by a Stenographer-Instructor appointed for the purpose. At the beginning,

The financial implication of the scheme for one selected College with detailed explanatory note is enclosed :-

An Explanatory Note to the Estimates for imparting coaching in Typewriting/Stenography in the Colleges affiliated to the North Eastern Hill University for the year 1982-83.

A sum of Rs. 3.00 lakh is proposed in the Estimates for the year 1982-83 for imparting coaching in Typewriting and Stenography to Scheduled Caste and Scheduled Tribe students studying in Colleges affiliated to the North Eastern Hill University. In the first instance, it is proposed to implement the scheme only in 3 selected Colleges, namely, 1 one each at Shillong, Aizawl and Kohima. An explanatory note on each item of expenditure is given below :-

Personnel

A. Stenographer Instructor : It is proposed to appoint one part time Stenographer Instructor in each of the selected Colleges to conduct the coaching for stenography course as well as in Typewriting. This post is proposed to be filled by a stenographer Grade I, preferably a retired person, if available. The Instructor will be responsible for arrangement of the classes for the two coaching programmes in consultation with the Principal of the College concerned. A sum of Rs. 6,400/- only is proposed as honorarium of the part-time Instructor @ Rs. 800/- per month for 8 months from August, 1982 to March, 1983

Office Staff: It is proposed to appoint one Part-time Assistant to manage the correspondence work and accounts matter required for implementing the programme. Obviously, the College office staff may not be very keen on taking up this additional work without any extra remuneration. Hence, a sum of Rs. 2,000/- only is proposed as honorarium to be paid to the part-time Assistant for 8 months @ Rs. 250/- per month from August, 1982 to March, 1983.

B. Office Expenses: A sum of Rs. 5,000/- only is proposed to meet the expenses towards the costs of stationery, postage stamps, advertisements and other miscellaneous expenditure.

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Necessary funds for the scheme will be allotted to the North Eastern Hill University for making necessary arrangements to provide typewriters and their maintenance and for payment of honorarium to the Instructors and Assistants etc. Similarly, the other required materials such as stationery, books and furniture will be purchased and supplied to the selected Colleges by the University.

#### Personnel

- (1) Stenographer Instructor(part-time) - 1 No in each selected college
- (2) Assistant (part-time) - -do-

#### Training facilities

It is envisaged that about 40 students will be admitted to each of the selected colleges soon after completion of College admissions i.e. August every year, from amongst the students studying in the 1st year P.U.C. and 1st and 2nd year Bachelor Degree. The 2nd year Degree students will be considered for enrolment when the Three Year Degree Course is introduced.

Adequate provision will be made for supply of a set of books in stenography with required stationery to the candidates attending the course, which will be conducted outside the College hours.

Besides educational qualifications, the general qualification for stenographers is knowledge of typewriting with a speed of at least 30 words per minute. Therefore, it is desirable that candidates should take coaching in Typewriting and Stenographers' course side by side, these courses being inter-related. Therefore, at least 10 Typewriters will be required for each selected College to enable the candidates to practice as well as to transcribe dictation given in stenography.

As an incentive for successful completion of training, it is proposed to grant a lumpsum amount to each candidate on successful completion of the course. It is suggested that an amount of Rs. 500/- each may be granted to those who secure a speed of 120 words per minute and Rs. 300/- each to those with 80 words per minute in Stenography, and Rs. 200/- each to those who secure a speed of 30 words per minute in Typewriting. No stipend is proposed to be granted to candidates during the training period, since the Scheduled Castes and Scheduled Tribe students in Colleges are already availing of the Post-Matric Scholarship.

C. Purchase of Books for Library: A sum of Rs. 2,000/- only is proposed for purchasing the required books for stenography. A copy of Shorthand Text Book will be supplied to each student undergoing coaching for the duration of the course. Similarly, a guidance book for typewriting will have to be procured for use by the students.

D. Lumpsum grant to students: As an incentive to students to complete the course successfully, it is proposed to grant them a lumpsum grant, during the training period. A sum of Rs. 16,000/- is proposed for those students who may qualify themselves in Stenographer Grade II (120 words per minute) and Grade III (80 words per minute) at the rate of Rs. 500/- and Rs. 300/- each respectively. Another sum of Rs. 12,000/- is proposed for those students who may qualify themselves in Typewriting by securing a speed of at least 30 words per minute at the end of the training period. Since the normal course in Typewriting is 3 to 4 months, it is proposed to impart training to 2 batches in a year consisting of 30 students per batch.

E. Purchase of Typewriters: The Coaching Programmes for Typewriting and Stenography are inter-related since the students who desire to learn Stenography should learn typewriting as well. Therefore, providing of Typewriting machine is a prime factor for the scheme. As such, it is proposed to provide 10 Typewriters to each of the selected Colleges in the first instance. The Instructor will have to impart coaching in 2 different shifts to the students doing Typewriting/Stenography courses on rotation basis. If this experiment proves successful, more Typewriter machines may be provided in the subsequent years. A sum of Rs. 40,000/- only is proposed for purchasing 10 Typewriters in the first phase.

F. T.A. to Members : It is envisaged that the members of the Committee appointed by the University will make inspection of the Colleges implementing this coaching programme at least once in each session. For this purpose, a sum of Rs. 4,000/- is proposed for meeting the T.A./D.A. of the Members for visiting the College which will be drawn and disbursed by the University.

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G. Furnitures/Equipments: A sum of Rs. 16,500/- only is proposed for purchase of 1 table and 1 chair (Godrej) for the Instructor, 10 sets of Typing tables and Chairs and 2 Godrej Almirahs (1 big and 1 small) for keeping the Typewriting machines, stationery etc.

Recurring Expenditure

A. Personnel

1. Stenographer Instructor (Part-time) @ Rs. 800/- per month for 8 months	- 1 No	6,400.00
2. Assistant (Part-time) @ Rs. 250/- per month for 8 months	- 1 No	<u>2,000.00</u> 8,400.00

B. Office Expenses-Stationery, Postage stamps, Advertisement & Miscellaneous - 5,000.00

C. Purchase of Books for Library - 2,000.00

D. Lumpsum Grant to students in Stenographer's course-20 students @ 500/- each and 20 students @ Rs. 300/- each. 16,000.00

E. Lumpsum Grant to students in Typewriting course 2 batches of 30 students each @ Rs. 200/- each 12,000.00

F. T.A. to Members of the Committee - 4,000.00  
47,400.00

Non-recurring Expenditure

A. Purchase of 10 typewriters @ Rs.4,000/- each - 40,000.00

B. Furnitures/Equipments - 16,500.00

Total: 56,500.00

Total for Recurring-Expenditure - 47,400.00

Total for Non-Recurring - 56,500.00

Grand total -1,03,900.00

Say Rs. 1.04 lakh for one College.

It is proposed that the Scheme should be implemented in 3 Colleges, preferably Commerce Colleges at the initial stage, namely 1 each at Shillong, Aizawl and Kohima. Hence the total requirement of funds will be Rs. 1.04 lakh x 3 = Rs. 3.12 lakh.

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A scheme for imparting coaching to the students belonging to the Scheduled Castes and Scheduled Tribes in Typewriting and Stenography in selected Colleges affiliated to the North Eastern Hill University

The North Eastern States of Meghalaya and Nagaland and the Union Territory of Mizoram have a substantial number of Scheduled Castes and Scheduled Tribes population. However, their representation in the various junior posts of the Central Government Offices, public undertakings etc. in this region has been extremely poor. The new industrial enterprises and other allied developmental programmes are coming up in these areas with ever increasing force. The new opportunities are, however, beyond the reach of the local Scheduled Castes and Scheduled Tribe candidates because of their general backwardness, poverty and low educational base. The importance of counselling and guidance right from the time of their studies in Colleges needs to be stressed to meet this inherent deficiency. It is, therefore, considered necessary to have some kind of vocational guidance in a few selected Colleges of this area, where candidates belonging to Scheduled Castes and Scheduled Tribes studying in Colleges could at the same time take up coaching in typewriting and Stenography thereby enabling them to secure employment as soon as they complete their course of studies in the Colleges.

It is in this context that it is proposed to set up a coaching Programme in some selected Colleges preferably in Colleges having Commerce Department affiliated to the North Eastern Hill University for starting courses in Typewriting and Stenography to enable some of these young people to qualify themselves for such jobs. This course, if introduced, will cater to the need of fresh unemployed youth with the necessary aptitude to appear with confidence at the various grades of Stenographer Examination/typing speed test for recruitment by the States and Central Governments etc.

The management of the Typewriting and Stenographer's courses will be in the hands of the Principals of the selected Colleges concerned who will provide the necessary infra-structural facilities needed for - running the course and be responsible for the smooth progress and implementation of the course at different intervals, with the help of a part time Stenographer Instructor.

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10 machines will be allocated to each of the 3 Colleges. The safe custody of these machines will be the responsibility of the Principal who will also provide a class-room for the purpose. As special type of furniture etc. will be required for these classes, a provision has been made in the scheme for its purchase.

As regards the number of students, it was decided that 40 students will be admitted to the course in each of the selected Colleges who will be trained in stenography and typewriting on alternate days in groups of 20 each. As regards typewriting, since machines are only 10 in number, the students will have to be trained in 2 shifts of half-an-hour duration each.

The duration of the course will be 6 months and the classes will be held in the afternoon from 3 to 5 p.m. or from 4 to 6 p.m. according to the convenience of the Principal.

Staff: The Committee recommended that a part-time Stenographer-Instructor and a part-time assistant may be engaged for the course on Rs. 800/- and 250/- p.m. respectively. Preference may be given to retired persons for the post of Stenographer-Instructor and to those already working in the same college for the post of Assistant.

In admitting candidates, preference will be given to those studying in the first year of the P.U./Degree courses. 80% attendance will be required for the participants who will also be examined at the end of the course. A certificate will be awarded by the University to each of the successful candidates at the end of the course.

Lastly, the Committee recommended that some of the members of the Committee may visit the Colleges selected for the purpose prior to the introduction of the course and a few months later to see to the progress and proper implementation of the scheme.

A draft scheme incorporating the above suggestions and recommendations is attached.

The meeting ended with a vote of thanks to the Chair.

Sd/- B.V. Roy  
Chairman  
Committee For Introduction  
of Courses in Shorthand and  
Typewriting, H.B.N.U.

5:5:2 TO CONSIDER CREATING A ROAD SAFETY CELL

The letter No. TW/TRS(1)/81 dt. 28/8/82 in connection with the subject stated from Sri Sitaram Kesri, Minister of State, Shipping & Transport, Govt. of India, is reproduced below for consideration of the Council.

It is for quite some time that I have been thinking to personally write to the Vice-Chancellors all over India, seeking their kind cooperation in a matter concerning public interest. I am fully aware that you are already carrying on your shoulders the most vital responsibility of imparting education to the youths of India. But the matter I propose to write about is closely connected with this very process of education to make our youths better citizens of tomorrow.

2. I would like to draw your attention to the growing incidences of road accidents in the country, for which deep concerns have been voiced by all concerned at various forums including the Parliament. Appropriate remedial measures on all fronts are being taken by us also. As a part of this effort, the matter was discussed in detail in a meeting of Transport Ministers convened by me on 31.5.1982 where the steps to be taken by us were decided upon with a view to prevent occurrence of road accidents. You will, however, agree with me that this is a human problem which can be minimised to a great extent if the basic knowledge of road safety is imparted to the students from the very young age through lectures, practical demonstrations with the help of Traffic Police and other experts in the field, if necessary. After all, the experience of N.C.C. has not gone waste. I would, therefore, suggest that with a view to develop general awareness of traffic rules and road sense in the students, you may even consider creating a road safety cell under the charge of one of your senior Professors in different colleges.

3. I thank you very much in anticipation of all help.

The Executive Council at its meeting held on 4-9-82 vide its Resolution No. EC:31:82:18 has resolved as under on the Agenda item reproduced below for consideration of the Council:

EC:31:82:18: The Council noted that there is a huge number of candidates seeking admission to the Post-Graduate Departments especially in Political Science, History and Economics. The Council also welcomed the proposal of the University to start correspondence courses in English, Political Science and History.

The Council RESOLVED to refer the proposal to the Academic Council for consideration with a suggestion that the Department of Continuing Education be entrusted with the task.

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Agenda.

NEHU has been experiencing great difficulty in giving seats to students of the Region for the Masters' Degree classes and the rush of admission has been on the increase. This year the rush was at its maximum, so much so that it has become necessary to think of other measures to make higher education within the reach of a greater number of people. It may, further be stated that the great rush is for the Departments of Political Science, History and English. One of the possible measures is therefore to start correspondence courses on the three subjects by the beginning of 1983 in consonance with the objective of correspondence education, i.e., to provide a new stream of education to enable a large number of persons with necessary aptitude to acquire further knowledge and improve their professional competence and to cater to students who cannot find a seat or do not wish to join a regular college or University department, although they have necessary qualifications to pursue higher education.

It is proposed to implement the scheme through the Department of Continuing Education and a sufficiently senior Lecturer from one of the Departments will be engaged to organise the courses and frame the necessary regulation, no appointments of other teachers is contemplated at this stage. The courses may start by February, 1983.

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NORTH EASTERN HILL UNIVERSITY

SHILLONG...793001

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ADDITIONAL AGENDA

FOR

THE FIFTEENTH MEETING OF THE  
ACADEMIC COUNCIL

Friday/Saturday .. 26/27th November, 1982,  
SHILLONG.

ADDITIONAL AGENDA  
FOR THE FIFTEENTH MEETING OF THE ACADEMIC COUNCIL (26/27-11-82)

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Contents.

ORDINANCE :

Item: 5:1:3 First Ordinance on N.E.H.U. Publication

SYLLABI:

Item: 5:2:2 Minutes of the Meeting of the School Board of Life Sciences held on 29-9-82.

5:2:3 Minutes of the School Board of Environmental Sciences held on 8.11.82.

5:2:4 Minutes of the School Board of Languages held on 17.6.82.

5:2:5 Syllabus in paper IV (Hons. Bengali)

5:2:6 Syllabus in B.Sc. Home Science.

NEW COURSES ETC

Item 5:5:4 A note on certain aspects of Education by Prof.B.Das.

AFFILIATION ETC.

Item: 5:6:1 Upgradation of Kolasib College to Degree level.

~~5:6:2 Permission to open Geology/Psychology/Statistics/  
Commerce in Paohunga University College.~~

ITEM No. 5:1:3.

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The Draft First Ordinance about North Eastern Hill University Publication is placed below for information and suggestion if any from the Council.

FIRST ORDINANCE ON NORTH EASTERN HILL UNIVERSITY

Publications.

(1) The North-Eastern Hill University may establish a Publications Unit which shall be known as North-Eastern Hill University Publications, hereafter referred to as the Publication.

(2) The Publications Unit shall function as an autonomous Unit in the University subject to the provisions of this ordinance and other Statutes and ordinances of University and subject to such directions as the Executive Council may give from time to time in this regard.

(3) The North-Eastern Hill University Publications shall promote and undertake publications in various areas and for different target-groups and also their distribution in general furtherance of the objectives of Section 'A' of the North-Eastern Hill University Act, 1973.

(4) Without any prejudice to the generality of provision in preceding clause the Publication work will broadly cover the following areas :-

GROUP A - University level text books, supplementary reading material and reference books in English and in the languages of the area under its jurisdiction, specially texts concerning the North-Eastern Hill University region and texts for special/innovative courses introduced by the University from time to time.

GROUP B - (i) Researchworks on different subjects carried out within the university and (ii) Research work on North-Eastern Region and on Tribal affairs in general in the other universities or industries of higher learning in the country.

GROUP C - Literature on various facets of continuing education for dissemination of knowledge and improving the general awareness about new scientific, cultural and economic content of the human society and literary works in languages spoken in the area under jurisdiction of the university.

MANAGEMENT

(5) (a) There shall be a Governing Board of the Publications which shall be responsible for all aspects of its functioning.

(b) There shall be full time publication Manager whose status shall be not be lower than a Reader of the University. He shall be designated as Manager, North-Eastern Hill University Publications.

Continued/-

(c) The Governing Board shall comprise seven members as follows :-

- (i) Vice-Chancellor - Chairman
- (ii) One nominee each of the Executive Council & Academic Council.
- (iii) One Member to be nominated by the Vice-Chancellor from amongst persons of standing Publication industry.
- (iv) Registrar, North-Eastern Hill University
- (v) Finance Officer, North-Eastern Hill University
- (vi) Manager North-Eastern Hill University Publication - Member secretary.

#### EDITORIAL BOARD -

(6) (a) There shall be an Editorial Board comprising not more than 'eleven' members.

(b) The Editorial Board may appoint as many Editorial committee for different subjects or group of subjects as may be considered necessary from time to time, provided that the number of Editorial committees shall not be less than one each for (1) Science group (2) Language group and (3) other subjects including social sciences, Humanities etc.

(c) The composition of the Editorial Board shall be as follows :-

- (1) Vice-Chancellor - Chairman
- (2) One member each nominated by the School Boards
- (3) Chairman of Editorial committees
- (4) Manager Publications.
- (5) Not more than three members nominated by the Vice-Chancellor from amongst noted literary figures, social scientists and scientists.
- (d) The Editorial committees shall comprise not more than seven members and shall be nominated by the Editorial Board.
- (e) The first Editorial committees may nominated by the Vice-Chancellor, if necessary.
- (f) The term of the members of the Editorial Board who are not ex-officio members, shall be three years and that of Editorial committee two years. They shall be eligible for re-nomination.

#### FINANCES

(7) (a) The Publication shall have a separate fund but within the consolidated funds of the university for which separate accounts shall be maintained.

- (b) This fund shall be operated as a revolving fund in which grants and receipts shall be credited and all expenditure in relation to the publications shall be debited.
- (c) The Publications may receive directly or through the university grants or assistance for any specific or general purpose from the central or state Government or from an institution established by them. Prior approval of the Executive Council shall be necessary to receive a grant or assistance in any form from any other organisation or institution.
- (d) The unassigned grant of the University for research publications, etc, will be credited to the revolving fund of the Publications, provided that the Publications shall ensure that minimum number of research Publications which could have been supported by the university under normal scheme shall be brought out by the Publications every year.
- (e) A separate account shall be maintained in respect of the publications in Group A for which special support is available for the Government of India.
- (f) The Finance Officer shall be responsible for all financial transactions of the Publications.

MANUSCRIPTS FOR PUBLICATION

- (8) (a) The publications under this scheme shall be of three types :-
  - (i) Works commissioned by the University.
  - (ii) Works of individual author(s) prepared by them on their own.
  - (iii) Reproduction or new editions of their works
- (b) In case a work is to be commissioned on a subject in accordance with the general policy of the University or for a specific subject, the following procedure shall be followed :-
  - (1) The concerned Department(s) shall prepare a broad outline of the work which it considers necessary or useful for publication along with the possible authors who can be assigned the task.
  - (2) The outline shall be nominated to the Publication and will be considered by the concerned Editorial committee.
  - (3) The works shall be assigned to author(s) by Editorial Board from the list given by the Department on otherwise with much direction in relation to its size, style, etc. as may be considered necessary.

(4) four copies of manuscript shall be submitted by the author(s) to the Department who shall place it before the concerned Board of studies.

(5) The Board of studies shall constitute a committee of three experts who shall examine the manuscript, or make suggestion for revision or reject it.

(6) The manuscript finally approved by the respective Boards of study shall be placed before the Editorial Committee who may submit the same to the Editorial Board for final decision.

(7) The chairman of the Editorial Board may dispense with any of the stages in the above provision in special circumstances for reasons to be recorded in writing.

(c) In case of other works of individual author(s) on earlier published work, the procedure outlined in (b) above shall be followed to the extent necessary in case of text books or supplementary reading materials.

(d) In case of other works, the Editorial committee shall examine the proposal. The committee may reject the proposal on its own if it is not suitable or does not fall within the purview of the North Eastern Hill University publications. In case the committee considers the proposal worth pursuing, they shall refer the manuscript to two experts in the field. If their opinion is favourable and unanimous the committee shall submit the proposal to the Board for their final decision. In case both the experts give unfavourable opinion, the manuscript shall be returned. In case of mixed opinion, the committee may reject the proposal or may send the manuscript to a third referee and may take a decision after his opinion has been received. Provided if the work pertains to a dissertation for Ph.D. or a higher degree and has been recommended for publication by the examiners, it may be referred to only one expert..

ROYALTY, HONORARIUM etc.

(i) All publication shall be taken up only after an agreement on a form prescribed by the university has been executed.

(ii) No work shall be published by the University unless the author accepts royalty or honorarium, even a token honorarium, wherever necessary, in lieu of his having authorised the Publications to publish the work.

(iii) Individual authors of works other than text books and supplementary reading material shall be paid 15% royalty.

(iv) Authors and Editors of works commissioned by the University shall receive a suitable honorarium as per rules to be prescribed by the University in this regard.

(v) The Publications shall not publish a text book, supplementary reading material on works in Group C or royalty basis. In these cases the University shall obtain copy right on payment as per rules in this regard.

#### PRINTING

- (9) (a) The University shall establish its own printing press as early as possible.
- (b) Pending establishment of a press special arrangements should be made for the time following usual commercial terms.

#### PRINTING POLICY.

- (10) (i) The text books shall be priced at 40% plus cost of production.
- (ii) The retail price of non text books shall be three time the cost of production.

#### DISTRIBUTION

- (11) (a) The Publications shall be the sole distribution of the books, published by North-Eastern Hill University Publication. However, for the first two years arrangements may be made for distribution through distributors of repute provided the Publications keep the option of direct sale open.
- (b) The rate of discount etc. shall be as follows :-
- (i) A discount of 20% shall be allowed for 5 copies or more, 25% for 10 copies or more and 40% for 25 copies or more for all publication except text books.
- (ii) A 40% discount shall be allowed for the members of the University community for all books published by North-Eastern Hill University Publication - except text books.
- (3) In case of text books a discount of 15% shall be allowed to the distributors.
- (4) Libraries shall be given usual trade discount.

#### ASSOCIATION WITH OTHER NON-PROFIT & LITERARY ON ACADEMIC BODIES

- (12) The Publications may associate with other similar Institutions, Literary or academic bodies for such purposes and on such terms as may be decided by the Governing Body.

#### EMBLEM

- (13) The Publication shall use University crest with the words "North-Eastern Hill University" Publications on its abbreviated form in suitable design as its emblem.

(11) 4  
6  
FIRST PUBLICATIONS

- (14) Pending finalisation of all formalities for establishment the Publications, the Vice-Chancellor may authorise publication of works of any description on such terms and conditions as may be considered necessary in each case provided they broadly conform with the provision of this ordinance.

REMOVAL OF DIFFICULTIES

- (15) In case some difficulties arise in the operation of any provision of this ordinance, the Vice-Chancellor or the Governing Body after its constitution may take suitable action in furtherance of the basic objective subject to the condition that action shall also be initiated to amend the ordinance suitably

Placed below the Exerpts from the Minutes of the meeting of the School Board of Life Sciences which was held on 29-9-82 for consideration of the Council.

Minutes of the School Board meeting on 29th September, 1982.

The following members attended the meeting :

1. Professor R.P. Roy, Patna University.
2. Professor P.S. Ramakrishnan
3. Prof. H.R. Mishra (Chairman).
4. Prof. M.K. Khoro
5. Dr. A. Raghuvaman
6. Dr. R. Lalithantluanga
7. Dr. B.K. Dutta
8. Dr. R.S. Tripathi

1. The cases of Shri S.H.S. Nattar and Shri C. Radhakrishnan, working at the Zoological Survey of India, Shillong as recommended by the Post-graduate Board of the Zoology Department regarding their registration for Ph.D. (Appendix I) were considered by the School Board. It was the considered opinion of the Board that final decision in this matter cannot be taken as the regulations governing the collaborative research work between the Universities and other research organisations and Ph.D. research at these collaborating organisations are not yet finalised. It was felt that these cases have academic merit and these can be forwarded to the academic council which may look into the technical aspects and take a final decision in the matter.

#### 2. Registration of the Ph.D. Students

The names of the Ph.D. students recommended by the Post-graduate Boards of the departments of Botany, Zoology and Bio-Chemistry (Appendix II) were considered by the School Board. The candidates were recommended for the registration but since the students recommended for Ph.D. registration by the Zoology Department have not submitted the synopsis, it was decided that the students from the Zoology Department should submit their synopsis before their cases are forwarded to the Academic Council.

3. The Board considered the type of courses to be offered for the Research degree. The courses for Research degree as suggested by the the different departments of the School were considered and approved (Appendix III). It was also resolved that the set of three courses on "Methodology and Techniques" may be framed so that out of these courses at least one could be offered by the Ph.D. students as a School level course. A course on Bio-statistics may also be offered as a School level course.

4. The panels of the examiners (Appendix IV) for the Ph.D. thesis of the following students were approved by the Board.

Zoology Department:

1. Shri S.N. Dutta
2. Miss S. Chaudhury
3. Mr. P.K. Prabhakaran

Botany Department:

1. Miss Mangala Satpute
2. Mr. K.M. Kuruvilla
3. Mr. J.F.N. Rai

5. M.Sc. syllabi of the Botany, Zoology and Bio-Chemistry Departments (Appendix V, VI, VII) were approved.

APPENDIX - II

Ph.D. Synopses for Registration

The School Board of Life Sciences recommended the synopses submitted by the following candidates for doing research leading to the Ph.D. degree of this University.

Department of Botany :

Name of Student	Date of Joining	Ph.D. Problems	Supervisor
1. Mr. A. Sivarani Reddy	26th June, 1982	Studies on ecosystem function of some plantation forests in North-East India	Prof. P.S. Ranakrishnan.
2. Mr. P. Sudhakar Swamy	24th July, 1981	Eco-physiological and demographic studies of weeds of successional environmental after slash and burn agriculture in North-Eastern India	Prof. P.S. Ranakrishnan.
3. Mr. R.S. Khiewtan	1st Oct' 1981	Ecosystem function of protected forests of Cherrapunjee and adjoining areas	Prof. P.S. Ranakrishnan.
4. Mr. S.C. Ran	9th Dec' 1981	Ecosystem structure and function of seral community of degraded environment around Cherrapunjee.	Prof. P.S. Ranakrishnan.
5. Mr. K.S. Rao	24th May 1982	Ecophysiological attributes of Bamboo forests in successional communities in North-Eastern India	Prof. P.S. Ranakrishnan.
6. Mr. A.N. Raghuwanshi	20th Mar 1982	Studies on Orchids of North-East India- Influence of Ecophysiological factors and mycorrhizal Association on germinating seeds and some aspects of metabolism.	Prof. R.R. Mishra & Dr. P. Tandon.

Name	Date of Joining	Ph.D. Problems	Supervisor.
7. Mr.R.S. Katiyar	13th April 1982	Studies on Orchids of North-Eastern India. Ecophysiology of Mycorrhizal	Prof.R.R.Mishra & Dr.G.D.Sharma
8. Mr.S.K. Sharma	3rd Aug' 1982	Ecophysiological studies on Endo-mycorrhizae of certain important timber tree species of North-Eastern India	Prof.R.R.Mishra
9. Mr. Meyipokyin	3rd Mar' 1982	Studies on Mycorrhizae and its role in Biological control of root diseases of Pine ( <u>Pinus Kesiya</u> Royle Ex-Gorden.	Prof.R.R.Mishra
10. Mr.Subodh Kumar Sharma	19th April, 1982	Studies on Orchids of North-East India Metabolism and growth factor requirements in seed germination of some orchids	Dr.P.Tandon & Prof.R.R.Mishra
11. Mr- N. Joshee	19th May 1981	Studies in the reproductive Biology of alkaloid yielding Solanums: histological, histochemical, electrophoretic and physiological aspects of stylar heteromorphism in <u>S. Khasiense</u> Clarke and <u>S. Sisymbirifolium</u> Lam.	Dr.Y.S.Chauhan
12. Mr.T.Y. Inchen	5th Feb' 1982	Physiological and Biochemical studies on Heterocyst differentiation and Nitrogen fixation in Blue green Algae.	Dr.P.M.Reddy.
13. Miss D.D.Yunnam	15th Feb 1982	Physiological and Biochemical studies on spores (Akinetes) of Blue-Green Algae	Dr.P.M.Reddy.

Name of Student	Date of joining	Ph.D Problem	Supervisor
14. Mr.S.C.Joshi	17th Aug'81.	Studies on the Biochemistry of gall formation in plants with special emphasis on auxin metabolism	Dr.P.Tandon
15. Mr.A.N.Verma	21 St Nov'81	Studies on the physiology and Biochemistry of seed germination of some forest trees of North East India.	Dr.P.Tandon.
16. Mr.Megoneitso	Feb'1982	Ethnobotanical studies in the flora of Nagaland State.	Dr,R.R.Rao & Dr.M.N.V. Prasad.

Candidates recommended for registration for Ph.D.Degree in zoology.

Name of candidate	Research topic	Date of joining	Name of Supervisor.
(1) Mr.Kiyasetuo	Certain aspects of studies on survey of frogs of Kohima, Nagaland and studies on Ecology and development of <u>Racophorus Micropalmatuo.</u>	1-2-82	Dr.M.K.Khare
(2) Mr.Dibyendu Paul.	Ecological studies on soil arthropods.	18-3-82	Dr,R.B.Alfred
(3) Mr.J.Sen (Teacher candidate)	Genetical studies on some selected earthworm species.	2-4-82	Dr.K.Chatterjee
(4) Mr.F.Khongwir.	Physiological and biochemical studies on the biology and caste differentiation of honey bee <u>Apis cerana indica</u> (Feb)	1-2-82	Dr.A.K.Varman

Name of candidate	Research topic	Date of joining	Name of Supervisor
5. Mr. H. Nuri	Physiological studies on the symbiosis between the termite <u>Odentotermes redemanni</u> (Wasmann) and fungus <u>Xylaria nigrep.</u> (Koltz)	1.2.32	Dr. A.N. Varman.
6. Mr. Reba Bhattacherjee.	Morphological and histochemical studies on some Caryophyllidean cestodes on catfishes and histopathology of the host.	13.8.32	Dr. Mrs. V. Tandon.
7. Ms. Sabita Sinha.	Morphological and histochemical studies on some blood flukes of edible chelonians.	29.4.32	Dr. Mrs. V. Tandon

Candidates proposed for Registration for Ph.D. from ZSI Eastern Regional Station, Shillong.

Name	Research Topics	Name of Supervisor.
1. Mr. S. J. S. Hatter	Ecological studies in soil fauna in some ecosystems of Meghalaya N.E. India.	Dr. J.R.B. Alfred.
2. Mr. C. Radhakrishnan, Zoologist.	Studies on Biology, Ecology & Taxonomy of fruit flies of North Eastern India.	Dr. M.K. Khare.

Research degree courses available in Botany

(Emphasis shall be placed on research techniques and methodology for all the courses).

1. Experimental Ecology
2. Ecology of Successional Plant Communities
3. Dynamics and regulation of plant population
4. Microbial Ecology
5. Plant Pathology
6. Ecology and control of soil-borne pathogens.
7. Microbiology of root and its environment
8. Cytogenetics
9. The control of ~~xxxx~~ growth and differentiation in plants
10. Experimental morphology
11. Experimental Taxonomy
12. Systematic Botany
13. Tree physiology
14. Algal ecology and physiology
15. Molecular basis of cell structure and function
16. Biology of blue green algae - cellular differentiation and nitrogen fixation
17. Molecular and Hormonal Basis of Plant growth Regulation
18. Palynology.

Experimental Ecology

1. a) Forest Physical Environment - Light; Temperature; water relations; wind, fire, soil

Forest Biological Environment - Plant life, biomass, its structure and function; inter-relationship between the plants within the forest community; Ecophysiology of tree growth bud dormancy and bud break; shoot elongation, leaf growth, senescence and abscission; physiological changes with age, flowering and fruiting.

b) Ecological aspects of plant mineral nutrition; seed ecology - dormancy, germination behaviour; regeneration and establishment; plant competition, phenotypic plasticity and ecotypic differentiation under varied environmental conditions; Ecological strategies of plants.

2. Ecology of successional plant communities

The concept of succession; structural and functional changes associated with successional communities; Edaphic and Microenvironmental changes. Biomass productivity and nutrient cycling through developing communities; Hydrology and water chemistry; Ecophysiology of developing communities.

3. Dynamics and regulation of Plant Population

1. Basic attributes of the population
2. Demographic studies
3. Life table analysis and survivorship
4. Mechanics of population regulation
  - (i) Density dependent forces
  - (ii) Density independent forces
  - (iii) Allelopathic effects

5. Population regulation of weeds in relation to weedcrop interaction and their reproductive strategies

4. Microbial Ecology

Microbial community - structure and organization, species diversity, habitat and niche, food chain, application of invitro information to condition in vivo; Bacterial - culture duration, efficiency, active and passive dispersal, colonization processes - Succession and climax; Nutrition - availability, regeneration of nutrients in the ecosystem, growth factors best nutrition and colonization; Tolerance; Inter-specific relationships - symbiosis, competition, parasitism, Effect of micro-organisms on their surroundings - micro-organisms and bioremediation with ref. to C.F.P. and S; Effect of micro-organisms on plants - morphological and physiological effects, metabolites and pathogenicity.

## Plant Pathology

History of phytopathology in India, plant diseases, their nature, classification and importance, General characteristics & taxonomy of plant pathogens (i.e. fungi, bacteria, viruses, nematodes, phanerogams, division protista, taxonomy of plant pathogens).

Physiology of plant pathogens, pathogenicity, infection and disease development; Modes of penetration of phytopathogenic toxin, polysaccharides growth regulators. Resistance before penetration resistance after penetration, pre-disposition.

Genetic aspects of plant diseases physiology & biochemistry of diseased plant. Environment and nutrition in relation to disease development.

The root environment (i.e. Rhizosphere) in relation to foot disease fungi, growth and survival of root disease fungi in soil fungistasis, microbial antagonism.

Principles and methods of plant disease control (i.e. chemical, biological control).

Evaluation of fungicidal chemicals. The relation of chemical structure to fungicidal activity.

Pathological problems in forest, seed pathology, Forest disease control - General principles, Forest plant quarantine.

### Disease of trees

i.e. Sai - Shorea robusta Gaertn. f

Pine - Pinus Keriya. Hoyle

Teak - Tectona grandis Linn. f

Sandal - Santalum album Linn.

Eucalyptus - Spp.

Deodar - Cedrus deodara. Loudon.

Acacia mollissima. Wall

Common trees in north eastern India.

## 6. Ecology and control of soil - borne Pathogens

Growth and survival of soil borne plant pathogen (i.e. Fungistasis, antibiosis, competition, inoculum density and potentiality). Biological control of plant disease (i.e. one of pure culture of antagonistic organism, organic amendments, inorganic amendments, stimulation of antagonist by chemicals or by cultural practices). Role of chemotherapeutant in the biological control of plant disease. Induced disease resistance mechanism in host plants.

## 7. Microbiology of root and its environment

Population dynamics of microorganisms in soil, rhizosphere, and rhizoplane. Interaction between rhizosphere and higher plants, Microbial antagonism competition, Decomposition of root.

Mycorrhiza - ectomycorrhiza, vesicular, arbuscular mycorrhiza and orchid mycorrhiza; Ecology, physiology, morphology and Biochemistry, Interaction among mycorrhizae fungi and root pathogens. Symbiotic nitrogen fixation in nonleguminous plants by microorganisms.

8.

Cytogenetics

Molecular basis of mutation  
Mutagenesis at cellular level  
Genetics and cytogenetics of forest plants  
Cytogenetics of important crops  
Genetics and cytogenetics of euploids and aneuploids; use of translocations and aneuploids in gene location  
Haploids - production and utilization  
Genetic system and mutagenesis in cytoplasmic organelles  
Somatic cell hybridization  
DNA feeding  
Cytogenetics in relation to evolution and plant breeding.

9. The control of growth and differentiation in plants

Growth in higher plants; Patterns of growth and differentiation; Effects of Physical and chemical factors on the differentiation in apical meristems, Cytodifferentiation and histogenesis; Hormonal control of flowering and sex expression in plants; Dormancy and Senescence.

10. Experimental Morphology

Microtechnique, macerating fluids and maceration techniques, microdissection and tissue culture technique, photomicrography.

Experimental control of plant growth and development, radiobiology of plants: types of radiations and their mode of action radiation effects on differentiation and development, radiosensitivity and its modulation by exogenous factors; Effects of plant hormones and growth regulators on differentiation and development in plants.

11. Experimental Taxonomy

Evolutionary concepts - Adaptive radiation in Angiosperms - Ecological differentiation of populations - Geographical variations and genetic barriers - Cytology and taxonomy.

12. Systematic Botany

General study of the forest types of N.E. India  
Different systems of plant classifications.  
Detailed study on herbarium method.  
Herbarium literature  
International code of plant nomenclature and their applications.

Preparation of Taxonomic accounts.  
Methods of studying forest vegetation  
Ethnobotany and its scope  
Exotic weeds - their introduction and spread  
Recent trends in taxonomy - general idea and chemotaxonomy  
cytotaxonomy concept - geneecological studies.

13. Tree Physiology

Tree growth and development - Structural and growth characteristics of trees, Physiology and biochemical seed germination, and seedling development, physiology of seed dormancy and bud dormancy, maturation and phase change in trees, vegetative and sexual reproduction and senescence in trees.

14. Algal Ecology & Physiology

Ecology and distribution of freshwater, terrestrial and Marine algae. Algal communities of : Hot spring, River, Pond, Lakes, Epiphytic, endophytic, epizooic, endozooic algae.

Extra cellular products of algae and their ecological implications. Chlorophylls and carotenoids in algae; heterotrophy of carbon; Nitrogen metabolism in algae; Pathogens of blue-green algae. Symbiosis and Ecology of nitrogen fixation by algae. Organic nutrients, silicification and calcification in algae. Physico-chemical factors affecting growth, metabolism and reproduction. Role of vitamins and growth regulators in aquatic ecosystem.

15. Molecular basis of cell structure and function

The course will consider the recent advances in the following fields by analysis of the literature and impart laboratory training in specialized techniques depending upon the availability of the facilities.

Subcellular organization (only brief account); nuclear and organelle nucleic acid; proteins; enzymes and isoenzymes; and other important biomolecules.

16. Biology of blue-green algae - cellular differentiation and nitrogen fixation

1. Methods pertaining to studies on cellular differentiation and nitrogen fixation.
2. Differentiation of heterocyst and spore - morphology and occurrence, structure and chemical composition, differentiation, biochemistry and metabolism, factors effecting heterocyst and spore formation.
3. Nitrogen fixation - unicellular, filamentous heterocystens and nonheterocystens nitrogen fixers, physicochemical factors effecting nitrogen fixation, nitrogenase enzyme complex. Mechanism of nitrogen fixation, Nitrogen fixation in field (terrestrial and aquatic systems), genetic of nitrogen fixation.

17. Molecular and Hormonal Basis of Plant Growth Regulation

General introduction to problems of molecular biology in plants.

The genetic information of organelles (chloroplast and mitochondrion) and its expression - the concept of organelle autonomy; properties of chloroplast DNA; elements and factors of gene expression; product of chloroplast genomes; cooperation between chloroplast and nuclear genomes; mitochondrial autonomy.

The nucleus and the organization and transcription of nuclear DNA - brief account of nuclear structure and composition, nuclear DNA content; fractionation and properties of DNA; the genes for ribosomal - RNA; organization and function of the genome; RNA-synthesis; brief account of nucleic acid - protein interactions.

Protein synthesis in the cytoplasm - polyosomes; the biochemical mechanism of protein synthesis; brief account of protein synthesis in vivo.

Control of gene expression during growth and development.

The patterns of genetically based and environmentally induced adaptations in plants. Regulation of enzyme levels and activity. Intercellular regulation by plant hormones - mechanism and mode of action of auxins, cytokinins, gibberellins, abscisic acid, ethylene and synthetic growth regulators.

Plant tumorigenesis with emphasis on molecular basis and abnormal growth hormone metabolism.

Role of plant cells, tissue and organ culture in growth and differentiation in plants.

18. Palyology

Pollen morphology - Spore morphology - Pollen/Spore identification - Pollen/Spore dissemination - collection and study techniques - palyological - palyological literature - quaternary ecology of Indian Sub-Continent by pollen analysis - Applications of Palyology.

DEPARTMENT OF ZOOLOGY  
School of Life Sciences  
North Eastern Hill University  
Shillong.

1. M.Phil/Ph.D. Courses
1. Biogeography
2. Animal Cytogenetics
3. Functional Morphology of vertebrates
4. Altitudinal Physiology
5. Developmental Physiology of Arthropods
6. Biochemical Taxonomy
7. Experimental Limnology
8. Forest Soil Ecosystem
9. Forest Invertebrate Consumer
10. Protein Chemistry
11. Avian Biology
12. Experimental Embryology
13. Animal morphogenesis
14. Adaptational Biology and Physiology
15. Biochemistry of Development and Differentiation
16. Taxonomy and Biology of Fresh water Organisms
17. Biosystematics
18. Fish Biology
19. Parasitology : Physiology of Helminth parasites.
20. Parasitology -- Helminthology.

1.

BIOGEOGRAPHY

Historical, Zoogeography - Principles - Zoogeographic studies - Biogeography; Zoogeographical Realms - Land bridges - Geological Claciations; Animal migration - Dispersal - Centres of Origins - Faunal regression and transgression; Distribution - area and dynamics - circumpolar and pantropical - Zonal and marginal distributions; Chorology - Biunistics - Systematic Zoogeography and inter-relationship, Continental pattern - drift - faunal regions - Discontinuities - Tectonics - effects on faunal regions - Paleobiogeography - Orogenic effect of the Himalayas on the Oriental fauna; Natural regions of India - Biogeographical Evolution of India - Role played by Eastern and Western Ghats - Extra peninsular regions; Evolution of the geographical patterns - Ranges, populations and Zoogeographic movements - Dispersal and climate - Dispersal between old and New Worlds Area, climate and evolution; Geological Calendar - Era - Periods - Evolution of Animal life-Adaptation Hypotheses and theories of Zoogeography. Schator, Darwin, Wallace, Blandford, Meyr, Darlington, Hinning, Modern concept of zoogeography.

TECHNIQUES

Mapping, Range representation, Statistical analysis - ecological methods.

2.

ANIMAL CYTOGENETICS

Genes, Species and Populations Genes and Development - Mutagenesis at cellular level - Cytogenetics of insects, fish and mammals - Cancer; The misguided cell - Cell culture and varicus - Chromosome methodologies - Hybridization and polyploidy.

3.

FUNCTIONAL MORPHOLOGY OF VERTEBRATES

Introduction - adaptations - their evolutionary values - cursorial adaptation in different systems of various vertebrates; Fusorial adaptation; aquatic adaptation, terrestrial and desert adaptation - different types of eggs; Flight adaptation - Gliding adaptation; Deep sea adaptations; arboreal adaptation; cave adaptation; ionic and osmotic regulatory adaptations in fresh water, brackish and marine habitats.

4.

ALTITUDINAL PHYSIOLOGY

(i) The Himalayan System The North-West Himalaya the mountain ranges; the rivers; the lakes; glaciers; permanent snow line; geology. Biotic province above the timber-line in the North west Himalaya.

(ii) Origin and history of altitudinal lakes, hill stream fauna and flora: adaptations for life in high altitudinal stream and lakes.

(iii) Ecological specialisation: high altitude melanism; reduction and loss of sense in insect some other general structural peculiarities; Cold stenothermy; Hygrophilia and terricolity; general activities of insects; food habits.

(iv) Ecological interpretations: Essential basis of interpretations; Interrelations with plants of the nival biotope, interrelations with animals of the nival biotope.

(v) Insect communities above timberline: The nival insect communities; Rock communities; understone communities; Soil communities; phytophile communities.

(vi) Some nival insects and other arthropods.

(vii) The Origin and Evolution of the Nival Insect Fauna The sources of endemism, the major changes during evolution, major factors in evolution, The age of the nival insect fauna some recent trends.

5.

DEVELOPMENTAL PHYSIOLOGY OF ARTHROPODS

Metamerism as a special type of symmetry, Comparison of metamerism in various subphyla of Articulata. Ectenonomous metamerism in (a) Trilobites, (b) Chelicerata Orders. Developmental systems; Insects.

Oogenesis; Development of apterygote, hemimetabolous and holometabolous insects; egg cleavage and blastoderm formation, elongation and segmentation of germ band, gastrulation, somites, ganglions, rupture of embryonic membranes (Keratopesis), further development of the embryonic ectoderm & gut.

Polyembryony in Hymenoptera, strepsiptera, Development of spatial patterns in the integument of insects - Cell polarity precisely placed bristles. The imaginal disc of Proscophila state of determination, Long term cultures of marginal discs; genetic control of disc development, neuroendocrine system; developmental hormones; hormones; hormonal influence in developmental events; mode of action of hormones.

BIOCHEMICAL TAXONOMY

Primary structure of animal proteins as guide in taxonomic studies; Haemoglobin in Man and Animal; Acrylamide gel electrophoresis of Protein. The application of gel electrophoresis to the classification of microorganisms; Species differences in amino acid. Sequenced Serotaxonomy of vertebrate and invertebrate soluble proteins; Taxonomic applications of DNA Hybridization techniques. Evolution of Ribosomal RNA, Base salt differences in relation to Taxonomy and systematics. The assessment of new types of character in Taxonomy, Techniques - Chromatography. TIA, Ion exchange and absorption chromatography, column chromatography, Electrophoresis. Isoelectric focusing and isoelectrophoresis, Spectrophotometry. Protein Sequencing, density gradient centrifugation Immunological methods and statistical analysis.

7.

7.

EXPERIMENTAL LIMNOLOGY

The Calcium - bicarbonate system; Photosynthesis, energy, nutrient supply and adaptation; Intracellular conversions and extra cellular, Met production, respiration and mineral losses; Variation of photosynthesis in time and space; The metabolic and geochemical phosphate cycle; Interconversions of different forms of Nitrogen fixation and blue-green algae; Physiological properties of blue-green algae stimulating bloom; Silicon - its compounds - chemistry - Biochemistry and physiology of uptake by Diatoms; Oxidative and Anaerobic mineralization, the (S) donor and the carbon source; The Oxidative - reduction - (Redox) sequences, the E<sub>H</sub> sequences; Algal cultures and growth equations; Chelation of trace elements; Organic matter - occurrence, structure and fractionation, Algae and their pigments; Zooplankton - Field studies (population dynamic approach) Measurement of t and b and daily increases; Vectorial Limnology; Nutrient budget calculations; Eutropication; Sediments.

8.

FOREST SOIL ECOSYSTEM

Principles and theories of the study of soil fauna; Methods and techniques of the study of soil fauna - extraction - preservation identification; Classification and description of soil fauna; importance of taxonomy in soil Zoology; Habitat preference - activity (carnivores, phytophagous etc); Concept of soil environment and microclimate; physico-chemical factors, basic concept on the above techniques and instrumentations, study of the relationship between soil animals and vegetation; concept of distribution of soil fauna in space and time - habitat selection-

-factors determining the distribution - diurnal and seasonal rhythms - Statistics in soil Zoology - Factors determining/regulating population size, Concept of demography in soil Zoology - age structures - sex ratio - Life tables. Biomechanics and metabolism in soil animals - the role of soil animals in litter break-down and decomposition; Food chain relationships between soil faunal populations - the herbivore level - Carnivore level - decomposer levels; Characteristics of soil faunal community - the cloud, forest, cultivated land effects of pesticides, fire flood on the qualitative and quantitative composition of soil fauna.

9. FOREST INSECT B. AND CONSUMERS

Study of the forest pests and other aerial insects which are present in that particular forest ecosystem, Nature of the pest, Damage; Population study of the insect by quadrat method, selection of key organisms for the study of 2-3 annual cycles, Estimation techniques - Light - trapping etc. and taxonomy; Biology of some pests which are very common in the forest, relation with the other aerial insects and organisms; Interrelationship among the consumers and decomposers; Effects of different physicals, chemicals and Biological - factors on the insect population; Effect of different physical, chemical and Biological factors on the different life stages of the key Organisms; Effects of the parasites and predators on the insect population in a particular community of the forest.

10. PROTEIN CHEMISTRY

Primary, Secondary, tertiary and quaternary structure of proteins, Chemical modification of protein side chains, enzymatic and chemical methods of protein degradation. N. and C. Terminal determination. Structure - function relationship of proteins. Prediction of tertiary structure of proteins from the amino acid sequence.

Principles of techniques used in the study of proteins - Electrophoresis, electrofocusing, column chromatography, affinity chromatography gel filtration, ultracentrifugation, x-ray crystallography.

11. ANURAN BIOLOGY

Distribution of anurans in space and time - Anurans found in India with special reference to those of North-Eastern Region. Habitat, habitat and life cycles of selected species - Study of anuran populations - Food and feeding habits - Induced breeding and development - Ecological aspects

controlling development - Ecological aspects controlling development - culture techniques.

12. EXPERIMENTAL EMBRYOLOGY

Glasswares, Instruments and Laboratory requirements, Study of development and staging of embryos with special reference to fish, frog and chick. Analytical experiments (liceure, decapsulation, transplantation and paralisia in saura; explanation and transplantation experiments in chick; immunoelectrophoretic analysis of lens proteins; Effects of thyroxine on amphibian metamorphic tissue culture.

13. ANIMAL MORPHOGENESIS

Glasswares, Instruments and Laboratory requirements. study of animal development with special reference to anyone of the chick Hydra and insects.

Chick : Staging of chick embryos. Detailed development of chick upto 96 hrs. Effect of Incubation on different temperatures. Study of various experimental techniques. Transplantation techniques and study of differentiation tendencies.

Hydra : Detailed study of development of Hydra. Collection and study of various species of Hydra at Shillong. Study of breeding cycles and development of Hydra in relation to environmental conditions.

Insect : Detailed study of development of Hemi and Holometabolous insects. Maintenance and culture techniques of insects. Modes of reproduction and breeding habits of insects. Fate mapping and other experimental techniques employed in the study of insects. Hormonal regulation of metamorphosis.

14. ADAPTATIONAL BIOLOGY AND PHYSIOLOGY

Concepts of environmental stress and strain and organismal responses - types of stress injury; stress resistance stress avoidance, and stress tolerance; Adaptation, acclimation and acclimatization, Homeostasis. Different types of environmental stresses and their effect on the animals:- Thermal stress, Osmotic and ionic stress, Oxygen deficit stress and pollution stress. Biological rhythms.

15. BIOCHEMISTRY OF DEVELOPMENT AND DIFFERENTIATION

Chemical and metabolic changes of the zygotes during growth and maturation; Biochemistry of fertilisation; Biochemical changes during cleavage and differentiation; Organiser concept; Biochemical regulations of development and differentiation by different intrinsic and extrinsic factors including metamorphosis; Differential gene expression as the basis of differentiation; differentiation..

16. TAXONOMY AND BIOLOGY OF FRESHWATER ORGANISMS

Freshwater as an environment - major groups of freshwater organisms - different systems of classification of freshwater organisms - lotic and lentic animals, similarities and differences - conventional and modern tools in taxonomy with regard to freshwater forms - construction of keys - culture methods in invertebrates - collection preservation and mounting procedures employed in taxonomy - life history stages and their use in taxonomic studies.

17. BIOSYSTEMATICS

International code of Zoological nomenclature - population in systematics - factors influencing morphological changes - concept in new systematics - current methods in morpho-cyto and chemotaxonomy - species concept - data collection Processing and cataloguing - phylogenetic considerations - biogeographic considerations of systematics plate tectonics and its implications.

18. FISH BIOLOGY

Fish taxonomy; Basic fish anatomy and physiology - integument, scales from locomotion, food and feeding; migration, respiration, circulation, osmoregulation and excretion, reproduction, nervous system; age and growth. Induced breeding; Hybridization, Sex-reversal, Population dynamic of fishes, fish disease and parasites; Inter-relationships between fishes and their environment; fish behaviour; outline of fish-culture methods.

19. PHYSIOLOGY OF HELMINTH PARASITES

Feeding and nutrition - carbohydrate, protein, lipid and nucleic acid metabolism; Excretion and osmoregulation; Establishment and growth of parasites, biology of the egg and larval forms, factors inhibiting growth and development; Nervous transmission and co-ordination of behaviour; In vitro cultivation procedures; Immunity mechanisms against parasitic helminths.

20. PARASITOLOGY (HELMINTHOLOGY)

Structure, composition and function of Helminth body surface; Hypodermis, Musculature and Pseudocoel in Nematodes, Bodyris, Tegumentary or cuticular specialisations in Helminths, adhesive and anchoring apparatus in Trematodes and cestodes, Alimentary canal in Trematodes and Nematodes, Excretory organs and system; Sense organs and Nervous system; Reproductive system and its variation; larval form of Helminth parasites. Parasite transmission Host transmission, Host finding mechanism, Pattern of life Cycle.

\*For those who have not offered it at M.Sc. level.

Course for Research Degree in Biochemistry

1. Protein Chemistry

Primary, secondary, tertiary and quaternary structure of proteins. Chemical modification of protein side chains. Sequence determination. Structure-function relationship of proteins. Prediction of tertiary structure of proteins from the amino acid sequence.

Principles of techniques used in the study of proteins- electrophoresis, electrofocusing, column chromatography, affinity chromatography gel filtration, ultracentrifugation, x-ray crystallography.

2. Hemoglobin: Structure, Function, Genetics & Evolution

1. Hemoglobin types.
2. Preparation of hemoglobin  
    Its separation of Hb components
3. Primary structure of hemoglobin
4. Conformation
5. Physiological function of hemoglobin & factors affecting it.
6. Abnormal human hemoglobins and their functional properties
7. Genetic control of hemoglobin synthesis
8. Evolution of hemoglobin.

3. Serum Albumin : Its structure and function

1. Isolation and purification
2. Amino Acid composition
3. Amino Acid sequence and evolution
4. Physico-chemical properties
5. Denaturation and behaviour at acid pH
6. Interactions with smaller molecules
7. Physiological functions
8. Immunological functions
9. Clinical significance
10. Metabolism

4. General Biochemistry :

1. Protein conformation
2. Enzymology
3. Membrane Biology
4. Immunology
5. Molecular Biology

School level courses

Course Work for Research in School  
of Life Sciences

1. Techniques in Biochemical & Biological  
Research

General principles and uses of the following:-

Electron microscope, Spectrophotometry, Electrophoresis, chromatography, ultracentrifuge, radio isotopes.

General idea about pH and buffers, pH meter Isolation and purification of proteins and enzymes.

Brief outline of tissue culture techniques. Immunological techniques.

2. Biostatistics (Theory)

Scope, Importance and Limitations of statistics; Population and sample - sampling techniques; Design of Experiments; Collection and Tabulation of Data; Diagrammatic & Graphical Representation of Data; Frequency Distribution and Measure of Central Tendency; Measure of Dispersion, Skewness and Kurtosis; Random variable and Distribution functions - some standard Distribution functions; Sampling Distributions - Chi-square, student's 't', Snedecor's F; Correlation; Regression; Curve fitting and Principle of Least Squares; Association; Tests of Significance and Fiducial Limits; Large sample Tests, Small sample Tests; Analysis of Variance.

North Eastern Hill University, Shillong  
Department of Botany  
1982-83

Grouping of courses and distribution of marks to  
different papers

<u>Code*</u>	<u>Course</u>	<u>First Semester</u>	
		<u>Theory</u>	<u>Practical</u>
BbcZ1	Cell Biology	100	50
B1	Plant Diversity I	100	75
B2	Plant Diversity II	100	75
B3	Plant Anatomy and Morphology	100	50
Total:		400	250
		<u>Second Semester</u>	
BZ1	Biological Chemistry	100	50
BZ2	Genetics	100	50
B4	Experimental Embryology and Morphogenesis	100	50
B5	Phytogeography and Evolution	50	-
BBcZ2	Biostatistics	50	-
Total:		400	150
		<u>Third Semester</u>	
BZ3	Individual and Population Ecology	100	50
BZ4	Forest Biology/Freshwater biology	100	50
BBc1	Microbiology	100	50
B6	Plant Physiology	100	50
Total:		400	200

Fourth Semester

BZ5	Community Ecology and Ecosystem Analysis	100	50
B7	Angiosperm Systematics	100	50
B8	Plant Protection and Applied Botany	100	50
B9	Special Paper	100	50
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	Total:	400	200

Total marks for Theory - 1500

Total marks for Practicals - 800

Grand total of marks - 2400

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- \*B - Botany papers; BZ - Papers integrated with Zoology;
  - BBc - Papers integrated with Bio-chemistry;
  - BBcZ - Papers integrated with Biochemistry and Zoology.

M.Sc. BOTANY

I SEMESTER

CELL BIOLOGY

Theory: Historical background and concept of cell; different cell types; sub-cellular organization; detailed structural organization and general account of functional aspects of plasma membrane, endoplasmic reticulum, Golgi complex, cilia and flagella, lysosomemicrotubules, microfilaments, plasmodesmata, ribosomes, mitochondria, plastids, nucleus, nuclear membrane, nucleoplasm, nucleolus, chromatin, chromosome structure and models; nucleic acids, their structure and synthesis; chromosomal proteins; DNA replication; special types of chromosomes; lampbrush, polytene, accessory and sex chromosomes; cell division; cell cycle, mitotic apparatus, mitosis, meiosis and synaptonemal complex, molecular basis of crossing over; cellular transport-diffusion, osmosis and active transport; cellular death.

Practical:

1. Study of different kinds of cells
2. Study of pre-treating agents; killing, fixing and preservation.
3. Chromosome stains-crescin, acetocarmine etc.
4. DNA and RNA stains-Fuclgen, pyrochin, methyl green etc.
5. Study of mitosis
6. Study of meiosis
7. Demonstration of plasmodesmata
8. Staining of nucleolus
9. Staining of mitochondria
10. Staining of sex chromatin
11. Study of Polytene chromosomes
12. Study of lampbrush chromosomes
13. Extraction of nucleic acids
14. Colorimetric estimation of DNA
15. Colorimetric estimation of RNA
16. Demonstrations of osmosis and diffusion.

M.Sc. Botany  
I Semester  
Plant Diversity I

A - Algae

Theory:

Algal classification. Range of structure, reproduction and life history. Fossil algae. Ultra-structure of algal cell. Physiology and biochemistry of algal cell- brief account of growth and synchrony, food reserves, cell inclusions and extra-cellular products. Algal ecology - Ecological types of algae, factors governing the distribution of freshwater, terrestrial and marine algae. Economic importance of algae.

Practicals:

1. Collection and identification of terrestrial and aquatic algae with reference to local flora.
2. Study of algae inhabiting trees barks.
3. Preparation of culture media for algae other than blue green algae.

B - Fungi

General morphology of fungi including fine structure of vegetative and reproductive cells; A systematic study of the structure, development, reproduction, life cycle, classification, phylogeny & affinities of the main groups: A general account of nutrition, sexuality, physiological specialization & economic importance of fungi. Ecology of fungi: Soil mycoflora, rhizosphere mycoflora, phyllosphere mycoflora and air mycoflora. A general account of symbiotic association i.e. lichens, mycorrhiza.

Practical :-

- a) Collection and identification of certain saprophytic and parasitic fungi of local importance.
- b) Study of lichens.
- c) Study of mycorrhizal association.
- d) Preparation of media and cultivation of fungi.

M.Sc. Botany  
I Semester  
Plant diversity - II, Bryophytes, Pteridophytes and  
Gymnosperms

Theory

Origin and classification of Bryophytes; Distribution and Ecology of Bryophytes; A general account of the gametophyte, sporophyte, reproduction and affinities of Hepaticae, Anthocerotae and Bryopsida; Evolution of sporophyte in Bryophyta; Fossil Bryophytes

Origin and classification of Pteridophytes; A general account of the morphology, reproduction and affinities of Philophytoidae, Psilotales, Lycopodiaceae, Sphenocladales and Pterocladales. Evolution of strobili in Pteridophytes; Evolution of ferns in forms; Heterospory and seed habit.

Classification of Gymnosperms; Distribution of Cycadales, Coniferales, Taxales, Ginkgoales and Gnetales; Economic importance of the Gymnosperms (living species only) with reference to North-Eastern India; A general account of the morphology, reproduction and affinities of various groups of gymnosperms viz., Pteridopsales, Bennettitales, Pinales, Cycadales, Cordaitales, Coniferales, Taxales, Ginkgoales Gnetales and Progymnosperms.

Brief aspects of Palaeobotany.

PRACTICALS

1. Study of morphology and anatomy of the locally available Bryophytes.
2. Study of morphology, anatomy and reproductive structures of the locally available pteridophytes.
3. Study of morphology, anatomy and reproductive structure of the locally available gymnosperms.
4. Study of some peculiar characters of some Bryophytes, Pteridophytes and gymnosperms with the help of available museum specimens/permanent slides.
5. Study of some available fossil specimen/slides.

Plant Anatomy and Morphology of Angiosperms

Theory:

Tissues and tissue systems: Dermal tissue systems, its morphology, origin and functions; Permanent tissues: Parenchyma, Sclerenchyma, collenchyma, xylem, phloem; secretory tissues: Excretory tissues; Laticiferous tissues and transfer cells; Meristems: Apical, intercalary and Lateral, the organization of apical meristems and organogenesis; Axillary bud meristem; Effect of physical and chemical factors on the organization and activity of the apical and axillary bud meristems; cambium and its derivatives: structure, function and a study of physical and chemical factors influencing these aspects; Anomalous secondary growth, wood: various types and their structure; Cork cambium and periderm its structure and function; Abscission of leaves; **Root-stem transition.**

Basic concepts of morphology with special reference to the morphology of flower, stamen, carpel and ovule.

Practicals:

1. Study of tissues
2. Study of shoot apical and root apical meristems.
3. Study of the effects of physical and chemical agents, on differentiation during vegetative phase.
4. Development of leaf and axillary buds.
5. Anomalous secondary growth.

M.Sc. Botany  
II Semester  
Biological Chemistry.

Theory.

Scope of Biological Chemistry; Laws of thermodynamics  
Nature of chemical bonds; Buffer, pH: Carbohydrate Chemistry; glycolysis, Krebs cycle oxidative phosphorylation, TTP Pathway; lipid-chemistry oxidation of fatty acids; Amino acids-chemistry and properties, transamination, decarboxylation and decarboxylation, urea cycle, protein structure, synthesis; genetics, central dogma of molecular biology reverse transcription, genetic regulation of protein synthesis (operon concept) and metabolism; Enzymes-classification, mechanism of action, and kinetics; vitamins and their role as coenzymes; general account of the biochemical processes in photosynthesis; immunology-structure, synthesis and function of antibody and interference.

Practical:

1. Preparation of models of amino acids, sugars and nucleotides
2. Preparation of buffer of a particular pH
3. Colorimetric estimation of amino acid
4. Determination of pI of amino acids
5. Colorimetric estimation of proteins of biuret reagent
6. Colorimetric estimation of proteins using Folin's reagent
7. Colorimetric estimation of sugar
- 8-9. Separation of amino acids and sugars by paper chromatography
10. Isolation of pigments from plant tissues
11. Quantitative estimation of chlorophyll from green leaf tissues.
- 12-15. Effects of substrate concentration, time, temperature and pH on enzyme activity.

M.Sc. BOTANY  
II SEMESTER  
GENETICS

- Theory: Genic interactions
- Numerical changes in chromosomes
- Structural changes in Chromosomes
- Mutations
- Sex determination, sex linkage
- Linkage and crossing over
- Extra nuclear inheritance and concept of plasmids
- Multiple alleles and blood groups
- Gene concept
- Genetic code, gene regulation
- Hybridization, male sterility, heterosis
- Genetic engineering
- Genes and development
- Genes and population
- Genetics and mankind
- Practical :
- Mendelian genetics of Drosophila
- Preparation of karyotypes
- Determination of chiasma frequency
- Morphological and cytological comparison of diploids with its autotetraploids
- Blood groups
- Study of reciprocal translocations
- Hybridization
- Chromosome mapping-i) giant chromosomes
- ii) by three point test cross
- Genetic experiments with Neurospora or any other fungus.

Experimental Embryology and Morphogenesis

Theory:

Microsporogenesis; Megasporogenesis; development of male gametophyte and female gametophytes (mono-ovular, bisporic and tetrasporic); Fertilization and its control; Endosperm and Embryogenesis; various types of embryo development; Effect of morphogenetic factors such as growth hormones and radiation on various embryological phenomena; Experimental techniques of tissue culture; Anther culture and embryoid formation leading to haploid plants; Endosperm and embryo cultures, Protoplast fusion; Apomixis; Polyembryony; Seed development. Morphogenesis: Polarity, symmetry and Cell differentiation. Microtechnique and microtomy.

Practicals:

1. Micro and Mega-sporogenesis.
2. Study of the physical and chemical agents on the anther and pollen development.
3. Study of the effects of physical and chemical agents on pollen germination.
4. Embryo dissection.
5. Preparation of microtome slides.
6. Demonstration of the phenomenon of polarity in plants.

M.Sc. Botany  
Second Semester  
Biostatistics (Theory)

Scope, Importance and limitations of statistics  
Population and sample - sampling techniques: Design of  
Experiments; Collection and Tabulation of Data; Diagrammatic  
& Graphical Representation of Data; Frequency Distribution  
and Measure of Central Tendency; Measure of Dispersion,  
Skewness and Kurtosis; Random variable and Distribution  
functions - some standard Distribution functions; Sampling  
Distributions - Chi-square, student's 't', Snedecor's F; ...  
Correlation; Regression; Curve Fitting and Principle of least  
Squares; Association; Tests of Significance and Fiducial  
Limits; Large sample Tests; Small sample Tests; Analysis  
of Variance.

Individual and Population Ecology

Theory

Ecological factors and factorial interaction - water soil, light temperature, time and biotic factors - a detailed consideration; Population structure and Population dynamics; Biotic potential and Environmental resistance; Survivorship and life table, Demographic studies; Population interaction - competition, allelopathy and mutual exclusion principle; Co-existence and cohabitation; Population regulation; Population behaviour, Territoriality and Reproductive behaviour; A general consideration of Physiological ecology; Adaptation of species and populations; ecotype concept.

Practicals:

1. Estimation of soil moisture content.
2. Qualitative estimation of carbonate and nitrate in soil.
3. To test the base deficiency in soil.
4. To determine pH of soil through p H paper and pH meter.
5. To determine organic matter content of soil through titration method.
6. To study soil profile developed under a pine forest.
7. To determine the soil texture.
8. To study the effect of light on the botanical composition and standing crop of the herbaceous vegetation.
9. To study thermal stratification in a pond or lake.
10. Effect of crowding of its own individuals on growth of a plant (both in field situation and in pot cultures).
11. Effect of associated plant species on the growth of a given species (both in field situation and in pot cultures).
12. Effect of population density on standing crop per unit area (both in field situation and in pot cultures).
13. To study the behaviour of seedling population over a short period.
14. To study the growth behaviour of plants in relation to moisture.

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M. Sc. BOTANY  
III SEMESTER

FOREST BIOLOGY/FRESH WATER BIOLOGY  
FOREST BIOLOGY

Theory:

Basic concept in forest ecosystem; Primary producers; Consume of genus; Decomposer population; Nutrient cycling; Hydrologic cycles; Major forest types of the world; Forest types of India.

Practicals:

1. Comparison of botanical composition of two forest stands of different ages.
2. Measurement of basal cover of forest trees through density and diameter measurements.
3. The study of stratification and to make a profile diagram of piers of forest vegetation.
4. Estimation of litter accumulation on the forest floor of two different forest stands.
5. Estimation of humus content in the forest soil.
6. To determine wilting coefficient of the soil and estimation of available soil moisture.
7. To study litter decomposition on a forest floor through CO<sub>2</sub> evolution method.
8. Quantitative and qualitative study of microbial population in the soil.
9. Measurement of stem flow and canopy fall in a pine forest and estimation of total soluble salts and some of the nutrients.
10. To determine exchangeable bases in the forest soil.

\* The students have to offer only one of these two courses.

M.Sc. Botany  
III Semester

Forest Biology/Freshwater Biology

Fresh Water Biology.

Theory:

1. Introduction
2. Classification of Lentic Systems
3. Classification of Lentic Systems
4. Origin Lake basins
5. Physical characteristics of water waves, tides, currents & Seiches
6. Temperature, thermal stratification
7. Light - Factors influencing penetration and colour
8. Major & Minor nutrients cycles in water. (Phosphate, Sulphur, Carbon, Nitrogen & some minor elements).
9. Radiation Biology with reference to aquatic system.
10. Periphyton
11. Benthos and its functions
12. Trophic relation in freshwater.
13. Algal productivity and Zooplankton productivity.

Practical

The practicals will be based on the course contents of the Theory Paper.

\* The students have to offer only one of these two courses.

M.Sc. Botany  
III Semester  
Microbiology

Theory :

Brief account of characterization and classification of Micro-organisms; Viruses, bacteria, algae, fungi and protozoa. Physical and Chemical structure of procaryotic cell : bacteria and cyanobacteria. Growth : Nutritional requirements and environmental factors affecting the growth of bacteria and cyanobacteria. Replication of bacteria and algal viruses. Conjugation, transduction and transformation. Role of microorganisms in food preservation, fermentation, industrial fermentation food poisoning and spoilage. Nature and activity of antibiotics : Structure, synthesis, mode of action and application. Use of microorganism in bioassay. Treatment of sewage. Soil microbiology : Soil microbes and decomposition processes. Symbiosis. Physiology, biochemistry and genetics and nitrogen fixation by bacteria and cyanobacteria. Mutagenesis by chemical and physical means. Repair of mutations.

Practical

1. Calibration of microscope and measurement of dimensions of microbial cell.
2. Nutrient media, : composition, preparation sterilization etc.
3. Enumeration of microorganisms from soil, water, air etc. isolation and culture.
4. Study of morphology of microorganisms using different stains.
5. Population estimation and specific growth rate by haemocytometer and colimeter.
6. Spectrophotometric characterization of acetone and water soluble pigments of cyanobacteria
7. Isolation and counting (PFU) of cyanophages.
8. Study of antagonistic microbes in soil (bacteria and fungi)
9. Isolation and study of nitrogen-fixing bacteria and cyanobacteria

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M.Sc. Botany  
III Semester  
Plant Physiology

Theory :

Plant water relations, transpiration; Minerals nutrition, conduction of water and inorganic and organic nutrients; Respiration including photorespiration; Pigments and Photosynthesis; Plant growth regulators isolation, bioassay, metabolism; transport and physical action of auxins, gibberellins, cytokinins, ethylene, abscisic acids, phenolics and flavonoids, some synthetic auxins and morphactins, application of growth substances in agriculture and horticulture, compound interest law and growth physiology of germination and dormancy; Apical dominances; Photophysiology including floral induction, endogenous rhythms and growth regulation by phytochrome systems; Vernalization; Senescence, stress physiology - drought, frost and salinity.

Practical

1. Chemical composition of cell membrane and factors affecting permeability.
2. Determination of water potential of plant tissue
3. Study of structure and distribution of stomata on dicot and monocot leaves.
4. Mechanism of stomatal opening and closing
5. Extraction and assay of peroxidase, polyphenoloxidase and dehydrogenase.
6. Effect of gibberellic acid on amylase activity
7. Paper chromatography of chloroplast pigments and determination of their absorption spectra
8. Study of a light dependent reaction catalyzed by chloroplast (Hill reaction)
9. Measurement of photosynthesis by leaf disc method.
10. To find out  $CO_2$  compensation point of plant species
11. Phytochrome and seed germination
12. Effect of kinetin and gibberellid acid on radish cotyledon enlargement.
13. Effect of plant growth regulators on growth and development of certain plant species.

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M.Sc. Botany  
IV Semester  
Community Ecology and Ecosystem Analysis

Theory :

Structure, organization and development of community succession and climax, fluctuation within community; Analytic and synthetic characteristics of community, community classifications; dynamics of the ecosystem: principal components, food chains, food webs, food and feeding cycles, energy flow, bio-geochemical cycles and productivity (primary and secondary aspects); systems analysis; A general consideration of pollution effects on organisms and community.

Practicals :

1. To estimate the requisite size of the quadrat for the analysis of grassland vegetation by species-area curve method.
2. To estimate frequency of the herbaceous species by quadrat method.
3. To estimate abundance and density of herbaceous species by quadrat method.
4. To determine the percentage basal cover of different plant species through diameter measurement.
5. To analyse vegetation of a given community by line transect method.
6. Determination of frequency and density by belt-transect method.
7. Determination of percentage frequency of different species in grassland with the help of point frame method.
8. To find out the importance value index of different species in a grassland community
9. Analysis of quantitative characters of a community through point-centred-quarter method.
10. To work out the biological spectrum of the local vegetation.
11. To compare the aboveground biomass and percentage contribution of the herbaceous species in open situation and in Pine stand through harvest method.
12. To study the secondary succession in an adjoining region of the campus.
13. Estimation of primary production by the light and dark bottle method.
14. Study of pyramid of numbers in the water samples provided.
15. To estimate primary productivity by leaf disc method.

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M.Sc. Botany  
IV Semester  
Angiosperm Systematics

Theory :

Plant taxonomy and its significance; history of plant classification and system of plant classification; history of taxonomic researches in India; Botanical Survey of India.

Important world and Indian taxonomic literature.

Herbaria and their significance: herbarium and field methods.

Naming of plants - International code of botanical nomenclature; type concept vs population concept.

Origin of Angiosperms: Origin and evolution of monocots

Adaptation and adaptive radiations in Angiosperms, Primitive Angiosperms

Study of some important families of flowering plants of the region with special reference to biologically important families.

Biosystematics - Modern methods in plant taxonomy with special reference to the role Cytology, Chemistry, Anatomy, Embryology, Palynology and Ecology in understanding systematic botany.

Practicals :

1. Collection, identification, classification and preservation of local plants.
2. Study of biologically important families of the region.

The students are to submit the Herbarium specimens collected and studied by them.

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M.Sc. Botany  
IV Semester  
Plant Protection and Applied Botany

A - Plant Protection

Theory :

The principles of Plant Pathology, The pathogens (i.e. fungi, bacteria, nematodes, phanerogams, viruses, mycoplasma, environmental factors ext.) Interrelationships of parasitism and pathogenicity, Physiology of pathogenicity, Defence mechanism, Loss of host parasite balance in pathogenesis, effect of environment on different classes of parasitism; host genetics in relation to type of pathogenicity; Principles of plant diseases control (i.e. physical control method, chemical control, biological control, resistant variety) plant quarantine.

Practical :

1. Identification of causal organism from the diseased plant materials (Measurement of spores; camera lucida diagram).
2. Observation of permanent slides.
  - (a) Host pathogen relationship
  - (b) Morphology of some phytopathogenic/antibiotic producing microorganisms.
3. Discussion of the control measures of the diseases studied with special reference to the specimens collected from the N.E. region.

B - Applied Botany

Theory :

1. Ethnobotany & its scope-Local uses of wild plant as food and for medicines.
2. Minor forest products of the region with emphasis on resins & gums aromatic plants, fibre yielding plants, species & condiments, paper & pulp.
3. Hill agriculture with particular reference to rice and potato.
4. Ecological impact of Jhum (slash and burn) on the environment and problems related to conservation of natural resources.

Practical :

1. Study of the locally available important economic plants
2. Survey of the region for ethnobotanical study. The students will gather the information from local inhabitants and submit a report.
3. Study of secondary succession after Jhum
4. Study of soil, water and nutrient loss from jhum fallows

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M.Sc. Botany  
IV Semester  
Forest Biology - Experimental Ecology  
(Special Paper)

Theory :

a) Forest Physical Environment - Light, temperature, water relations, wind, fire; soil.

Forest Biological Environment - Plant life, biomass, its structure and functions; interrelationships between the plants within the forest community; Ecophysiology of tree growth - bud dormancy and bud break, shoot elongation, leaf growth, senescence and abscission; physiological changes with age, flowering and fruiting.

b) \*Ecological aspects of plant mineral nutrition; seed ecology-dormancy, germination behaviour; regeneration and establishment; plant competition; phenotypic plasticity and ecotype differentiation under varied environmental conditions: Ecological strategies of plants.

\*Wherever available, examples from forest system would be used.

Practical :

The practical course will be based on the course contents of the theory paper.

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M.Sc. Botany  
IV Semester  
Physiology of Plant Growth and Development  
(Special Paper)

Theory :

Growth, differentiation and development defined; totipotency of cells and its regulation; role of plant tissue and organ culture in differentiation.

History and modern concept of plant bio-regulants: the range of biologically active compounds.

Endogenous growth regulators - occurrence and distribution; chemical nature; physiological roles and mechanism of action of auxins, gibberellins, cytokinins, ethylene and abscisic acid.

Synthetic growth regulators-discovery; chemical nature; effects on growth and development; mechanism of action of cycocel, Phospon D, B-nine, AMO 1618, morphactins and etherel other growth retardants and phenolics.

Growth regulators: control of activity of key enzymes; role in modern agriculture Environmental and hormonal regulation of physiology of flowering, seed germination and dormancy. Physiological and biochemical adaptations of high altitude plants. Senescence and its control.

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Practicals :

1. The split pea stem curvature test for bioassay of auxin.
2. Effects of auxin on root initiation.
3. The effect of coumarins, thiocrea, urea, actinomycin D, 2,4-dichlorophenoxyacetic acid, 2,4-dinitrophenol on lettuce seed germination.
4. Preparation of standard curve for indoleacetic acid.
5. Extraction and assay of peroxidase, polyphenol oxidase and IAA-oxidase.
6. Polyacrylamide gel electrophoresis of plant proteins and some of the above mentioned enzymes.
7. Measurement of total and o-dihydroxyphenols.
8. Preparation of standard curve for starch.
9. Induction of L-amylase synthetis in aleurone cells of barley grains by gibberellic acid.
10. The effect of kinetin on chlorophyll retention in detached leaves.

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M.Sc. Botany  
IV Semester  
Weed Ecology (Special Paper)

Theory :

1. Noxious weeds of Indian agro-ecosystems and their distribution.
2. Origin and characteristics of weed species.
3. Role of weeds in agro-ecosystems.
4. Studies on weed-crop interaction with emphasis on India works.
5. Ecology of certain important weeds viz. Cyperus rotundus, Eichhornia crassipes, Eupatorium spp. and Spargula arvensis.
6. Population dynamics of important weedy species with special reference to jhum fallows.
7. Weed seed population in soil, and germination of weed seeds.
8. Population responses of weeds to crop density, herbicide use and other agronomic practices.

Practicals :

1. Distribution maps of certain noxious weeds.
2. Estimating soil binding capacity of weeds.
3. Role of weeds in conserving soil.
4. Population dynamic of weeds on jhum fallows
5. Effect of weeds on crop plants.
6. Effect of crop density on weeds.
7. Effect of certain herbicides on weeds.
8. Estimation of weed seed population in soil.
9. Studying the weed-crop interaction in pot culture experiments.
10. Estimation of reproductive efforts of weeds.
11. Allelopathic effect of weeds.
12. Collection and identifications of the common weeds of the area and submission of the weed herbarium.
13. Phytosociological analysis of the weed communities in the cropland ecosystem.

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M.Sc. Botany  
IV Semester  
Microbial Ecology  
(Special Paper)

Theory:

Microbial community - structure and organization, species diversity, habitat and niche, food chain, application invitro information to condition in vivo; Dispersal - centre, duration, efficiency, active and passive dispersal, colonization processes- Succession and climax; Nutrition - availability, regeneration of nutrients in the ecosystem, growth factors, host nutrition and colonization; Tolerance; Interspecific relationships - symbiosis, competition, parasitism; Effect of microorganisms on their surroundings . microorganisms and bioorganisms on plants - morphological and physiological effects metabolites and pathogenity.

Practical :

1. Basic instruments and their principle.
2. Culture techniques of microbes, their isolation and pure culture.
3. Growth measurement of microorganisms.
4. Morphology of certain dominant microorganism.
5. Effect of certain physical factors on growth of microbes.
6. Effect of mycorrhizae on plant, survival and their growth.
7. Effect of nutrition on micorrhizae.

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M.Sc. Botany  
IV Semester  
Experimental Taxonomy  
(Special Paper)

Theory:

Evolutionary concepts - Adaptive radiation in Angiosperms -  
Ecological differentiation of populations - Geographical  
variations and genetic barriers - Cytology and taxonomy.

Practical :

The practical course will be based on the course content  
of the theory paper

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M.Sc. Botany  
IV Semester  
The Control of Growth and Differentiation in Plants  
(Special Paper)

Theory:

Growth in higher plants; Patterns of growth and differentiation; Effects of physical and chemical factors on the differentiation in apical meristems; Cytodifferentiation and histogenesis; Hormonal control of flowering and sex expression in plants. Dormancy and senescence.

Practical :

A study of the effects of radiation and plant growth regulators on the differentiation in short apical meristems, axillary bud meristems, pollen germination and pollen tube growth culturing of the plant tissues.

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Theory:

History of phytopathology in India, plant diseases, their nature, classification and importance. General characteristic & taxonomy of plant pathogens (i.e. fungi, bacteria, viruses, nematodes, phanorogams, division protista; taxonomy of plant pathogens).

Physiology of plant pathogen, pathogenicity, infection and disease development; Modes of penetration of phytopathogenic microorganisms. Plant pathogen in action after host penetration, enzymes, toxins, polysaccharides growth regulators, Resistance before penetration resistance after penetration, predisposition.

Genetical aspects of plant disease physiology & biochemistry of diseases plant. Environment and nutrition in relation to disease development.

The root environment (i.e. Rhizosphere) in relation to root disease fungi, growth and survival of root diseases fungi in soil, fungistasis, Microbial antagonism.

Principles and methods of plants disease control (i.e. chemical, biological control).

Pathological problems in forest seed pathology, forest disease control-General principles, forest plants quarantine.

Disease of trees.

- i.e.
- Sal-Shorea robusta Gaertn. f.
  - Pine-Pinus Kesiya. Royle.
  - Teak-Tectona Grandis Linn. f.
  - Sandal-Santalum album Linn.
  - Eucalyptus-Spp.
  - Deodar-Cedrus deodar. Loudon.
  - Acacia mellissina. Wall
  - Common trees in north eastern India.

Practical:-

1. Preparation of culture media
2. Isolation and study of the economically important plant pathogenic fungi.
3. Isolation techniques for soil rhizosphere and phyllosphere-microflora-
4. Isolation of wood rotting fungi.
5. Screening of plant chemicals the repellents.  
(i.e. Fungicides, antifungals etc.)
6. Study of inoculation association.
7. Effect of soil amendments (i.e. organic and inorganic) on soil microbes
8. Antagonism and soil fungistasis
9. Application of Pash's postulated.

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M.Sc. Botany  
IV Semester  
Algal Ecology & Physiology  
(Special Paper)

Theory:

Ecology and distribution of freshwater, terrestrial and Marine algae- Algal communities of: Hotspring, River, Pond, lakes. Epiphytic, endophytic, epizooic, endozooic algae.

Extra cellular products of algae and their ecological implications.

Chlorophylls and carotenoids in algae; Heterotrophy of carbon; Nitrogen metabolism in algae; Pathogens of Blue-green algae.

Symbiosis and Ecology of nitrogen fixation by algae. Organic nutrients, simplification and classification in algae. Physico-chemical factors affecting growth, metabolism and reproduction. Role of vitamins and growth-regulators in aquatic ecosystem.

Practical:

1. Collection and identification of freshwater and terrestrial algae.
2. Collection and identification of epiphytic and endophytic algae
3. Extraction and separation of acetone/methanol soluble pigments of algae by paper/thin-layer chromatography.
4. Spectrophotometric characterization of acetone/methanol soluble pigments of algae.
5. Preparation of media sterilization.
6. Isolation and culturing of freshwater algae.
7. Effect of physico-chemical factors (temperature, light, nutrients) on the growth of algae.
8. Nitrate reductase enzyme assay.

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M.Sc. Botany  
IV Semester  
Palynology and Palynotaxonomy  
(Special Paper)

Theory:

1. Morphology, taxonomy of spores and pollen grains
2. Pollen morphological studies on some important families of North-Eastern India; Pollen morphology in relation to taxonomy.
3. Quaternary palynology and palynogeography.
4. Palynology - its applications.
5. Brief aspects of Lapaeopalynology.

Practical:

1. Preparation of pollen/spores from Herbarium Voucher specimens
2. Preparation of temporary slides using glycerin jelly from the macerated material.
3. Preparation of permanent slides from the macerated material using DPX/Canada balsam.
4. Sample preparation for palynological material
5. Maceration techniques for isolating pollen/spores from various sedimentary rock samples viz (a) peat (b) lignite (c) coal (d) Carbonaceous clay etc. (e) shale.
6. Collection of pollen/spores from the atmosphere and plotting of pollen diagrams.
7. Plotting of histograms/pollen diagrams showing relative abundance of pollen/spores in different samples of material studies.

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M.Sc. Botany  
IV Semester  
Cytogenetics  
(Special Paper)

Theory:

- Molecular basis of mutation
- Mutagenesis at cellular level
- Genetics and cytogenetics forest plants
- Cytogenetics of important crops.
- Genetics and cytogenetics of euploids and aneuploids;
- Use of translocations and aneuploids in gene location.
- Haploids - production and utilization
- Genetic system and mutagenesis in cytoplasmic organelles
- Somatic cell hybridization
- DNA feeding
- Cytogenetics in relation to evolution and plant breeding.

Practical :

The practical course will be based on the course content of the theory paper.

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DEPARTMENT OF ZOOLOGY  
SCHOOL OF LIFE SCIENCES  
NORTH-EASTERN HILL UNIVERSITY  
SHILLONG - 793 014 (MEGHALAYA)

M.Sc. ZOOLOGY  
SYLLABUS

( in force from August 1982 )

SOUTH-EASTERN HILL UNIVERSITY  
DEPARTMENT OF ZOOLOGY  
SCHOOL OF LIFE SCIENCES  
(In force from August, 1992)

Semester I:

<u>Course No.</u>	<u>Article</u>	<u>Theory</u>	<u>Practical</u>
BBCZ - 1	Cell Biology	100	50
Z - 1	Plant Biology	100	50
Z - 2	Animal Biology	100	50
Z - 3	Microbiology	100	50
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		400	200 = 600

Semester II:

BBCZ - 2	Biostatistics	50	-
BZ - 1	Biological Chemistry	100	50
BZ - 2	Genetics	100	50
Z - 4	Developmental Biology	100	50
Z - 5	Evolution	50	-
Z - 6	Zoogeography	50	-
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		450	150 = 600

Semester III:

Z - 7	Fish Biology	100	50
BZ - 3	Individual & Population Ecology.	100	50
Z - 8	Parasitology	100	50
BZ - 4	Freshwater Biology or Forest Biology.	100	50
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		400	200 = 600

Semester IV:

Z - 9	Entomology	100	50
BZ - 5	Community Ecology & Ecological Analysis.	100	50
Z - 10	Environmental Biology and Wild life Biology.	100	50
Z - 11	Special Paper	100	50
		<hr/>	<hr/>
		400	200 = 600

Total 1650                      750 = 2400

- a) Development & Morphogenesis
- b) Biochemical Limnology
- c) Altitudinal Limnology
- a) Fish & Fisheries
- e) Aquatic Entomology
- f) Forest Entomology
- g) Cytogenetics
- h) Adaptational physiology & Biochemistry
- i) Plankton studies
- j) Parasitology

Z - Courses offered by Zoology Deptt.

BZ - " " " " " & Botany Deptt.  
BBCZ - " " " " " & Biochem. Deptt.

M.Sc. Zoology

SEMESTER - I

COURSE - ZI - I

ZOOLOGICAL SYSTEMATICS

**Theory** Basic principles - terms and definitions, History, contributions and objectives of systematics, Material basis of systematics - characters, morphological records, ecological information. Special concepts - History of different concepts - difficulties in the applications of biological species concepts. The biological process of speciation, types of lineage changes mechanism in apomictic and panmictic lineages. Fundamentals of Numerical taxonomy, Cytotaxonomy and Chemotaxonomy. Taxonomic collections and the process of identification. Taxonomic decisions on the species level. Principles and Application of International Code of Zoological Nomenclature (ICZN) - Rules of Zoological Nomenclature, Interpretation of rules of Nomenclature. Classification of animals with emphasis on local fauna.

**Practicals**

1. Study of freshwater plankton.
2. Collection and preservation.
3. Study of phytoplankton and Zooplankton (dominant - groups)
4. Preparation of identification keys.
5. Study of important freshwater and marine fishes of India.
6. Study of fishes of N.E. India (particularly Hill stream forms) with specific relation to morphological adaptations.
7. Study of freshwater prawns, aquatic insects and frogs of this region. Preliminary survey of soil arthropods and terrestrial insects.
8. Classification of Selected Specimens.

**Note**

Students may be required to submit collections (Slides, preserved specimens, dry collections for insects) of the studied specimens.

M.Sc. Zoology

SEMESTER - I

COURSE - HBCZ - I

\* CELL BIOLOGY

### Theory

Historical background and concept of cell; Prokaryotes: virus, bacteria and blue green algae; Eukaryotes: a general view of the cell; Detailed structural organisation and general functions of the functional aspects of eukaryotic cell organelles: (i) Plasma membrane and Cell wall, (ii) Cytoplasmic reticulum, (iii) Golgi complex, (iv) Ribosomes, (v) Lysosomes, (vi) Mitochondria, (vii) Plastids, (viii) Cilia and Flagella, (ix) Centrioles and Basal bodies, (x) Microtubules, tonofibrils, (xi) Nuclear Envelope, (xii) Nucleolus, (xiii) Nucleo plasm, (xiv) Chromatin and Chromosomes; Nucleic acids, their structure and synthesis; Chromosomal proteins; DNA replication; Polytene chromosomes; Lampbrush chromosomes; Cell cycle; Properties of G<sub>1</sub> - S - G<sub>2</sub> periods; Cell surface, cyclic AMP, Nuclear proteins, RNA synthesis in relation to the Cell cycle; Mitosis; spindle apparatus; anaphase movement; Meiosis; Homologous chromosome pairing; Synaptonemal complex; crossing over and chiasma formation; Cellular transport: diffusion: osmosis: active transport; Cellular death.

### Practical

1. Preparation of fixatives and stains.
2. Staining of nucleolus.
3. Staining of mitochondria.
4. Staining of sex chromatin.
5. Study of mitosis.
6. Study of meiosis.
7. Study of polytene chromosomes.
8. Extraction of nucleic acids.
9. Colorimetric estimation of DNA
10. Colorimetric estimation of RNA
11. Study of osmosis and diffusion.

\*Integrated course with Botany and Biochemistry

M.Sc. Zoology

SEMESTER I

Course - 2 - 2

ANIMAL PHYSIOLOGY

Theory

History and scope of physiology; Nutrition - Nutritional; patterns; Food and feeding mechanisms; Digestion - extra-cellular and intracellular digestion - digestion and absorption of different food materials; Vitamins; circulatory system; structure and function of blood; blood coagulation;  $CO_2$  and  $O_2$  transport, Cardiac cycle and cardiac regulation; Respiration - Nature of respiratory organ - respiratory pigments - mechanism of breathing and its regulation; Excretion - Structure of different excretory organs - production of different excretory materials - structure of mammalian kidney and mechanism and regulation of excretion; Muscle - Types of muscles; ultrastructure and mechanism of contraction of skeletal muscle; Nervous system - Structure of neuron, mechanism of nerve conduction and synaptic transmission. Sense organs and bioluminescence; temperature compensation in poikilotherms and homiotherms; evolution of homeothermy; Homeostasis.

/ Circulation - general arrangement of circulation and

Practical

1. Determination of amylase Activity of human saliva in relation to pH and temperature.
2. Determination of ascorbic acid in Lemon & Tomato fruits on sheep blood serum.
3. General test for carbohydrates.
4. General tests for proteins.
5. General tests for Fats.
6. Determination of Blood Groups.
7. Factors Influencing Coagulation of Blood.
8. Counting of Blood Corpuscles. (R.B.C & leucocytes)
9. To determine the haemoglobin concentration of the blood of Human beings.
10. Preparation of Haematin crystals from the human blood.
11. Estimation of Dissolved oxygen in given sample.
12. Determination of oxygen consumption of fish at room temperature.
13. Determination of salt gain by fish.
14. Recording of Heart Beat by kymograph.
15. Recording of muscle twitch of the Gastrocnemius muscle by kymograph.
16. Examination of slides showing compound eyes of House fly; taste buds of Frog.

M.Sc. Zoology

SEMESTER - I

COURSE - 2 - 3

ENDOCRINOLOGY

Theory

Introduction and Scope Endocrinology; Endocrine organs and hormones in Platyhelminthes, Nematodes, Annelids, Arthropods, Molluscs, Chordata, Protochordate and Vertebrates; Hormones in Crustacea involved in migration of pigment, growth, regeneration and reproduction. Hormones of insects involved in growth, moulting, metamorphosis and reproduction; Hormones of Mollusca involved in growth, reproduction and regeneration of shell; Tissue hormones - Prostaglandin, kinin, acetylcholine, Serotonin, Gastrin and Histamine; Principles of hormone regulation; Adrenal cortical Hormones - cortisol, adrenocorticotrophic hormone (ACTH); Gonadal hormones: Male sex hormones - Testosterone, androsterrone; Female sex hormones: Oestrone, oestradiol, oestriol, Hormones of the adrenal, medulla epinephrine (nonadrenaline) and epinephrine(adrenaline), Biosynthesis. Hormones of the Pineal Gland - Melatonin; Thyroid hormones- Thyroxine, thyroxine, antithyroid substances, calcitonin, biological effects of thyroid hormone, Parathyroid hormone - Parathormone - biological effects. Pancreatic hormone Insulin, glucagon, biological effects. Pituitary Hormones - hypothalamus hormones, oxytocin, vasopressin, releasing factors for corticotropin, thyrotropin and gonadotropins. Melanotropin - Somatotropin, Lipotropic hormone, thyrotropic hormone, thyrotropin releasing factor Corticotropin releasing factor. Gonadotropic hormones - FSH, LH, Prolactin inhibiting factor (PIF), Follicle stimulating hormone(FSH). Hormonal regulation of blood glucose; Hormonal control of Menstrual cycle, Embryonic inducers, Mode of action of Hormones.

## Practicals

### A) Anatomy

1. Dissection of nervous and endocrine system in the larva of Pieris or Philoena.
2. Dissection of nervous and endocrine systems in adult Periplaneta.
3. Dissection and display of pituitary gland of fish.
4. Dissection and display of pituitary gland of frog.
5. Dissection and display of pituitary gland of rat.

### B) Histology

6. Study of histological slides
6. Mammalian thyroid gland.
7. Mammalian parathyroid gland.
8. Mammalian thymus gland.
9. Mammalian adrenal gland. (cortex and medulla)
10. Mammalian Pituitary body.
11. Mammalian Pineal body.

### 2) Physiology

12. Induction of moulting in lepidoptera larvae by P= ecdysone.
13. Induction of metamorphosis in tadpoles by thyroxine.
14. Effect of acetyl choline and epinephrine on cardiac activity of frog.
15. Effect of oestrogen on the reproductive activity of female rat. (smear-preparation of epidermal lining of the vagina).
16. Effect of prostaglandins on the platelet aggregation of sheep blood.

### 3) Biochemistry

7. Estimation of ascorbic acid in the vertebrate blood upon treatment with thyroxine and/or cortisol.

### 4) Cell Biology

8. Recording of Puffing patterns in the polytene chromosomes of salivary glands of IV instar larvae of Chironomus and the effects of ions on them.

M.Sc. ZOOLOGY

SEMESTER - II

COURSE - BCBZ - 2

BIOSTATISTICS

Theory

Scope, importance and limitations of Statistics; Population and sample - Sampling techniques; Design of Experiments; Collection and Tabulation of Data; Diagrammatic and Graphical Representation of Data; Frequency Distribution and Measures of Central tendency; Measures of Dispersion; Skewness and kurtosis, Random variable and Distribution functions - some standard Distribution functions; Sampling Distributions - Chi-square, student's 't' test, Snedecor's F; Correlation; Regression; curve fitting and Principle of least squares; Association; Tests of significance and Fiducial Limits; Large sample Tests; Small Sample Tests; Analysis of variance.

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\* Integrated course with Botany and Biochemistry

**M.Sc. ECOLOGY**  
**SEMESTER - II**  
**COURSE - III - 3**

**\* GENETICS**

**Theory**

Chromosome aberrations; numerical changes; Structural changes; Mutations; spontaneous, induced, lethals; Expression and inheritance of genes; multiple alleles; Multiple Gene inheritance; Linkage; crossing over, linkage map; Sex determination; sex linkage; Gene concept; Genetic code, Gene regulation; Genes and development; Genes in populations; Genetic engineering; Extracellular inheritance; plasmid; Hybridization; heterosis; male sterility; Preliminary ideas of the genetics of bacteria and viruses.

**Practical**

1. Preparation of karyotypes.
2. Study of chiasma. Pregnancy.
3. Chromosome mapping.
4. Determination of blood groups.
5. Drosophila genetics
  - i) Preparation of culture medium
  - ii) Study of mutants
  - iii) Determination of sex ratio
  - iv) Study of life cycle; handling of flies.
  - v) Experimental crosses with autosomal and sex linked mutants.
6. Genetic experiments with neurospora.

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\* Integrated course with Botany.

Development Biology

Theory

Origin differentiation & ultrastructure of germ cells; Fertilisation; Cleavage; Types & Mechanism, Morphogenetic gradients; Polarity & Symmetry; Gastrulation; Fate maps & Morphodynamics; Germ layers & their fate, Organizer & Embryonic induction; Nucleocytoplasmic interactions; Development of Brain, Eye and Heart; Regeneration and axial gradient; Differentiation; Pluripotency of differentiated nuclei, Nuclear cloning; Implantation & Placentation; Metamorphosis in amphibians and insects; Cellular & Biochemical aspects; Molecular Basis of gene expression during development; Pattern formation; Experimental Techniques and tissue culture.

Practicals

1. Induced Breeding and artificial insemination in frog.
2. Study of life history stages of frog.
3. Study of morphogenetic movements in frog embryo.
4. Effect of pressure on cleavage in Amphibian Embryo.
5. Hormonal control of anuran metamorphosis.
6. Incubation and mounting of chick embryos.
7. 'In Ovo' Study of chick development by window method and study of morphogenetic movements.
8. Explantation, separation of germ layers and transplantation techniques in chick embryo.
9. Study of embryological slides of frog and chick
10. Developmental and regeneration studies in Planaria
11. Developmental and regeneration studies in Hydra.
12. Study of life history stages in commonly available fish.
13. Study of insect development with reference to Drosophila and Phlebotomus ricini.
14. Experiments with Cellular slime mold.

The labs. will start after brief training on the preparation of glass instruments for embryological work.

.....

.....10/-

M.Sc. ZOOLOGY  
SEMESTER - II  
COURSE - Z - 2  
EVOLUTION

Theory

Origin of Life; Lamarckian principles; Darwin-Wallace concept of evolution by Natural Selection; neo-Darwinism; Organic variations source-expression - effect; Isolating mechanisms; role in evolution; Species - Race - Population; Genetic equilibrium; Genetic drift; Genetic load; Evolutionary forces; Patterns of Evolution; Genetic basis of Evolution; Selection; Evolution; Evolution of Man.

NORTH-EASTERN HILL UNIVERSITY  
Shillong 793 001

AGENDA NOTE FOR THE ACADEMIC COUNCIL

The University had adopted the Gauhati University Ordinance on Affiliation of Colleges in 1973. A part of this Ordinance (upto clause 13) was amended recently by the Executive Council. Consequent upon the amendment, it has become necessary to prescribe revised application forms, proformas for submitting project reports and essential conditions to be followed by the colleges in submitting applications to the University on various affiliation matters, such as establishing new colleges, starting new courses, upgradation of colleges to Degree or Honours level and matters relating to provisional or permanent affiliation. These will form part of the Ordinance on Affiliation as Regulations.

The blank application forms; project report proformas; and essential conditions are placed before the Academic Council for their consideration and approval.

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NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERE  
SHILLONG-793001

A P P L I C A T I O N

for

(1) To establish a new College

(2) To open new Courses in existing College

(3) To upgrade a Pre-University College into a Degree College.

(4) To upgrade a Degree College into an Honours College.

(5) To seek Provisional affiliation

(6) To seek Permanent affiliation

Mark which ever is applicable

To

The Registrar,  
North-Eastern Hill University,  
Lower Lachauwierre,  
Shillong - 793001

Subject:- Application for \_\_\_\_\_

Sir/Madam,

With reference to the subject quoted above, we submit the information and details as indicated below:

1. Name and address of the Sponsoring Authority (if a new College)  
Governing Body (if an established College):

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2. Name and address of the College:

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3. Courses for which permission is sought:

(Please specify subjects and standard upto which permission is sought)

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4. Permission fee/Affiliation fee of Rs \_\_\_\_\_

is enclosed (The payment has to be made through a Cheque/Bank Draft payable to North-Eastern Hill University, Shillong)

5. Whether relevant Proforma is enclosed?

Yes/No

Date:

Signature of Applicant

Place:

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**Note:** 1. The application, complete in all respects, should reach the Registrar, North-Eastern Hill University, before 15th August of the preceding year in which the College is intending to start.

2. Project Report to be used are as under:-

- |   |                |
|---|----------------|
| (i) To establish a new College                                  | - Proforma I   |
| (ii) To open new Courses in existing College                    | - Proforma II  |
| (iii) To upgrade a Pro-University College into a Degree College | - Proforma III |
| (iv) To upgrade a Degree College into an Honours College.       | - Proforma IV  |
| (v) To seek Provisional Affiliation                             | - Proforma V   |
| (vi) To seek Permanent Affiliation                              | - Proforma VI  |

3. Details of Fee:

- |  |              |
|--|--------------|
| (i) Permission to establish a new College            | - Rs. 1000/- |
| (ii) Permission to open new courses/subjects         | - Rs. 300/-  |
| (iii) Provisional/Permanent affiliation fee (annual) | - Rs. 300/-  |

NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERE  
SHILLONG - 793001

PROFORMA - I

Project Report in this Proforma is to be submitted by the Sponsoring Authority which intends to establish a new College

A. GENERAL INFORMATION

1. Sponsoring Authority

- (i) Name:
- (ii) Address:
- (iii) Legal Status, if any:  
(Please enclose the constitution)
- (iv) Objectives for establishing the College.

2. Location of the proposed College

3. Number of Schools and number of students passing in HSLC or any other equivalent course within a radius of 25 Kms from the location of the proposed College.

4. Names of other Colleges which are in the immediate vicinity of the proposed College.

5. Details of the enrolment in Colleges within a radius of 25 Kms from the proposed College.

6. Will it be a day College or an evening College

B. RESOURCES (Existing)

1. Physical Facilities

- (a) Extent of land available -  
for buildings and playing fields etc.
- (b) Extent of Buildings available -  
Please give details of class rooms,  
Laboratories, Library, Office rooms,  
Common rooms for staff and students etc -  
with specifications of carpet area etc.
- (c) Please furnish details of Furniture,  
equipment etc.
- (d) Details of student hostels, if any.

2. Financial position

- (a) Sources of Income and the extent to which it is available.
- (b) Is the Sponsoring Authority equipped for depositing the specified amount in Reserve Fund?
- (c) What is the annual estimated income?
- (d) What are the proposed budget heads of expenditure and to what extent in each case?

3. Academic details

- (a) Provision for the teaching staff - number of qualified teachers proposed for each subject with details of qualifications, experience etc.
- (b) Number of students expected to be enrolled - subject-wise break-up.
- (c) Courses/subjects to be offered
- (d) Whether a qualified full-time Principal is available. If so, full details of qualifications and experience
- (e) Strength of students in a section in a class.
- (f) Admission Policy - whether it maintain high ethical standard and non-discriminatory principles.

4. LIBRARY

- (a) Number of Volumes proposed to be purchased - subject-wise break-up.
- (b) Number of Journals proposed for subscription.
- (c) Whether provision for a qualified Librarian with supporting technical staff is envisaged. If so, please give full details.
- (d) Is there a separate building available for the Library- Please give specific details.

5. Co-Curricular activities

- (a) Please give details of Co-Curricular activities envisaged, such as student service, sports, NSS, NCC, Debating etc.

6. Administrative support

- (a) Details of administrative staff proposed

7. Any other relevant information.

C. RESOURCES - FUTURE PLANS

Please give detailed proposals for future development programme on the following points which should reflect the perspective of the College; for the next 10 years:

1. Physical Facilities
2. Financial Resources
3. Academic Programmes
4. Library facilities
5. Co-Curricular activities

Date:

Signature of Applicant

Place:

- 
- Note:
1. Documentary evidence is to be supplied wherever necessary.
  2. The University has laid down certain essential conditions to be fulfilled by the Sponsoring Authority for starting a new College. The Sponsoring Authority should make sure to follow such conditions in submitting the Project Report.
  3. The Report has to be submitted in ten copies

NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERE  
SHILLONG - 793001

PROFORMA - II

Project Report in this Proforma is to be submitted by the College Authority for permission to start new courses/subjects

A. GENERAL INFORMATION

1. Name and address of the College
2. What are the courses/subjects offered at present
3. Please state briefly the need for starting the new courses/subjects.

B. EXISTING POSITION

1. Please give details of Physical facilities, such as land, buildings, available at present.
2. Please furnish an income and expenditure statements for the last three years - on major budgetted items.
3. Please furnish details of teaching staff now on the payroll of the College with a brief bio-data of each teacher.
4. Details relating to student enrolment giving subject-wise break-up.
5. Number of volumes in the Library with
  - subject-wise break-up
  - the standard upto which such books are available
  - Number of journals being subscribed.
6. Details on Laboratory facilities
7. Is there any condition remains unfulfilled by the College with reference to any existing course/subject. If so, please give reasons for not fulfilling the conditions.
8. Any other relevant information

C. INFORMATION ON NEW COURSES

1. The Courses/subjects intended to be started.
2. Estimated student enrolment envisaged in each subject.
3. Details on additional physical facilities such as land, buildings etc.
4. Give details on how the College intends to meet the additional financial requirements.
5. What is the proposed additional teaching staff requirement.
6. Additional provision in terms of Library facilities-  
- additional volumes to be procured (with subject-wise break-up).  
- additional journals intended to be subscribed.
7. Arrangements with reference to additional Laboratory facilities intended to be started.
8. Any other relevant information

Date:

Signature of Applicant

Place:

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Note:

1. Documentary evidence to be supplied wherever necessary.
2. The University has laid down certain essential conditions to be fulfilled by the Colleges for introducing new courses/subjects. The College Authority should make sure to follow such conditions in submitting the Project Report.
3. The Report has to be submitted in ten copies.

NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERE  
SHILLONG- 793001.

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PROFORMA - III

Project Report to be submitted by the College Authority  
for permission to upgrade a Pre-University College into  
a Degree College.

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A. GENERAL INFORMATION:

1. Name and address of the College
2. Does the College have a properly constituted Governing Body ? If so, give details of membership etc.
3. Whether the College has implemented all the recommendations of the University relating to affiliation matters. If so, give details and if not, the reasons for not implementing the same.
4. Whether the College maintains the stipulated Reserve Fund in fixed deposit. If so, please give details.
5. Please state in detail the need and justification for upgrading the College into a Degree College.
6. What are the subjects now being offered in the Pre-University level ?
7. Please furnish a detailed statement of Pre-University results (subject-wise) for the last three years.
8. When was the College been granted provisional affiliation ?

B. EXISTING POSITION:

1. Please give details of Physical facilities, such as land, buildings available at present.
2. Please furnish an income and expenditure statement for the last three years or a year budgeted items.
3. Please furnish details of teaching staff now on the payroll of the College with a brief-bio-data of each teacher.

4. Please furnish details relating to Pre-University student enrolment giving subject-wise and section-wise break-up-
5. Please furnish information about the Library.
  - (i) number of volumes - subject-wise break-up
  - (ii) the standard up to which such books are available.
  - (iii) number of journals being subscribed
6. If the College is offering science subjects, please furnish details of Laboratory facilities available at present.
7. Does the College have a qualified full-time Principal ? please give details.
8. Please give details of workload of teachers.

C. INFORMATION ON PROPOSAL FOR DEGREE COLLEGE :

1. What are the subjects the College intends to start at Degree level and expected student enrolment in each subject ?
2. Information on additional Physical facilities required, such as land, buildings etc.
3. Please give details on how the College intends to meet the additional financial requirement.
4. What is the proposed additional teaching staff requirement in each proposed new subject ?
5. Additional provision in terms of Library facilities -
  - additional volumes to be procured (with subject-wise break-up)
  - additional journals intended to be subscribed.
6. Arrangement in terms of additional Laboratory facilities.
7. Admission Policy - whether the College maintains high ethical standard and non-discriminatory Principles.

8. Please give a future development programme of the College for the next years under the following heads:

1. Physical facilities
2. Financial resources
3. Academic programme
4. Library facilities
5. Co-Curricular activities

9. Any other relevant information.

Date:

Place:

Signature of the  
Applicant.

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Note:

1. Documentary evidence is to be supplied wherever necessary.
2. The University has laid down certain essential conditions to be fulfilled by the College authority for upgrading a Pre-University College into a degree College. The College authority should make sure to follow such conditions in submitting the Project Report.
3. The Report has to be submitted in ten copies.

NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERE  
SHILLONG- 793001.

PROFORMA - IV

Project Report to be submitted by the College Authority for permission to upgrade a Degree College into an Honours College.

A. GENERAL INFORMATION:

1. Name and address of the College.
2. Whether the College has implemented all the recommendations of the University relating to affiliation.  
If so, give details and if not, the reasons for not implementing the same.
3. Whether the College maintains the stipulated Reserve Fund in fixed deposits.  
If so, please give details.
4. Please state in detail the need and justification for upgrading the College into an Honours College.
5. What are the subjects now being offered at Pre-University and Degree level ?
6. Please furnish a detailed statement of Degree results (subject-wise) for the last three years including the pass percentage with division.
7. When was the College been granted provisional affiliation ?
8. What are the subjects proposed to be introduced at Honours level ?

B. EXISTING POSITION:

1. Please give details of Physical facilities, such as land, buildings available at present.
2. Please furnish an income and expenditure statement for the last three years as an annexure to the report.
3. Please furnish details of teaching staff now on the payroll of the College with a brief-bio-data.

4. Please furnish details relating to student enrolment at Degree level giving subject-wise and section-wise break-up.
5. Please furnish information about the Library facilities-
  - (i) number of volumes with subject-wise break-up.
  - (ii) Standard upto which such books are available.
  - (iii) number of journals being subscribed.
6. If the College is offering Science subjects, please furnish details of Laboratory facilities available at present.
7. Does the College have a qualified full-time Principal ? Please give details.
8. Please give details of workload of teachers.

C. INFORMATION ON PROPOSAL FOR HONOURS COLLEGE:

1. What are the Honours subjects the College intends to start and expected student enrolment in each such subject ?
2. Information on additional Physical facilities required such as land, buildings etc.
3. Please give details on how the College intends to meet the additional financial requirement.
4. What is the proposed additional teaching staff requirement in each proposed new subject ?
5. Additional provision in terms of Library facilities :-
  - additional volumes to be procured (with subject-wise break-up)
  - number of additional journals intended to be subscribed.
6. Arrangements in terms of additional Laboratory facilities.

7. Admission Policy - Whether the College maintains high ethical standard and non-discriminatory principles.
  
8. Please give a future development programme of the College for the next ten years under the following heads:
  1. Physical facilities
  2. Financial resources
  3. Academic programmes
  4. Library facilities
  5. Co-Curricular activities.
  
9. Any other relevant information.

Date:

Place :

Signature of the  
Applicant

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Note :

1. Documentary evidence is to be supplied wherever necessary.
2. The University has laid down certain essential conditions to be fulfilled by the College authority for upgrading a Degree College into an Honours College. The College authority should make sure to follow such conditions in submitting the Project Report.
3. The Report has to be submitted in ten copies.

NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERE  
SHILLONG- 793001

PROFORMA - V

Project Report to be submitted by the Sponsoring Authority/  
College authority to seek Provisional affiliation.

1. Name of the College
2. Date and reference of the first permission granted to establish a College.
3. Date from which the College starts its regular classes.
4. Please furnish actual position of the Academic details as on the last date of admission.
  - (a) Number of teaching staff appointed.
  - (b) Courses/subjects started
  - (c) Number of students enrolled
  - (d) name of the Principal with qualifications and experiences.
  - (e) Number of volumes procured for the Library
5. Progress report on the recommendations of the University at the time of granting first permission to start the College.
6. Any other relevant information.

Date:

Place:

Signature of the  
Applicant

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Note: The report has to be submitted in ten copies.

NORTH-EASTERN HILL UNIVERSITY  
LOWER LACHAUMIERRE  
SHILLONG- 793001

PROFORMA - VI

Project Report to be submitted by the College Authority  
for granting a permanent affiliation to the College.

A. GENERAL:

1. Name of the College
2. Name of the Principal/or Principals with qualifications, experiences and length of service in the College for the last 10 years.
3. Date of establishment of the College.
4. Date of upgradation into Degree College.
5. Date of upgradation into Honours College.
6. Courses/subjects affiliated at all levels (Pre-University, Degree and Honours)
7. Whether the College has implemented all the past recommendations of the University on affiliation matters. If not, please state reasons for not implementing the same.

B. ACADEMIC:

1. Please furnish the number of students enrolled at all levels (Pre-University, Degree and Honours) yearwise for the last five years.
2. Please furnish the pass percentage of regular candidates in the University examinations at all levels (P.U., Degree and Honours) year-wise for the last 5 years.
3. Please furnish the academic distinctions achieved during the past 10 years.
4. Please furnish details of teachers appointed subject-wise including the nature of their appointments.
5. Please indicate details of strikes, disciplinary cases in the College for the last five years - if any.
6. Policy of admission whether the College maintain a high standard and non-discriminatory principles.

C. RESOURCES:

1. Please furnish all the existing Physical facilities in the College such as - Land, buildings, Library, Laboratory, Hostels, equipments, play field, etc.
  
2. Please furnish present financial position showing major Heads of income and expenditure.

D. SELF-EVALUATION:

1. Please furnish self-evaluation on the following items :-
  - (a) the present academic standard
  - (b) the resources - Physical and Financial
  - (c) the extent of achievements towards its aim and objectives
  - (d) the points of strength and weakness
  - (e) the problems and their solutions
  - (f) the future priorities.

E. REFEREES:

Please furnish names of three responsible persons who are not employees of the College but who have fairly good information about the standing of the College at least for the last five years.

Date:

Place:

Signature of the  
Applicant.

- 
- Note:
1. Documentary evidence is to be supplied wherever necessary
  2. The University has laid down certain essential condition to be fulfilled by the College authority for granting Permanent Affiliation. The College Authority should make sure to follow such conditions in submitting the Project Report.
  3. The Report has to be submitted in ten copies.

NORTH-EASTERN HILL UNIVERSITY

SHILLONG

APPLICATION FOR RENEWAL OF PROVISIONAL AFFILIATION

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To

The Registrar  
North-Eastern Hill University  
Lower Lachumiere, Shillong -1.

Subject : Application for.....

Sir/Madam,

With reference to the subject quoted above,  
we submit the required information as indicated below:

1. Name of the College and address
2. Provisional affiliation for which renewal is due, \_\_\_\_\_
3. Date of granting first Provisional Affiliation to the College and subsequent renewals if there were any.
4. Whether there is any unimplemented recommendations of the University for granting Provisional Affiliation to the College. If so, please state reasons for not implementing the same.
5. Renewal affiliation fee of Rs. \_\_\_\_\_ is enclosed (the payment has to be made through a Cheque/Bank Draft payable to North-Eastern Hill University, Shillong).
6. Please enclose copy of Inspection Report of the College for the last 3 years.

Date:

Signature of the Applicant

Place:

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Note: 1. This renewal application form has to be submitted on expiry of every 3 years from its first provisional affiliation and six months before the expiry of the provisional affiliation.

2. Please submit in triplicate.

NORTH EASTERN HILL UNIVERSITY  
SHILLONG

ESSENTIAL CONDITIONS FOR ESTABLISHING A NEW  
COLLEGE AND FOR GRANTING PROVISIONAL AFFILIATION:

A NEW COLLEGE TO BE ADMITTED INTO THE UNIVERSITY OF THE UNIVERSITY ON PROVISIONAL AFFILIATION SHALL BE REQUIRED TO FULFILL THE FOLLOWING CONDITIONS :-

1. Adequate arrangements for accommodation: the College, Classes, Library, laboratory, Common rooms etc. as prescribed in the Ordinance.
2. A Reserve fund of Rs. 1 lakh in long term fixed deposit in the name of the College.
3. A qualified full time Principal as prescribed by the Ordinance.
4. A regularly constituted governing body.
5. Adequate financial provision, sufficient to run the College for one full academic year.
6. A specific financial provision of Rs. 1 lakh in case of Science College for the purpose of purchasing scientific equipment and laboratory furnitures fittings and chemicals etc.
7. At least 600 Standard Volumes in the College Library in the first year and 1000 in the second year.
8. Teaching staff requirement as prescribed in the Ordinance.
9. Number of students in a section of a Class as prescribed in the Ordinance.
10. Teaching workload and working hours of the teaching staff as prescribed in the Ordinance.
1. Proper maintenance of all official records and accounts.

NORTH-EASTERN HILL UNIVERSITY  
SHILLONG

ESSENTIAL CONDITIONS FOR UPGRADING A DEGREE  
COLLEGE INTO AN HONOURS COLLEGE:

A Degree Colleges to be upgraded into an Honours College shall be required to fulfill the following conditions :-

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1. Implimentation of all the recommendations of the University for starting Degree College.
2. The College must have enjoyed Provisional affiliation upto degree level at least for three years with consistently good results especially in the subjects proposed to be introduced at Hons. level.
3. The College must have adequate physical facilities for accommodating the additional programmes.
4. A qualified full-time principal as prescribed in the Ordinance.
5. Teaching staff requirement as prescribed in the Ordinance.
6. Teaching workload and working hours as prescribed in the Ordinance.
7. A Reserve fund of Rs. 1 lakh in long term fixed deposit in the name of the College.
8. A regular working fund sufficient to run the College for one academic year.
9. A Library with 300 Standard Volumes for each of the Honours subjects proposed to be introduced at Honours level with adequate study space.
10. A completed Laboratory arrangements in Sciences College as prescribed in the Ordinance.
11. A Specific financial provision of Rs.50,000 for purchase of additional Laboratory equipment furnitures etc. for each proposed Honours subject.  
Laboratory
12. A regularly constituted Governing Body.

ESSENTIAL CONDITIONS FOR STARTING NEW COURSES/  
SUBJECTS IN AN EXISTING COLLEGE:

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A College intending to start new Courses/subjects in an existing College shall be required to fulfill the following conditions :-

1. Implimentation of all the recommendations of the University for starting the College up to the standard in which the new Courses/subjects are proposed to be introduced.
2. The College must have consistently good results for the last ~~three~~ years in the subject for which provisional affiliation had been granted.
3. The College must have adequate Physical facilities for accommodating additional programmes.
4. A qualified full-time Principal as prescribed in the Ordinance.
5. An additional teaching staff requirement as prescribed in the Ordinance.
6. A regular working fund sufficient to meet additional requirements for one academic year.
7. An additional 200 standard Volumes for each new Course/subjects to be introduced.
8. An additional Laboratory arrangements in Science College as prescribed in the Ordinance.
9. A Specific financial provision of Rs. 50,000 for purchase of additional laboratory equipments, furnitures etc. for each Laboratory subject.

NORTH EASTERN HILL UNIVERSITY

SILIGONGI

ESSENTIAL CONDITIONS FOR UPGRADEING A DEGREE COLLEGE INTO A DEGREE COLLEGE

A Degree-College shall be required to fulfill the following conditions.

1. Implementation of all the recommendations of the University for starting the College and a Provisional affiliation to the College up to Degree-College level.
2. The College must have enjoyed Provisional affiliation up to Degree-College level at least for 3 years with consistently good results especially in the subjects proposed to be introduced at Degree level.
3. The College must have buildings in its land.
4. A qualified full time Principal as prescribed in the Ordinance.
5. Teaching staff requirement as prescribed in the Ordinance.
6. Teaching workload and working hours of the teaching staff as prescribed in the Ordinance.
7. A Reserve fund of Rs. 1 lakh in a long term fixed deposit in the name of the College.
8. A regular working fund sufficient to run the College for one academic year.
9. A Library with 500 standard Volumes for each subject proposed to introduce at degree level with adequate study space.
10. A completed laboratory arrangement in Science College as prescribed by the Ordinance.
11. A specific financial provision of Rs. 1 lakh for purchase of additional laboratory equipment, furnitures etc.
12. A regularly constituted Governing Body.

NORTH-EASTERN HILLS UNIVERSITY  
SHILLONG

Essential Conditions for granting  
Permanent Affiliation

A College to be admitted into the privilege of the University on Permanent Affiliation shall be required to fulfill the following conditions:-

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1. Implimentation of all the recommendations of the University on affiliation matters upto the standard for which Permanent Affiliation is sought.
2. The College must have a record of consistently good results for the last ten years upto the standard for which Permanent affiliation is sought.
3. The College must have observed all the Ordinances relating to the qualification and minimum requirement of teaching staff, appointment of Principal, teaching workload and working hours of teachers, arrangement of Laboratory and Library.
4. There must have been an adequate evidence to the stability of all the existing physical facilities and financial provisions with scope for further improvement.

MEMORANDUM

Agenda Item:

The North-Eastern Hill University had adopted the Ordinance on Affiliation of Gauhati University in 1973. This Ordinance was amended recently by the Executive Council upto clause 13. It has now become necessary to amend the clause 15 of the old Ordinance relating to 'Affiliation Fee'. This has become necessary in view of the fact that the rates in the old Ordinance were prescribed almost 2 decades ago and are not quite adequate at present. It is, therefore, proposed to amend the clause 15 on 'Affiliation Fees' as follows:-

Existing Clause

115. AFFILIATION FEE

Applications for affiliation or renewal or extension of affiliation shall be submitted with a fee at rates prescribed below. Such fee shall not be refunded in any circumstances.

- (i) Application for first affiliation .Rs.560/-
- (ii) Renewal of affiliation Rs.200/-
- (iii) Extension of affiliation in one or more new subjects or from pass course to honours course in any subject or subjects in any year
- (iv) Upgrading of affiliation from P.U. to Degree standard or new affiliation in courses under a separate faculty in the same college Rs.500/-
- (v) Annual enrolment fee At the rate of Rs. per regular student on the college rolls as on the 1st of October of the year subject to a minimum of Rs.300/-

The application fee shall be required in the case of affiliation of a college for 2nd year P.U. or 2nd year Degree class or for permanent affiliation of the college.

Proposed amendment

\*8. AFFILIATION AND OTHER FEES

A sponsoring authority seeking permission to open a new college or colleges seeking to open new courses or upgradation or for seeking provisional/permanent affiliation shall pay the fees at the rates specified below:-

1. Request for permission to open a new college Rs.1,000.00
2. Request for renewal of provisional affiliation/permanent affiliation Rs. 300.00
3. Permission to open a new course/subject Rs. 300.00
4. Annual enrolment fee @Rs 2/- per student on rolls as on the closing day of admissions. of the year to a minimum of Rs. 500.00
5. Reserve fund in long term fixed deposits in the name of the college/fees once Rs.10,00,000 paid shall not be refunded

Fees from students

The college may levy such fees from students from tuition etc., as is prescribed by the Univ. from time to time.

A NOTE ON RESTRUCTURING OF COURSES AND SOME RELEVANT APPLICATION ORIENTED SUBJECTS WHICH COULD BE INTRODUCED AT THE FIRST DEGREE LEVEL: UNIVERSITY GRANTS COMMISSION

SECRETARY

Bahadur Shah Zafar Marg  
New Delhi - 110002

No.F.1-3/82(CP)

July 28 1982

Dear Vice-Chancellor:

As you are aware, the scheme of restructuring of courses was initiated by the University Grants Commission during the fifth plan period with a view to making the first degree courses more relevant to the rural environment and to the developmental needs of the community and to link education with work/field/practical experience and productivity. The key concept underlying the restructuring of courses is to remodel the existing conventional three subject courses at the first degree level by courses comprising two of the existing subjects together with a third subject being oriented towards field/practical work or having a bearing and direct relevance to the local/regional needs and requirements.

The conference of Vice-Chancellors held in May 1981 reviewed the position regarding restructuring of courses at the undergraduate level for greater relevance and development and the guidelines for the restructuring of courses in the context of new pattern of education. The conference unanimously agreed to the need and urgency for restructuring of undergraduate courses so as to bring in the necessary measure of relevance, application orientation, flexibility and diversification and efforts to provide linkages between education and emerging employment opportunities including self-employment. Sufficient attention should be given to introduce in an appropriate manner the newly emerging subject disciplines.

The Commission with the help of a committee reviewed the guidelines for restructuring of courses at undergraduate level and a copy of the revised guidelines for restructuring of courses of study at the undergraduate level including the courses in actuarial science/insurance as suggested by the Government of India and as accepted by the Commission is enclosed.

A list of Course Content for "Insurance" as an Elective subject for B.A./B.Com. examinations in the universities as framed by the Insurance Division of the Ministry of Finance is also enclosed. A note on the introduction of Job Oriented courses in "Actuarial Science" prepared by the Ministry of Finance in consultation with the Actuarial Society of India is also enclosed.

I shall be grateful if you would kindly get these considered as expeditiously as possible by the academic bodies of the university and send within the next three months the views of the university, if any, and also the action taken thereon including the phased programme for implementation of the scheme during the sixth plan period.

With regards,

Yours sincerely,

Sd/-  
( R. K. Chhabra )

Dr. B.D. Sharma  
Vice-Chancellor  
North Eastern Hill University  
Shillong.

A NOTE ON RESTRUCTURING OF COURSES AND SOME RELEVANT APPLICATION ORIENTED SUBJECTS WHICH COULD BE INTRODUCED AT THE FIRST DEGREE LEVEL: UNIVERSITY GRANTS COMMISSION

"Revised Guidelines for restructuring of courses of First Degree level in the Faculties of Arts, Social Sciences and Science in Universities and Colleges."

(A) Objectives

1. Within the general principles of relevance and flexibility, there is an immediate need for combining the academic component of courses at the First Degree level with relevant applied components suited to the real problems having a bearing and direct relevance to the local/regional needs and work experience so that courses at first degree level in Arts, Social Sciences and Science become relevant to the local environment and to the developmental needs of the community and are linked with work/field/practical experience and productivity. This would imply a good deal of integration and broad based re-framing of the courses at the degree level to give them a practical and rural application orientation.
2. The restructuring of courses implies re-orientation of existing courses in subjects to the needs of the region/community and also the introduction of some relevant applied disciplines/subjects related to basic subjects or subject groups. The component of academic subjects has essentially to be the same so that students pursuing these courses are able to go in for post-graduate studies, but their orientation may be different in regard to application of knowledge of the concerned discipline to relevant situations.
3. The new courses of applied nature to be introduced do not have to be necessarily in the nature of professional and/or job-oriented courses, but should involve development of appropriate skill and competence. The underlying idea in restructuring the courses is to make them relevant to the local needs and increase the horizon of the employability of science and Arts graduates. Existing courses are to be re-oriented in such a manner that students can apply theoretical knowledge to the problems of the region through field work, project work, extension etc. which would be undertaken as a part of study of the concerned discipline. In other words, the existing conventional courses may be concerned with concrete problems and related to the development of the region.
4. Restructuring of courses has become particularly important in view of the introduction of the new pattern of education which has enhanced the duration of courses leading to the first degree in arts, science, commerce etc. from 14 to 15 years in a number of states. The opportunity should obviously be utilised to modernise the course as well as to enrich the contents and to make them relevant to Societal needs and aspirations.
5. The suggestions regarding foundation courses and applied projects are illustrative and not prescriptive in nature. The purpose of the scheme is not a mechanical addition to the content of courses but to make education more purposeful and to move away from highly formalised and narrow courses based on information and rote memory.
6. In this context, one needs to underscore the point that restructuring of courses should not necessarily lead to increase in workload of students as the purpose of this scheme is to improve quality of education rather than the quantum of work.
7. The restructured courses, it is expected, would emphasize those skills and values which would enable the student to have a better awareness of his self and environment, culture, tradition and heritage and the contemporaneous problems of the society.

(B) ROLE OF UNIVERSITIES

The Universities have to take a lead in formulating courses at first degree level with the help of their boards of studies and faculties. The restructured courses may be generally on the lines indicated later in the guidelines. The content of courses in each subject which the University proposes to introduce may be broadly laid down and facilities for examining the students in that subject be provided so that the colleges affiliated to the University are able to choose the subjects keeping in view the local and regional needs. The Universities may for this purpose also consider setting up an Implementation Committee which may review the progress of the scheme of restructuring of courses periodically and evaluate the programme from time to time. Students may be associated with the selection of courses wherever considered essential. The College should also undertake survey in the area to assess the needs of the region before choosing a particular subject of study under the scheme of restructuring of courses.

(ii) The University may also consider taking up some of the courses proposed to be introduced as application oriented subjects within the programme of continuing education to see their impact and progress. The question of introducing the course as a part of restructuring of courses may be considered after assessing its impact and usefulness.

(iii) While framing content of courses for the subjects of applied nature, the university may consult the Agricultural Universities and Technological Institutions other user institutions and local industries in the region.

(iv) After the courses have been formulated by the University, the **next logical step would be to arrange workshops and orientation courses** for teachers of colleges which have agreed to introduce the scheme of restructuring of courses so as to enable them to teach the subject more effectively with the new concept and by relating them with the problems connected with the development of the region concerned.

(C) CONTENT OF COURSES

The courses at first degree level may have 3 components:

- (a) Foundation Courses
- (b) Core Courses
- (c) Courses of Applied Nature.

a) Foundation Courses:

(i) With a view to creating greater awareness of one-self and of the social, cultural and natural environment, a study of foundation courses in the broad areas of knowledge may be introduced for all degree students as part of restructuring of courses. For this purpose, a number of alternative courses may be provided as part of foundation courses from whom, a student be given option to choose the stipulated number of courses. The alternatives should be so provided that there is some degree of equivalence as well as flexibility and the colleges are enabled to select relevant courses depending upon the teaching resources available with them. As the foundation courses are initiated for creating an awareness among the students, the responsibility for teaching them should rest with the existing teachers in the related disciplines after providing suitable short-term orientation courses, workshops, wherever necessary by the Universities. Assistance for organising such workshops may be made available by the Commission within the provisions of existing scheme of seminar and summer institutes as per norms laid down for the purpose.

(ii) It may not be necessary that foundation courses should necessarily and with a regular examination. Each University may exercise its discretion in this regard.

(iii) The Institution should give ample choice to students to select foundation courses of their choice instead of providing facilities in the stipulated number of foundation courses only to be taken compulsorily by all the students.

(iv) The foundation courses should be started only after all the details including syllabi, work schedule, lecture, programme, level of collaboration and interaction with other organisations and institutions in the city/region and other relevant details have been finalised by the institution concerned.

(v) The University/College may also decide the duration of each foundation course. Each course may not necessarily be undertaken by a student during all the 3 years. Some of the courses could be taken and completed in one year while others in 2 years. An illustrative list of courses which could be considered for including them in the foundation courses is given below:-

1. Language - English including literature and or regional language with a view to developing communication skill among the students.
2. Social and cultural History of India/Asia
3. History of Freedom Movement in India including National Integration.
4. Science in Everyday life/science and Society
5. Evolution of life.
6. Growth and development of scientific ideas.
7. Population health and Nutrition education.
8. Environmental study
9. Value systems
10. Resolution of Conflict in Society
11. Growth of Moral and spiritual ideas.
12. Educational Technology.

(b) Core Courses

(i) Study of 2 or 3 subjects not necessarily confined in the same faculty may be prescribed under Core Courses, to give the student an opportunity to acquire a broad familiarity of disciplines of his choice including study of atleast/one of these subjects in depth. For this purpose, the University may consider prescribing that one of the subjects under core courses may be taken as a major subject in which the student may if so wishes pursue postgraduate studies whereas the other subject or subjects may be of subsidiary nature. The syllabi of various courses may be determined both as a major subject and as a subsidiary subject with the help of boards of studies, which may also incorporate field work, survey, extension and practical work, wherever necessary in the course content.

(ii) The Colleges may select subjects to be offered to students in their institutions keeping in view the local and regional needs and the facilities of teaching available with their institutions.

(c) Courses of Applied Nature.

(i) The third component of restructuring of courses would be to provide for courses of applied nature or application oriented subject which could be offered by a student along with the foundation and core courses of his choice. The combination of application oriented subjects with core courses may be determined by the University and the colleges may select these application oriented subjects keeping in view its local and regional needs and the industries in the region. An illustrative list of courses which may be taken up with Science and Social sciences subjects is given in the Annexure. This list is merely illustrative and the University may prescribe such courses as they feel necessary in their region. The content of courses may be carefully worked out and the expertise available with other institutions and industrial undertakings in the region should be utilised for this purpose. The courses offered as part of application oriented subjects may not necessarily be the same as in agricultural and technological universities and may be introduced with a view to familiarising the students with that subject and equipping him with the skills/techniques which may help him in finding an employment with the local industries or start his own venture/self-employment after graduation. The course should not be introduced with the intention of enabling the students to take up post-graduate studies in such subjects. In teaching these application oriented courses, it may not be necessary to provide a full time faculty for teaching all the papers. The expertise available in the other institutions and industries should be utilised by inviting them to deliver lectures as visiting faculty.

(ii) The response of students to these courses may be assessed periodically and if it is found that any particular course is not attracting students or it is not possible to run it effectively, the institution may substitute it with other alternative courses prescribed by the University.

(iii) It would be useful and appropriate in the selection of application oriented subjects to try them as pilot projects under continuing education programmes for a year or so before incorporating them in the regular degree courses. If the course evokes response as a part of continuing education programme, it could be incorporated in the regular degree courses.

(d) Post-B.A./B.Sc./B.Com. Diploma courses to increase the employability of graduates

In addition to restructuring the courses at first degree level as indicated above, the universities may consider introducing post-B.A. B.Sc./B.Com. diploma courses of one year duration in such subjects which may increase the area of employability of graduates. For this purpose, the University may undertake a survey of the region to determine the courses which would be useful for the graduates in finding employment in the industries and institutions in the region. The content of these diploma courses may be determined with the help of institutions and industries concerned. The colleges may select any subject within several diploma courses formulated by the University. In case there is some difficulty with the colleges to introduce such a course as a full fledged course after graduation, they may consider staggering the content of one year course to three years and introducing it as an additional course at degree level which may be undertaken by interested students in all the 3 years of the degree course as additional subject. In case, the University does not find it possible to formulate such a course after survey, a college having necessary infrastructure facilities with it for running such a course, may introduce it and award diploma on successful completion of the course by the Students.

## Supplementary measures

Several important measures as detailed below will have to be adopted in order to secure the fullest advantage of the new pattern of education. It hardly needs to be emphasized that the proposed changes will require considerable preparation, including the preparation of new courses/materials and the orientation of teachers.

### (i) New Methods of Teaching:

The existing teaching methods which are largely based on rote-memory, lecture and re-production should be replaced by new teaching methods which awaken curiosity, encourage self study habits and promote problem solving skills.

It is necessary to recognize the importance of problem solving exercises and seminar discussions in the case of science subjects and case studies, tutorials and seminars in the case of social sciences. There should, therefore, be adequate time explicitly allocated in the time-table for tutorials, seminars, self-study sessions etc. It is suggested that a formal lecturing should not constitute more than two-third of the teaching learning situation. Especially during the third year, the proportion of formal lecturing could be reduced even more and greater emphasis laid on guided self-study. Class-room lectures should be substituted, to an increasing extent, by seminar discussions with a view to ensuring a two-way participation in instruction. Individual and group assignments should be given evaluated and discussed frequently as an aid to better learning.

It may not be possible to introduce project work for every student immediately but planning should be done in such a way that in about five years project becomes an integral part of the curriculum.

There must be some component in the curriculum which required every student to use the library for reference work. Once such a component is introduced, this should be taken into account in strengthening the library for reading and reference materials, including journals.

### (ii) Examination Reforms

The entire philosophy of examination reform is that one who teaches must evaluate but the ultimate objective can be achieved through different paths in different universities. The purpose of sessional evaluation is not merely to increase the frequency of examinations or to supplement the final examinations by mid-term examinations. The main purpose is to bring about interaction between teaching and learning on a continuing basis and to test those skills and abilities which cannot be tested through a written examination alone at the end of the term of course. The concept of question bank is to utilise the collective wisdom of teachers in framing question items of improved type and properly related to the multiple objectives of the courses. Question banks bring about a better correlation between what is taught and what is to be examined. It is a means of reducing the element of chance and arbitrariness. The semester system, properly linked with unit courses and credits enables students to have greater flexibility in the combination of courses. The introduction of a system of credits and unit courses would also enable students to take up part of the courses in the neighbouring institutions and also facilitate student mobility. The essential features of these reforms should be incorporated in the courses to bring about a proper integration of teaching, learning and evaluation.

### (iii) Faculty Improvement

It has already been emphasized that the new courses and the new techniques of teaching will not produce the desired results unless steps are taken for the professional enrichment of teachers. Universities and colleges should make the fullest use of the on-going faculty improvement programmes of the Commission and also organise orientation and training courses for the college teachers in the new areas and also in techniques of teaching.

(iv) Language as a means of Communication :

It is important that universities pay adequate attention to language as a means of communication either through the courses included in the curriculum or through remedial teaching programmes and enrichment programmes or other special courses using modern techniques of language teaching. Students should be taught to use and organise words clearly and effectively to make their thinking precise and accurate.

In this context it may be mentioned that hours of work devoted to language teaching could be reduced in many universities if the courses are so re-oriented that they emphasise language as a means of improving communication skills in the relevant subjects areas rather than literary skills, criticism etc.

(F) Assistance from the Commission

Resources for the implementation of the programme of restructuring of courses may have to be found by each university within its existing resources. The universities interested in this programme may utilise the assistance available under the UGC schemes of "Summer Institute" and "Workshop" for organising re-orientation courses for teachers in colleges whose proposals for restructuring of courses are accepted by the Commission. The Commission may also provide assistance to universities for (a) seed money

(b) Orientation of teachers and

(c) Preparation of course materials, teaching aids etc. Universities may also be assisted for offering some courses on an experimental basis. Total assistance to a University for the above programme may be limited to Rs. 5 lakhs for a period of 5 years.

The Commission may assist a college under this programme upto Rs. 1 lakh per annum, for appointing Core Staff, utilising services of part time staff and other non-recurring expenses for a period of 5 years. The core staff may be appointed wherever necessary in the new areas to be introduced as a part of restructuring of courses part time staff may be drawn from other institutions and local industries. A meaningful interaction between the theory and its application to the needs of the region would be possible only when there is a regular interaction with the user agencies in the region.

Relevant application oriented subjects which could be introduced at the First Degree Level.

With Science Subject

- i) Physics, Mathematics along with subjects such as instrumentation/communications/metallurgy/electronics/solid state devices/computer science/environmental physics/meteorology.
- ii) Physics, Chemistry along with subjects such as polymer science/industrial chemistry(plant products- based or mineral-based/materials science/analytical methods/solid state devices/pharmaceutical chemistry/waste products chemistry, etc.
- iii) Botany, chemistry with horticulture/pharmacy, agricultural chemicals and fertilisers/seed pathology and technology/Human biology/resources ecology/micro-biology/analytical methods/forestry/biochemistry/biotechnology and waste products utilisation/food technology etc.
- iv) Zoology, chemistry with human biology/human nutrition/animal nutrition/rural biology/post control/public health and sanitary biology microbiology/food technology population and health education, etc.
- v) Botany zoology with plant protection/plant and crop genetics/storage and warehousing/systems ecology/and resources documentation/mangrove ecology/fisheries/aquaculture/apiculture/soriculture/wild life biology/environmental biology/population biology, etc.
- vi) Geology, physics with geophysical exploration methods/coastal ecology/groundwater geology/water technology and management, etc.
- vii) Geology, geography with geological exploration methods/fossil fuels and energy resources/regional development/ground-water resources/soil conservation, etc.
- viii) Mathematics/Statistics/Insurance/Actuarial Science.

With Arts Subjects

- i) Economics, Commerce and Agricultural Marketing Insurance/Actuarial Science/Management Studies.
- ii) Economics, Commerce and Farm Management/Insurance/Actuarial Science/Management Studies.
- iii) Economics, Commerce and Co-operative Management/Insurance/Actuarial Science/Mathematics/Statistics/Management Studies.
- iv) Political Science, Economics and Community Development/Insurance.
- v) History, Political science, and Local Self-Government/Insurance.
- vi) Economics/Political Science, Cultural Anthropology/Sociology of Community Life.
- vii) Economics, Commerce and Rural Industrialisation/Insurance/Actuarial Science/Mathematics/Statistics/Management Studies.
- viii) Economics, Political Science and Panchayati Raj.
- ix) Economics, Commerce and Rural Banking/Insurance.
- x) Economics, Sociology and Social Work/Insurance.
- xi) Economics, Sociology and Labour Welfare/Insurance.
- xii) Economics, Sociology and Industrial Relations/Insurance.
- xiii) Economics, Sociology and Trade Unions/Insurance
- xiv) Economics, Commerce and Marketing.
- xv) Economics, Commerce and Home Economics.

COURSE CONTENT FOR "INSURANCE" AS AN  
ELECTIVE SUBJECT FOR B.A./B.COM EXAMI-  
NATIONS IN THE UNIVERSITIES

The students should be required to cover the following syllabus for the B.A./B.Com Examinations:-

Syllabus for B.A. Examination

(A) ELEMENTS OF MODERN COMMERCE

The meaning and Scope of Commerce - Home Trade - Foreign Trade - Transport - Forms of Business Organisation - Office Organisation and Routine - Banking and Instruments of Credit - Book Keeping - Business Correspondence - Report Writing and Public Relations in General Insurance.

(B) LAW & ECONOMICS OF INSURANCE

Elements of Price Theory - The Theory of the Firm - Equilibrium of the Firm - The Role of Insurance in Economic Activity - Public Economics & Insurance.

LAW Salient Aspects of Law of Contracts - Insurance Contracts - Agency (Based on Indian Contract Act, 1872) - Agency for Insurance - Law relating to the business of Insurance (Elementary - Based on the Insurance Act, 1938).

(C) PRINCIPLES AND PRACTICE OF GENERAL INSURANCE

(i) Principles of General Insurance

Risk and Risk Control - Theory of Rating - Scope and Functions of Insurance - Origin, History and Development of Insurance - Principles - Insurable Interest - Principles - Utmost Good Faith - Principles - Indemnity - Principles - Subrogation and Contribution - Proximate Cause - Underwriting - Claims.

(ii) Practice of General Insurance

Market Structure - Insurance Legislation in India - Tariff Advisory Committee - Agency Structure - Proposal Forms - Cover Notes - Policies - Endorsements - Renewals Underwriting - Co-Insurance - Reinsurance - Accounting - Reserves. Payments of Premium - Refund of Premium - Short period Scale - Stamp Duty. Rating - (Tariff & Non-Tariff). Claims Practice including Surveys. Statistical Returns.

(D) PRINCIPLES AND PRACTICE OF LIFE INSURANCE

Nature of Insurance - Brief History of Life Assurance - What Does The Insurer Offer - Basic Elements in Life Insurance premiums - Some Important Plans of Insurance - Underwriting or selection And Classification of Risks - Other Important Plans - Some Legal Aspects of Insurance - Tax Reliefs and Life Insurance - People's Money for People's Good - Mathematics of Life Insurance - Non Medical Insurance Group Insurance - policy Conditions and Privileges - Surrender Value - Paid-up Value and Loans - Settlement of Claims - assignments and Nominations - The Salary Savings Scheme - Valuations - Mechanical Aids in Service to Policy - Holders - The Set-up of Life Insurance Corporation of India.

(E) MATHEMATICAL BASIS OF LIFE INSURANCE

Elements of Algebra - Compound Interest - Annuities Certain - Probability - Mortality Table - Construction of Mortality Tables - Well Known Mortality Tables - Life Insurance Premiums - Assurance Benefits - Life and Temporary Annuities - Net Premiums - Office premiums - Premium Conversion Tables & Commutation Functions - Policy Values - Methods of

Valuation - Data for Valuation - Special Reserves - Meaning of Profit.

(F) FIRE INSURANCE

Introductory - The Standard Fire Policy -

I - The Standard Fire Policy - II - Special Perils;  
 Special Policies - Fire Insurance Rating and Tariffs -  
 Fire Underwriting - The practice of Fire Insurance -  
 Surveys and Inspections - Consequential Loss Insurance.

Syllabus for B.Com. Examination

(A) LAW & ECONOMICS OF INSURANCE

Elements of Price Theory - The Theory of the Firm -  
 Equilibrium of the Firm - The Role of Insurance in Economic  
 Activity - Public Economics & Insurance.

L A W: Salient Aspects of Law of Contracts -  
 Insurance Contracts - Agency (Based on Indian Contract Act, 1982) -  
 Agency for Insurance - Law Relating to the Business of Insurance  
 (Elementary - Based on the Insurance Act, 1938).

(B) ACCOUNTING & MANAGEMENT ACCOUNTING WITH  
 REFERENCE TO INSURANCE

Fundamental Principles of Accounting - Accounts of Insurance Companies -  
 Life Insurance in India - Premiums - Life Insurance - Policy Loans -  
 Life Insurance Claims - Life Insurance - Expenses of Management - Commi-  
 ssions - Expenses of Management - Other Expenses - General Insurance -  
 Premiums - General Business - Claims - General Business - Expenses of  
 Management. General Business - Investments - Income - Tax Assessment of  
 Insurance Business - Exchange Control - Balance Sheet - Management  
 Accounting - Accounting Ratios - Interpretation of Financial Statements-  
 Budget and Budgetary Control - Reports and Reporting - Cost Accounting  
 Mechanisation.

(C) PRINCIPLES AND PRACTICE OF GENERAL INSURANCE

(Syllabus same as for subject "C" for B.A.)

(D) PRINCIPLES AND PRACTICE OF LIFE INSURANCE

(Syllabus same as for subject "D" for B.A.)

(E) MATHEMATICAL BASIS OF LIFE INSURANCE

(Syllabus same as for subject "E" for B.A.)

(F) FIRE INSURANCE

(Syllabus same as for subject "F" for B.A.)

BOOKS RECOMMENDED

B.A.

(A) ELEMENTS OF MODERN COMMERCE

Prescribed reading.

"Elements of Modern Commerce" published by Federation of Insurance Institute - Course No.(12).

Additional Reading

1. Modern Business Correspondence - L. Gartside - The English Language Book Society and Macdonald and Evans Ltd., London and Plymouth.
2. A guide to Precise Writing - F.J. Fielden - University Tutorial Press Ltd., London.
3. Public Relations (A Scientific Approach) - Sahai Baldeo - New Delhi, SCOPE, 1980

(B) LAW & ECONOMICS OF INSURANCE

Prescribed Reading.

1. "Law & Economics of Insurance" published by Federation of Insurance Institute - Course No. (94).
2. "Investment Supplement" published by Federation of Insurance Institute (F.I.94A).

Additional Reading

Economics and Insurance - R.L. Caryer - P.A. Press Ltd.

(C) PRINCIPLES AND PRACTICE OF GENERAL INSURANCE

(i) Principles of General Insurance.

Prescribed Reading.

"Principles of General Insurance" published by Federation of Insurance Institute - Course No. (10)

(ii) Practice of General Insurance

Prescribed Reading.

"Practice of General Insurance" published by Federation of Insurance Institute - Course No. (11).

(D) PRINCIPLES AND PRACTICE OF LIFE INSURANCE.

Prescribed Reading.

"Principles and Practice of Life Insurance" published by Federation of Insurance Institute - Course No. (1).

Additional Reading

Principles and Practice of Life Insurance - New & Bacon - Buckley Press.

(E) MATHEMATICAL BASIS OF LIFE INSURANCE

Prescribed Reading.

"Mathematical basis of Life Insurance" published by Federation of Insurance Institute - Course No. (21)

Additional Reading.

Elements of Actuarial Science - Underwood - Pitman.

(F) FIRE INSURANCE

Prescribed Reading.

"Fire Insurance" published by Federation of Insurance Institute - (F.I.10).

B. COM.

(A) LAW & ECONOMICS OF INSURANCE

prescribed Reading.

1. "Law & Economics of Insurance" published by Federation of Insurance Institute - Course No. (94).
2. "Investment supplement" published by Federation of Insurance Institute (F.I.94-A).

Additional Reading.

Economics and Insurance - R. L. Carter - P.H. Press Ltd.

(B) ACCOUNTING & MANAGEMENT ACCOUNTING WITH REFERENCE TO INSURANCE

prescribed Reading

"Accounting & Management Accounting with Reference to Insurance" published by Federation of Insurance Institute - Course No. (95).

Additional Reading

1. Introduction to Business Accounting for Magagers - W.C. Hartly - Pergamon Press.
2. Management Accounting in practice - De Paula - Pitman.
3. Management Accounting - Text and Cases - Robott N. Antrony.
4. Study Course Management Accounting - I.C. 77 (iii).

Subject : Introduction of job-oriented course in Actuarial Science - Proposal regarding

### INTRODUCTION

Though the actuarial profession in India is well over 50 years old, we do not have any institution to impart actuarial education and conduct examination in the field. Almost all Indian actuaries are Members of the Institute of Actuaries, London, which, having been established in 1848, is the oldest actuarial institute in the world. The Institute is universally looked upon as the mother of the profession and even at present, Indians seeking to acquire actuarial qualifications sit for its examinations which are held at different centres in several countries in the world, including India.

2. The Institute of Actuaries, London, has consistently maintained high rigorous standards and only those students who have a sound academic background and have put in serious and intensive study can expect to pass these examinations. By virtue of this, the Institute has been able to maintain the integrity and status of the profession.

3. The rigorous discipline of the actuaries in subjects like Statistics, investments and demography equip them eminently for efficiently carrying on jobs requiring mathematical and statistical analysis, estimation, projections, decrement rates and so on. Thus, in U.K. and several other countries, the actuarial profession has a large and broad base for employment, and many actuaries have creditably applied their skills in a variety of specialised fields other than life insurance, such as general insurance, census operations, investment management and operational research.

### CONDITIONS IN INDIA

4. India is considered as a developed country as far as insurance industry is concerned. The industry has made great strides in the wake of nationalisation and many Indian insurance experts, including actuaries, have secured senior jobs in developed as well as developing countries abroad. While the industry is poised for attaining a faster rate of growth, paradoxically enough the number of actuaries and actuarial students has been going down. The following are the main causes for this situation:-

(i) The utility of actuaries in the diverse fields mentioned has not yet been fully recognised in India. As the actuarial profession in India does not command employment potential comparable to that in other countries, new entrants to the profession are drawn mainly from the life insurance industry.

(ii) Over the years, admission fees, annual subscription fees, examination fees, costs of books and tuition courses, payable to the Institute of Actuaries, London, have gone up steeply. While the life insurance industry reimburses these costs to its actuaries as well/<sup>as</sup> its employees taking up actuarial examinations, prospective students other than employees of the industry find the costs to be prohibitive. Thus, the cost of prosecuting actuarial studies has become a serious inhibiting factor.

(iii) The legislative background and social conditions in U.K. are at considerable variance with those in India, since the examinations of the Institute of Actuaries, London are based essentially on the conditions and practice obtaining in U.K., Indian students are at a handicap in taking up these examinations.

5. The continuing fall in the number of actuaries and actuarial students in India is a matter of concern. It is feared that unless the situation is remedied at the earliest, and the trend of decline in the number of actuaries and actuarial students in India continuous, stage may soon be reached when even the traditional employers of actuaries and actuarial student, namely, the LIC, GIC and Insurance Division of the Ministry of Finance, may find it difficult to find enough hands to carry on actuarial work even at the existing levels of efficiency.

#### CONSIDERATION OF PROBLEM.

6. Having regard to the foregoing, Government of India had requested the Actuarial Society of India to give urgent thought to the question of establishing an Indian qualification in actuarial science, which should take into account Indian conditions and practice. The Actuarial Society of India (a deliberative body consisting of most actuaries and actuarial students of India) has examined the matter at length and has come to the conclusion that the time is ripe for establishing a broad-based Indian qualification in actuarial science, which would provide employment opportunities in several fields. It may be mentioned that the employers who would be in a position to employ persons with the Indian qualification include LIC, GIC, Insurance Division of the Ministry of Finance, Ministry of Labour (including Employees' State Insurance Corporation and Employees' Provident Fund Organisation), FLI Organisation of DGP&T, Financial Institutions, such as IDBI, ICICI, IFCI and UTI, Central Statistical Organisation and National Sample Survey Organisation. The services of the actuaries would also be required by the Government in the fields of retirement benefits and other social security benefits for their staff as well as for formulating social security schemes for specific categories of persons or general public etc.

PROPOSAL

7. It should be our aim to establish an Indian qualification in actuarial science of the same standard as that maintained by the Institute of Actuaries, London. The examinations conducted by the latter cover subjects in two groups. The first group may be termed as Actuarial Mathematics, covering probability, statistics, mortality and other investigations and allied subjects. The second group covers professional level subjects including life insurance and its practice, retirement benefits and its practice, investments and general insurance.

8. The main difficulty in setting up an Indian Institute of Actuaries, corresponding to the Institute of Actuaries, London, has been that of finding sufficient number of actuaries and academicians who can devote enough time to preparation of syllabus, reading material and question papers, holding of examinations, etc. and undertaking original research. Having regard to this constraint, a practical method of evolving an Indian qualification in actuarial science would be through university level courses in actuarial science combined with professional examination conducted by a body like the Actuarial Society of India. The university level course could be designed to cover the basic theoretical knowledge which provides the foundation of actuarial science. A part of our university course could be restructured in such a way that the mathematical part of the examinations can be taken up by the universities. Our universities have a number of experts in this area and they can easily take up the mathematical part known as actuarial mathematics. In our endeavour to make our education system job-oriented this would be a great step forward. The students with this background can immediately look forward to securing remunerative jobs after completing the actuarial mathematics at the university level. (The LIC has tentatively agreed that first class graduates and high second class graduates in actuarial science would be considered for appointment as Higher Grade Assistants and first class post-graduates would be considered for appointment as Assistant Administrative Officers). This would also enable them to gain further higher positions after passing the professional examinations.

9. The present syllabus of the 'A' level examinations of the Institute of Actuaries, London, answering the description of actuarial mathematics is enclosed.

CONCLUSION

10. Having regard to the need to set up an Indian qualification in Actuarial science, as early as possible, it is proposed, as mentioned in para 8 above, to request the universities to take up the mathematical part of the examinations at a level comparable to that of Group 'A' of the examinations of the Institute of Actuaries, London and to assign the conduct of professional level examinations to

the Actuarial Society of India. As regards the mathematical part, considerable head way has already been made by Bombay University and the Indian Statistical Institute, Calcutta. Other universities are also being approached in the matter. It is felt that this process would be greatly expedited if the University Grants Commission lends its valuable support to the project.

## Content of the Examinations-group A

## A1 Probability and Elementary Statistics

One paper covering:

- (a) Meaning and scope of probability
- (b) enumeration of cases
- (c) geometrical probability
- (d) conditional probability
- (e) independence
- (f) addition and multiplication axioms
- (g) Bayes' theorem
- (h) use of binomial expansion and elementary combinatorial methods
- (i) Organisation and presentation of data
- (j) measures of location and dispersion
- (k) expected values
- (l) random variables and their distributions
- (m) probability generating functions
- (n) use of binomial, normal and poisson distributions
- (o) covariance and correlation
- (p) elementary regression, method of least squares
- (q) sampling distribution of the mean, central limit theorem

## A2 Compound Interest

One paper covering:

- (a) basic functions and equations of value
- (b) discounted cash flow terminology and methods of investment appraisal
- (c) annuities certain
- (d) capital redemption policies
- (e) valuation of securities
- (f) cumulative sinking funds
- (g) effect of taxation
- (h) effect of variations in interest rates

## A3 Life and Other Contingencies

Two papers covering:

- (a) construction of mortality, sickness, multiple-decrement and other similar tables from graduated data
- (b) determination and use of the functions based thereon
- (c) values of premiums for annuities and assurances on one or more lives
- (d) values of and contributions for sickness benefits, pension benefits, disability benefits and widows & orphans' benefits

A4 Investment : Principles and Economic Background

Two papers covering:

Economic background to investment:

- (a) basic economic theory
- (b) the economy as a whole
- (c) the fiscal system and public expenditure
- (d) the monetary system, banking and financial institutions.
- (e) international trade and the balance of payments
- (f) industry and commerce

Elementary accounts:

- (g) construction and simple analysis of balance sheets and profit and loss accounts
- (h) elements of company taxation
- (i) basic concepts of historic cost and inflation accounting

Investment principles and practice:

- (j) the joint stock company
- (k) forms of finance, the capital market and Stock Exchange procedure
- (l) elementary principles of investment
- (m) investment arithmetic and the choice of investments for different types of investor

A5 Further Probability and Statistics

Two papers covering

- (a) Further probability - addition axiom for general events and Borel's theorem
- (b) compound distributions and branching processes
- (c) elementary stochastic processes
- (d) point and interval estimation
- (e) hypothesis testing
- (f) analysis of variance
- (g) further regression and correlation
- (h) nonparametric statistics
- (i) chi square tests
- (j) maximum likelihood estimation
- (k) decision theory
- (l) sampling methods and sampling distributions
- (m) time series
- (n) quality control

A6 Mortality and Other Actuarial Statistics

One paper covering :

- (a) concepts of rates and other indices
- (b) analysis of experience data and derivation of exposed to risk formulae
- (c) the calculation of mortality, sickness and other decremental rates (including multiple-decrement rates)
- (d) selection
- (e) graduation methods and their application, including curve fitting by method of least squares; tests of graduation
- (f) sources and collection of data for the Continuous Mortality Investigation
- (g) features of principal tables in common use
- (h) national vital statistics
- (i) population projection methods

UPGRADATION OF KOLASIB COLLEGE TO DEGREE LEVEL.

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The Principal of Kolasib College applied for permission to start Degree Classes in his College from 1981-82. The Academic Council resolved (AC:11:81:40) to grant provisional affiliation for opening 1st Year B.A. class from 1982-83 session. The Council further resolved that the students now studying 1st year B.A. will have to appear privately".

In the mean time some doubts have arisen of how Kolasib College having its affiliation for P.U. Course in 1980 could be eligible to start B.A. 1st year class in 1982-83 and not from 1983-84. The College having affiliation for P.U. Course in 1980 should have enjoyed affiliation upto the IIInd year P.U. class for at least three sessions immediately preceding the date of application for upgrading the College degree standard as per the University Ordinance on affiliation. The college therefore, should have been eligible for the same from 1983-84 session.

On this consideration, instead of the above Academic Council resolution get approved in the Executive Council, the matter had been placed to the Executive Council to modify it. The Executive Council, therefore allowed the college to start Degree class from 1983-84 session (EC:31:82:08). This resolution had been communicated to the College.

However, the college authority submitted fresh representation for permission to start degree class from 1982-83 session in view of the fact that the College had already fulfilled the condition laid down in the Ordinance by presenting and producing three regular candidates of P.U. from their own College since 1980. It was discovered that the University had granted Examination Centre in 1980 to present the IIInd year students as regular candidates which in fact the affiliation department is not aware of. It was, therefore, clear that although the college should have been normally eligible to apply for permission to start Degree class from 1983-84 session, yet they are technically eligible to do so from 1982-83 session for reasons stated above.

The Academic Council may kindly reconsider the case whether its earlier resolution to allow the Kolasib college to start Degree class from 1982-83 should stand as it were in view of the above reasons and other problems faced by the College Authority. In that case, the college may kindly be considered again for a permission to start Degree class from 1982-83 session on the condition that the College will shift to its own building in its own land within 6 months from now in addition to whatever conditions the Inspection Commission may recommend.

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NORTH-EASTERN HILL UNIVERSITY

LOWER LACHUAMIERE : SHILLONG 793001

Ordinance on the Mahatma Gandhi Visiting Professorship Fund

- Short title: 1. The endowment shall be called the "Mahatma Gandhi Visiting Professorship Fund".
- Objective: 2. To evolve a Scheme through which distinguished and eminent scholars in any discipline be invited to visit North-Eastern Hill University to deliver a course of lectures and spend sometime in the campus ranging from three to six weeks.
- Operation of the endowment: 3.(i) To appoint distinguished scholars, preferably other than the teachers of the North-Eastern Hill University, in any discipline for a period of ordinarily not exceeding one semester.
- (ii) The Professor invited under this scheme shall be designated as "The Mahatma Gandhi Visiting Professor, NEHU".
- (iii) The Visiting Professor shall be paid an honourarium, the maximum of which shall not exceed Rs.2500/-, plus such other allowances as may be admissible to a Professor of the University for the entire period of lectures. He shall also be paid travelling expenses. The expenditure so incurred shall be met out of the bank interest accrued on the designated fund.

(v) During his stay at North-Eastern Hill University, the designated Professor shall be entitled to free board and also local conveyance and the expenses so incurred shall not be met out of the fund, but out of the general maintenance fund of the University.

v) The Visiting Professor under this endowment shall deliver a course of lectures comprising lectures to students of the University, public lectures, etc. While the lectures to the students may cover a wider range, the public and general lectures will relate to a specific theme in the subject which may cover any aspect of Gandhian thought by way of its critical study, elaboration, comparative study with other philosophies etc.. The number of public lectures may depend on the tenure of the Professor with atleast one lecture per month. The copyright of these lectures shall vest in the University in case the University decides to publish them. If no decision is taken by the University within a year of the end of the term of the Professor, he will be free to publish them on his own. The publication of these lectures may be done under the aegis of North-Eastern Hill University Publications. A suitable subsidy may be provided from the interest of the endowment if alternative arrangements are to be made for their publication.

Endowment

4.(i) The amount of Rs. 1 lakh shall be invested in the long term highest rate of interest yielding securities of the State Bank of India. The balance of the interest in a year after meeting the expenses, shall be added to the corpus of the endowment.

- (ii) The expenditure in connection with the Mahatma Gandhi Visiting Professor shall be met only from the interest accrued from the endowment in any particular year. In exceptional cases 50% of the net balance of the previous year added to the corpus of the fund in term of (i) above, may be further utilised for any special programme like publication.

Operation of 5.  
the Fund

The Finance Officer shall be responsible for maintenance of proper accounts of the fund and the accounts of the fund shall be audited every year along with the accounts of the University. The Audit fees or any other related expenditure shall not, however, be charged to the fund.

- Deans' Committee 6(i) The Deans' Committee of the University shall be responsible for management of this fund. Finance Officer shall be a special invitee when the Deans' Committee considers any matter having financial implications.

- (ii) Without prejudice to the generality of the objectives of the fund, it shall be the duty of the Deans' Committee to recommend to the Executive Council on the following:

- (a) to select the discipline in which the professor is to be invited;
- (b) to recommend a panel of three names of persons from which selection to the Mahatma Gandhi Visiting Professorship may be made;
- (c) to decide about the duration of stay and number of lectures to be delivered by the visiting professor and the amount of honorarium to be paid.

- (d) to decide about the publication or otherwise of the lectures; and
- (e) to recommend such other matter as may be found desirable in accordance with the conditions laid down in the ordinance.

Annual Report 7.

The Registrar shall prepare, a report at the end of each financial year on the administration of the fund and place it before the Executive Council.

NORTH EASTERN HILL UNIVERSITY

Draft first ordinance relating to the maintenance of discipline and proper conduct among the students of the University.

- 1:1 This Ordinance shall be called the "Ordinance on Discipline and Proper Conduct" under Section 31 (5) of the Statute for the maintenance of discipline and proper conduct among the students of the University and shall come into force with immediate effect.
- 1:2 The students, for the purpose of this Ordinance, shall include all post-graduate students and full-time research scholars registered for M.phil/Ph.D degree of the University.
- 1:3 The University may frame Rules and Regulations from time to time, as it deems necessary.

2:1 DEPARTMENTAL DISCIPLINE COMMITTEE

Every Department shall have a Departmental Discipline Committee. The Committee shall have three members with the Head of the Department as its Chairman. The Committee will be constituted by the Head of the Department in consultation with the Department and with the approval of the Dean of the School. Its term of office shall be two years.

2:2 The function of the Departmental Discipline Committee shall be as follows:

- (i) to oversee general discipline in the Department and assist the Head in ensuring that the Department functions smoothly in accordance with the Act, Statutes, Ordinances, etc. of the University.
- (ii) to enquire into cases of indiscipline suo moto, or on report from any student, teacher etc.

2:3 The Committee shall be competent to admonish, and issue written warning in case a student is found guilty of indiscipline. If the act of indiscipline recurs more than twice, the matter shall be referred to the School Discipline Committee.

2:4 The Head of the Department, as the Chairman, will preside over the Departmental Discipline Committee meetings and all communications to the School Discipline Committee will be by him.

3:1 SCHOOL DISCIPLINE COMMITTEE

Every School of Studies shall have a School Discipline Committee. It shall comprise the following :

1. Dean - Chairman
2. Two Heads of Departments - Members
3. Head of the Department concerned or his nominee.

The School Discipline Committee shall be appointed by the Vice-Chancellor on the recommendation of the Dean. Its term of Office shall be two years.

Rules of Discipline and Proper Conduct for Students of the  
North Eastern Hill University.

The following shall be acts of indiscipline and misconduct.

1. An act violative of the provisions of the North Eastern Hill University Act, Statutes, Ordinances and Regulations and Rules, including those relating to attendance at lectures, tutorials, tests, terminal or preliminary examinations, framed there under.
2. An act which causes destruction or defacing of the property of the University.
3. An act amounting to trespass on unauthorised entry into specified premises and areas.
4. False statements or the submission of false documents with a view to securing any benefit.
5. Use of title of the University or title which includes the name of the University for sending any communication for purposes, not specifically authorised by the University.
6. An act which disrupts the smooth functioning of the University, the environment conducive to the pursuit of knowledge, on the harmonious relationship amongst students of the University on any ground whatsoever.
7. An act or statement, distribution of any documents or literature including the issue of circulars, pamphlets, posters, press-releases etc, which adversely affects the public image of the University on any individual member thereof.
8. Abetting or resorting to ragging in any form.
9. An act of unruly and disorderly behaviour at competitions in sports and cultural activities or other social or educational programmes organised by the University.
10. An act violative of the ordinance or and Rules framed thereunder
11. An act unruly and disorderly behaviour at the competitions in sports and cultural activities or other social or educational programmes organised by the University.
12. Disobeying the decisions of Referee/Umpires/Judges appointed at the competitions organised by the University on the field.
13. An act which interferes with the personal liberty of another person or subjects another to indignity, or involves physical violence or use of abusive language;
14. An act which implies interference of outside persons organisations or authorities in the functioning of the University.
15. Unauthorised collection of funds.
16. Consumption of alcoholic drinks, intoxicants and narcotic drugs;
17. An act involving moral turpitude;
18. Possession of objectionable goods or materials.
19. Any other act which, in the opinion of the Vice-Chancellor/Deans of Schools/Heads of Departments, Warden and officers of the University is unbecoming of a student.

- 3:2 The function of the School Discipline Committee shall be as follows:
- (i) to oversee general discipline in the School and assist the Dean in ensuring that the School functions smoothly in accordance with the Act, Statutes, Ordinances, etc of the University.
  - (ii) to enquire into cases of indiscipline *sue noto*, on report from any student, teacher etc.

3:3 It shall have the powers to suspend a student from attending classes for a specified period or award any other suitable punishment and shall report all such actions to the University Disciplinary Council.

3:4 The School Disciplinary Committee may where it deems necessary refer cases to the Vice-Chancellor/Proctor.

NOTE: For the purpose of this Ordinance and until such a date as the Vice-Chancellor may, by Notification appoint, the School of Education shall be treated as one School and the Senior Dean shall be the Chairman of the Committee.

#### 4:1 MAINTENANCE OF DISCIPLINE IN HOSTELS

Without prejudice to the powers of the Vice-Chancellor and the Proctor, the Central Committee on Residence and the Wardens of Hostels shall exercise such powers and perform such functions as prescribed in the Ordinance on Conditions of Residence of the students of the University, for the maintenance of discipline in the hostels.

#### 5:1 PROCTOR

All powers relating to the discipline and disciplinary actions in relations to the students of the University shall vest in the Vice-Chancellor in accordance with Section 31(I) and 31(3) of the Statute. He shall be assisted by a Proctor who shall exercise such powers and perform such duties as may be assigned to him by the Vice-Chancellor and as prescribed in this Ordinance.

5:2 The Proctor shall be responsible for the maintenance of discipline among the students of the University.

5:3 The Proctor shall on behalf of the Vice-Chancellor receive and act upon any report received by him from any Officer of the University, Head of the Department, Teachers, Wardens or any public complaint against a student or a group of students.

5:4 In the event of breach of discipline and/or misconduct/mis-behaviour on the part of a student or a group of students, the Proctor shall have the powers :-

- (a) to impose a fine upto Rs. 100/- on a student at a time;
- (b) to suspend a student or students and to keep the University out of bounds for such student/students until further orders.

- 5:5 Action taken by the Proctor shall immediately be reported to the University Disciplinary Council. Appeal to be made within one week of the date of receipt of orders by the Proctor shall in the first instance lie with the University Disciplinary Council which may confirm, modify or reverse the decision of the Proctor.
- 5:6 Notwithstanding what is contained in 5:5 above, a student may appeal to the Executive Council against any decision of the Proctor or Vice-Chancellor in accordance of the procedure of appeal and arbitration and right to appeal under section 31 and 32 of the North Eastern Hill University Act.
- 5:7 In instances of serious breach of discipline or mis-conduct/mis-behaviour where the Proctor is convinced that action in excess of powers vested in him is called for, he shall refer all such cases to the University Disciplinary Council for its consideration and appropriate action.

6:1 UNIVERSITY DISCIPLINARY COUNCIL

There shall be a University Disciplinary Council. It shall comprise the following :

1. The Vice-Chancellor - Chairman
2. Six teachers of the University - Members
3. Dean of Students Welfare - Ex-Officio
4. Director of Sports - Ex-Officio
5. One other Officer of the University
6. Two Wardens of the Hostels
7. Proctor - Member Secretary

All members except the ex-officio members and the member-secretary shall be appointed by the Vice-Chancellor for a term of two years.

6:2 The function of the University Disciplinary Council shall be as follows :

- (i) to advise the Vice-Chancellor in the maintenance of discipline and proper conduct among the students of the University ;
  - (ii) to review from time to time the over-all situation regarding discipline in the University and consider special cases referred to it by the Vice-Chancellor.
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Iten No.5:2:3

Minutes of the Meeting of the School Board of Environmental Sciences, held on 8.11.82

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The Minutes referred to above is placed below for information and consideration of the Council

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Minutes of School Board Meeting  
School of Environmental Sciences,  
North-Eastern Hill University, Shillong-14.

A meeting of the School Board (Environmental Sciences) was held on the 8th November, 1982 at 11:30 A.M. in the Vice-Chancellor's Chamber, Administrative Building, Shillong.

The following members were present -

1. Prof. J. Singh
2. Dr. R.C. Sharma
3. Dr. B.K. Nayak
4. Dr. R.K. Rai
5. Dr. P. Deka
6. Dr. R. Gopalakrishnan
7. Dr. B.D. Sharma V.C./Dean was in chair.

Prof. C.R. Pathak showed his inability to attend the meeting.

The following agenda was discussed.

1. To confirm the minutes of last meeting of the School Board.
2. Approval of curricular Programme for M.A./M.Sc. and M.Phil programme.
3. Approval of Ph.D. result of Shri A.C. Mohapatra.
4. Approval of research topics of the Ph.D. students and appointment of Supervisors.
5. Appointment of Ph.D. thesis examiners.
6. Approval of the list of examiners for M.A./M.Sc. and M.Phil exams.
7. Any other matter with the permission of Chair.

The following decisions were taken.

1. The minutes of the last meeting were read and confirmed.
- 2.A The Course No. GE-113 (Regional Structure of North Eastern Region) and Course No. GE-106 (Settlement and Population Geography) were discussed and approved.
- 2.B The curricular programme of M.Phil was discussed. The given below courses which have been offered by M.Phil students were approved for this session, and it was felt by the Board that these courses may further be reformulated for next session.

Course No. GE-207 - Spatial Analysis in Geography

Course No. GE-303 - Evolution of Landforms.

Course No. GE-304 - Advanced Political Geography

Regarding

Course No. GE-301 - (Methodology of Geographical Research) .

GE-302 - (Geographical Milieu and Socio-economic problems of the North East Region of India.

The course No. GE-301 and 302 are M.Phil. optional courses. These are not offered at present. It was the opinion of the Board that these courses may be reformulated keeping in mind the suggestions offered by the members. It was also suggested to hold next School Board meeting in April/May, 1983.

3. The Ph.D. result of Shri A.C. Mohapatra was approved.
4. The research topics of the Ph.D. students and appointment of Supervisors were approved.
5. The pannel of Ph.D. thesis examiners was approved.
6. The list of examiners for M.A./M.Sc. and M.Phil for 1983-84 - 84-85 session was approved.
7. The S.Chander's modified research proposal was approved.
8. The proposal of Head of the Department of Geography to appoint him as co-Supervisor of Shri S.Chitteraj was approved.

With vote of thanks from Chair, the meeting came to an end at 1.P.M.

Sd/-

Dean,

School of Environmental Sciences,  
North Eastern Hill University,  
Shillong.

Course No. GE 106

Title : Settlement and Population Geography

Credits: 4

Instruction Method : Lectures - 3  
Tutorial - 1

Evaluation Method : TE - 1  
S - 1  
WE - 2

Teacher : P. Deka  
A. C. Mohapatra

Objective: The main emphasis of the course will be on the teaching of the principles, methods and growths of the settlements and population in different geographical environments of the world in general and India in particular. The significant point to be considered here will be to acquaint the students about the man-environment relationship and disparities in the distribution of resources in the regional context.

Course Contents: Settlement Geography

1. Nature of settlement geography; concept, approaches and trends.
2. Principles of rural and urban settlement formation.
3. Types of rural settlement.
4. Settlement and land-use
5. Size and spacing of rural settlements, settlement regions and regional development.
6. Rural-urban dichotomy, central place hierarchy and spatial relationship.

Population Geography

1. Definition, scope, and importance of population geography.
2. World population : history of world population geography medieval and modern times in terms of their distribution and migration, the later to be explained in terms of their cause, origin route and destination.
3. World population crisis.
4. Indian population : density, distribution and growth
5. Population composition in India in terms of SC/ST religious and linguistic composition.
6. The growth crisis in India (Population).
7. Population in North East India.
8. Causes and consequences of migration in the N.E. India.

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Course No. GE 113

Title : Regional Structure of North-Eastern Region

Credit Allotted : 4

Course Contents :

1. Physical Structure: Physiographic features and divisions, climatic variations and regionalisation and distribution of Soils Types.
2. Historical Set up: (a) The influence of geographical factors in the course of cultural history of the region.  
 (b) Identification of the 'Areas of Attraction', 'Areas of Isolation' and 'Areas of Relative Isolation' in the North eastern Region of India and the role of geographical factors in the evolution of different cultures in these areas.  
 (c) The role of 'Centripetal' and 'Centrifugal' forces in the Unification of culture of Brahmaputra Valley and the diverse cultures in the hilly areas of the region.
3. Social Structure: (a) Peopling of the North-Eastern Region and the Racial Groups  
 (b) Linguistic families and distribution of various languages in the region.  
 (c) Spatial Distribution of the tribal population in the region  
 (d) Religious groups and their distribution pattern  
 (e) Distribution pattern of Scheduled Caste population
4. Population Structure: (a) Distribution and Density of Population  
 (b) Population Growth and Migration  
 (c) Rural and Urban Population
5. Resource Base and Economic Structure: (a) Communication network and the role of communication lines in the economic development of the region.  
 (b) Agriculture with special reference to Jhum cultivation.  
 (c) Forests and Development  
 (d) Power and Mineral resources  
 (e) Industries and Industrial Development
6. Levels of Development and Problems of Development in North Eastern Region.

Course No:GE 207

Title : Spatial Analysis in Geography

Credit Allotted : 4

Instruction Method :Lecture - 3  
Seminar - 1

Evaluation Method :IE - WE - 2  
SE - WE - 1  
VV - 1

Teacher : P.DEKA

Objective : In the study of Geography, although several traditional paths are followed; basically all the academicians in the field share a common goal. They are interested mainly in discovering, describing and accounting for location, distribution and spatial association of things as they occur on the face of the earth surface as a whole or in any part of it.

The main objective of this course is to acquaint the students to develop and conceptual structure of the discipline in way of discovering, describing and understanding the location and distribution of phenomena both natural and cultural.

Course Content :

1. Introduction : The underlying philosophy
2. Spatial Approach in the study of Geography, identification of some fundamental sparial concepts.
3. Concept of location and description of location; spatial data matrix : Types of data, levels of measurement, tools in data collection, coding principles for normal data; statistics: Sampling, formulation and testing of hypotheses.
4. Spatial distributions and surfaces - their nature and general characteristics : Central tendency in area distribution, dispersion and patterns.
5. Spatial association : Correlation and regression analyses; interaction: Gravity and Potential models; diffusion and central place theory: Network analysis.
6. Regionalisation and time series analysis.

References : To be given later.

Course GE 301: (Methodology of Geographical Research)

1. Approaching a research problem, aims and defining the problem, choosing method. The Nature of Geographical data, primary and secondary sources of data. Original investigation and collection of primary data.
2. Processing of data and sampling.
3. Collection Informations.
4. Sources of climatic, population and agriculture data and Analysis technique.
5. Dissertation writing.

Pre-Ph.D. Course : FE 302

"Geographical Milieu and Socio-economic Problems of the North Eastern Region of India".

Credit Allotted : 4

Internal assessment : 50%

Examination : 50% (Including Viva-Voce)

Objective: The main objective of this course is to acquaint the students about the Socio-economic disparities imbalances and its consequences within the rural and urban framework of the North Eastern Region of India.

Course Contents:

1. Delimitation and physical characteristics of N.E.India
2. Trends of Urbanisation in North East India.
3. Accessibilities to towns and cities of N.E.India.
4. Morphology of cities and Intra-city problems of N.E.India.
5. Rural aspect of N.E.India and its problems of Development.
6. Influx of population in rural and urban areas in N.E.India.
7. Demographic variations and socio-economic problems of N.E.India.
8. Occupational structure of N.E.India.
9. Cultural aspect and its impact on Socio-economic Development of N.E.India.

References : To be announced later on.

GE:303 (Evolution of Landforms)

Objective: This course aims to acquainting the students with research techniques in the study of evolution of landforms. Students will also learn to apply the Geomorphological knowledge in different fields of planning etc.

1. Nature and scope of the subject.
2. Elementary knowledge of geological principles and techniques. Indian stratigraphy with special reference to North East India.
3. Knowledge of research and field techniques to analyse the different types of landforms.
4. Knowledge of use of Aerial photographs and landsat imageries in identifying the different types of landforms.
5. The study of impact of geomorphology in soil formation, landuse, development of transport communication system and location of settlements etc.
6. Application of geomorphological knowledge in different fields.
7. Processing of data and dissertation writing.

The list of book and references will be announced later.

Course No E GE - 304.

Title : Advance (Pre-Ph.D) Political Geography.

Credit Allotted : 4

Instructional : Lectures - 1 1/2  
 Seminar - 1  
 Term Paper-1 1/2

Objective: The basic objective of the course is to prepare the students in the application of the methodology in the political Geographical situations of the State (national as well as international).

Course Content:

1. Theoretical approaches in Political Geography.  
 Its applications in internal and external situation.
2. The Geographical pattern of Relations.
  - a) Limited Tensions and insurgency
  - b) Classification of Tensions and Conflicts.
  - c) Theoretical framework.
3. Political process, Perception and Decisions
  - a) Political process and Perception
  - b) Ideology and Decisions.
4. Political process and the State
  - a) Nation, nationalism, National character
  - b) National independence, landscape changes and Problems
  - c) Insurgency-State.
5. Geography of land-locked states (Political units)
6. Political Geography of the Oceans.
7. Environmental Basis of the problems.

Department of Geography  
 School of Environmental Sciences,  
 North Eastern Hill University  
Shillong.

Research Topics of Ph.<sup>D</sup>. candidates

Name of candidate	Supervisor	Topic
1. S.T. Ahmed	Dr.R.K.Rai	Cherrapunjee and its Environments: A Study of Geomorphology
2. P.Rinawma	Dr.R.K.Rai	Geomorphology and Agricultural Development in Lunglei District of Mizoram.
3. S.Chander	Dr.R.Gopala krishnan	The Nature and Pattern of Insurgency in Nagaland: A Geographical Analysis.
4. B.S.Mipun	Dr.R.Gopala krishnan	Growth of Population and Agricultural Changes in the Upper Assam Valley.

The Minutes of the Meeting of the Board of School of Language held on 17.6.82 on the Ph.D Projects of the School are placed below for consideration of the Academic Council.

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Decisions of the Board of the School of Languages (at its meeting on 17.6.82) for reference to the Academic Council.

1. The Board agreed to the request of Mrs. T.Ao, Lecturer in English, for a modification of the title of her Ph.D. Project from "Art as Theme in Modern Fiction with special reference to Henry James, James Joyce, B.H. Lawrence, E.M. Forster and Wyndham Lewis' to "The Heroines in Henry James' Fiction" and for a change of Supervisor from Dr. A.K. Dhan to Dr. D.P. Singh.
2. In the case of Mr. H.W. Sten's request for a change of supervisor from Dr. A.G. George to Dr. N. Hasan, the Board resolved that the Chairman would ask the Registrar to get in touch with Dr. George to obtain his permission in this regard.

The Board approved of the following Ph.D. Projects with the recommendation that the candidates be registered with effect from the dates of their application.

Name	Subject	Supervisor	Date of application	Date of provision registration
1. Mr. P. Pimomo	- "E.M. Forster within and outside the tradition"	Dr. N. Hasan	1.2.82	1.2.82
2. Mr. S. Sengupta	- G.B. Shaw - "An enquiry into his Philosophy & Art"	Dr. S. Hopchoudhuri	31.5.82	
3. Mr. R. N. Upadhyay	- "A Comparative Study of Milton and Tulsi Das with reference to Paradise Lost and Ramcharitmanas"	Dr. D. P. Singh	1.7.81	
4. Mr. K. C. Baral	"Literary Criticism of George Santayana"	Dr. D. P. Singh	1.4.82	1.4.81
5. Mr. Anthony Jala	"Shakespeare Romances - A Critical Study"	Dr. S. Hopchoudhuri	14.6.82	

As for Mr. E.M. Schkhlet's Project 'A Critical Survey of the growth and development of Prose Fiction in Khasi Literature in relation to the emergence of the Khasi Novel, the Board decided that it be referred to the Khasi Department for consideration at the initial stage

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As per the direction of the 15 th Academic Council Meeting (Resolution No.AC:13:82:11) and 3 rd Local Academic Council Meeting (Resolution No:3:82; 01-(ii) held on 26 th & 27 th April & 24 th August '1982 respectively, the Board of Under-Graduate Studies in Bengal in its meeting held on 20 th November '1982, reframed the syllabus of the IV paper (Honours, Bengali). The recommendations of the BUGS in Bengal and the Syllabus of the IV paper are placed below for consideration of the Academic Council.

To

Registrar,  
North-Eastern Hill University,

SUBJECT :- REFRAMING OF THE IV PAPER BENGALI  
HONOURS SYLLABUS.

Your ref :- Circular No.A 3-14/Cenf./82-171 dated  
15 th September '1982.

Madam,

The BUGS in Bengali met on the 20 th November '1982 at 11 AM. in room No.2. of Administration Building, North-Eastern Hill University. We have considered the said circular along with the letter written by me to you dated Calcutta 30-9-82 (docket No 9214/5.10.82).

We had a threadbare discussion on the question. Prof. Dr. D. P. Sing assisted us.

I hereby send the minutes of this meeting along with the reframed syllabus of the IV paper (Honours Bengali). I hope this will satisfy the A.C. We have tried to meet the demands of the A.C. as far as possible.

The two local members have raised some points about the syllabus and submitted the difficulties which they are facing in teaching. An overall overview of the whole Bengali Honours syllabus can be done only after one year of the implementation of the Syllabus. Prof. Dr. D. P. Sing has informed the meeting such overall consideration in being done in case of the disciplines.

As text-book (Unalinya Satakar Gitekanita Sankalan) is not available right now, I shall send the names of the pieces to be read as soon as possible. I think now you can present the re-framed IV paper (honours Bengali) syllabus can be put before the A.C. in the next meeting in Shillong.

22-11-1982.

Sd/-

Arun Kumar Mukherjee

BENGALI HONOURS

As adopted at the meeting of the BUGS, 20-11-82.

Full Marks - 100. 1,2,3, = 50 Marks, 4,5 = 50 marks.

- (1) Medieval Epic :  
Krihitas : Ramajana-Adi Kanda (1st Canto)
- (2) Medieval Narrative Poetry :  
Mukundaram Chakravarti : Candimangala:  
Kalketur Upakhyan
- (3) Ballad :  
Mymensing Gitika : Malua-Malua Pata,  
Candravati Upakhyan.
- (4) Modern Epic & Blank Verse :  
Michael Madhusudan Dutta - Meghanad Vaidha  
Kanya - Canto I
- (5) Modern Lyrics, Sonnets etc :  
Selected pieces (5 sonnets, 5 lyrical pieces  
and 2 pieces of free verse) from the poetical collection  
"Unabinsa Satabdir Gitikavita Sankalan" edited by Prof.  
Srikumar Banerjee and Dr. Arun Kumar Mukherjee (Published  
by M/S Modern Book Agency, Bankim Chatterji Street,  
Calcutta 73).

Textbooks 1,2,3 = 50 marks; Textbooks 4 and 5  
= 50 marks = Total 100 Marks.

Sd/-

Arun Kumar Mukherjee  
External Export and  
chairman of the meeting  
held on 20-11-82)

MINUTES OF THE BUGS BENGALI/MEETING

HELD ON 20-11-82.

The meeting of the Board of Under-Graduate Studies  
in Bengali is held on the 20 th November '82 at 11 Am in  
Room No.2. of the Administrative Building of the North-  
Eastern Hill University.

The following members were present :-

- (1) Nihatán Sen
- (2) M. Sarkar
- (3) Arun Kumar Mukherji
- (4) D.P. Sing.

Dr. Sing Dean of the faculty of languages cum-Prof  
Head, English, attended in special imitation.

This meeting considered the circular A 3-14/Conf./82  
-171 dated 15 th September '1982, subject : follow up of the  
minutes of the 3 rd Local A.C. meeting held in 24.8.82,   
circulated by I/C, Conference; also considered the letter  
of Dr. Arun Kumar Mukherji dated Calcutta, 30-9-82 (docket No.  
9214/15.10.82)

The members wanted to examine the common structure of all the language syllabus. The meeting wants to examine the entire structure and pattern of all languages, Dr. Sing presented copies of the Hindi and Sanskrit syllabus.

The IV paper (Honours I) already framed offers the study of Mediaeval epic, narrative poetry and ballads in Bengali written in the middle age, i.e., from the 15th century to the 18th century.

But the circular circulated to the Board members suggests these should be a study of evolution of six poetical forms, viz., epic, ballad, lyric sonnet, blank verse & free verse ranging 600 years - from the 13th century down to the 20th century.

The meeting considers that the suggestions is a full aspiration.

The meeting considers the above mentioned circular and is of opinion that paper IV may be

reformed in the following way : variety of poetical forms in Bengali in shorter poems and from longer ones. The IVth paper can be reformed in this fashioned

Mediaeval Epic : (1) Krittibas-Ramayana-Adi Kanda (1st canto)

Narrative Poetry : (2) Mukundaram-Chandimangal-Kalkatu Upakhyan

Ballad : (3) Mymensing Gitika - Malna-Malna Pala Chandravali Upakhyan.

Modern Epic : (4) Madhusudan Dutta - Meghnad Badha  
Blank verse Kanya-Prathama Sarga (Canto I)

Modern Lyrics : (5) "Unabinsa Satuker Gitakavita Sankalan" (Ed. by Prof. Srikumar Banerji & Dr. Arun Kr. Mukherjee published by Modern Book Agency): 5 sonnets, 5 lyrical pieces and 2 pieces of free verse)-to be supplied soon.

As the said text-book ("Unabinsatakev Giti-kavita Sakalan") is not available right now, Dr. Arun Kumar Mukherjee and Dr. Nilratan Sen are entrusted to select the pieces and send the list to the Registrar as early as possible.

IV Paper, Full Marks 100. Marks should be divided into two parts; 50 marks for textbooks 1,2,3, 50 marks for textbooks 4 and 5 .

N.E.H.U., Shillong

Sd/-

Arun Kumar Mukherjee  
Chairman of the meeting)

Item No.5:2:6

Syllabus for B.Sc. (Home Science) for the 1st two years and the Course Structure for the 3rd year.

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The Syllabus referred to above as accepted at the meeting of the Board of Under-Graduate Studies in Home Science held on 5.11.82 is placed below for consideration of the Council.

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SYLLABUS FOR B.Sc. (Home Science) For the First Two Years

<u>GROUP-A</u>	<u>Maximum Marks</u>	
	<u>Theory</u>	<u>Practical</u>
Paper-I-Food and Nutrition	100	50 (external)
Paper-II-Chemistry & Biochemistry	75	25 (external)
Paper-III-Physiology	80	25

GROUP-B

Paper-I-Clothing & Textiles	75	50 (external)
Paper-II-Child Development	75	25 (internal)
Paper-III-Psychology	50	

GROUP-C

Paper-I-Home Management & Consumer Economic	100	50 (external)
Paper-II-Extension Education	75	25 (internal)
Paper-III-Household Equipments & Appliances	50	

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III-WEAR

Food and Nutrition

Paper IV - Nutrition and Food Science	100
Paper V - Biochemistry and Microbiology	100
Paper VI - Food Preservation	50

Practical

Paper VIII-Nutrition and Food Science AND Biochemistry and Microbiology	150
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Paper-VIII-Food Preservation	100
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Clothing and Textiles

Paper-IV - Advanced Clothing Construction	100
Paper- V - Costume Designing	100
Paper-VI - Advanced Textiles	100

Practical

Paper-VII- Advanced Clothing Construction AND Costume Designing	100 (50-Internal) (50-External)
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Paper-VIII-Advanced Textiles AND Commercial Clothing	100 (50-Internal) (50-External)
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Home Management

Paper-IV - Advanced Home Management	100
Paper- V - Housing	100
Paper-VI - Principles of Designing and Interior Decoration	100

Practical

Paper-VII- Advanced Home Management AND Housing	100 (50-Internal) (50-External)
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Paper-VIII-Principles of Designing AND Interior Decoration	100 (50-Internal) (50-External)
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Appendix

Group A

Paper I

Theory 100 marks

Food and Nutrition

Theory

A. Food and Nutrients

1. Definition and functions
2. Review of essential nutrients, their food sources, requirements and deficiency diseases-carbohydrates, proteins, fats, vitamins, minerals.
3. Water- water and electrolyte balance (acid-base balance)
4. Classification of foods according to their functions.
  - a. Energy yielding.
  - b. Body building
  - c. Protective foods.
5. Study of basic food groups- basic 10, basic 7, basic 4.
6. Digestion, absorption and metabolism of foods.

B. Balanced Diet

1. Definition
2. Factors to be considered while planning a balanced diet
  - a. Knowledge of nutritional requirements for different physical physiological conditions.
  - b. Planning of meals
  - c. Selection of foods.
  - d. Preparing foods
  - e. Serving meals.
3. Calculation of nutritive value by using tables for different meals.
4. Effects of cooking on taste, nutrients and appearance of the food. Definition of terms - Baking, roasting, grilling, frying - deep and shallow; boiling, simmering, steaming, poaching, pressure cooking, broiling; effect of acid, alkali and baking soda during cooking.

C. Meal Planning

1. Food habits of different regions of India
2. Food fads and fallacies
3. Planning balanced diets for different income levels
4. Planning balanced diets for

- i) Infants
- ii) Pre-school children
- iii) Elementary school children
- iv) Adolescents - boys and girls
- v) Adult men and women - light, moderate and heavy workers.
- vi) Pregnant and lactating women
- vii) Elderly people.

#### D. Malnutrition

1. Definition of Malnutrition and optimum nutrition.
2. Protein-calorie Malnutrition kwashiorkor, marasmus and obesity.

#### E. Diet Therapy

1. Principles of therapeutic diets
2. Types of therapeutic diets-Liquid, semi-solid, bland, high and low protein, high and low calorie, high and low fibre, low sodium diets.
3. Diets in diseases - Diabetes mellitus, Hypertension, Anemia Jaundice, Fever, diarrhoea, constipation.

#### F. Food Preservation

1. Importance and principles of food preservation
2. Household methods of food preservation - drying, smoking, dehydration, refrigeration, pasteurization, canning.
3. Use of salt, sugar, oil and chemical preservatives.
4. Equipments used in home and commercial industries.

#### G. Microbiology

1. Types of micro-organisms in relation to foods
2. Factors essential for their growth.

PRACTICALS : 50 marks.

1. Use and care of the laboratory equipments.
2. Weights and measures
3. By using locally available food stuffs, various methods of cooking, planning, preparing, serving and calculating the nutritive value and cost of -
  - a) Balanced diets for families of different income levels
  - b) School and packet lunch
  - c) Meals for different occasions -

- i) Birthday party
  - ii) Special lunch & dinner
  - iii) Buffet party
  - iv) Regional festivals.
- d) Diets for sick people in different conditions of health and according to their sickness as diabetes, obesity, hypertension, fever, diarrhoea, constipation, *Suitable for the people of North India.*
- 5. Low cost nutritious dishes suitable for the people of North Eastern region.
  - 6. Preservation of locally available fruits and vegetables. Preparation of low cost jams, jelly, mar malades, pickles, sauces, chutneys, squashes and chips.
  - 7. Preparation of different items from soyabean - soya milk, soyasweets, soyacheese etc.
  - 8. Special cookery - cakes and biscuits, puddings.
  - 9. Table setting - Indian, Traditional, tribal and Western style

Chemistry and Biochemistry

Definitions of atom, molecule, valency, empirical and molecular formulae, molecular and equivalent weights, normality and molarity. Chemical equations. Diffusion, osmosis, osmotic pressure. pH and buffer solutions. Oxidation and reduction, oxidising and reducing agents. Detection of C, H, N, S and P. Occurrence and Chemistry of carbon with special reference to formation of organic compounds, General properties of saturated and unsaturated hydrocarbons. Structural formulae, preparation, properties and uses of - methane, ethane, methyl iodine, ethyl iodide, methyl alcohol, ethyl alcohol, glycerol, acetone, formaldehyde, ether, acetic acid, oxalic acid, formic acid, citric acid, tartaric acid, amines, benzene and phenol.

Historical background and scope of biochemistry.

Carbohydrates - Occurrence, definition, classification, structure and chemical properties - importance in biological systems.

Proteins and amino acids - definition, classification, structure, physico-chemical properties. Essential and non-essential amino acids. Biological value of proteins. Isolation and purification of proteins.

Lipids - definition, classification and properties. Difference between fats & oils, Saturated and unsaturated fatty acids, essential fatty acids, biological importance of lipids.

Nucleic acids - Structure and physico-chemical properties of RNA and DNA. DNA as a genetic material.

Enzymes - Chemical nature, classification, nomenclature, catalytic property, specificity, factors affecting enzyme activity. Coenzymes and role of vitamins as coenzymes.

Brief outline of the biosynthesis of RNA, DNA & proteins.

Glycolysis and kreb's cycle. Production and role of ATP.

References

1. E.E. Conn, & P.K. Stumpf - "Outlines of Biochemistry", Wiley Eastern Ltd.
2. H.A. Harper, V.W. Rodwell & P.A. Mayes - "Review of Physiological Chemistry", Language Medical Publications.
3. J.C. Fairley & G.L. Kilgaur - "Essentials of Biological Chemistry", Rheinhold East-West Press.
4. V.S. Bahl & A.S. Bahl - "Text Book of Organic Chemistry" S. Chand, Delhi.
5. S.R. Palit - "Text Book of Physical Chemistry".

1. Use of chemical balance
2. Preparation of standard solutions.
3. Titration of acids and base
4. Use of pH meter (demonstration only).
5. Separation of sugars and amine acids by paper chromatography.
6. Colour reactions of ~~carbohydrates~~ and or
7. Colour reactions of amine acids and proteins
8. Qualitative tests for lipids
9. Enzyme action ( demonstration only).

Group - A

Paper - III

Physiology

Theory 50 marks.

Brief outline of cell structure, Composition and functions of blood, coagulation of blood, blood transfusion and blood groups.

Circulatory system - Structure of the heart, cardiac cycle, blood pressure, diseases of the heart.

Respiratory system - Anatomy of the respiratory tract, mechanism of respiration, the role of hemoglobin and plasma in O<sub>2</sub> and CO<sub>2</sub> transport.

Digestive system - Anatomy of the gastre intestinal tract, role of saliva, gastric and pancreatic juices and bile in digestion. Absorption of products of digestion.

Excretion - Structure and functions of kidney, formation of urine.

Central nervous system - Different portions of central nervous system, structure of nerve tissue, brief outline of transmission of nerve impulse.

Muscle contraction - Structure and physiological properties of voluntary muscle. Chemical changes during muscle contraction.

Reproductive system - Male and female reproductive organs. Process of reproduction.

Endocrine system - Endocrine glands and their secretion.

General idea about the physiological role of hormones.

References

1. C.A. Keel & E. Neil - "Samson Wright's Applied Physiology", E.L.B.S.
2. R.M. Dowben - "General Physiology, " Harper and Row

Textiles and Clothing

A. Textiles and Care

1. Brief historical development of textile fibers.
2. Classification of fibers and their properties:
  - a. Cellulose fibers
  - b. Protein fibers
  - c. Thermoplastic fibers
3. Identification of various fibers :
  - a. Importance of identification of textile fibers
  - b. Different tests for identification of fibers :-  
visual, Microscopic, Burning and Solubility test
4. a. Type of yarns & fabric constructions.  
b. Study of textiles of N.E. region
5. Finishes :
  - a. Introduction to finishes
  - b. Objectives of the application of finishes
  - c. Types of finishes
6. Laundry Work :
  - a. Laundry equipment, their use and care
  - b. Water :- Hard and soft water, importance of soft water in laundry work, softening of hard water.
  - c. Cleaning materials and other re-agents :-Rita nuts, shikari, soap, synthetic detergents, washing soda etc.
  - d. Blueing agents
  - e. Bleaching agents:- **Oxidising bleaches, Reducing bleaches.**
  - f. **Stiffening agents :- Starches-Rice, wheat, Maize, Sagoo, Commercial starches, gum-water.**
  - g. Mending
  - h. Stain removal :- General rules for stain removal; classification of stains-animals, vegetable, grease, dye and mineral stain removing re-agents, stain removing processes for different textiles.
  - i. Methods of laundering and finishing of different fabrics

7. Dry cleaning : Use of absorbents and solvents.

8. Storage of clothes

B. Dyeing and Printing of textiles :

1. Indigenous and chemical dyes

2. Application of dyes :-Raw-stock dyeing, skein-dyeing, piece-dyeing, tie and dye.

3. Printing :- Block, stencil, screen, batik printing and printing by machine.

C. Clothing construction

1. Fundamentals of Clothing Construction.

a. Sewing equipment:- Measuring tape, ruler, tracing wheel, tailor's chalk, needles, thimbles, threads, of various types for machine and hand sewing etc.

b. Sewing machine and its part-care of sewing machine, use of sewing machine.

c. Constructive stitches-tacking, running, back stitch, hemming.

d. Decorative stitches

e. Seams and seam finishes

f. Fullness-gathers, pleats, tucks etc.

g. Openings-plain plackets, bound plackets etc.

h. Fasteners-press fasteners, buttons and button holes, hooks and eyes etc.

i. Preparation of fabric for cutting:- grains of the fabric, evening and straightening of the fabric, shrinking the materials.

2. Children's Clothing

a. Importance of clothing

b. Sociological and psychological aspects of clothing

c. Effects of clothes on child's growth and development.

d. Clothing and family budget-the children's clothing in relation to budget.

e. Factors to be considered while selecting and making garments for the children of different age groups:- Infants, creeping age, pre-school age and school going children.

3. Costumes used by men and women of different tribal areas in North-Eastern Region

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A. Textiles and Care

1. Identification of fibers:- Physical, Chemical, burning and microscopic tests.
2. Study of weaves
3. Stain removal:- Removal of stains from washable and non-washable fabrics
4. Mending and renovating of clothes
5. Laundry work:- study of laundry equipments; washing, finishing and storage of different fabrics.

B. Dyeing & Printing

1. Dyeing of fabrics with direct, basic, and acid dyes; tie and dye
2. Printing-Batik printing, block printing, stencil printing.

C. Clothing Construction

1. Acquaints the students with the sewing machine and its parts and learn how to take care of it.
2. Preparation of samples for :-
  - a. Constructive stitches
  - b. Decorative stitches
  - c. Seams
  - d. Fullness
  - e. Openings
  - f. Fasteners
3. Construction of baby garments:- Jable, vest, matinee coat or matinee jacket, baby dress, bib, diaper.
4. Taking measurements and drafting of child's basic body block
5. Adaptation of child's basic body block to child's dress, rompers or sub-suits, bush shirt, half-pants and their construction.
6. Drafting of basic body block, cutting and stitching of blouse.

D. Weaving

Demonstration of different kinds of handlooms and looms used in N.E. India.

E. Knitting

1. Getting acquainted with the knitting machine and its care.
2. Preparation of samples of various designs by hand and machine
3. Knitting of a baby set of following three pieces.
  - a. Cardigan baby dress (by machine)
  - b. Stockings by hand
  - c. Hat or bonnet

Reference:

1. Duntyagi, Susheela, "Fundamentals of textiles and their care". Orient Longmans, Bombay.
2. Hollen, Norma and Sessler. J. "Textiles" Macmillan Publishing Co., New York, 1973.
3. Deulkar, D., "Household textiles and laundry work" Atma Ram & Sons, Delhi, 1976.
4. Hess K.P., "Textiles Fibers and their use" Oxford & IBH publishing Co., New Delhi, 1974.
5. Kale, D.G. "Principles of Cotton Printing". Ahmedabad, 1976
6. Shenai V.A. "Chemistry of dyes and principles of dyeing". Textile book Sellers & Publishers, Ahmedabad, 1973.
7. Pandit, Savitri and Seraj Patel "Tie and dye and batik technique for all" Baroda, Faculty of Home Science, 1970.
8. Doongaji, "Basic process and clothing construction" New Raj Book Dep., New Delhi, 1975.
9. Pandit Savitri, "Manual for Children's Clothing" Orient Longmans Ltd., Bombay, 1974.

Child Development

- A. Meaning and Principles of Child Development
- B. Prenatal care and development
  - 1. Diagnosis, signs and symptoms of pregnancy
  - 2. Physical and Psychological care of the mother
  - 3. Complications during pregnancy
  - 4. Stages of prenatal growth and development
  - 5. Preparation for the delivery-at home and in the hospital
  - 6. Natural and unnatural child birth
  - 7. Post-natal care of mother
  - 8. Care of new born baby
- C. Stages of development
  - 1. Infancy
    - a. Care of the baby-breast feeding, bottle feeding-its advantages and disadvantages-Schedule of baby weaning, clothing, playing, medical care, minor ailments and diseases of infancy.
    - b. Development - Physical, mental, social and emotional
  - 2. Pre-School Child - 2-5 years
    - a. Characteristics and developmental tasks of pre-school child
    - b. Development-Physical, intellectual, social, emotional, personality.
    - c. Play-Suitable toys & equipments, creative materials.
    - d. Habit formation-eating, Resting, sleeping, eliminating, washing & dressing, playing.
    - e. Nursery School-Equipment & curriculum
  - 3. Elementary School Child - 6-12 years
    - a. Developmental tasks of childhood
    - b. Physical growth and development
    - c. Emotional development
    - d. Intellectual development
    - e. Social development-Relationships with peers, parents and other adult formation of gangs.
  - 4. Adolescence
    - a. Definition and characteristics of adolescence
    - b. Developmental tasks of adolescents.
    - c. Development-Physical, intellectual, social, emotional
    - d. Problems of adolescents-deviant behaviour.

D. Marriage

1. Concept of marriage with special reference to tribal in N.E. region.
2. Preparation of marriage
3. Evils of dowry system & early marriages
4. Marriage adjustments
5. Family Planning

E. Family - Different types of families-Joint, nuclear and extended families- Functions of family.

Practical :- 25 Marks

1. Observation of children in a nursery school in relation to their all around development.
2. Preparation of a report on school observation
3. Preparation of a nursery school programme

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### References

1. Kuppaswamy B.D. "Text book of child behaviour and development"  
Vikas Publishing House - New Delhi.
2. Kher, N. Durett, M.E. Bhoots K. "An introduction to child  
Development. Asia Publishing House - Bombay.
3. Breckenridge, M.E. & Vincent L. "Child Development". London.
4. Hurlock, E. "Child Development". McGraw Hill Book Co. Inc.  
New York.
5. Todd V & Hoffernan H. "The years before school".  
Macmillan Book Co. New York.
6. Crow & Crow "Adolescent Development and Adjustment.
7. Kapadia K.M. "Marriage and Family". Calcutta University Press,  
Delhi.

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Paper - III

Group - B

50 marks.

Psychology

- I. Psychology : A science and a profession - ~~Aims~~ and methods of Psychology.
- II. Individual differences : Scientific study of how individual differences originate. Heredity and environment and their interaction.
- III. Motivation and Emotions : Needs, drives, urges, motives, Variation with the culture of force of habit, interests and attitudes.
- IV. Learning : Its basic nature, meaning of learning, conditions necessary for learning, learning and maturation, learning and concept formation - Stages.
- V. Remembering and forgetting : Factors governing retention, short-term memory, long-term memory, reasons for forgetting, memory and perception, attention and interest, measurement of retention.
- VI. Intelligence : Definition, assessment, intelligence tests.
- VII. Personality : Personality traits and personality types, developments of personality, assessment of personality, personality disorders.

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PAER-IHome Management & Consumer Economics

- A. Introduction to Home Management.
1. Meaning of Home Management
  2. Importance of Home Management in everyday life
  3. Elements involved in Home Management
    - a. Process-Planning, controlling, evaluating.
    - b. Decision making
    - c. Goals and values
    - d. Resources-Classification, factors affecting the use of resources.
- B. Management of resources - Human and Non-Human
1. Time Management
    - a. Time as a resource
    - b. Time demanded during different stages of life cycle
    - c. Norms, work units and work loads
    - d. Handling of peak loads
    - e. Steps in making time plans.
  2. Energy Management
    - a. Energy as a resource
    - b. Energy demands in different stages of life cycle
    - c. Energy costs in home making activities
    - d. Fatigue-Physiological and Psychological
  3. Money as a resource
    - a. Sources of income
    - b. Types of income
    - c. Methods of handling income in families
    - d. Budgeting-types, planning
    - e. Account keeping
    - f. Savings and investments.
  4. Objectives and principles of work simplifications.
- C. Housing
1. Selection-family needs and preferences site, space,
  2. Principles underlying the planning of a house
  3. Planning major areas of the house-living room, bed room, kitchen, dining room, store-room, bath-room etc.
- D. Home Furnishing and Interior decoration.
1. Objectives of home furnishing
  2. Principles involved in furnishing different rooms
  3. Flower arrangement-Principles, types
  4. Accessories (Pictures, wall hanging, decorative objects etc..)

E. Cleaning of the House

1. Purpose, types, cleaning reagents
2. Household pests and their control

F. Consumer Economics

1. Meaning and purpose
2. Consumer goods-classification, brands, price, weights and measures. advertisements.
3. Markets-Wholesale and retail markets, characteristics and functions of markets, supply and demand.
4. Selection of consumer goods
  - a. Needs and preferences of the family
  - b. Budget
  - c. Consumption pattern
  - d. Storage facilities
  - e. Market study
  - f. Buying habits.
5. Consumer protection-Quality control & labelling  
Practical - 50 marks
  1. Planning houses for middle income group (line drawing)
  2. Market study of furniture and furnishings & report
  3. Planning furniture and furnishing for a living room, bedroom and study (line drawing)-with special reference to N.E. India.
  4. Cleaning and polishing of wood, metal, glass, cane, bamboo and plastics
  5. Preparing a thin(liquid) furniture polish & laundry soap
  6. Preparation of any two of the following:-  
Flower vases, lamp shade, artificial flowers, wall hanging, magazine rack, mobile, candles, etc. with locally available materials.
  7. Flower arrangements - fresh, dry, floating, miniature.
  8. Planning of family budgets for middle and lower middle income groups.
  9. Sample account keeping for individual expenses.

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REFERENCE.

1. P. Nickell & J.M. Dersoy "Management in family living",  
John, Wiley & Co. New York-
2. G. Gross & E. Crandall "Management for modern families"  
Appleton Century Crafts New York
3. L. Peet & L.S. Thye, "House hold equipments" John, Wiley & Co.  
New York
4. Mohinder Mann "Management for Indian families"  
Kalayani Publishers, Delhi, Ludhiana.
5. Ruth A.H. "Home Furnishing" Wiley Eastern Pvt. Ltd.  
New Delhi
6. Agan Tessie J.B. Hippincott " The House its plans & use"  
Oxford & IBH Publishing Co. New Delhi.
7. Tara D.B. "Interior Decoration in India Past & Present"  
D.B. Taraporevala sons & Co. Pvt. Ltd. Bombay
8. Gordon, Leland "Economics for consumers" American Book  
Co. New York

PAPER-IIExtension Education

Principles of extension education :-

- a. Extension education : definition meaning; nature, importance and scope; Qualities of an extension worker; Role of extension work - in community.
- b. Extension techniques :  
Selection and use;  
Group methods-mobilization for Home Science extension.  
Extension talk-concept, elements, planning presentation and evaluation, demonstration.  
Skill teaching with special stress on kitchen gardening, nutrition & health.
- c. Community development  
Meaning and definition  
Role of extension worker in community development especially in tribal areas.
- d. Audio Visual aids  
Significance  
Types, planning and preparation  
Characteristic features & Uses of each type

Rural Sociology

- a. Rural Society in N.E. India  
Meaning and characteristics;  
Structure; tribe, clan, class, caste occupation etc.
  - b. Basic institution in rural society and their functions:  
Headman, Syien & village council  
Religious institution  
School  
Co-operatives and family
  - c. Rural resources
  - d. Rural problems
- General - Health, education, communication, nutrition, water supply in N.E. India.
- Specific - Landless labour, alcoholism & unemployment.
- e. Overcoming these problems :  
Various govt. schemes for rural development,

Role of Home Science in rural development

- a. Training of Home Science workers for rural (tribal) development
- b. Role of rural youth programmes and Balwadis
- c. Study of various rural programmes like nutrition programmes child welfare programmes. Mahila mandal carried out by voluntary & Govt. agencies.

Kitchen Gardening

- a. Selection of site, planning and lay out
- b. Selection of vegetable crops, for both Rabbi and Kharif season
- c. Selection of garden tools, manures and fertilizer
- d. Kitchen garden in relation to balanced diet for a family.

Practical : 50 Marks (Internal)

Planning, preparing and evaluating visual aids :

Poster

Flash Card

Map

Chart

Conducting of classes for village women relating to home science

Preparation of nursery and raising of seedlings

Preparation of compost

Method of propagation of plants-Budding, grafting and cutting

Proper method of packing vegetables and flowers

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References :

- a. Extension education in Con Development, Directorate of Extension, Khishi Bhavan, G.O.I., New Delhi.
- b. Extension education, A.A. Reddy, Tri-laxmi press, Baplata

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Household equipments and appliances

A. Types of appliances used in the home.

1. Electrical : heaters, mixers and grinders, toasters, refrigerator, cooking range, electric oven, dish washer, washing machine, electric iron, immersion heater, electric bell, air-conditioner.
2. Non-electrical : Pressure cooker, electric cooker, different types of stoves, can openers, graters, slicer, cutters and peelers.
3. Acoustical : Stereo, Hifi

B. Basic principles involved in the functioning of household appliances

C. Electrical wiring for house-hold appliances; fuse, meter etc.

D. Use maintenance & care of house-hold appliances.

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Item No. 5:5:4

NORTH EASTERN HILL UNIVERSITY : SHILLONG  
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A Note on Certain Aspects of Education by Prof. B.Das

I attended a meeting of the Academic Council in April to participate in the discussion on the 3-year degree course. I have now seen the minutes of the Council and find that this course has been introduced to conform to the objectives of the 10+2+3 plan which is a part of the National Policy. The course as it is designed will be expected meet the objectives of an upgraded degree course to attain, as far as practicable, standards in external universities. And in this, the courses designed by our university seem to follow the pattern of Delhi University to a large extent.

On the otherhand, one of the major aims of higher education in the sixth plan as also in the years to come and as laid down in the UGC policy Frame, is to restructure the system itself to fit it to the life, needs and aspirations of our people and make it truly relevant. It is this point which has been stressed by the Prime Minister in her statements and in her talks with the Vice-Chancellors of the universities of Calcutta, Madras and Bombay. An examination of our recent 3-year course, however, does not seem to me to be capable of achieving this purpose. It is largely because we have, as everywhere else, been stressing cognitive development alone and have designed our course accordingly. It is true that some thought has been given to the socio-economic changes in the North-Eastern region but that is marginal. On the otherhand, in a region like ours we have to think of education as a positive investment in human resources, not merely in the narrowly behaviouristic terms of economists like Schultz and Vaizey, for example, but broadly in terms of the great tradition of our country combined with the concept of a scientific humanism as formulated by the Edgar Faure Commission. The UGC Policy Frame

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advocates (1) Foundation Course (2) Core Course (3) Some applied studies and (4) National Service and we have rightly decided to follow it.

But in a region which is undergoing socio-economic development at a very fast rate skipping numerous stages, higher education is an extremely precious and delicate instrument and it has to aim at the total development of the human personality. It is not only the cognitive capacity of the student but his affective dispositions and psycho-motor developments which have also to play a significant role in the process of education at the tertiary level. The cultural traditions of the people of this region, as you have very well pointed out in your writings, are quite strong, rooted in age old customs and mores, and a process of modernization is a challenging task. This modernization leading to the acceptance of scientific humanism cannot be brought about without sufficient care, patience and understanding. Likewise, modernisation cannot also take place by echoing the Redfieldian concepts of great tradition of little tradition. From the angle of economic growth, too, we cannot bridge the Rostovian stages by an upgraded course where the student will perhaps see that his knowledge of growth and development, both economic and social, cannot be applied profitably to change the environment. He would be conversant with advanced technology whereas the region, whether in the context of agriculture or industry, might require only intermediate or some other kind of appropriate technology. In that case his expectations from life may not be available to him at the end of his academic career and instead of becoming an asset from the point of human capital development, he might be a loss or a liability.

This idea occurs to me so strongly because of the restricted and manageable number involved in the educational effort of ours unlike in other large universities in the country. There are about 40 colleges under the university with

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students from the States mostly in them and each college has an average strength of 150 students only. It is, from this point of view quite possible to evolve a personalized education service for the students, aiming at making him an instrument of socio-economic and cultural development, self-confident, self-reliant and patriotic by designing courses of studies that will enable him to play a significant role in the life of the region as well as in the life of the nation.

As such, I would suggest that the 3-year courses should be more flexible and we should consider the introduction of a semester system and a credit system. The course should be in two categories: major and minor. The former should embrace the disciplinary aspects of education, the stress being on the cognitive or intellectual aspects and this has been taken into account. But with a semester and credit system it should be possible for a student majoring in Economics, for example, to take a certain number of courses in Sociology or Agriculture etc. or for a student majoring in English to take certain number of courses in European or World History or Khasi or Nagamese or any other literature of Philosophy and earn credits. Suitable modifications can be made for the Sciences. This will help in promoting interdisciplinary studies which requires, as you have pointed out, a different approach and attitude to the prevalent system.

What is more important, however, is the introduction of courses that would be a compulsory minor (of two to three papers which can be designed into units) from among many which will help him to develop both cognitive and psycho-motor skills and help us in making his education more complete and rounded. It is in this respect that I feel, there is scope for improving upon the scheme we have accepted in the Academic Council. Keeping in view the present stage of socio-economic development in the North-Eastern region and also the plan of the North-Eastern Council, I am suggesting

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a list of subjects: the list is illustrative, not exhaustive and new subjects can be added on the basis of man-power requirements in relation to the State plans and the plan of the North Eastern Council. Till now we have thought of agriculture and Electronics only as subjects of this productive category.

- 1) Agricultural techniques and practices in hill areas
- 2) Soil and water management
- 3) Agri-based and agro-based industries
- 4) Dairy husbandry and farming
- 5) Poultry farming
- 6) Sheep and goat rearing and pig husbandry
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- 25) Construction of buildings: technique and practice.
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- 27) Land surveying and mapping
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- 32) Rural development, theory and practice
- 33) Radio and T.V. technology
- 34) Horology
- 35) **Military Science**
- 36) Tree culture.

The recent thinking of the North-Eastern Council to go in for extensive small-scale industrialization of the region is an indicator of the direction of economic development and the kind of man-power that is expected to be needed for the purpose. It is this man-power aspect that has been recently emphasised by the Prime Minister. Her point is validated by the fact that about three or four years back a newspaper report said that in U.P. more than 14000 middle level posts could not be filled owing to lack of applicants whereas thousands of degree and post-graduate degree holders went without jobs. This is due to one of the main drawbacks in our educational system in which more than 90 p.c. of the students from the elementary to the post-graduate level complete their education without acquiring a skill at any stage of their education. I would, therefore, plead for a combination job-orientation and self-reliance with general education along with adequate physical and moral growth. Pondology, as you have suggested wisely, can be a very profitable subject in this region. It will redeem reckless deforestation and ecological imbalance. I read about the decision of the Nagaland Government to grow some fast growing exotic trees as a part of economic afforestation. Our students who study Botany or Forestry, ought to be familiar with them and their utilization for self-reliance. As such a college may introduce at least three applied subjects keeping in view the needs of the immediate environment and the State. We could also

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think of starting diploma courses for these subjects separately according to needs. For such subjects, to cut down costs and facilitate the recruitment of teaching personnel, a graduate qualification could suffice and they may be designated as Instructors.

As regards the physical, moral and cultural development of the students, it can be taken care of by including in the curricular requirements participation in the hitherto known co-curricular and extra-curricular activities and social service. We have provisions for games, sports, debates, symposia seminars, music, dance, dramatics, N.C.C., N.S.S., N.E.C. etc. but these are not taken seriously enough nor organised systematically because their importance is not recognised in the educational system as they are not required from the view point of examination. Since our system is so much examination oriented still, participation in them may be made a university requirement - one physical, one intellectual and one aesthetic - leaving the option to the student according to his aptitude. 100 marks may be allotted for this purpose. We can devise evaluation techniques for these activities as a part of the university examinations.

Equally important is the growth and fostering of desirable dispositions. It is a question of the formation of desirable values and attitudes and these can be fostered by the introduction of a proctorial system under which every student will be attached to a teacher who will meet him twice a month and discuss with him his personal problems academic, emotional, moral and spiritual - and give him necessary guidance and counselling. The proctor should assess the character, conduct, behaviour, department and record his impression of the growth and maturing of the student's personality in a measurement chart which can be devised by the university with the help of the Departments of Education and Psychology. The proctor's performance should be taken into account by the Principal of the college in evaluating his

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If such a system meets with the approval of the university, we may think of a cumulative record as a students' profile instead of giving him just a certificate at the end. Here I would refer to the S.S.L.C. record in the old Madras State in which a complete record was kept of the students' performance in all his activities in the school from the date of his entrance, the last page being reserved for the final certificate. This is likely to help the University in making a continuous assessment of the student's (a) physical (b) emotional and spiritual (c) intellectual growth and will be in keeping with modern trends in education.

It is not claimed here that we will achieve a hundred per cent success, but it will mean the beginning of a more desirable change and innovation in the system which has been accepted and introduced by the University. In this region, any student receiving higher education ought to be a source of critical man-power, an initiator of change and progress and a leader of the community. This modified system will enable the student to compete for positions where a general education is required (by virtue of his Hons. Degree). He can also compete for middle level positions in the public and private sectors (by virtue of the skill he will acquire from the applied subject). But most importantly, if he fails in both i.e. higher and middle level competitions, he can fall back on his own skill for self-employment.

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Such a reorganisation of the 3-year degree course, I feel humbly, might help our University to play the same role as a Canadian University which by linking education with economic development played a remarkable role in that country. The Ontario Commission Report on Post-Secondary Education makes a similar approach.

The scheme suggested above may at least be given a trial in some selected colleges as an alternative to the scheme already accepted by the University.

And lastly, I would suggested that coaching classes may be started on the campuses to motivate and prepare the products of our University to sit for all competitive examinations- the Civil Service Examinations, Bank Services, L.I.C. services, the Railway Service Commission examinations, Army service etc. and once our students succeed in them much of the frustration of the educated youth will diminish.

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Such a reorganisation of the 3-year degree course, I feel humbly, might help our University to play the same role as a Canadian University which by linking education with economic development played a remarkable role in that country. The Ontario Commission Report on Post-Secondary Education makes a similar approach.

The scheme suggested above may at least be given a trial in some selected colleges as an alternative to the scheme already accepted by the University.

And lastly, I would suggested that coaching classes may be started on the campuses to motivate and prepare the products of our University to sit for all competitive examinations- the Civil Service Examinations, Bank Services, L.I.C. services, the Railway Service Commission examinations, Army service etc. and once our students succeed in them much of the frustration of the educated youth will diminish.

M.Sc. ZOOLOGY

SEMESTER - II

Course - Z - 6

Zoogeography

Theory

Introduction and scope; Principles of Zoogeography with important theories; Zoogeography realms distribution, area and dynamics; Animal migrations, dispersal and centres of origin; Natural Regions of India, dispersal and climate, Geological calendar and degrees of adaptation.

- 13 -  
M.Sc. ZOOLOGY  
SEMESTER - III  
COURSE - I - I  
FISH BIOLOGY

Theory

Classification of fishes; freshwater and marine fish fauna of India; Scope of fish Biology; basic fish anatomy and physiology - integument, scales, coloration, form and locomotion - skeletal system - food, digestion and growth - feeding habits - respiration Accessory respiratory organs and air bladder - constitution of blood, circulation - Excretion and Osmoregulation - sense organs nervous system and Endocrine system - reproductive system hybridisation - storage and transfer of nutrients to gonads - nervous system and endocrine system; Sex reversal, breeding and parental care, migration and Spawning behaviour; aestivation and over-wintering outline of Fish culture methods - Altitudinal fisheries - Development and management.

Practicals

1. Classification (upto order) and identification the fish provided.
2. Dissection of the following system in the fish provided  
(a) Alimentary Canal (b) Urinogenital system.  
(c) Accessory Respiratory organ (d) Brain (e) Airbladder and Weberian vessels.
3. Histology of the following tissues:- (a) Intestine (b) Stomach (c) Gonads (d) Liver (e) Kidney.
4. Whole mount of different kinds of scales.
5. Age determination with the help of scale.
6. Induced breeding techniques in fishes.
7. Food and feeding mechanisms in fishes.
8. Length and weight relationship.
9. Reproductive behaviour and courtship.
10. Oxygen consumption in fishes.
11. Hematology in fishes.
12. Calorific estimations in fishes.

INDIVIDUAL AND POPULATION ECOLOGY

Theory

Introduction; Ecological factors-introduction; Water, Soil, Light, Temperature, Fire etc; Biotic factors; Population, growth models (J & S shaped curve), Population age structure; Demographic studies, Survivorship and life table studies; Biotic potential and Environmental resistance; Population interaction- introduction; Competition, Predator-Prey relation, Host - parasite, Allelopathy & Mutual exclusion, Coexistence & Cohabitation, Population Behaviour, Territoriality & Reproductive behaviour, Physiological ecology, Ecotype concept.

Practicals

1. Morphological Variability in Natural Populations.
2. Population sampling - simple sampling of unknown density sampling of known populations.
3. Population sampling Stratified.
4. Population Growth.
5. Population Dispersion.
6. Population Size.
7. Population Sex Ratios.
8. Population Decline.
9. Life Tables.
0. Population Size by Lincoln - Peterson Index & Schnuracher - Eschmeyer estimate.
  1. Estimation of soil moisture content.
  2. Qualitative estimation of carbonate and nitrate in the soil.
  3. To test the base deficiency in the soil.
  4. To determine pH of the soil through pH paper and pH meter.
  5. To determine organic matter content of the soil through titration method.
  6. To study the soil profile developed under a pine forest.
  7. To determine the soil texture.
  8. To study the effect of light on the botanical composition and standing crop of the herbaceous vegetation.
  9. To study thermal stratification in a pond or lake.
0. Effect of crowding of its own individuals on growth of a plant. (Both in field situation and in pot cultures).
  1. Effect of associated plant species on the growth of a given species (both in field situation and in pot cultures).
  2. Effect of population density on standing crop per unit area (both in field situation and in pot cultures).
  3. To study the behaviour of seedling population over a short period.
  4. To study the growth behaviour of plants in relation to mixture.

Theory

General

Introduction, definitions, various symbiotic relationships; History of the development of the discipline; Evolution of parasitism and parasites; Structural and physiological adaptation; Microenvironment of parasites - factors like pH, enzymes, gaseous contents, bile, peristalsis etc; Phases of parasitism - contact with the host, entry and establishment, escape from the host; Host-parasite relationships; Effect on host - destruction of tissue, tissue changes, mechanical changes; Host specificity - types, manifestations, factors responsible for specificity, specificity in different parasitic groups; Immunity and resistance - kinds, manifestations, mechanisms, immune responses to different parasitic groups; Prophylaxis and control - general principles of control, protection of host.

Protozoa

Introduction to parasitic protozoa, Distribution, morphology, life cycle and pathogenicity of: Entamoeba histolytica, giardia intestinalis, Haemoflagellates - Trypanosomes, Leishmania spp., Malarial parasites, Piroplasma (Babesia), Balantidium coli, Naegleria spp.

Trematoda

Introduction, Classification; Monogenea - general account, morphology and life cycle of xyrodactylus, polyostoma.

Diplozoan; Aspidogastrea - general account; Digena - general account, distribution morphology, life cycle and pathogenicity of:-

Fasciola hepatica, clonorchis sinensis, Dicrocoelium dendriticum, Fasciolopsis buski, Paragonimus westermani, Schistosomes.

Cestoda

Introduction, classification; Cestodaria - general account, exemplified by Amphilina, Eucestoda - general account; distribution, morphology, life cycle and pathogenicity, of:

Taenia solium, T. saginata, Hymenolepis nana, Multiceps multiceps, Echinococcus granulosus, Dibothrioccephalus latus.

Nematoda

Introduction, classification, general account; Distribution, Morphology, life cycle and pathogenicity of:

Trichuris, Trichinella spiralis, Ascaris, Strongyloides stercoralis, Hook worms, Filaria worms (Wuchereria), Braconculus medinensis, Enterobius vermicularis; Plant parasitic nematodes - A brief general account.

Acanthocephala

General account with Macracanthorhynchus as an example.

Arthropoda

A brief account of parasitic arthropods, arthropods as vectors.

Practicals

1. Preparation and study of enteric and parenteric protozoan parasites from earthworm and fish or frog.
2. Preparation of thin and thick blood smears for detection of parasitic infection.
3. Study of blood haemoflagellates, haemosporidia and microfilariae from permanent preparations.
4. Field census of parasitic infection in vertebrate hosts with special reference to locally available fish amphibian, avian and mammalian hosts. Collection preservation and study of the parasites recovered.
5. Study of the helminth parasites of economic importance from permanent preparations.
6. Study of larval trematodes from snail hosts.
7. Isolation and preparation of plant parasitic nematodes.

M.Sc. ZOOLOGY

SEMESTER - I

Course - BZ - 4

\* 4(a) FRESH WATER BIOLOGY

### Theory

Introduction; Classification of Lotic Systems; Classification of Lentic Systems; Origin of Lake basins; Physical characteristics of water waves, tides, currents & Seiches; Temperature, thermal stratification; Light - Factors influencing penetration and colour; Major & Minor nutrients cycles in water (Phosphate, Sulphur, Carbon, Nitrogen & some minor elements); Radiation Biology with reference to aquatic system; Periphyton; Benthos and its functions; Trophic relation in fresh water; Algal productivity and Zoo plankton productivity.

### Practicals

1. Measurement of primary productivity by light & dark bottles.
2. Estimation of water pollution index (W.P.I.) by algal population.
3. Bacterial estimation of faecal pollution by standard plate count method.
4. An ecological comparison between clear and polluted waters.
5. A detailed analysis of BOD, Nitrate, Phosphate, Chloride, COD, in some representative water bodies.
6. A comparative study in the identification and population analysis of benthos.
7. Littoral and limnetic zooplankton of freshwaters in an around Sh. long.
8. A general survey of phytoplankton and its relation to the water bodies.
9. A study of Nannoplankton in particular reference to freshwater and productivity.
10. Analysis of physical factors in freshwater (a) Morphometry (b) Light (c) Water temperature profile (d) current rate.
11. Measurement of primary productivity by chlorophyll.
12. Analysis of periphyton in lotic and lentic systems.
13. A detailed analysis of pH, conductivity, O<sub>2</sub>, alkalinity and Co<sub>2</sub>.
14. Estimation of Ca and Mg in some selected freshwater bodies.
15. Estimation of some trace elements.
16. Two diurnal cycles using the O<sub>2</sub> evolution method in lotic and lentic system.
17. Estimation of primary productivity by C<sup>14</sup>.
18. Primary productivity in relation to various pesticides, like DDT etc.

\* Integrated course with Botany.

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M.Sc. ZOOLOGY

SEMESTER - III

Course - BZ - 4

4(b) FOREST BIOLOGY

Theory

Basic concepts in Forest ecosystems; Major Forest types; Forest Types of India; Primary producers; Invertebrate mycophages; Plant animal interaction; Wild life as a Natural resource; Wild life management principles; Wild life damage problems; Honeybees and their significance; Nutrient cycles; Hydrologic cycles.

Practicals

1. Comparison of botanical composition of two forest stands of different ages.
2. Measurement of basal cover of forest trees through density and diameter measurements.
3. The study of stratification and to make a profile diagram of a piece of forest vegetation.
4. Estimation of litter accumulation on the forest floor of two different forest stands.
5. Estimation of humus content in the forest soil.
6. To determine wilting coefficient of the soil and estimation of available soil moisture.
7. To study litter decomposition on a forest floor through  $CO_2$  evolution method.
8. Quantitative and qualitative study of microbial population in the soil.
9. Measurement of stem flow and canopy fall in a pine forest and analysis for total soluble salts and some of the nutrition.
10. To determine exchangeable bases in the forest soil.
11. Study of soil arthropods.

ENTOMOLOGY

Theory

Insect Morphology and Physiology: Classification. Origin and evolution of Insects; General Morphology of a generalised Insect; Different types of mouth parts, wings and legs; Morphology and Physiology of Digestive - Respiratory - Circulatory - Excretory - Reproductive - Nervous and endocrine systems; Sense organs; Sound and light producing organs; Insect development, Metamorphosis and Diapause; Insect Phenomena.

Applied Entomology and Toxicology: Principles of Insect control; Insecticides - Formulation, application and mode of action; Pests of Sugarcane, Vegetable crops, stored grains, fruit trees and fibre crops (including cotton). Insect Resistance to Insecticides; Beneficial Insects. Plant Protection and extension Entomology in India with special reference to North-Eastern Regions.

Practicals

1. Study of Morphology of grasshopper.
2. Study and mounting of different types of mouth parts, wings and legs.
3. Dissection of and mounting of internal organs locally available insects e.g. Cockroach, Grasshopper, Bugs, Beetle, Honey-bee, Housefly and Lepidopterous larvae.
4. Study of pH and digestive enzymes of cockroach and grasshopper.
5. Study of different constituents of haemolymph.
6. Collection and preservation of insects.
7. Experiments to demonstrate the physiology of metamorphosis in insects.
8. Study of different insecticides, their formulation and methods of application.
9. Study of various pests as per syllabus.
10. Study of material damaged by insect pests,
11. Elementary toxicological experiments.
12. Study of beneficial insects and their products.

M.Sc. ZOOLOGY

SEMESTER - IV

Course - BZ-5

\* COMMUNITY ECOLOGY AND ECOSYSTEM ANALYSIS

Theory

Introduction; Community structure, organisation and development; Analytical characteristics of Community; Primary & Secondary Succession; Fluctuation within the Community; Classification of Communities; Dynamics of the ecosystem; Foodchain, Food web & Feeding cycles; Energy flow in the ecosystem; Biogeochemical cycles- Hydrological, Phosphate, Carbon, Nitrogen and some minor element cycles; Productivity - Primary & Secondary; Concept of system analysis; Concept of Niche & calculation of Niche values; Pollution effects on organism and community.

Practicals

1. Species Abundance in Natural Communities.
2. Species Distribution in Natural Communities.
3. Species Interactions - competition, Predation - Commercialism.
4. Protozoan succession in laboratory cultures.
5. Comparison of Plankton Communities.
6. Structure of Terrestrial Communities.
7. Structure of Freshwater Communities.
8. Estimation of Primary Production.
9. Estimation of Secondary Production.
10. Community Metabolism studies in lentic & lotic systems.
11. Energy estimations at different trophic levels.
12. Food web analysis.
13. To estimate the requisite size of the quadrat for the analysis of grassland vegetation by species - Area curve method.
14. To estimate frequency of the herbaceous species by quadrat method.
15. To estimate abundance and density of herbaceous species by quadrat method.
16. To determine the percentage basal cover of different plant species through diameter measurement.
17. To analyse vegetation of a given community by line transect method.
18. Determination of frequency and density by belt transect method.
19. Determination of percentage frequency of different species in grassland with the help of point frame method.
20. To find out the importance value index of different species in a grassland community.
21. Analysis of quantitative characters of a community through point centered quarter method.
22. To work out the biological spectrum of the local vegetation.
23. To compare the aboveground biomass and percentage contribution of the herbaceous species in open situation and in Fine stand, through harvest method.
24. To study the secondary succession in an adjoining region of the campus.
25. Estimation of primary production by the light and dark bottle method.
26. Study of the pyramid of numbers in the water samples provided.
27. To estimate primary productivity by leaf disc method.

\* Integrated course with Botany.

M.Sc. ZOOLOGY

SEMESTER - IV

COURSE - 2 - 12

ENVIRONMENTAL BIOLOGY  
AND WILD LIFE BIOLOGY

**Theory**

Introduction to Environmental biology; Man and his environ -  
ment; Environmental management; Pollutants and their classification;  
Impact & control of air pollution, water pollution, pesticide  
pollution, Radioactive accumulation, oil pollution, oceanic  
pollution; Population explosion & its impact; Urbanization and crowd-  
ing; Monitoring the atmospheric environment; Conservation &  
Resource Management.

Wildlife-an introduction; Distribution of wildlife in India;  
Status of Wildlife Conservation in India; Special projects for  
endangered species in India; Management of Natural reserves; The  
strategy of conservation.

**Practicals**

- Estimation of atmospheric pollutants toxicity of Pesticides.
- Methods of Pesticidal residue estimation.
- Pesticide residue in vegetables.
- Effects of organochlorine on soil insects.
- Studies on Persistence of Pesticides.
- Behavioural response to environmental stress.
- Rate of change of Population density.
- Role of Zoos in wild-life conservation - visit to the  
Zoological garden.
- Field visit to various developmental sites.
- Role of sanctuaries and national parks in conservation  
Field visit.
- Problems solving in human ecology.

M.Sc. ZOOLOGY

SEMESTER - IV

Course - Z - 11

(F) FOREST ENTOMOLOGY

Theory

Scope of Forest Entomology, Forest Entomological procedures, important forest insects, search for insect outbreaks, basis of forest detection, infestation surveys - diagnosis of entomological causes of mortality. Biological evaluation - population measurement, indices of damage - problems in estimation - ecological effects - Physical and environmental damage; Population phenomena - analysis, factor and mechanism - anises of outbreaks, outbreaks characteristics; Applied control - general concepts of control - direct, indirect and control according to part of tree affected.

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M.Sc. ZOOLOGY

SEMESTER - IV

Course - Z - 11

(c) AQUATIC ENTOMOLOGY

Theory

Taxonomy of Aquatic Insects - Phylogeny of aquatic insects ( larvae and adults ) in terms of habitat; Adaptations for aquatic mode of life - morphological, physiological and biochemical in different organ systems; Economic importance - Biological, Chemical integrated control of aquatic insect pests; Medically important aquatic insects; Colonization of aquatic insects - Reasons why insects did not inhabit marine habitats ?

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M.Sc. ZOOLOGY

SEMESTER - IV

Course Z - 11

(C) FISH AND FISHERIES

Theory

Morphology, Taxonomy and distribution of Fishes; Biology of commercially important fishes of India - food & feeding habits, age & growth - reproduction, Capture fishery sources; Important riverine, estuarine, lacustrine & marine fisheries of India. Fishery products of commerce & their export; Fishing methods - Grafts & gears. Scope & Importance of aquaculture; cultivable species & their criteria for selection; selection of site & construction of ponds; Preparation and management of nursery, rearing and stocking ponds; Ponds fertilization - principles and methods; Natural fish food and supplementary feeding. Procurement and production of stocking material - induced breeding - bundh breeding Hybridization; Fish genetics; Hatcheries and their management; Composite fish culture - monoculture - cage culture - Sewage - fed fisheries; Fish disease and parasites, Common aquatic weeds; Algal blooms and their control Predators and their eradication.

Practicals - based on theory syllabus.

M.Sc. ZOOLOGY

SEMESTER - IV

COURSE - Z - 12

(c) ALTIMUDINAL LIMNOLOGY

Theory

Origin and history of altitudinal lakes, hill stream - stream fauna and flora - diurnal and season cycles of physico - chemical and biological factors in lakes and streams - larvae and adults of aquatic organisms - food webs and trophic dynamics - productivity and community energetics of streams - Adaptations for life in streams and lake - spawning and migration - culture methods of salmonid fishes;

Practicals Based on theory syllabus.

M.Sc. ZOOLOGY

SEMESTER - IV

Course - Z - 11

(b) BIOCHEMICAL ECOLOGY.

Theory

Dissolved gases - Oxygen, Carbon Dioxide, Hydrogen Sulphide, Ammonia, Methane; Dissolved substances - Phosphates, Nitrates, Nitrites, Silicates, Amino Acids, Proteins, Carbohydrates, Vitamins, Iron, Calcium, Magnesium, Sodium, Potassium - trace element cycles - sources of dissolved substances and their role in the metabolism of aquatic organisms - seasonal variations of the dissolved substances; Techniques in the study of dissolved organic substances - Chromatography, Electrophoresis, Bioassay. Toxins, growth promoters, growth inhibitors, embryological organizers in aquatic system pesticides and pollutants and their effects on the aquatic systems; Role of biochemical constituents in relation to functioning of the aquatic ecosystems.

Practicals

• Based on theory syllabus.

(A) DEVELOPMENT AND MORPHOGENESIS

Theory

Functional Morphology of Eukaryotic Cell - Cell assembly and reproduction - Cellular slime molds; Cellular differentiation and interaction - Regeneration of Hydra, Planaria and amphibian limb; Concepts of morphogenetic field and positional information; Wound healing, Blastema formation and differentiation - Representative Embryonic development of Annelids, Arthropods, Molluscs, and Anamniota - An analysis of early amphibian development; Embryonic induction and pattern formation; Origin of primordial germ cells; Induced Breeding and aquaculture.

Practicals

1. Cellular slime Molds: culture and study of different phases.
2. Regeneration Experiments in Hydra , Planaria and Amphibian limb.
3. Developmental stages of Insects and Mollusc.
4. Parabiosis and organiser experiments in frog embryo.
5. Transplantation and Explantation experiments on chick embryo.
6. Effect of temperature on development.

M.Sc. ZOOLOGY

SEMESTER - IV

Course - Z - 11

(7) CYTOGENETICS

Theory

Chromosomes as supermolecular systems; Chromosomal rearrangements; Evolution of the meiotic mechanism; mutational changes; meiotic drive; achiasmatic meiosis; Aberrant genetic systems; haplodiploidy; preliminary ideas about thelytoky; Mutagenesis; Differential gene expression and control mechanism, in gene expression Cell fusion; Cancers Genetic concept of origin; Episomes, viruses and abnormal genetic elements.

Practicals

1. Preparation of invertebrate touchromosomes;
2. Preparation of vertebrate chromosomes.
  - 1) Air dry technique.
  - 11) Bone marrow technique.
3. Metrical studies of chromosomes.
4. Study of chromosome morphology during cell division.
5. Longitudinal differentiation of chromosomes:
  - 1) G - banding
  - 11) C - banding
6. NOR staining
7. Electrophoretic studies.

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M.Sc. ZOOLOGY

SEMESTER - IV

Course - Z - 11

Special Paper

(b) ADAPTATIONAL PHYSIOLOGY AND BIOCHEMISTRY

Theory

Basic concepts of environmental stress and strain, and organismal responses; types of stress injury, stress resistance, stress avoidance and stress tolerance; adaptation; acclimation and acclimatization; Homeostasis; Different types of environmental stress and their effects on different physiological and biochemical processes in animals; Thermal stress; Osmotic and ionic stress; pressure stress; drought and desiccation stress; oxygen stress; radiation stress and pollution stress; Biological rhythms; Evolutionary adaptations in disposal of nitrogenous wastes in animals; Metabolic adaptations during vitellogenesis and early development oviparous animals ( including metamorphosis ) with special reference protein, nucleic acids and ammonia; Biochemical and physiological adaptations during growth and aging.

Practicals

1. Determination of LC<sub>50</sub> and LD<sub>50</sub> values for pollutants on animals.
2. Biochemical methods :- Spectrophotometry, Centrifugation, electrophoresis, Chromatography and isotope methods.
3. Modulation of circadian rhythm of any enzyme and its relation with the environment.
4. Effect of different environmental factors like temperature, pH and pollutants on the activity and kinetics of some enzymes in vitro.
5. Effect of higher ammonia level in water on the ammonia metabolic enzymes and the concentrations of ammonia and urea in vivo in some fishes.

(1) PLANKTON STUDIES

Theory

Plankton Studies - history, importance and scope. Freshwater as an environment. Major groups of freshwater plankton - different systems of classification - affinities with other allied groups. Methods of collection, preservation and study of freshwater plankton - quantitative and qualitative studies. Lentic and lotic animals - similarities and differences. Littoral and limnetic plankton communities a comparison. Conventional and modern tools for identification of freshwater plankton and allied groups - general problems in taxonomy of freshwater animals and global distribution. Culture methods in freshwater invertebrates - vertebrates and parasitic groups. Food and feeding habits - trophic relations and food chains. Seasonal, diurnal and horizontal migration of plankton in relation to physico-chemical and biological factors. Morphometric and morphological variations - dwarfing in tropical plankton ( Rotifers ) cyclomorphosis - predation - prey relationships. Plankton as indicators of trophic status. Biology of selected groups of freshwater organisms.

Practical to be read on theory syllabus.

M.Sc. ZOOLOGY

SEMESTER - IV

COURSE - I - II

**(3) PARASITOLOGY (Helminthology)**

**Theory**

Structure, composition and function of helminth body surface; epidermis, musculature and pseudocoel in nematodes; ecdysis; Segmentation of cuticular specialisations in helminths; Adhesive and anchoring apparatus in Trematodes and cestodes; Alimentary canal in trematodes and nematodes; Excretory organs and system; Sensory organs and nervous system; Reproductive system and its variations; Larval forms of helminth parasites; Parasite transmission; Host finding mechanism; Patterns of life cycle.

**Practicals**

1. Examination of faecal samples for detection of protozoan cysts and helminth ova using.
  - (i) Direct smear method.
  - (ii) Concentration methods;
2. Egg count and assessment of worm burden in a host;
3. Effect of temperature and salt concentration on the hatching of helminth eggs;
4. Isolation and study of nematode larvae in different phases of development.
5. Histology of the trematode, cestode, nematode and acanthocephalan body.
6. Camera lucida sketching of the whole mount/histological preparations.
7. Measurements of body and organs of the worm.

A. Physical Chemistry

Thermodynamics

A brief revision of First Law of thermodynamics, internal energy, work and enthalpy, thermodynamic reversibility, isothermal and a diabatic changes, heat capacities at constant pressure and constant volume. Spontaneous process, Entropy concept, entropy changes at constant pressure and volume, entropy changes accompanying change of phase, entropy changes in irreversible process, physical significance of change of phase, entropy efficiency of a reversible cycle, free energy and maximum functions.

Electrochemistry

A brief review of laws of electrolysis, electrolytic conductance, degree of dissociation.

Ionization equilibrium constants, mean activity coefficients, ionic strength, solubility equilibria and solubility product, complexions, influence of solvent ionisation constants of acids and bases, ionic product of water, ampholytes and iso-electric point, hydrogenion concentration, Ph scale and buffer solutions, acidbase indicators, Henderson-Hasselbalch equation, methods of determination of Ph.

Kinetics of Chemical Reaction

A brief review of velocity, order and molecularity of reactions, specific reaction rate, first, second third order reactions- effect of temperature on specific reaction rate, Arrhenius equation.

B. Organic Chemistry

Brief outlines and general concepts of the following

Bonding in organic molecules : atomic and molecular orbitals, molecular orbitals and their shapes, hybridization of molecular orbitals, bond formation from molecular orbitals, bond angles and shapes of molecules, bond energies, bond distances, molecular structure and dipole moment, resonance, tautomerism, elec-tronegativity and their impact on structural organic chemistry.

Shape of molecules -stereochemistry : geometric isomerism, conformation of acyclic compounds, chirality and optical activity. Nucleophilic substitution at saturated carbon: definitions of nucleophile and electrophile, distinction between acid and electrophile, base and nucleophile, nucleophilic substitution at saturated carbon : atom-SN<sub>2</sub>, SN<sub>1</sub>, SN<sup>i</sup> applications of SN<sub>2</sub>, SN<sub>1</sub>, and SN<sup>i</sup> reactions in/nucleophilic additions Contd 2/

to the carbonyl functions free radicals elimination reactions-E<sub>2</sub>  
E<sub>d</sub>. Electrophilic additions to unsaturated molecules and aromatic  
characteristics with electrophilic aromatic substitutions.

\*/ biochemical reactions.

### Part - II

#### CELL - BIOLOGY

##### Theory

Historical background and concept of cell; different cell types: subcellular organisation; detailed structural organisation and general account of functional aspect of plasma membrane, endoplasmic reticulum, golgi complex, cilia and flagella, lysosome, microtubules, microfilaments, plasmodesmata, ribosome, mitochondrion, plastids; nucleus, nuclear membrane, nucleoplasm, nucleolus, chromatin; Chromosomal structure and models; Nucleic acids, their structure and synthesis; chromosomal proteins; DNA replication; special types of chromosomes :- Lampbrush, polytens, accessory and sex chromosomes : cell division :- cell cycle, mitotic apparatus, mitosis, meiosis, meiosis and synaptonemal complex, molecular basis of crossing over; cellular transport-diffusion, osmosis and active transport; cellular death.

### Part - III

#### Basic Biochemistry

Physical and chemical properties of amino acids, biological importance amino acids and proteins, separation methods of amino acids; Proteins-Isolation and purification, Basic idea of determination and features of primary, secondary, tertiary and quaternary structure; denaturation. Naturally occurring peptides Classification, general properties and kinetics of enzymes. (No mathematical derivations except simple derivation of Michaelis-Menten equation) Carbohydrates - Classification, configurational and conformational aspects; Brief outline of the structure, properties and importance of homopolysaccharides and heteropolysaccharides.

Lipids-Classifications structure chemistry and Biological significance. Nucleic acid-Isolation and purification, structure and properties, elucidation of structure by chemical enzymatic degradation.

### Part - IV

#### Techniques in Biochemistry

Approaches to biochemical investigations-whole animal studies, perfusion of isolated organs, tissue and cell culture-techniques.

Chromatography-Principles and applications of different types of chromatography.

Centrifugation-Principles and applications of ultracentrifugation  
Electrophoresis-Principles and applications.  
Spectroscopy-Principles and construction of colorimeters and spectrophotometers - uses.

Mannometry-Principle and uses, Ph meter-principle, different electrodes Principles & applications of flame photometry, Fluorometry.

Radiochemical immunochemical methods.

Chemistry.

Practicals-Max Marks:50)

- (1), Kinetics of hydrolysis of sucrose polarimetrically.
- (2) Determination of pH range of indicators.
- (3) Verification of Beer-Lambert's law.
- (4) Potentiometric study of acid-base and precipitation reactions.
- (5) Conductometric titration of acid-base.
- (6) Distribution of iodine between water and benzene-partition coefficient determination.
- (7) Determination of b.p. and m.p.
- (8) Fractional and vacuum distillation.
- (9) Purification of solid organic compounds.
- (10) Identification of single organic compounds (resorcinol, salicylic acid, urea, aniline, phthalic acid, benzil, p-hydroxy benzaldehyde, p-nitroaniline, benzene from nitrobenzene.
- (11) Identification of functional groups ( $\text{COOH}$ ,  $\text{NH}_2$ ,  $\text{NO}_2$ ,  $\text{-CH}$ ,  $\text{-CO-CHO}$ ).
- (12) Preparation of phthalimide from phthalic anhydride, picric acid from phenol, aspirin from salicylic acid p-bromoacetanilide, from acetanilide, m-nitrobenzene from nitrobenzene.

Kinetics of decomposition of  $\text{H}_2\text{O}_2$  in presence of  $\text{FeCl}_3$  as a catalyst.

Molecular weight determination by rai's method (Naphthalene as solute and camphor as solvent).

Cell Biology

Practicals

(Max Marks-50)

- (1) Study of different kinds of cells.
- (2) Study of pretreatment agents, killing, fixing and servatives.
- (3) Chromosome stains-orcein, acetocarmine etc.
- (4) DNA and RNA stains-Feulgen, pyronin, methyl green
- (5) Study of mitosis
- (6) Study of metosis
- (7) Demonstration of plasmodesmata
- (8) Staining of nucleolus
- (9) Staining of mitochondria

- (10) Staining of sex chromatin
- (11) Study of polytene chromosomes
- (12) Study of lampbrush
- (13) Extraction of nucleic acids
- (14) Colorimetric estimation of DNA
- (15) Colorimetric estimation of RNA
- (16) Demonstrations of osmosis and diffusion
- (17) Cell fractionation and identification of cell organ by enzyme

Semester I

Practicals-Max. Marks-  
100

Biochemistry

- (1) Amino acids and proteins colour reactions, Pauly's Elrich's Nitropursside, SakaguchiNinhydrin, Xanthoproteic, Millon's Glyxylic colorimetric estimation of proteins by biuret and Lowry's methods, formal titration.
- (2) Preparation of buffer using Henderson-Hasselblech equation and determination of its buffering capacity.
- (3) Sugars-analysis of mixture of carbohydrates, quantitative estimation of sugar by Hane's method.
- (4) Lipids-Qualitative tests for lipids, determination of iodine number
- (5) Enzymes-Effect of pH, temp and substrate and enzyme concentration on enzyme concentration on enzyme activity.
- (6) Chromatography - Separation amine acids and sugars by paper chromatography.

SEMESTER - II

Paper V

Mathematics & Biostatistics

Basic Mathematics

Basic Mathematics

Theory of indices, polynomials of degree 1 and 2, theory of Factorisation, liner definitions and examples of equad-ratic equation, A.P., G.P., permutation combination (No proof), binomial theorem for positive integral index, logarithm, exponential, logarithm series (statement & illustration), idea of deter-minants (only second & third order)

Idea of coordinates, variables, functions, graphs of simple functions,

Idea of differentiation (illustrations), integration as inverse of differentiations, Definite integral & area.

B. B. Biostatistics

Descriptive Stastics : Basic statistical concepts Individual population, sample, parameter, statistics etc. Statis-tical data; (methods of data collection); classification.

summarisation & presentation of data. Frequency distribution histogram.

Classical idea of probability (simple illustrations, no theorems), method of fitting a straight line, calculation of product moment correlation coefficient, uses of t, F and X-tests (simple problems only)

Analysis of variance for one way & two classified data with one observation per cell (only the idea & technique of numerical computations)

Definition of simple random & stratified random sampling, use of random number tables for drawin of SRS (simple random simple) only finite population.

Estimation of mean & total and their standard errors.

### Part - VI

#### Metabolism - I

Intermediary metabolism, Free energy in biological systems, Energy rich compounds, Energy charge, Glycolysis, Tri-carboxylic acid cycle, Oxidative phosphorylation, Respiratory inhibitors and uncouplers, Hexose monophosphate shunt, Gluconeogenesis, Biosynthesis and degradation of Glycogen and starch, Hormonal control of glycogen metabolism, glycogen storage disease Metabolism of common disaccharides viz maltose, sucrose and lactose.

Degradation of Complex lipids, Fatty acid oxidation Biosynthesis of fatty acids and cholesterol. Biosynthesis of sterriid hormones, fat soluble, and water soluble vitamins.

### Paper - VII

#### Physiology

Structure of the gastro-intestinal tract, secretion, composition and role in digestion of saliva, bile, gastric, pancreatic and intestinal juices.

Digestion, absorption and transport of carbohydrates fats, proteins and minerals.

Composition of blood, plasma proteins and their biological significance. Respiration and the role of blood in transport of  $O_2$  &  $CO_2$ , blood pressure etc. Structure and function of kidney, formation and composition of urine, homeostasis Structure of brain and central nervous systems. Biochemistry of nerve conduction, muscle contraction and vision. Endocrine glands and their secretion, physiologic l role of hormones.

Immune-response, antigen and antibody, formation of antibodies, antigen - antibody interaction, allergy and hypersensitivity.

Contd/-6/-

Part - VIII

Food and nutrition

Food as a source of energy, composition of food and their energy value, basal metabolism and respiratory quotient, factors affecting NMR, specific dynamic action foods, nutritional and caloric requirements, requirements of fats, proteins and carbohydrates, nitrogen balance studies, essential fatty acids, essential amino acids, lipotropic factors, kwashiorkor and marasmus. Nutrition during pregnancy, lactation and aging.

Requirements and functions of minerals, structures source, functions at the cellular level of water-soluble and fat-soluble vitamins and vitamins deficiency diseases.

Principles of food processing & preservation.

Bio-Chemistry Practicals for  
II Semester

Max Marks-150

- (1) Isolation of Starch from Potato.
- (2) Assay of amylase activity from human saliva
- (3) Estimation of sugar in urine and blood
- (4) Separation of Amino<sup>ion</sup> acid by exchange chromatography
- (5) Isolation of casein from milk
- (6) Estimation of blood cholesterol
- (7) Estimation of carbohydrate by Anthrone method and Nelson
- (8) Electrophoresis of Serum
- (9) Estimation of blood urea
- (10) Estimation of blood hemoglobin
- (11) Serological tests
- (12) Radioactivity experiments.

Semester III

Paper IX

Medical Biochemistry

Disorders of digestion and absorption of carbohydrates, glucose, fructose and lactose intolerance, hypo and hyperglycemia, diabetes, glycogen storage disease. Disorders in digestion and absorption of amino acids, proteins and lipids steatorrhea, lipoproteinemia, fatty liver, cirrhosis of liver, obesity and atherosclerosis, role of prostaglandins, Nieman-Pick, Tay-sachs and Gaucher's diseases, liver function tests. Disorders in metabolism of purines and pyrimidines-Gout, Xanthuria, orotic aciduria, porphyria and bilirubin metabolism and jaundice.

Lathyrism and muscle dystrophies.

Hemorrhage, anemia and abnormal hemoglobins.

Endocrine function and disorders.

Inborn errors of amino acid and carbohydrate metabolism,

Contd/7/-

Carcinogens and carcinogenesis, Antimetabolites and interferon.

Enzymes of clinical significance—SGOT, SEPT, Phosphatases, aldolases etc.

Paper - X

Metabolism - II

Pathways of amino acid metabolism (general individual)  
Urea cycle, Biosynthesis of amino acids, Regulation of amino acid biosynthesis, t-RNA, m-RNA, Protein biosynthesis, inhibitors and regulation of protein biosynthesis, General methods for synthesis of peptides.

Purine and Pyrimidine metabolism and their regulation, Metabolism of porphyrins, General methods for the synthesis of nucleotides.

Paper - XI

Microbiology.

Brief account of characterization and classification of microorganisms; Viruses, bacteria, algae, fungi and protozoa. Physical and chemical structure of prokaryotic cell: bacteria and cyanobacteria.

Growth : Nutritional requirements and environmental factors affecting the growth of bacteria and cyanobacteria. Replication of bacteria and algal viruses. Conjugation, transduction and transformation.

Role of micro-organisms in food preservation, fermentation, industrial fermentation food poisoning and spoilage. Nature and activity of antibiotics : Structure, synthesis mode of action and application. Use of micro-organisms in bioassay. Treatment of sewage.

Soil microbiology : Soil microbes and decomposition process. Symbiosis. Physiology, biochemistry and genetics and nitrogen fixation of bacteria and cyanobacteria. Mutagenesis by chemical and physical means. Repair of mutations.

Paper - XIII

Enzymology

Definition, specific activity, active site, Enzymatic catalysis, Regulation of enzymatic activity, classification of enzymes, Feed back inhibition, Factors affecting the rate of enzyme action, Forces involved in ES formation.

Enzyme Kinetics—Michaelis-Menton constant, determination and significance of  $K_M$  and  $V_{max}$ , competitive, Noncompetitive and Uncompetitive inhibition of enzyme activity,

Mechanism of enzyme action with special reference to chymotrypsin, lysozyme and carboxy peptidase - A.

Kinetics of bisubstrate reactions.

Enzyme cofactors and coenzymes : Coenzyme A, NAD, NADP, FMN, FAD, TPP, lipoic acid, pyridoxal phosphate, biotin and folic acid.

Allosteric Enzymes : Concerted and sequential models for allosterism, Enzyme Regulation. & Significance of allosterism covalent modifications.

Zymogens forms of the enzymes, mechanism of Zymogen activation, Physiological significance of Zymogenecity.

Isozymes, their regulation and significance.

Microbiology

Practicals : Max. Marks-50

- (1) Calibration of microscope and measurement of dimensions of microbial cell.
- (2) Nutrient media, : composition, preparation sterilization
- (3) Enumeration of micro-organisms from soil, water, air, etc
- (4) Study of morphology of micro-organisms using different stains
- (5) Population estimation and specific growth rate by haemocytometer and colourimeter.
- (6) Spectrophotometric characterization of acetone and water soluble pigments of cyanobacteria.
- (7) Isolation and counting (PFU) of cyanophages
- (8) Study of antagonistic microbes in soil (bacteria and fungi)
- (9) Isolation and study of nitrogen-fixing bacteria and cyanobacteria.

Biochemistry Practicals  
for III Semester.

Max. Marks-150

(I) Isolation of an Enzyme.

- (1) Cell fractionation
- (2) Ammonium sulfate fractionation
- (3) Ion Exchange chromatography
- (4) Gel filtration
- (5) Affinity chromatography (with oibacron blue)

(2) Determination of Homogeneity

- (1) Polyacrylamide gel electrophoresis
- (2) SDS pplyacrylamide gel electrophoreses
- (3) End group analysis
- (4) Gel filtration

(3) Enzyme Kinetics

- (1) Determination of  $K_m$  and  $V_{max}$
- (2) Demonstration of competitive and non-competitive inhibition

(4) (1) Enzymes of clinical significance like SGOT

Semester IV

Paper-XIII

Biophysics

Conformation of macromolecules

Principle and application of Mossbauer effect : Principles and applications in the study of macromolecules for the following-Viscometry, light scattering, ORD, Circular dichroism Osmotic pressure, titrimetric behaviour, X-ray diffraction, ESR, MNR, electron microscopy, Raman spectroscopy.

Structure of biomembranes, and active transport.

Metal ions and their interaction with proteins and nucleic acids.

Ligand field theory & its significance in biochemical systems.

Ultracentrifugation, Ramachandran Plot.

Paper - XIV

Plant Biochemistry

General account of plant cell organelles with special reference to Biochemistry; Regulation of enzyme activity in metabolic pathways, general account and metabolism of carbohydrate lipids and nucleic acid; sulfate/nitrate metabolism, nitrogen fixation; biosynthesis of amino acids and proteins and their

regulation, structure and function of plant-pigments (Chlorophyll) carotenoids, chromobilli proteins, phytochroms etc.); secondary plant compounds (terpens, terpenoids, alkaloids, prohibitions, etc); vitamins organic acids metabolism; chemosynthesis, chloroplast structure and structure and function.

Molecular Biology

Information transfer in biological systems, replication of DNA, DNA polymerases (I, II, & III), ligases, Replication of single stranded cyclic DNA, rolling cycle model of DNA replication, repair of DNA. Intron, exons, biosynthesis of RNA-RNA polymerase, processing of mRNA, rRNA & tRNA, replication of viral RNA, reverse transcriptase. Inhibitors of nucleic acid biosynthesis. Viruses, transformation, transduction and conjugation. Structure of ribosome. Genetic code general features of the genetic code, methods of deciphering the genetic code; suppressor mutations. Enzyme induction & repression, the operon model, catabolic repression, role of cAMP in transcription, a brief account of the operons lac, his, ala, Gene expression & regulation in eukaryotic cells.

Contd/10/-

Laws of inheritance, extranuclear inheritance and concept of plasmids, Genetic Engineering.

Biochemistry Practicals for IV  
Semester

(Max Marks-150)

- (1) Isolation and characterization of DNA and RNA in terms of
  - (i) Stability to temperature
  - (ii) Stability to alkali
  - (iii) Stability towards nucleases.
- (2) Viscosity Measurements
- (3) Spectral Measurements
- (4) Reactivation of an enzyme with metal
- (5) Demonstration of Active transport
- (6) Isolation and characterization of some plant pigments

Paper - XVI

Special paper	} to be decided later	Max Marks - 100
Project work		Max Marks - 150

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