PART II AGENDA PAPERS FOR THE FIFTYFIRST MEETING OF THE ACADEMIC COUNCIL

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(iii)-Affiliation cases approved by the Vice Chancellor

After considering the respective inspection report, the Vice Chancellor has approved grant of affiliation to the following colleges for the purpose mentioned against each. The cases are placed at annexure 'A,B &C' before the Council for ratification

(1) Synod College, Shillong – Introduction of Major in Physics, Chemistry, Mathematics, Botany, and Zoology.

(2) Seng Khasi College Shillong – Introduction of Major in English, Political Science, Khasi(Elect) History, Philosophy, and Education.

(3) Govt. Aizawl College – Introduction of Major in Physics, Chemistry, Mathematics, Botany, Zoology.

3:3(2) Annexure - A'

NORTH EASTERN HILL UNIVERSITY
MAYURBHANJ COMPLEX, NONGTHYMMAI
SHILLONG -793 014.

Head,
Department of English.

Dated the 25th July, 1995.

No.62

To,

Prof (Mrs) Helen Giri
Director
College Development Council
NEHU, Shillong.

Sub :- Re-inspection of Synod College for introduction of Major courses

Madam,

With reference to your letter NO.CDC/A.11/91-92/451-52 dt. 24.6.95, Dr. B. Kharluki, Dr. B.S. Nipun, Dr. B. Myrboh and I inspected Synod College on 25 July. As is evident from the faculty position indicated in the document enclosed herewith the college has a minimum of four permanent faculty in the following subjects :

1. Physics (2) Chemistry (3) Mathematics
(4) Botany (5) Zoology.

Hence we recommend affiliation of the college for the introduction of Major courses in these subjects.

Yours faithfully

Sd/-
N. Hasan
(Convener)

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NAME OF THE COLLEGE :: SYNOD COLLEGE : : SHILLONG.

I. STAFF POSITION : (SCIENCE FACULTY)

SUBJECT/COURSE	NAMES OF TEACHERS
1. PHYSICS	1. Miss V.G.Shylla, M.Sc., M.Phil. 2. Miss S.M.Khongwir, M.Sc. 3. Mr. Merostar Rani, M.Sc. 4. Miss G.A.Kharsyntiew, M.Sc.
2. CHEMISTRY	1. Dr.(Mrs) S.S.Islam, M.Sc., Ph.D. 2. Miss W.Kharmawphlang, M.Sc. 3. Mr. Sotstone Marsharing, M.Sc. 4. Miss I. Kharpuria, M.Sc. 5. Dr. Alok Kumar Deb, M.Sc. Ph.D.(Part-time)
3. MATHEMATICS	1. Mr.P.S.Marpna, M.Sc. 2. Mr. L.S.Nongbri, M.Sc. 3. Miss Hazeline G. Laitthma, M.Sc. 4. Mrs. Irilin Shabong, M.Sc.
4. BOTANY	1. Mr. S.Jyrwa, M.Sc. 2. Dr.(Miss)B.Wankhar,M.Sc.,Ph.D. 3. Miss Nora C.L.Marbaniang,M.Sc. 4. Miss Fancy S.Khonglah,M.Sc. 5. Mrs.A.D.Synrem, M.Sc.(Part-time)
5. ZOOLOGY	1. Mr. D.Wanswett, M.Sc. 2. Mr. L.M.K.Lyngrah,M.Sc. 3. Mr. Richard M.Lyngdoh, M.Sc. 4. Miss Radiancy D.Lyngdoh, M.Sc.
6. GEOGRAPHY	1. Mr.D.G.Nongkhlaw,M.Sc. 2. Mr. Laitpharlang Cajee,M.Sc. 3. Mr.Synsharlang Kharshiing,M.Sc.(Part-time) 4. Mr.Kwilly Nongrum,M.A. (Part-time)

Sd/-

Principal
Synod College Shillong.
(26.7.95)

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3:3(4)

Enrolment in B.Sc. First Year Class

(General & Major)

		Number of students enrolled
I. B.Sc. First Year (General)	:	9 (Nine) Nos.
II. B.Sc. First Year (Major)	:	
1. Chemistry	:	10 (ten) Nos.
2. Botany	:	5 (Five) Nos.

Sd/-
Principal,
Synod College, Shillong
(26.7.95).

3.3(5) Annexure - 'B'

NORTH EASTERN HILL UNIVERSITY
SHILLONG

For New Course/Upgradation

INSPECTION REPORT

1. Name of the College: Seng Khasi College, Jaiaw.

2 (a) Year of affiliation and corresponding University Notification No.1976-77 vide No.A-I|SKC/76-77/4627 dt. 12.7.79.

(b) Level to which affiliation: B.A. (Pass).

3. Affiliation/Permanent sought to Upgrade to or B.A.|B.Sc Pass Course in B.A. Major in

Introduce (a new subject)English, Pol.Science,Elective Khasi,

B.Sc Hons. in History,Education,Economics.Philosophy & Mathematics.

4. Admission(for the last three years)

Year	P.U.	B.Sc.I.	B.Com.I	B.A.III	B.Sc.III	B.Com.III
1992-93	726			319		
1993-94	691			276		
1994-95	626			236		

5. Result of University examination during the last three years.

Examination	Year	Percentage of Pass
Please see Annexure 'A'		

6. In case the college is seeking Honours in a subject( )for which it has already a Pass Course please give below the No. of students admitted in the last three years and their results for these years in the SUBJECT in which College has applied for Honours.

YEAR	NO. OF STUDENTS APPEARS	% SUCESS
See Academic Details (enclosed) at page 3.		

7. FUNDS:

(a) Whether the College is having a Reserve Fund in longterm Fixed Deposit: YES. Please see Annexure at at page 3.C.

If yes, the details thereof: (Bank No. of Term Deposit Receipt, etc.

(1) Canara Bank KDA No.207740-642/9/2.9.91

(2) Canara Bank-No.06807651/243 94 dt.28.4.1994.

(3) Canara Bank-No.0680766-249/ 94 dt.28.4.94.

(b) Present working fund:

8. Qualification/Specialization of the Teaching Staff(of the relevant subject only)

Name & Designation	Qualification(with grade and subject in P.G.
1. Smt.B.Tymthai-	PRINCIPAL.
2. Smt.E.V.Poon -	Lecturer
Please see Annexure 'B'	

NOTE: THE UNIVERSITY REGULATION STIPULATES THE FOLLOWING STAFFING REQUIREMENT

Level/Class	Minimum No. of Teaching in each subject.
a) Degree Non-Laboratory (Pass)	Two in all subjects and 3 in English.

...2/-

a) Degree Non-Laboratory (Pass) Two in all subjects and 3 in English.

b) Degree Laboratory (Pass-Six of whom four should be lecturer.

c) Degree-Non-Lanoratory(Pass) Four in all subjects other than English & other Elective Languages in which there should be at le st five.

d) Degree Laboratory (Pass) Seven of which six shall be Lecturers + Hons. +

8. LAND & SITE:

a) Wheth r the college is having permanent building on its own l nd: Yes.

b) Area of the College Campus.A part of Sengkhasi Land at Jaiaw.

c) Accommodation(give size) See page 1 under Physical Facilities

1. One room for the Principal.
2. One room for the college office.
3. One room for the Staff Common room (Adequate).
4. Common room for Boys and Girls- one each.
5. Library with reading room. One big room.
6. Class room (Adequate)

9. Work load of Teachers:

10. Library books: Please see enclosure at page 4 & 5.

Whether the college has a trained Librarian: Yes.

11. Laboratory facilities.

a) Whether accommod tion is adequate or not: Adequate

b)No. of shifts the students do their practicals.

12. When was the last Governing Body meeting: 7th Oct.1994.

RECOMMENDATIONS

Please m ke your recommendation without any ambibuity. In case your suggest provisional affiliation for a particular period please mention the academic year specifically. Please also mention the conditions, if any, to be fulfilled if extension of affiliation is to be considered.

The Inspection Team inspected the college on June 16,1995 at 2 p.m. and discussed with the Principal and the concerned Teachers. They also went round the College building and make the following commence and recommendations:-

The College has adequate Physical facilities for class room and Library and its scund financially.

However, the college does not have adequate number of titles of books on any subject asked for affiliation and does not have minimum number of Lecturers as prescribed by University Ordinance.

Therefore, the Inspection Team recomnends that the subjects of Political Science, English, History, Elective Khasi, Education and

...3/-

Education and Philosophy be given provisional affiliation on condition that theyfulfil the minimum requirements with regard to titles of books of Economics and Mathematics as there is no prospect of getting qualified teachers in near future.

Signature of the members of the Inspection Team.

Sd/- Prof. M.Sharma
3/7/95-

Sd/-Dr.S.C.Daniel.
3/7/95.

Sd/-Dr.N.Srivastava
8/7/95.

Sd/-Dr.Miss.A.Henia
10/7/95.

Sd/- Dr.(Mrs)S.Dkhar
10/7/95

Sd/-Dr.P.K.Saikia
3/7/95-

Sd/-L.S.Gassah
11/7/95

Sd/-Dr.R.P.Sharma
3/7/95.

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ANNEXURE 'A'

B.A. RESULT

SUBJECT	YEAR	NO.APPEARED	NO.PASSED	PERCENTAGE OF PASS AT DEGREE
English	1992	62	24	40.32 %
	1993	124	41	33.06%
	1994	98	86	87.76 %
F.C.	1992	62	61	98.38%
	1993	124	121	97.58 %
	1994	99	97	97.47 %
KHASI S.L.	1992	49	48	97.95 %
	1993	80	70	87.05 %
	1994	84	77	91.66 %
Pol.Sc.	1992	54	21	38.88 %
	1993	97	14	14.43 %
	1994	96	23	23.95 %
Economic	1992	28	8	28.57 %
	1993	45	7	15.55 %
	1994	22	14	63.63 %
Education.	1992	26	13	50.00 %
	1993	43	3	6.38 %
	1994	51	6	11.76 %
History	1992	18	6	33.33 %
	1993	29	14	48.27%
	1994	32	13	40.62 %
Philosophy	1992	5	4	80.00 %
	1993	5	0	0%
	1994	2	1	50.00%
M ths.	1992	0	0	0 %
	1993	0	0	0 %
	1994	1	0	0 %

ANNEXURE 'B'

Sl. No.	Name	Designation	Subject taught.	Qualification								Teaching Experience	Classes of Taught
				Matric/HSLC		IA/PU		B.A/B.Sc		MA/M.Sc			
				Div.	Pc.of Marks	Div	Pc. mark	Div.	Pc. Mark	Div.	Pc of mark		
1.	Smt.B.Tymthai	)Principal	-	II	53%	II	53.5	II	58.75	II	51.37%	22 yrs	PU & Degree
2.	" E.V.Poon	Lecturer.	English	III	46.1	II	50.0	Sim	39.9	II	51.25	20 yrs	÷
3.	Shri N.Shabong	-	English	Sup	-	III	36.7	Sim	40.66	Gr.C.	3.29%	6 yrs	÷
4.	Shri D.Syiem	-	English	I	64.1	II	57	Sim	44.0	II	48.0	9 yrs	-
5.	Shri D.Kharkongor	-	Khasi	III	43.0	III	41	Sim	44.60	II	48.63	20 yrs	-
6.	Shri K.Wahlang	-	Khasi	III	42.38	III	41.7	Sim	39.1	II	51.0	8 yrs	--
7.	Shri E.Nongsteng	-	Khasi	Sup.	-	III	40.5	Sim	45.9	II	53.5	8 yrs	-
8.	Shri R.Lyngdoh	-	Pol.Sc.	II	51.89	III	40.8	II	46.25	II	55.13	16 yrs	-
9.	Shri L.Laitthma	-	Pol Sc.	III	31.8	III	50	Sim	45.50.	II	45.13	22 yrs	-
10.	Shri R.Lamare	-	Economics	II	51.2.	III	48.66	II	40.62	II	45	22 yrs	-
11.	Smti.N.Syngdon	-	Economics	II	47.0	III	38.3.	Sim	42.2	Gr.C.	3.16pts	22 yrs	-
12	Smti.B.Niangti.	-	Education	II	53.77	III	48.16	II	47.38	II	47.25	10 yrs	-
13.	Smti.Y.Swer	-	Education	III	44.5	III	44.11	II	46.66	I	60	22 yrs	-
14.	Shri A.Shabong	-	History	II	45.5	III	46.3	II	43.4	II	54.4	10 yrs	-
15.	Smti.B.Pde	-	History	II	54.73	II	52.65	II	49.33	II	45.63	18 yrs	-
16.	Smti.T.Lismon	-	Philosophy	III	44.5	III	43	Sim	38.40	Gr.C.	3.02pts	10yrs	-
17.	Smti.Y.Nongsiej		Maths	II	59.75	II	47.55	Sim	45.80	Gr.C.	3.43pts	14 yrs	-

C. FINANCIAL POSITION

1. Detail on fixed deposit in favour of the college. A Certificate from the Bank must be enclosed.

	NAME OF THE BANK	AMOUNT
1.	Canara Bank. KDR No.244/94 dt.28.4.94	Rs.10,52,680.00
2.	Canrak Bank KDR No.243/94 dt.28.4.94	Rs. 3,38,114.00
3.	Canara Bank KDR No.642/91 dt. 2.9.91.	Rs. 74,812.50.

2. Kindly furnish the income and expenditure during the last three years.

YEAR	INCOME	EXPENDITURE
1992-93	Rs.37,79,625.40	Rs.34,56,171.38.
1993-94	Rs.36,13,470.90	Rs.32,41,638.55
1994-95	Rs.40,28,343.95	Rs.35,00,079.10

3. How does the college intends to raise additional funds for starting Honours. Name the sources and give the amount

SOURCES	AMOUNT
None, only from the Government Grants as per rule.	

D. ACADEMIC DETAILS:

1. Details of subject wise, students enrolment during the last three years.

SUBJECT	YEAR	ENROLMENT AT DEGREE LEVEL B.A. I - B.A.II
a. English	1992-93	149 - 170 = 319
	1993-94	140 - 130 = 276
	1994-95	140 - 96 = 236
b. M.I.L.	1992-93	- -
	1993-94	138 - = 138
	1994-95	139 - 94 = 233
c. Alt Emglish	1992-93	- -
	1993-94	2 = 2
	1994-95.	1 2 = 3
F.C.	1992-93	149 - 170 = 319
	1993-94	140 - 130 = 270
	1994-95	140 = 96 = 236
Pol. Sc.	1992-93	142 - 170 = 312
	1993-94	136 - 128 = 264
	1994-95	136 = 94 = 236
Khasi	1992-93	124 - 149 = 273
	1993-94	119 - 116 = 235
	1994-95	124 = 80 = 204
History	1992-93	43 - 47 = 90
	1993-94	73 - 38 =111
	1994-95	57 = 55 = 112
Education	1992-93	85 - 69 = 154
	1993-94	34 - 67 = 101
	1994-95	63 = 22 = 85.
Philosophy	1992-93	5 - 8 = 13
	1993-94	7 - 4 = 11
	1994-95	2 = 7 = 9
K. Logic	1992-93	- -
	1993-94	- -
	1994-95	- -
Maths	1992-93	1 - 0 = 1
	1993-94	3 - 1 = 4
	1994-95	1 = 0 = 1

p.2/-

2. What is the expected enrolment on the honours course(s) , 120

3. Details of subject wise result percentage during the last three years

Subject	Year	Percentage at Degree Level.

Please see Annexure 'A'

4. Please furnish details of academic qualifications of the Principal and teachers giving their names, division & percentage of marks at each stage beginning high school, teaching & research experience, classes taught, area of specialisation, if any.

Please see Annexure 'B'

5. Are there any additional post by not yet appointed if yes, please furnish a sanction order from the appropriate authority.-
No.

E. LIBRARY:

1. Do you have a separate room. Yes.

2. Kindly give the name and qualification of your librarian.

Name	Qualification
Smt. Iolang Lamare	B.A. (Library)Science Certificate Course.

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3:3(12) Annexure - 'C'

NORTH-EASTERN HILL UNIVERSITY
SHILLONG.

FOR NEW COURSE/UPGRADATION

INSPECTION REPORT

1. Name of the college: GOVT.AIZAWL COLLEGE.

2(a) Year of affiliation & corresponding University Notification No. : 16.8.1975 vide U.S.O. : AFFILIATION NEHU NO.A.3/ : ANC/75-86/182/384 : dt.15.7.1975.

(b) Level to which affiliation : P.U.Sc.'A', PU 'COM', B.A(MAJOR)

3. Affiliation/Permanent sought to upgrade to or B.Sc.Pass Course in Physics, Chemistry, Mathematics, Botany, Zoology.

Introduce(a new subject)

B.Sc.Major in - do -

B.Com. in -Not applicable.

4. Admission(for last three years)

YEAR	P.U.	B.SC.I.	B.COM.I.	B.A.III.	B.SC.III.	B.COM.III.
1992	142	N.A.	N.A.	665	N.A.	N.A.
1993	163	N.A.	N.A.	671	N.A.	N.A.
1994	136	N.A.	N.A.	656	N.A.	N.A.

5. Result of University examination during the last three yeasr.

EXAMINATION	YEAR	PERCENTAGE OF PASS
P.U(SC)	1992	58.13%
	1993	75%
	1994	69.50%
P.U(ARTS)	1992	50.91%
	1993	52.15%
P.U(COM)	1994	47.62%
P.U(COM)	1992	42.10%
	1993	35.71%
	1994	32.14%
	1992	53.65%
	1993	55.1%
	1994	30.38%

contd.2/-

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6. In case the college is seeking Honours in a subject(s)for which it has already a Pass Course please give below the No.of students admitted in the last three years and their results for these years in the SUBJECT in which college has applied for Honours. :N.A.

YEAR	NO. OF STUDENTS APPEARS	% SUCCESS.

7. FUNDS:

(a) whether the college is having a Reserve Fund in long term Fixed Deposit: Being a Govt.college, the college receives fund from the State Govt. and U.G.C.regularly.

If yes, the details thereof : N.A.
(Bank No.of Term deposit receipts.etc) N.A.

(b) Present working Fund: Government of Mizoram.

8. Qualification/Specilization of the Teaching Staff(of the relevant subjects only)

NAME AND DESIGNATION.	QUALIFICATION(WITH GRADE & SUBJECT IN P.G.
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	

contd.3/-

NOTE: THE UNIVERSITY REGULATION STIPULATES THE FOLLOWING STAFFING REQUIREMENT.

LEVEL/CLASS	MINIMUM NO. OF TEACHING IN EACH SUBJECT
a) P.U. Non-Laboratory	one.
b) P.U. Laboratory	two.
c) Degree Non-Laboratory(Pass)	Two in all subjects & 3 in English.
d) Degree Laboratory(Pass)	Six of whom four should be lecturers.
e) Degree-Non-Laboratory(Pass)	four in all subjects other than English & other Elect. languages in which there should be atleast five.
f) Degree Laboratory(Pass) + Hons. + P.U. Laboratory.	Seven of which six shall be lect.

9. LAND AND SITE:

a) Whether the college is having permanent building on its own land : YES.

b) Area of the college campus : 2 Acres.

c) Accommodation (give size):-enclosed in Annexure-II

1. One room for the Principal :Yes.
2. One room for the Vice-Principal: Yes.
3. One room for the college office: Yes
4. For staff common-room Adequate.
5. Common room for Boys and girls.: YES.
6. Library with reading room :YES.
7. Class room .....Adequate.

10. Workload of teachers: 12- 18 periods per week pending on subjects.

11. Library books:

Total Volume. : as on 22.8.95 - 19,277.

Subjectwise break-up(of relevent subjects only)

1) General reference	670
2) Arts	11,225
3) Science	6,832
4) Commerce	550
TOTAL	19,227.

A 3(12)

Whetner tne colle_e nas a trained Librarian : YES

12. Laboratory facilities.
a)Whether accommodation is adequate or not: Not adequate.
b) No.of shifts the students do their practicals : ONE.

13. When was the last Governing body meeting : N.A.
14. Any other relevant information(s)/point(s).

RECOMMENDATIONS:

Please make your recommendation without any embibuity. In case your suggest provisional affiliation for a particular period please mention the academic year specifically. Please also mention the conditions, if any, to get fulfilled if extension or affiliation is to be considered.

Encl; Report on page 5.

signature of the members of the Inspection Team.

Sd/-illegible. 22/8/95.

Sd/-DIPAK K.Bank 22/8/95

Sd/-illegible 22.8.95.

Sd/-Dr.H.L 22/8/95

Sd/-A.B.Chetri 22/8/95

Sd/-Dr.C.Thanthlunga
22/8/95.

3:3(16)

RECOMMENDATIONS

The inspection was conducted on 22nd Aug'95 after noon. The team visited the College and the following decisions taken.

1. The inspection team felt that the number of teachers in the subjects are not adequate. The College has three lecturers in each subject. For degree level pass course and P.U., six teachers are required. The Principal has informed that College will stop PU teaching after this session.

As per University regulation for PU Science & B.Sc pass course, College requires three more teachers in each subject, The Principal of the college submitted letter issued by the Under Secretary, Higher and Technical Education that 3 posts of lectueres each in Chemistry, Physics, Mathematics, Botany and Zoology have been approved in annual plan 1995-96(Annexure-V&VI)

The same should be fullfilled by the Govt. of Mizoram immediately.

2. It was observed that the College should acquire more books which are recommended readings for B.Sc course. The Principal informed that they are likely to place order. The UGC has granted special grant for Rs.325,000/- to purchase books. They are going to place order to purchase text books as well as reference books.

3. It was also observed that the College should acquire sufficient instruments as per University syllabus. The Principal informed that U.G.C. has sanctioned Rs.3,50,000/- to purchase instruments. They will place order very soon. The Inspection team felt the need to purchase furniture for Laboratory as well.

Subject to fulfilling of the above condition and on the basis of assurance given by the Joint Director, Higher & Technical Education the committee recommend to grant affiliation for B.Sc Major(with current session) for a period of three years.

For granting further extension of affiliation/or permanent affiliation it will be necessary to have another inspection conducted in order to assess whether the conditions are fulfilled.

Sd/-
Dr.D.K.Barkakati,
Head,
Deptt. of Physics,Member.

Sd/-Dr.C.Lalrawna,
Head,Deptt. of Botany
member.

Sd/-Prof.L.K.Jha,Convener

Sd/-Dr.H.L.Malsawma,
Jt.Director,Higher
&Technical Education
Govt.representative

Sd/-Dr.C.Thanthianga
Head,Deptt of Zoology
member

Sd/- Dr.M.Das
Head,Deptt. of Mathematics
Member

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(iv) Introduction of vocational subjects in Industrial Chemistry, Bio-Technology and Mass Communication and Video Production

As authorised in the last meeting of the Academic Council, the Vice-Chancellor has approved the introduction of the above vocational subjects after consideration of the recommendations made by the Expert Committees. The recommendations of the Expert Committees alongwith the syllabus are placed at Annexure-'A'

The matter is placed before the Council for ratification.

Annexure - 'A'

3:4(2)

B.Sc. INDUSTRIAL CHEMISTRY

Ref: CE/Doc:1st Degree(Edn:)94-338

A Committee constituted by Academic Council for Introducing B.Sc. Industrial Chemistry met on 27th June 1995 at 2 P.M. in the Office of the Chairman. The following members were present :

1. Prof. J.K.Choudhury — could not attend

2. Sd/-
Prof.T.S.S.Narasaraju

3. Sd/-
Principal
St.Anthony's College
Shillong.

4. Sd/-
Rev.Fr.Nellanatt
St.Anthony's College,
Shillong.

5. Sd/-
Prof.B.Junjappa
Chairman
A.C.Committee on B.Sc.
Industrial Chemistry.

3:4(3)

MINUTES

The Committee discussed the syllabus of B.Sc. Industrial Chemistry placed before the 50th Academic Council which met on 29th and 30th May 1995 and arrived at the following conclusions:

1. The Committee looked into the genesis of introduction of vocationalization of First Degree Education.

2. The Committee felt the course is feasible which can be introduced on an experimental basis.

3. The teaching requires more technical personnel either as a core faculty or as part timers.

4. The UGC has indicated to finance required additional teaching posts.

5. The existing equipments and books available in the college appear to be adequate for running the course.

6. B.Sc. Industrial Chemistry is a technical course as per UGC guidelines. The candidates completing the course will not be eligible for admission to M.Sc. programme in chemistry of this University.

7. The syllabus as prepared by the college is recommended to the Bugs/AC for adoption.

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FEASIBILITY OF INTRODUCING VOCATIONAL COURSE IN BIOTECHNOLOGY AT THE FIRST DEGREE LEVEL

The Academic Council at its 50th meeting had constituted a Sub-Committee comprising of the following to look into the feasibility of introducing a vocational course in Biotechnology at the first degree level with reference to a proposal submitted by the St.Anthony's College :

1. The Principal, St.Anthony's College - Member
2. Shri. M.R. Halim, St.Anthony's College "
3. Prof.K.Chatterjee, NEHU "
4. Dr.R.Sharma, NEHU "
5. Dr.A.K.Mishra, NEHU "
6. Prof.R.S.Tripathi, NEHU "

The following were coopted on the Committee:

1. Prof.P.Tandon
2. Dr.K.B.Tiwari

The terms of reference of the Committee were as follows

a) To look into the feasibility of introducing the said vocational subject at the First Degree Education at St.Anthony's College, Shillong.

b) To look into the soundness of the proposed course content of the UGC on the subjects in the context of this University & the acesptation to the TDC as proposed by the College and if necessary propose changes.

c) The Committee shall have the powers of co-option if deemed necessary.

d) The Committee shall appoint its own Secretary.

The Sub-Committee met on the 20th June and 26th June and deliberated on various relevant issues and finalized its reports. The minutes of the meetings are reporduced below:

MINUTES OF THE MEETING HELD ON THE 20TH JUNE, 1995 in THE OFFICE CHAMBER OF THE DEAN, SCHOOL OF LIFE SCIENCES, NEHU

MEMBERS PRESENT:

1. Principal, St.Anthony's College.
2. Prof.K.Chatterjee
3. Mr.M.R.Halim
4. Dr.R.Shamma
5. Dr.A.K.Mishra
6. Dr.B.K.Tiwari
7. Prof.R.S.Tripathi (Chairman)

1. The Chairman welcomed the members and briefly informed them about the discussion that took place in the Academic Council meeting as some of the members of the Sub-Committee are not the members of the Academic Council.

2. The Principal, St.Anthony's College, gave the barckground of proposing the course on Biotechnology which was followed by a meaningful discussion.

3. It was decided that Dr.R.Sharma, Dr.B.K.Tiwari and Dr. A.K.Mishra would pay a visit to St.Anthony's College on June 21,95 to find out the status of infra-structural facilities required for running the Biotechnology course at the said college.

4. It was resolved to meet again on June 26 at 10.00 a.m. for a detailed discussion on intrastructural facilities and syllabus of the proposed course.

5. The Chairman thanked the members present.

MINUTES OF THE MEETING HELD ON THE 26TH JUNE, 1995 IN THE OFFICE CHAMBER OF THE DEAN, SCHOOL OF LIFE SCIENCES NEHU.

MEMBERS PRESENT :

1. Fr.Joseph Nellonott (representing the Principal, St. Anthony's College)
2. Dr.R.Sharma
3. Prof.K.Chatterjee
4. Mr. M.R.Halim.
5. Dr.A.K. Mishra
6. Prof.R.S.Tripathi (Chairman)

Besides, three teachers from the St.Anthony's College viz., Dr.Jauti Sarma, Dr.J.N.Vishwakarma and Mr. A.A.Lamare, also participated in the delibrerations.

1. Taking into consideration the views of the members who visited the college and made on the spot assessment, it was felt that the course in question may be started in St.Anthony's College subject to the condition that separate laboratory space and other facilities required for Biotechnology course would be developed by the start of second year.

2. A core faculty of two members for Biotechnology would have to be assigned and guest faculty would have to be associated. Gradually, at least five core faculty members would have to be there. Library facilities too would need augmentation.

contd.3/-

3. Students opting for Biotechnology must offer TDC pass course papers in Chemistry and either Zoology or Botany.

4. Equipments shall have to be provided as per enclosure I.

5. Number of students to be admitted should not exceed ten per year.

6. The Syllabus that was placed at the 50th meeting of the Academic Council was revised by the Committee. The syllabus was organised into various papers allocating marks(see Encl.II) in accordance with the existing pattern for other laboratory oriented science subjects that are being taught in the college affiliated to NEHU.

7. The Committee resolved to appoint Dr.Ramesh Sharma as Secretary of the Committee.

The meeting ended with a vote of thanks from the CHAIR.

JULY 22, 1995.

Sd/-R.S.TRIPATHI
DEAN, SCHOOL OF LIFE SCIENCES AND
CHAIRMAN OF THE SUB-COMMITTEE.

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ENCLOSURE-I

LIST OF EQUIPMENTS :

1. An autoclave or a large capacity pressure cooker(20 litres) for routine sterilization of media and laboratorywares.The existing labs may already have this.
2. An oven(ca 40cm x 40xm x 50xm) useable in the range of 180°C to 200°C for drying and sterilization of glasswares. The existing laboratories may already have this.
3. An incubator for use in the range of 20°C to 70°C(dimensions as for oven under '2' above)
4. An illuminated temperature controlled (20°C to 30°C)area for plant tissue culture(A BOD incubator may be adapted for the purpose).
5. A CO_2 incubator for animal cell culture, O_2 and CO_2 cylinders.
6. Microscopes preferably with oil immersion objective and phase optics. The existing laboratory may already be having this.
7. A computer terminal with requisite software for demonstration and use under paper II.
8. A spectrophotometer/colorimeter with UV and visible light source.
9. A water bath/incubator thermostatted to work over the range 20-100 °CC
10. Vortex mixers(one per work bench); magnetic stirrer.
11. Electrophoresis system for horizontal and vertical run(e.g. the units marketed by Biotech).
12. Microfuge(e.g.the units marketed by Remi).
13. Glassplates for casting TLC and /or electrophoresis.
14. High Speed Refrigerated centrifuge.
15. Sosonricator
16. Electronic balances.
17. Double distillation set.
18. Deepfreezer (-20°C)

ENCLOSURE : II :

SYLLABUS IN BIOTECHNOLOGY.

A. Summary of the syllabus

	MARKS
1st year	
Pap.I Biochemistry	70
II Maths & Computers - 35 Biophysics - 35	70
III (Practical) Biochemical Techniques.	60
(Job training in clinical pathology/X ray Sonography clinic)	20
2nd year	
IV Microbiology	70
V Genetics & Melecular biology -	70
VI (Practical) Microbiological technique	45
VII (Practical) Methods of Cellular & Melecular biology	45
Job training in Laboratories/Clinics/Institutions for body fluid culture production of vaccine.	20
3rd year:	
VIII. Immonulogy -28 Recombinant DNA Technology -42	70
IX Plant Biotechnology - 42 Environmental Biotechnology - 28	70
X (Practical) Immonilogical Methods.	30
XI (Practical) Culture method	60.
XII. Project work under chosen faculty Entrepreneurship, Theory & Practice in a project Draft.	50.
	800.

contd.2/-

B. DETAILED SYLLABUS.

1st year Paper I BIOCHEMISTRY MARKS 70

UNIT I. Nature of biological materials,(Polymeric reactions,Carbohydrate,Lipid,Protein,nucleotide,nucleic acid)Oxidation-reduction properties for pK and buffering,Isomerism,Types of Chemical bonds and interactions,Hydrophillic and hydrophobic groups in biological molecules.

UNIT 2-Classification of biomolecules bases on their role in bioprocesses.

i. Molecules involved in generation of mechenical stability (strucutres)-peptidoglycans,polysaccharides and membrane lipids.

ii. Molecules involved in information storage and restrieval-the nucleic acids.

iii. Molecules executing mediator and catalytic functions-the proteins(Cofactors,Peptide linkage,types,enzyme)

iv. The signal molecules-hormones and growth factors.

v. High energy biomolecules-ATP,GTP and creatine phosphate.

UNIT 3.-Perspectives of biological macromolecules:the repeating units in nucleic acids & proteins,Helicity,bending,looping pleats,salt brioges etc. and their determinants,basis for intermolecular interaction eg.enzyme-substrate and antigen-antibody recognition, Nature of biochemical reactions underlying biosynthesis of amino acids,fatty acids and nucleotides

UNIT 4-Protein and non-protein enzymes,(classification,nomenclature theories of enzyme action,enzyme regulation)Kinetics of enzyme-enzyme catlyzed reactions,. In vitro activity of purified enzymes and their applications in industry,Various uses of enzymes-Enzymes in good processing,medicines,diagnotics and production of new compounds,Enzyme as research tools-ELISA methods,modification of biological compounds with the help of enzymes.

Recommended books:

Stryer,L.(1993)Biochemistry,W.H.Freeman.

Lehninger,A.L(1993)Principles of Biochemistry,Worth Publ.

Zubay,G(1993)Biochemistry,Macmillan.

Murray,R.K.et al(1994)Harper's Biochemistry,Lange Med.Publ.

PAPER II SECTION - A MATHS AND COMPUTERS MARKS 35

UNIT 1. The set theory properties of sub sets, Linear & geometric functions, the binomial theorem of integers, Limits of functions, (basic idea of limits of functions without analytic definition derivatives of functions, logarithm(definition & Laws of Logarith., use of logarithm table)Differentiation, Integration (general introduction, significance and application for simple algebraic and trigonometric functions), Probability calculations(classical & Axiomatic difinition of probability, theorem on total & compound probability. Standard distribution, Binomial, Poisson and Normal, forms and shapes of these distributions with important properties. Simple problems involving Binomial, Poisson and Normal variables. Methods of sampling, Collection of data, Primary & Secondary data, classification & tabulation, confidence level, Measurement of central tendencies. Basic idea, parameters and Statistics, idea of sampling distribution and standard error, location & dispersion).

UNIT 2- Compueters : General introduction(Characteristics, capabilities, Generations).

Classification(Analog, Digital, Hybrid)Hardware, Software Hardware : System software, application software, languages(Low Data Processing : Batch, on-line, real-time(take examples from bio-industires: e.g. application of computers in coordination of solute concentration, pH, temperature, etc. of a fermenter in operation).

SECTION-B BIO - PHYSICS MARKS 35

UNIT 1- Energetic of a living body, Sources of heat limits of temperature, Heat dissipation and conservation, Photo synthesis, strategies of light receptions in microbes, plants and animals, Correction of vision faults, Electrical properties of biological compartments-electrochemical gradient, (Membrane transport Generation and receiption of sonic vibrations, Hearing aids.

UNIT 2- Principles and biological applications of physical techniques: Colorimetry, Spectrophotometry, Fluorimetry, Atomic absorption, IR, Raman Spectra, Ultra sound, Optical filters, X-Ray, CAT Scan, E C G, E E G, N M R, X-ray crystallography.

RECOMMENDATION BOOKS:

Campbell, R.C(1974)Statistics for Biologists, Cambr.Univ.Press.
Gupta, S.C. and Kapoor, V.K(1989)Vital Statistics, Chand & Co. Snedecor, G.W.& Cochran, W.G(1967)Statistical methods, IBH, Wilson, K & Goulding, K.H(1992)A Biologist Guide to Principles and Techniques of Practical Biochemistry, Founoation Books.

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RECOMMENDATION BOOKS:

Campbell,R.C(1974)Statistics for Biologists,Cambr.Univ.Press, Gupta,S.C.and Kapoor,V.K(1989)Vital Statistics,Chand & Co-Snodecor, G.W. & Cochran,W.G(1967) Statistical methods,IBH,Wilson K & Goulding,K.H(1992) A Biologist Guide to Principles and Techniques of Practical Biochemistry,Foundation Books.

Paper III(Practical) BIOCHEMICAL TECHNIQUES MARKS 60

Quantitative estimation of the following biological samples.

1. Sugar in given solutions.
2. Sugar in biological samples.
3. Extraction and separation of lipids.
4. Estimation of Proteins.
5. Estimation of DNA and RNA
6. Isolation and purification of Proteins.
7. Assay of enzyme activity - Urease and Amylase
8. Kinetic studies on enzyme-Urease.
9. Paper chromatographic separation of amino acids & sugars.
10. Handling of computers and data analysis using Dbase(create, Append,Delete,Pack,Display,List,Count,Set Order,INDEX,SORT).

(Job training for 30 days in chemical pathology/X-ray/Sonography clinic). Marks - 20.

2nd Year Paper IV SECTION -A MICROBIOLOGY MARKS -70

Unit 1- History and development of microbiology, Pasteur's experiments The concept of sterilization, ethods of sterilization, (Dry Heat, wet heat, radiation, chemical and filtration etc), Microscopy(Optical, TEM and SEM), Prokaryotic microbial cells, Concept of microbial species and strains, Various form of microorganisms-PPLOs, COCCI, Bacilli and spirilla Nature of the Microbial cells surface, Gram positive and Gram negative bacteria, Kinds of flagella, Sero types, Nutritional classification.

UNIT 2- Genetic homogeneity in clonal populations, Spontaneious and induced variation arising in microbial populations, Genetic recombination in microbes(conjugation, transduction, transformation), Isolation of auxotrophs.

(replica plating technique and analysis of mutations in biochemical pathways), Microbial assays for vitamins and antibiotics, Strain improvement by selection.

UNIT 3- Microbes in extreme environments-the thermophiles and alkalophiles, pathogenic microorganisms, (A general amount of plant pathogen - with special reference to Cephalaris, Puccinia, Agrobacterium & T M V)Defence mechanisms against microorganisms.

Symbiosis and

Antibiosis among microbial populations, N_2- fixing microbes in agriculture and forestry, Microbial metabolism.

UNIT 4 Industrial microbes and their uses in production of food & drugs, (Dairy & SCP)and drugs(Antibiotics-with special reference to Penicillin & Streptomycin). Fermentation products, A survey of products from microorganisms.

RECOMMENDED BOOKS

Stainer, R.Y(1990)The Microbial World, Prentice Hall,
Wilkinson, J.F (1987) Introductory Microbiology, Blackwell,
Friefelder, D(1987) Microbial Genetics, Jones & Bartlett.

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PAPER-V GENETIC AND MOLECULAR BIOLOGY MARKS 70

UNIT 1- Gene concept cistron, muton, recon, One gene-one enzyme hypothesis and its newer concepts, Overlapping and split genes, Mutations (spontaneous and induced), Chemical and physical mutagens, (UV rays, Z-rays; 5-Bromouracil, ethyl methene Sulfonate, acridine) Molecular mechanisms of DNA damage and repair Induced mutations for improvement of plants and animals, Genomes of organelles (Mitochondria and chloroplasts) and their roles in inheritance.

UNIT 2- Structure of DNA and RNA, Biosynthesis of Nucleic Acids, DNA replacation in prokaryotes and eukaryotes, Molecular mechanism of DNA recombination, Insertion elements and transposons, Transcription in pro- and eukaryotes, Processing of eukaryotic mRNA

UNIT 3- Deciphering the genetic code, Prokaryotic & eukaryotic translation, Regulation of prokaryotic gene expression (lac, his, trp, catabolite repression).

UNIT 4- Regulation of eukaryotic gene expression: Transcription factors, gene expression in yeast and protozoan mara-sites, translational regulation of gene expression, Developmental and environmental regulation of gene ex-pression.

RECOMMENDED BOOKS:

Lewin, B (1994) Genes V, Oxford
Brown, T.A (1989) Genetics: A Molecular Approach, Van Nostrand
Walker, J. M. and Gingold, E.B (1993) Molecular Biology and Biotechnology Panima Book Agency.

Strickeberger, M.W (1992) Genetics, Macmillan Alberts, B et al. (1994) Molecular Biology of the Cell, Garland.

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PAPER VI MICROBIOLOGICAL TECHNIQUE MARKS 45

1. Aseptic techniques :

   -Cleaning of glassware
   -Preparation of media, cotton plugging and sterilization.
   -Personal hygiene-Microbes from hands, tooth-scum and other body parts.

2. Isolation of microorganisms from air, water and soil samples dilution, pour plating and colony purification.

3. Enumeration of microorganisms : total Vs viable counts.

4. Identification of isolated backteria: Gram staining methods, metabolic characterization (IMVIC test)

5. Growth curve of microorganisms.

6. Antibiotic sensitivity of microbes, use of antibiotic discs.

7. Testing water quality.

8. Alcoholic and mixed acid fermentation.

PAPER VII (PRACTICAL)METHODS IN CELLULAR AND MOLECULAR BIOLOGY

marks 45.

1. Cytological preparations :
   -Fixation, dehydration and staining
   -Squash preparation of meiotic & mitotic cells
   -Embedding and sectioning

2. Cell counting methods : The haemo-cytometer and other aids

3. Measurements with the help of ligh microscope
   - Calibration of occular microscope
   - Average cells size
   - Chromosome lengths.

4. Separation of cell types(from blood)

5. Separation of cell organelles :
   -Methods of lysis : rupture osmotic/chemical/Enzymatic lysis of cells followed by centrifugation
   -Mechanical rupture of cells(using ultrasionicator and and French press)followed by centrifugation for cell organelles.

6. Extraction of cellular materials
   - Extraction in saline buffers
   - Extraction in solvents
   - Precipitation from extracts.

7. Separation of the constituent molecules of the extract in aqueous buffer
   - Gel filtration
   - Ion exchange chromatography

8. Thin layer chromatography of extracted material

9. Isolation of chromosomal and plasmid DNA from bacteria

(Job training - in Laboratories/Clinics/Institutions/ Bakeries in relation to above practicals) Marks 20

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3rd year Paper VIII IMMUNOLOGY MARKS 28

Unit 1- Historical perspective of immune system and immunity, Antigen -antibody and their structures, policlonal and monoclonal antibodies, The organs and the cells of the immune system and their functions, Antigen-antibody interaction, Humoral and cell mediated immunity (role of MHC and genetic restriction).

Unit 2- Origin of diversity in the immune system, Effecter mechanism Autoimmune diseases, Immunity to infectious diseases, Production of vaccines (attenuated and recombinant), Antibodies in Targetting therapeutic agents.

Section-B RECOMBINANT DNA TECHNOLOGY MARKS 42

Unit 1-Introduction to gene cloning and its uses, Tools and techniques : plasmids and other vehicles, DNA, RNA, cDNA, Restriction enzymes and other reagents, Techniques, laboratory requirements, safety measures and regulations for recombinant DNA Work, Purification of DNA from bacterial, plant and animal cells, Manipulation of purified DNA, Introduction of DNA into living cells and their screening.

Unit 2-Application of cloning in gene analysis (obtaining clone of a specific gene, studying gene location, structure, and expression), Expression of foreign genes in prokaryotes and eukaryotes, Production of proteins from clones genes, Gene cloning in medicine (pharmaceutical agents such as insulin, growth hormone, t-plasminogen activator, clotting factors, interferon, recombinant vaccines, diagnostic reagents), Gene therapy for genetic diseases.

Recommended books

Roitt, I.M. et al, (1986) Immunology, Mosby & Gower Publ.

Kimball, J.W (1986) Introduction to Immunology, Macmillan Glick, B.R & Pasternak, J.J. (1994) Molecular Biotechnology, ASM Press, USA.

Brown, T.A. (1990) Gene Cloning, Chapman & Hall

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Paper IX Section – A PLANT BIOTECHNOLOGY MARKS 42

Unit 1- Introduction to in vitro culture methods, Use of growth regulators, Ovary and ovule culture, In vitro pollination and fertilization, Embryo culture, Embryo rescue, Introduction to the processes of embryogenesis and organogenesis and their practical applications, Micropropagation of elite species (axillary bud, shoot tip and meristem culture), Haploid production and its use, Somaclonal variations and applications, Endosperm culture and production of triploids.

Unit 2- Single cell suspension cultures in selection of variants/mutants with or without mutagen treatment, Protoplas isolation and regeneration, Fusing protoplasts, Use of markers for selection of hybrid cells, Concept and applications of somatic hybridization (hybrids vs cybrids), Uses of plant cell, protoplast and tissue culture for genetic manipulation of plants, Production of transgenic plants using Ti plasmids and other vectors, Practical applications of genetic transformation.

Section-B ENVIRONMENTAL BIOTECHNOLOGY MARKS 28

Unit 1- Renewable and non-renewable resources, Conventional fuel and their environmental impacts (fire wood, plant and animal wastes, coal, petroleum and gas and animal oils), Modern fuels and their environmental impacts (methanogenic bacteria & biogas, microbial hydrogen production, conversion of sugars to ethanol, the gasohol experiment, solar energy converter-hopes from the photosynthetic pigments, possibility of plant based petroleum industry and cellulose degradation for combustible fuel) Biotechnological inputs in producing good quality natural fibers.

Unit 2- Microbiological quality of food and water, Treatment of municipal wastes and industrial effluents, Degradation of pesticides and other toxic chemical by microorganisms Thuringiensis toxin as a natural pesticide, Biological control of insects and other pests, Enrichment of ores by microorganisms, Biofertilizers (nitrogen fixing micro-organisms, mycorriza), Environmental impact assessment of transgenic organisms, Bio-assessment of environmental) quality.

Recommended books :

PAPER X (PRACTICAL) IMMUNOLOGICAL METHODS MARKS 30

1. Raising antibodies in rabbits
2. Immunodiffusion or antigen-antibody
3. Purification of antibodies
4. Conjugation and labeling of antibodies
5. Generation of ascitic fluid

PAPER XI (PRACTICAL) CULTURE METHODS MARKS 60

1. Growing plant cells into undifferentiated mass
2. Culture of lymphocytes from blood samples
3. Isolation and culture of single animal and plantcells
4. Culture of plant embryos
5. Short term suspension culture of animal and plant cells
6. Isolation and fusion of plant protoplast.
7. Production of secondary metabolites(eg alkaloid,glycosides, terpenoid etc) from plant cell suspension culture.
8. Clonal propogation and production of virus free plants.

PAPER XII SECTION - A PROJECT WORK MARKS 50

The students will be assigned to generate data on certain research projects and/or compile available information from literature on a given topic of biotechnological relevant. The project will be under the supervision of chosen faculty member and span over a period of one Semester.

SECTION - B ENTREPRENEURSHIP MARKS 50

The student will be delivered lectures on how to select for a product line, design and develop process,economics on material and energy requirement, stock the product and release the same for marketing etc. In paraller the students will be asked to survey the demand for a given product,feasibility of its production under the given constraints of raw materials,energy input,financial situation export potention etc. Procedural details on how to select process, how to more for loans,how to operate and how to repay the loans should be high lighted during the lectures. The semester should end with submission of a draft project by the student.

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iii) Amendment of the Ordinance OB-6 on Affiliation of Colleges and its Regulations and the Ordinance OB-7 on the College Development Council

The Director, College Development Council has submitted the proposed revised Ordinances OB-6 and OB-7 on " Affiliation of Colleges" alongwith the relevant Regulations and on the "College Development Council" respectively.

The two proposed Ordinances are placed at Annex-A and 'B' respectively for consideration of the Council.

ANNEXURE-'A'

ON THE AFFILIATION OF COLLEGES

OB 6

(Statute 33 (6) of the Schedule to the NEHU Act 1973)

Establishment of a New College

1.(1) When it is proposed to establish a new college the sponsoring body, or in the case of a Government College, the Head of the Department concerned, shall submit an application to the Registrar in a prescribed from not later than August 15 of the preceding year in which it is intended to start the college. The application should be accompanied by a project report giving details as laid down in the Regulations.

General/ Major

(2) The colleges for the purpose of the Ordinance will be Degree Colleges. The admission to the privileges of the colleges shall be directed by the University.

(3) A Degree College shall be admitted to the privileges of the University for providing instruction for the General and Major levels of teaching of the three year degree course. In providing in accordance with the procedure prescribed for the purpose by the University.

Initial Screening of the Application.

2. On receipt of the application along with the prescribed fee, the Affiliation Committee of the Academic Council shall scrutinize the application and seek any further clarification from sponsoring body either in writing or through a respresentative. The Committee thereafter, shall offer its recommendation to the Academic Council as to whether they are satisfied with the project report and that there is prima case for starting a college.

Inspection Commission

3(1)(a) The Academic Council, after considering the report of the Committee, may appoint an Inspection Commission. The Commission shall comprise not less than three members which shall include the Director of Public Instruction/Director of Higher & Technical of Education of the unit in which the college is located or his nominee as one of the members or the Affiliation Committee meeting after considering the report of the Committee, may appoint an Inspection Commission. The Commission shall conprise . The Director of Public/ Instruction/Director of Higher & Technical of Education of the unit in which the college is located or his nominee as one of the members and also subject experts-wise as member(s)

(b) The Inspection Commission may take necessary steps to examine the request, inspect the site and

Contd....2/-

the site and submit its report to the Academic Council on the need for the proposed college, the suitability of the site, feasibility of plans submitted, the adequacy of the physical and financial resources teaching staff offered and also make suitable recommendation for granting the permission to start the college.

First Permission

(2) A new college may ordinarily be permitted, in the first instance, to start the General Courses only. Provided that in the case of an institution sponsored by the Government or by an Education Society of standing permission may be granted to start the General and Major levels of teaching of the Degree simultaneously.

Time Schedule for application etc.

4(1) The request for permission to open a college/renewal of provisional affiliation/permanent affiliation in an Academic session shall be made before 15th May of the preceeding year. The Affiliation Committee shall meet as possible and submit its recommendation to the Academic Council not later than 30th July. The Inspection Commission which shall be appointed by the Academic Council/Affiliation Committee shall submit its report before the end of September. The decision on permission to start the college shall Ordinarily be communicated by the University not later than 31st October.

Opening of a New Faculty in existing College.

(2) When it is proposed to open a new faculty in an existing College, the sponsoring body, or in the case of a Government College, the Head of the Department concerned, shall submit an application to the Registrar not later than May 15th of the preceeding year in which it is intended to open the faculty. The application shall be accompanied by a project report giving details as laid down in the Regulations.

Preliminary steps by the sponsoring Authority for Affiliation.

5(1) On the receipt of the permission to start a college, the sponsoring body shall constitute a Governing Body and proceed to make appointment for the posts of the Principal and other academic staff in accordinge with the provisions of the Statutes, Ordinances and Regulations, procedures for appointment etc.

(2) No person who is not fully qualified as per the norms laid down by the University for the purpose shall be appointed on the staff of the college or as Principal. In exceptional cases, however, if a fully qualified Principal is not available, one of the members of the staff having longest teaching experience at the College level may be designated as Vice-Principal and the post.

Contd...3/-

the post of the Principal may be kept vacant such time as a fully qualified person is recruited.

Application for Provisional Affiliation

6(1) Ordinarily the application for provisional affiliation will be entertained only after the University is satisfied that the college has fulfilled the minimum requirement about the appointment of the Principal, the staff and other conditions laid down by the University. The Governing Body of the College shall in form the University forthwith about the appointments and also of the fact that the college having been started not later than 15 days after the beginning of the Academic Session and make an application for provisional affiliation to the University.

Commission for Grant of Provisional Affiliation

7. The Commission which reported on the permission for starting the college, or if the Academic Council so decides a re-constituted Commission, shall visit the college on any working day in the first academic session of the college between April 15 and July 31, and submit a report as may be prescribed in the Regulations Academic Council.

Provisional Affiliation.

8. On receipt of a report from the Commission the Academic Council may grant provisional affiliation to the College. The University may, after ascertaining that the requirement regarding governing body as given in Statutes, Ordinance and Regulations as modified by the Academic Council from time to time have been met, notify the decision of the Academic Council to the College Concerned.

General and Major levels of Teaching

9(1) General Courses : The application for permission to start a College for General Level of teaching in the desired disciples shall be submitted by the College to the Registrar before May 15, of the preceding year in which it is intended to start in accordance with the Regulations on the subject,

2. Major Courses : The Application for permission to start Major classes in any subject shall be submitted by the college to the Registrar before May 15, of the preceeding year in it which it is intended to start the Major classes in the prescribed form in accordance with the regulations on the subject.

Contd.....4/-

Provided further that the permission to the colleges which were allowed to teach Major courses in the older system will be considered on the basis of results in the honours classes and such other conditions as may have been laid down in the Regulations.

The Affiliation Committee

10. The Academic Council constitute an Affiliation Committee for colleges under the University. The composition of the Committee shall be as follows:-

(i)	Vice-Chancellor or Pro-Vice-Chancellor.	Chairman
ii)	DPT/Director of Education or his nominee from each two units.	Members
iii)	Two nominees of the Academic Council.	Member
vi)	Registrar or any other officer nominated by the Vice-Chancellor.	Member-Secretary

Renewal of Provisional Affiliation.

11.(1) Provisional affiliation to a College shall be granted for a period of three years at a time. Request for renewal shall be submitted in the prescribed form if any, or on plain paper, six months before expiry of the Provisional Affiliation.

2. The Vice-Chancellor shall appoint an Inspection Committee to report on the request for renewal. The Commission shall review the progress of the college, its performance in general and make recommendation for renewal of provisional affiliation. The Vice-Chancellor may permit the renewal subject to notification by the Academic Council.

Permanent Affiliation

12. The College which has been granted provisional affiliation after the laspse of stipulated period as prescribed in the Regulations may apply for permanent affiliation which may be granted on the recommendation of an Inspection Commission appointed for this purpose.

Submission of Statement of Particulars

13. The Principal of a College shall submit a written statement of particulars to the Inspection Commission at the time of inspection asm may be laid down in the Regulation.

Dissolution of a college

14. No college shall be dissolved or abolished by its Governing Body without making prior arrangement for admission of its students in another affiliated college or colleges and without making alternative arrangements for employment of the permanent members of the teaching staff and also without obtaining prior approval of the Government, the University and the University Grants Commission, regarding final settlement of any property including library books and laboratory equipments which might have been acquired by the college with financil assistance from the University Commission/or Governmen t

Contd.....5/-

Provided that no college shall be dissolved or abolished under any circumstances in the midst of an academic session.

Power to lay down new condition.

15. The Executive Council may, from time to time, lay down new conditions of affiliation, general or specific, regarding staff, buildings, equipment, library laboratories, finance or other relevant matters and specify the date by which these conditions must be satisfied failing which the institution may not be allowed to enjoy the privileges of the University.

Admission of students

16. No students shall be admitted into any college or in any course of instruction in a college before permission to start classes is granted by the University. Breach of this rule may be sufficient ground for refusal of any permission.

Affiliation and other fees

17. A sponsoring authority seeking permission to open a new college or colleges seeking to open new course or Upgradation or for seeking provisional/permanent affiliation, shall pay the fee at the rates specified below :-

i) Request for permission to open a new college Rs.5,000
ii) Request for renewal of provisional affiliation/Permanent affiliation, Rs.1,000
iii) Permission to open a new Course/Subject. Rs.1,000
iv) Annual enrolment fee @ 10/- per student on rolls as on the closing day of admission of the year subject to a minimum of Rs.1,000/-
v) Reserve fund in long term fixed deposits in the name of the college,

for General Stream Rs.4,00,000 } For a five years
for Major Rs.5,00,000 }

Fees from Students

2. The College may levy such fees from students for tution etc, as may be prescribed by the University from time to time.

Withdrawal of Affiliation.

18. The Executive Council shall have power to withdraw any affiliation or permission from a college at any whenever in the opinion of the Executive Council it has failed to comply with the Rules, Regulations, Statutes, Ordinances or any other directives of the University, or if the college authorities have failed to maintain order and discipline in the college or the normal regular and proper functioning of the college has become impossible due to mismanagement of the affairs of the college or any other reason.

Contd.....6/-

Qualification of teaching staff

19.(1) Principal: A Principal of a college shall be a a wholetime Officer, possessing integrity, commanding personality and organising ability, preferably with administrative experience. He should be the holder of atleast Second Class Master's Degree with atleast 55% marks and with 10 years experience as a teacher in a college or a University or as an Educational Administrator.

Provided that in special cases of outstanding merit and or administrative ability the length of experience may be relaxed up to five years. His minimum age should be 35 years.

2. Teachers : For the purpose of this Ordinance all teachers shall be wholetime employees of the college expept where otherwise specially permitted by the University and on designated as Lecturer.

3. Lecturer: General : (a) Consistantly good academic record with at least 55% marks above Master's Degree in a relevant subject or equivalent, and

(b) An M.Phil degree or a recognised degree beyond the Master's level or published work indicating the capacity of candidate for indepenent research work or diploma of one years duration in teaching of the subject (for posts in English or Foreign language).

4. Lecturer in MIL (in which normal post gradute education has been/has not been started).

(a) Consistently good academic record with atleast 55% aggreagate marks at the Master's degree in the language concerned; and,

(b) An M.Phil degree in any subject or research work of an equally high standard.

Tutor or Dimonstrator

5. A tutor or a Demonstrator, irrespective of his actual designation and pay scale shall, for the purpose of this Ordinance mean one whose qualification is atleast a Bachelor Degree, preferably with Honours with equivalent with the subject in question as one of his subject in the degree examination.

6. Appointment of teaching staff, including the Principal of the college, shall be made by proper advertisment and selection by the Governing Body subject to approval by the University except in case where this matter is governed by suitable rules, if any, of the Government concerned duly framed for the purpose.

Duties of Teachers,

20. Duties of the teachers shall be as prescribed by the Regulations.

Contd....7/-

Minimum number of Classes per Week.

21. The time-table of a college shall provide for the minimum number of classes per week for a subject as prescribed by Regulations.

Minimum Staffing Requirement.

22. The minimum staffing requirement of a college sha be as provided in the Regulations. No college shall be granted affiliation if it fails to satisfy such minimu requirement.

Accomodation and Equipment.

23. Every college shall provide suitable accommodati for class rooms, laboratories, library and administrati as prescribed in the Regulations.

Library

24. Every college must have a well equipped Library as per provisions of the Regulations with qualified Librarian and a minimum number of books in the discipline of books.

Size of Classes.

25. Every college should follow the norms laid down b the University about the size of classes which may be Prescribed by Regulations.

Inspection report

26. The inspection report of a college shall not be communicated to the College but shall be regarded as a confidential document until it has first been considered by the University. After a decision regarding affiliatio has been made, copies of the report may be sent, unless with-held under the orders of the Vice-Chancellor for an reason, to the college and to the Directors of Education concerned for information, guidance and necessary action.

Removal of Difficulties

27. Any difficulty arising in interpretation of giving to, any provisions of this Ordinance, shall be referred the Vice-Chancellor, whose interpretation or decision thereon shall be final.

Regulations:

Contd....8/-

Regulations :

Regulation = 2
OB-6/R-1

CONCERNING THE AFFILIATION OF COLLEGES
NORMS FOR DIFFERENT PURPOSES

1. Minimum Number of Classes per Week

i) Time-table of College shall provide the minimum number of Lectures/Tutorials/Seminars/Practicals in every paper carrying 100 marks under :

	Lecturers	Tutorials
a) BA/B.Sc/B.Com General		
b) (for B.Sc/General B.A./B.Sc/B.Com Major	180 Practicals	30
Theory Papers	144	30
Practical Papers (for B.Sc Major)	180 Practicals	

ii) Each lecture period shall be of 45 minutes duration and the duration of each practical/tutorial/seminar classes shall be of 90 minutes duration.

ii) No practical group or in the General and on Major Course shall consist of more than 30 students or less and there should be a minimum number of 5 (Five) Students enrolled for each major subject.

Contd.....9/-

REGULATIONS

Regulation
OB-6/R-2

MINIMUM STAFFING REQUIREMENT

Subject to the provision as laid down in the Regulation concerning the duties of the teachers and minimum number of classes per week, the minimim staffing requirement of a College shall be as prescribed below :-

i) No college shall be granted affiliation if it fails to satisfy such minimum requirement:

a) Degree-Arts and Commerce

Non-laboratory Science subject upto first year Class-in the pass course. — Atleast two lecturers in each subject.

b) Degree Science upto First year in the General Course.

c) First and Second year Degree in the General Course of Arts and Commerce. — 3 Lecturers in English and two in each of other subjects.

7

d) Laboratory Subjects. — 4 Lecturers

Provided that in a College providing instruction and more than one faculty, there shall be atleast four Lecturer in English and provided further that the College imparting instruction non-language as an elective subject, there shall be atleast 3 lecturers in the language concerned.

e) General and Major Courses in first year Arts and Commerce,..... — 3 Lecturers in each subject except in English and any other elective language. In each there shall be atleast 4 Lecturers in English. There should be 5 lecturers if the College is providing instruction in more than one faculty six lecturers in each subject.

f) Laboratory Subject

g) General and Major Courses in Second and Third Years Arts & Commerce — 4. Lecturers in each subject except in English and any other elective language. In each there shall be atleast 5

Laboratory subject — 6 Lecturers.

REGULATIONS

Regulation
OD-3/A-3

ON DUTIES/WORK-LOAD OF TEACHERS

*1. The work-load of various activities shall be not less than 40 hours a week for a teacher who is in full-time employment. The work-load shall be devised with the following break-up. This break-up shall only serve as a guideline and is subject to such variation as may be found necessary in the circumstances Institution concerned.

(a) Lecturers in non-laboratory subject

Activity	Number of hours per week
(i) Teaching	16
(ii) Testing/Exam	2
(iii) Tutorials	4
(iv) Preparation for teaching	10
(v) Supervision of extra curricular activities	4
(vi) Administrative work	4

(b) Lecturers in Science Subjects

Activity	Number of hours per week.
(i) Teaching	16
(ii) Lab-Work	4
(iii) Testing/Exam	2
(iv) Teaching preparation and lab.setting	12
(v) Administrative activities	4
(vi) Extra-curricular activities	2

2: No teacher shall ordinarily be required to take more than 24 teaching periods of 45 minutes each per week in a single shift or more than 32 teaching period of 45 minutes each per week in two shifts taken together including tutorials and practicals provided that no teacher of a College shall be permitted to work in more than two shifts a day.

3. No teacher shall be allowed to work in more than one College in the same shift.

Contd/.../-

4. No teacher of a College shall work in another shift of any other college without the prior permission of the Governing body of the College of which he is a whole-time employee.

5. Notwithstanding what has been prescribed above, a whole time teacher of a College shall be required to attend his College for a minimum period of 4 hours in the main shift of any working day.

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REGULATIONS

Regulation.
OB-6/R-4

NORMS ON ACCOMMODATION AND EQUIPMENTS

1. Each College shall provide suitable accommodation as follows:

(1) One room for the Principal.

(2) One room for the Vice-Principal.

(3) One room for the College Office with necessary arrangement with the Cash counter.

(4) One common-room for the staff.

(5) One common room for boys and girls separately.

(6) One room for the library with attached reading room.

2. In addition to the above, the College shall provide the following spaces for class-rooms for various classes:

(i) B.A/B.Sc/B.Com(General) Minimum 100 students 5 class-rooms-two for 50 and three for 35 students capacity and in addition a class-room for each unit of students.

(ii) Major-Two class/tutorial rooms for each unit of 30 students per subject.

The class-rooms shall be of a size that each student sitting in the room is provided with a floor of 8 sqft.

3. Science Subject:

(i) Atleast any two science subjects taught upto Degree standard or science subjects taught at the Major level.

(ii) Necessary arrangement for laboratory with each room having a floor area of not less than 25 sqft per student working in the laboratory.

Provided that the laboratories for General Stream be separate from the Laboratory for Major classes.

Provided further that the College shall make necessary arrangement for a museum, balance room, dark room and preparation room for the Science subjects in close proximity to the respective laboratory.

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REGULATIONS

Regulation-
OB-67 - R-5

NORMS ON LIBRARY BOOKS

1. B.A/B.Sc/B.Com/General Stream

A College imparting instruction for Degree Course must have a basic minimum of 5000 books for compulsory subjects and in addition 500 books for each of the elective subjects offered. Further a College library must have 15 books per student enrolled @ 150/-per book and should subscribe to atleast 10 journals in the various subjects.

2. B.A/B.Sc/B.Com Major Stream.

A College imparting teaching in Major subjects must have in its library a basic minimum of 500 books in the subject concerned and in addition 25 books per student enrolled @ Rs.200/- per book. As a general policy each college should provide with a fund to the tune of 10% in addition to the above norms in its budget.

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REGULATIONS

OB 6/R 6
Regulation-

NORMS ON NUMBER OF STUDENTS TO BE ADMITTED IN VARIOUS CLASSES

1. Bachelor of Science(General Streams)

1. Number of students to be admitted to first and second year of Bachelor of Science Course shall ordinarily not exceed 40 in each section. This may however be increased to 50 by the Principal of the College, if the exigencies arise. In case the number of students exceed 50, the Class shall be split into two or more section so as to bring them within the prescribed norm.

2. The number of students to be admitted to the Major of the Bachelor of Science Course shall not ordinarily exceed 30 in each section which may be increased to 40 by the Principal of the College if the exigencies arise. In case the number of students exceeds 40, the class shall be split into two or more Sections so as to bring them within the prescribed norm.

3. Number of students for a practical class shall not exceed 20 under any circumstances.

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REGULATIONS

OB-6/R-7
Regulations

ON NUMBER OF STUDENTS IN CLASSES IN COLLEGE
(Under Section 33 of the North-Eastern Hill University Statutes)

1. These Regulations shall be called "Regulations on number of Students in Classes in Colleges" and shall be applicable to colleges maintained by, or admitted to the privileges of the University.

2. These Regulations shall come into force with immediate effect subject to relaxation as may be given by the Vice-Chancellor in a specific case or category of cases.

3. Size of classes in Bachelor of Science including Mathematics/Statistics.

(1) The size of theory section in the Bachelor of Science General Course shall be ordinarily 40. This may be increased to 50 by the Principal of the College.

In case the number of enrolled students exceed 50, the class shall be split into two or more sections so as to bring them within prescribed norms.

(2) The size of theory section in the Major Stream of the Bachelor of Science course shall be 30, which may be increased upto 40 by the Principal.

In case there are more than 40 students in a course, the class shall be split into two or more sections so as to bring them within the prescribed norms.

(3)(a) The size of practical section in the(Science) Bachelor Science General shall be 20.

(b) The size of practical classes in each section of the Bachelor of Science Major Stream,where applicable, shall not be more than 20.

(4) Size of classes in Bachelor of Arts excluding(Mathematic/ Statistics)

Contd/.../-

(1) The size of each section in the General Stream of Bachelor of Arts shall be ordinarily 50 which may be increased upto 60 by the Principal.
In case there are more than 60 students in a course, the class shall be split into two or more sections so as to bring them within the prescribed norms.

(2) (2) The size of each section in the Major of the Bachelor of Arts course shall ordinarily not exceed 40; it may be increased upto 50 by the Principal.
In case there are more than 50 students in a course, the class shall be split into two or more sections so as to be in conformity with these Regulations.

5. Size of classes in Bachelor of Commerce.

(a) The size of a section in the Bachelor of Commerce courses in respect of Accountancy and Statistics shall be governed by Regulation 3 above.

(b) The size of classes in respect of other subjects shall be governed by Regulation 4 above.

6. Transitional Provisions:-

All affiliated colleges shall adopt norms as early as possible but the transition shall be completed before the beginning of the following academic session.

Provided that all colleges which may be allowed to start teaching of the Major of Degree Course with effect from or thereafter shall be admitted to the privileges of the University in respect of that course only if they adopt the new norms.

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ANNEXURE-'B'

OB 7 ON THE COLLEGE DEVELOPMENT COUNCIL
(Section 2(1)(m) of the NEHU Act,1973)

Short Title 1. There shall be established a College Development Council to be known as Council hereinafter, in the North-Eastern Hill University.

Object 2. Without prejudice to the generality of the provisions of the Act, the Statutes, the Ordinances of the University, the objects of the Council shall be to provide a leadership role and generally extend help, guideance and advice to the College admitted to the privileges of the University.

Scope 3. The Council shall be the Principal advisory body to the Executive Council, through the Academic Council, in all matters relating to the affiliated colleges.

Composition of the Council. 4. The Council shall consist of the following members:-

(i)	Vice-Chancellor	Chairman-Ex-Officio
(ii)	Pro Vice-Chancellor	Member -Ex-Officio
(iii)	Four teacher of the Post Graduate Departments, of which two will be from Science and two from Humanities, to be nominated by the Vice-Chancellor.	Members
(iv)	Six Principals of affiliated colleges, two each from Meghalaya and Mizoram, by rotation, out of which at least four will be from Colleges having Degree Course.	Members
(v)	Six teachers of the affiliated colleges, two each from Meghalaya and Mizoram, to be nominated by the Vice-Chancellor	Members

Contd/.../-

(vi)	Director of Public Instruction/ Education of Meghalaya and Mizoram.	Member Ex-Officio
(vii)	The Dean of Students' Welfare NEHU	Member Ex-Officio
(viii)	The Director of Sports, NEHU.	-do-
(ix)	The Registrar, NEHU.	-do-
(x)	The Finance Officer, NEHU,	-do-
(xi)	The Controller of Examination, NEHU.	-do-
(xii)	The Librarian, NEHU	-do-
(xiii)	The Director College Development Council, NEHU.	Member Secretary, Ex-Officio.

Term of Officer of Members.

5. The term of office of members, other than Ex-Officio, shall be two years. They will be eligible for reappointment, except in cases where the appointment is by rotation, in which case they will wait for their turn to become members again.

Filling up of casual vacancies.

6. Any vacancy arising due to illness, death or resignation or otherwise, shall be filled up as soon as convenient may be, and member or members so appointed shall continue in office for the residue of the term of office of the member or members concerned whose vacancy they fill up.

Quorum.

7. Seven members of the Council shall form the quorum for the meetings of the Council.

Meetings

8(1) The Council shall meet at least twice in an academic year and meetings shall be convened by the Director, College Development Council, in consultation with the Vice-Chancellor. In absence of the Vice-Chancellor,

Contd/.../-

the Pro Vice-Chancellor present, and in case of more than one Pro-Vice-Chancellor, the senior Pro Vice-Chancellor shall preside over the Meetings of the Council. If

(2) A special meeting of the Council may be convened if a request to that effect is received by the Vice-Chancellor in writing from not less than six members of the Council giving a notice of at least 21 days.

Proceedings of the meetings of the Council.

9. It shall be the duty of the Director, College Development Council, to keep record of the proceedings of the Council meetings and generally look after the day to day business of the Council.

Functions of the Council.

10. The Council shall have the following functions, namely,

(i) to provide a forum for consideration of various aspects of education in the affiliated colleges of the University with a view to continously improve the general educational standards in the colleges;

(ii) to assess the development needs of the colleges;

(iii) to help the affiliated colleges to prepare developmental projects which may be financed internally by the Institutions, or which may be presented to other funding agencies such as University Grants Commission, etc;

(iv) to submit projects to funding agencies on behalf of the affiliated colleges individually or collectively;

Contd/...

(v) to assess periodically the physical facilities in the affiliated colleges with reference to the number of students and subjects taught and to make recommendations for their improvement;

(vi) to review the academic performance of affiliated colleges from time to time and to make suggestions for improvement;

(vii) to follow up the Inspection Reports on various colleges and to suggest corrective measures wherever necessary;

(viii) to review the examination system and suggest innovations and improvement;

(ix) to promote and encourage co-curricular activities in the colleges; and

(x) to perform such other functions as may be assigned to it by the Academic Council, the Executive Council or the Vice-Chancellor.

Council Secretariat 11: The office of the Council shall be located at Shillong.

Standing Committee. 12. There shall be Standing Committee of the Council for campus of Mizoram which will be responsible to the Council.

Provided the Standing Committee shall function in relation to the area under its jurisdiction, within the general functions as enumerated under Clause 10.

Composition to the Standing Committee. 13. The Composition of the Standing Committee shall be as follows:

(i) Pro-Vice-Chancellor of the Campus concerned — Chairman Ex-Officio

(ii) Director of Public Instruction/Education of the State, Union Territory concerned. — Member Ex-Officio

... Contd/.../-

(iii)	Director, College Development Council	Member Ex-Officio
(iv)	Two teachers from the Department of the Campus concerned, not below the rank of a Reader, to be nominated by the Vice-Chancellor.	Members
(v)	Two Principals of the affiliated colleges from the State or Union Territory concerned, to be nominated by the Vice-Chancellor.	Members
(vi)	Two teachers from the affiliated colleges of the State or Union Territory concerned, to be nominated by the Vice-Chancellor.	Members
(vii)	Regional Director, College Development Council.	Member

(2) If there is no Pro-Vice-Chancellor or in his absence, the Standing Committee shall elect a member from amongst themselves to be the Chairman of that meeting.

Term of Office of members of Standing Committee.

14. The term of office of members, other than Ex-Officio, shall be two years. They shall be eligible for reappointment.

Filling up of Casual Vacancies.

15. The filling up of casual vacancies will be the same as in the case of the Council as provided in clause 6 of this Ordinance.

Quorum

16. Four members shall form a quorum for the meetings of the Standing Committee.

Removal of difficulties.

17. Any difficulty arising in giving effect to or interpreation of a, any or all the provisions of this Ordinance, shall be referred to the Vice-Chancellor whose decision thereon shall be final.

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(iii) Revised syllabus for B.Ed Paper V & vi (Elective)

The Board of under Graduate studies in its meeting held on 22.9.95 and School Board meeting held on 10.10.95 approved the revised B.Ed syllabus for Paper V & VI(Elective). The revised syllabus is placed at Annexure-'A' for consideration of the Council.

5:2:3:(2)

NORTH EASTERN HILL UNIVERSITY

SHILLONG.

ANNEXURE-'A'

B.Ed - Elective Group B.

Paper V and VI.

TEACHING SPECIALIZATION -

TEACHING OF ART EDUCATION

Unit I. Definition and meaning of Art, Art and Culture

- Aims and Objectives of Art Education
- Scope of art education in secondary school curriculum - Need for Teacher prepartion for Art Education.
- Affective Domain and the need for its development through art education

Unit II A brief study of various forms of Art-painting, dance, music.

- Special study of Regional Folk arts and formal arts of Meghalaya and Mizoram.
- Emerging trends in various art forms.

Unit III Socio-Philosophical Bases of Art Education

- Views and contributions of Aristotle, Tagore and satyajit Ray
- Art and Morals, aesthetics and beauty, Meaning and truth in Arts.

Unit IV Principles of Curriculum construction with special reference to Art Education

- Formulation of specific objectives with different art forms according to NCERT curriculum
- Curriculum construction with special reference to affective domains

Unit V Instructional strategies for Art Education

- Methods and techniques - recitation, modelling, Role Play, Dramatics, Demonstration.
- Place of Media, field studies, seminars, stage plays, jatra, puppetry in Art Education
- Value of teaching aids in Art Education
- Use of local resources and expertise for Art Education

Unit VI Evaluation in Art Education

- Special techniques for assessing affective domain-skill analysis, appreciation tests, creativity tests, aptitude, interest inventories-interpretation of test scores and their uses
- Diagnostic and remedial instruction in Art Education.

Suggested Readings

1.Michael,Stevemi; Art and Education, B.T. Batsford LTD,London, 1966.

2.Chakrabarti,Mohit: Tagore and Education for Social Change,Gian Publishing House,New Delhi, 1993.

3.Corlin,H.Dan,and Tait,J.William: Education for Leisure,Prentice Hall,Inc,Englewood Cliffs,New Jersey.

4.UNESCO: Art Education: an international survey,Paris, 1972.

5.Bloom,B.S.: Taxonomy of Edubational objectives,Affective Domain, NewYork, 1975.

6.Ross,Malcolm: Assessment In Arts Education, Pergamon Press,Oxford, 1986.

7. Read, Herbert: Education through Art,Faber and Faber,London,1956.

8.Prof Bareah: The Art History of Meghalaya, Agamkala Prakashan, 34,Central Market,Vihar, Delhi.

9.ICSSR : Seminar on Art History of Meghalaya, ICSSR, Regional Centre(Seminar Paper)

10.NCERT : Art Education in Secondary Schools NCERT, New Delhi - 1988.

(iv) Revised Syllabus for M.A.Education

The Board of Post Graduate Studies in its meeting held on 9.10.95 and the School Board held on 10.10.1995 approved the Revised Syllabus for M.A.Education. The Revised Syllabus is placed at Annexure 'A' for consideration of the Council.

5:2:4(2)

[illegible]

M.A.EDUCATION

(REVISED COURSE STRUCTURE)

M.A. Education shall be two year Programme with four semesters. There shall be 16 courses :

[illegible] - Core courses including laboratory Practicals and

[illegible] - Electives (with an option to offer dissertation work instead of two elective courses, namely, EC 11 and EC. 15.)

SEMESTER I.

EC 1.1 : Advanced Philosophy of Education

EC:2 : Advanced Psychology of Education

EC: 3.: Research Methodology and Statistics in Education

EC: 4 : Curriculum Development and Instruction.

SEMESTER II.

EC : 5 : Educational Management and Change

EC : 6 : Advanced Sociology of Education

EC : 7 : Educational Testing and Evaluation

EC : 8 : Elective I -(Group.A)

SEMESTER III.

EC : 9 : Educational Technology

EC : 10: Educational Systems in a Comparative Perspective

EC : 11: Elective II : (Group.A)

EC : 12: Elective III-(Group B)

SEMESTER IV.

EC : 13 : Laboratory Practicals

EC : 14 : Higher Education in India

EC : 15 : Elective IV -(Group A.)

EC : 16 : Elective V -(Group. B)

Students have to select :

3 Elective Courses from Elective Category 'A' and
2 Elective Courses from Elective Category 'B'.

Elective Category 'A'

OP A
1. Environmental Education.
2. Economics of Education
3. Computer Education.
4. Early Childhood Education
5. Educational Guidance and Counselling
6. Futurology in Education
7. Education and Rural Development.
8. Non-formal and Adult Education

Elective Category 'B'

Special Education.	1. Education of Creative and Gifted. 2. Education of Disabled and Backward.
Educational Thought	1. Indian Educational Thought. 2. Western Educational Thought.
Values and Yoga Education	1. Value Education. 2. Yoga Education
Teacher Education.	1. Teacher Education. 2. Methods of Teaching at Tertiary level.

EC:1. ADVAVCED PHILOSOPHY OF EDUCATION.

1. Philosophy of Education.

- Meaning, nature and scope Philosophy of Education and Educational Philosophy.
- Functions of Philosophy of Education. Speculative, normative and critical
- Need for Philosophy of Education.

2. Philosophical Bases of Educational Aims:

- Philosophical and Educational Aims
- Classification of Educational aims
- Aims of Education in relation to Philosophy of life
- Aims of Education and the Process of Education

3. Values and Education:

- Nature and criteria of value
- Types of values
- Hierarchies of values
- Moral values and education
- Conflict/contradiction/compromise between metaphysical and materialistic bases of values.

4. Knowledge, Culture and Curriculum:

- Meaning and scope of Khowledge
- Ways of knowing
- Forms of knowledge, knowledge and wisdom
- Philosophical bases of curriculum-(ethical, aesthetic and logical dimensions)
- Culture and Curriculum, common culture curriculum.

5. Discipline and Freedom:

- Concept of Discipline and Freedom
- Order and Disciplines: Regression, impression, emancipation
- Criticism of all three orders
- Freedom implies responsibility
- Freedom and Authority

6. Philosophical Approaches in Education:

(a) Indian Schools of Philosophy -orthodox (Sankhya, Yoga & Vedenta) Heterodox-Jainism and Buddhism
(b) Western Schools of Philosophy-Existentialism, Humanism, Dialetical materialism.

5:2:4(5)

SUGGESTED READINGS :

1. John S. Brubacher : Modern Philosophies of Education.
2. John Dewey : Philosophy of Education.
3. R.S. Peters : Philosophy of Education.
4. D.J. O'Conner : The philospphy of Education.
5. L.A. Reid : Philosophies of Education
6. G. Maz Wingo : Philosophies of Education.
7. J.W. Tibble : An Introduction to the study of Education
8. G.J. Brauner : Problems in Education and Philosophy
9. Christopher J. Lucas : What is Philosophy of Education.
10. John B. Magee : Philosophical Analyssis in Education.
11. S.J. Curtis : Introduction to Philosophy of Education.
12. Israel Scheffler : Philosophy of Education.
13. Harry Schofild : Philosophy of Education.

5:2:4(6)

EC: 2: ADVANCED EDUCATIONAL PSYCHOLOGY.

1. Educational Psychology as applied field of Psychology:

- Psychology as scientific study of behaviour
- Educational Psychology as applied field.
- Scope and nature of Educational Psychology

2. Growth & Development.

- Meaning of growth & Development
- Erickson's theory of Psycho-social development
- Kohberg's theory of moral development
- Educational implications of principles of growth and development.

3. Intelligence:

- Meaning and Development
- Theories of intelligence- Spearman's two factor theory; Gilford's structure of intellect: Piaget's theory of Cognitive development.

4. Motivation:

- Meaning, Factors affecting motivation, Levels of motivation.
- Achievement motivation Atkinson's, theory of motivation, Maslow's self actualization theory, Role of Motivation in learning.

5. Learning:

- Concept and natural of learning, principles of learning.
- Learning theories- Classical and operant conditioning theories, Kurt Lewin's Field theory, Hull's re-Inforcement theory, Tolman's Sign Gestalt theory, Gagnes hierarchy of learning.

6. Personality:

- Development and Structure of Personality.
- Theories of personality
- Psycho analytical theory: Catell's trait theory: Carl Roger's self theory: Eyrench's theory of personality.

7. Mental Health:

- Concept of mental health and hygiene
- Role of home, School and society in promoting mental health
- Adjustment mechanism, Implications for education.

S 2:4(7)

REFERENCE READINGS:

1. Chauhan S.S. : Advanced Educeational Psychology Vikas Publishing, New Delhi.

2. Crow & Crow : Educational Psychology, Eurasia Publishing House, New Delhi-1964

3. Deceace J.P. : The Psychology of Learning & Instruction Patentice Hall, 1970.

4. Eysenck H.J. : The Structure of Personality, Methuen, 1960.

5. Guilford J.P. : Fields of Psychology, Van-Nostrand, 1977.

6. Griender R.E. : Adolescene, John Wiley 1973.

7. Hilgard E.R. : Theories of Learning, Appleton Century crofts, 1956.

8. Hurlock, E.B. : Child Development McGraw Hill, 1972.

9. Kundu C.L. : Personality Development, Sterling Pub. Ltd. New Delhi.

10. Maslow A.H. : Motivation of Personality, Harper 1954.

11. McMillan : Assessment of Personality

12. Skinner C.E. : Educational Psychology, Prentice Hall India 1970.

13. Torrance E.P. : Gifted Children & the classroom, Mcmillian Co, 1963.

14. Walia J.S. : Foundation of Educational Psychology, Jalandhar Publishing, 1977.

15. Mangal S.K. : Advanced Educational Psychology, New Delhi : Prentice Hall of India, 1993.

5:2:4(8)

EC :3 : RESEARCH METHODOLOGY AND STATISTICS IN EDUCATION:

1. Methods of Acquiring Knowledge.
   - Tradition
   - Experience
   - Reasoning : Inductive and Deductive
   - Scientific Method
2. Educational Research:
   - Meaning
   - Scope
   - Need and Importance
   - Types: Basic Research, Applied Research, Action Research.
3. Research Problem:
   - Indentification
   - Criteria for Selection
   - Scope and Delimitations
   - Hypothesis: Characteristic Types, Formulation.
4. Data Collection:
   - Types of data:Qualitative and Quantitative.
   - Techniques and Tools: (a) Documentary sources (b) Observation (c) Questionnaries and schedule (d) Interview (e) Rating scales and tests
   - Sampling.

   (a) Population and sample (b) Methods:
   (i) Probability sampling- Random, Systematic, stratified, cluster.
   (ii) Non- Probability sampling- Purposive, Incidental.

5. Approaches in Research:

   Historical Research - Need and Significance
   - Sources and Collection of data
   - Establishing Validity and interpretation of data.

   Descriptive Research- Need and use, steps and interpretation
   - Survey studies
   - Case study
   - Developmental studies
   - Correlation studies.

   Experimental Research-Nature
   -Validity-Internal and External
   -Role of control
   -Designs- single group and Barallel group.

6. Analysis of Data and Formulation of conclusions:

(a) Qualitative - (i) Criticism :External and Internal
(ii) Content Analysis.

(b) Quantitative - Use of Statistics.

7. Probability Distributions:

- Concept of probability
- Concept of Binomial distribution
- Concept of normal distribution
- Characteristic of Normal distribution
- Kurtosis and Skewness
- Applications of Normal distribution

8. Correlation:

- Concept and Uses
- Compulation of the Product Moment correlation for an ungrouped data and a grouped data
- Partial and Multiple correlation
- Interpretation of the result

9. Inferential Statistics:

(a) Parametric statistics

- Concept of Parameter and statistics
- Sampling Distribution of Mean
- Standard Error of Mean
- Confidence intervals and Levels of confidence for the true mean for a (a) Large Sample (b) Small sample
- Testing the significance of the difference between

(a) Means of _____ two independent large samples
(b) Means of _____ two small independent samples
(c) Means of _____ two correlated means
- Concept of one-tailed and two-tailed tests

(b) Non-Parametric Statistics

- Concept of non-parametric tests
- use and computation of Chi-square test.

10. Preparation of Research Report:

SUGGESTED READINGS:

1. Best J.W. and Kahn J.V.:Research in Education (Sixth edition) Prentice Hall of India, Private Ltd, New Delhi,1989.
2. Fox D.J.The Research Process in Education, Holt Rinethart and Winston, Inc, New York 1969.
3. Van Dalen D.B. & Meyer W.J: Understanding Educational Research: An Introduction, McGraw Hill Co, New York,1979.
4. Kerlinger F.N:Foundations of Behavioural Research, Surjeet Publications, Delhi.1978.
5. Sukhia S.P. and Others: Elements of Educational Research, (3rd revised edition) Allied Publishers, Bombay,1974.
6. Koul L: Methodology of Educational Research, Vikas Publishers, New Delhi, 1984.

5 : 2 : 4 (10)

EC :4 : CURRICULUM DEVELOPMENT AND INSTRUCTION.

1. Introduction to Curriculum Development:

- Meaning, Nature and Purpose of curriculum
- Concept of curriculum development
- History of curriculum development
- Criteria of curriculum development -articulation continuity, balance.

2. Foundation of curriculum Development:

- Philosophical foundation
- Socio-Cultural foundation
- Psycho-linguistic foundation

3. Curriculum Designs:

- Types of curriculum designs-subject centred
- Activity-Cum-Experience centred
- Undifferentiated and differentiated
- Core curriculum

4. Process of Curriculum Development

- Principles of curriculum development
- Selection of aims and objectives
- Identification of learning activities and Experiences
- Organisation of Learning activities and experiences.

5. Instructional Materials:

- Text Book and allied Instructional materials -Handbook, manual, workbook.
- Preparation and Evaluation of Textbook.

6. Curriculum Transaction:

- Analysis of curricular content
- Designing units -suitable presentation modes
- Teacher as curriculum practitioner
- Instructional planning for effective teaching

7. Curriculum Evaluation:

- Need for curriculum evaluation
- Aspects of curriculum Evaluation
- Formative and Summative Evaluation
- Revision and Redesigning of curriculum

8. Innovations in Curriculum:

- Concept of innovation and change
- Factors influencing change in curriculum
- Elements of change process
- Preparation and uses of resource units
- Participation of pupils, teachers, administrators and education leaders-Barriers to change.
- Introduction, diffusion & dissemination of innovations and new experiments in the realm of curriculum.

SUGGESTED READING :

1. Saylor, J.Galen; William M Alexander and Arthur J.Lewis : Curriculum Planning for Better Teaching & Learning : (4 edition), New York : Hold Renhart & Winston 1980.

2. Doll, Ronald C : Curriculum Improvement ; Decision Making and Process (6 edition), London, Allyn & Bacon, Inc., 1986.

3. Diamond, Robert M : Designing & Improving Courses & Curricula in Higher Education : A systemic Approach, Califormia; Jossey-Bass Inc Publishers, 1989.

4. Mamidi, Malla Reddy & Ravishankar (eds) : Curriculum Development & Educational Technology, New Delhi, Sterling Publishers Pvt., Ltd., 1984.

5. Taba, Hilda : Curriculum Development : Theory & Practice, New York : Harcourt Brace, Jovanovich Inc., 1962.

6. Tyler, Ralph W : Basic Principles of Curriculum & Instruction Chicago : The University of Chicago Press., 1974.

7. Oliva, Peter F : Developing the Curriculum (2 edition) Scott : Foresman & Co., 1988.

8. Wheeler D.K : Curriculum Process, University of London, Press, 1967.

9. Verduin J.R : Cooperative Curriculum Improvement : Prentice Hall, 1967.

10. Aggarwal J.C : Curriculum Reform in India : World Overview, Doab World Education Series -3, Delhi : Doaba House, Book Seller & Publishers, 1990.

11. NCERT : Curriculum and Evaluation, New Delhi, NCERT 1984.

12. Trump J. Lloyd : Secondary School Curriculum Improvement, Boston, Allyn and Bacon Inc., 1973.

13. NCERT : National Curriculum for Elementary & Secondary Education A frame work, New Delhi : NCERT, 1988.

14. Dewey, John : The Child and the Curriculum, Chicago : The University of Chicago Press., 1966.

15. Das, R.C. et al : Curriculum & Evaluation, NEW DELHI : NCERT.

16. Bellay, A.V : Curriculum - Theory & Practice, New York, Harper and Row Pub., Inc. 1977.

17. UNESCO : Currienla & Lifelong Education, Paris, UNESCO, 1981.

18. Taylor, Ralph : Basic Principles of Curriculum, Chicago, Chicago University Press.,

19. Bront, Allen : Philosophical Foundations for the Curriculum Boston : Allen and Unwin. 1978.

EC : 5 : EDUCATIONAL MANAGEMENT AND CHANGE

1. Organizations and their Management :

- Organizations : Meaning, Types and Characteristics educational organizations.
- Educational Management : Meaning, scope and Principles of management.
- Aspects of educational management : Planning, organization, supervision, finance, innovations and change, evaluation.
- Leadership in Educational Organizations : Styles of Leadership and development of leadership.

2. Managing Change in Education :

- The changing world scenario as background for change, the need towards change : Population growth, Technological and Scientific development, Educational growth and diffusion of knowledge.
- Planning for Change : Concept and objectives of planned change process.
- Approaches to Change : Need-based, people-oriented, and task-oriented.
- The Stages of Change-Process : Awareness, Interest, Conviction, Evaluation, Trial, and Acceptance and Adoption (Rogers, Ryan and Gross.)
- Educational Institution as an Agent of Change : Achieving change in people, Develop need for change, Research on Change process, Organization as a change agent.

3. Personnel Administration and Human relations in Educational Organisations :

- Meaning and Scope of Personnel Administration in Educational Organizations.
- Dynamics of Human Behaviour : Interpersonal behaviour, behavioural norms, conflicts and methods of reducing them.
- Professional Growth of Educational Personnel : Concept of Professional growth, factors facilitating professional growth, personnel services, evaluation of professional growth

4. Resource Management in Educational Institutional Institutions:

- The concept of Systems approach in educational organizations: goals, resources activities, technology.
- Resources and their Types : Human, physical, instructional, community, government and other agencies, financial.

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- Economic dimensions of resource management : Resource allocation and their efficient use, Budgeting : concept, forms, process of budgeting.

5. Educational Planning:

- Concept of planning, importance and goals of planning.
- Approaches to planning : Social demand approach, man-power approach, rate of return approach.
- The Planning process and procedure at central and state levels.
- Educational Planning in India : Role of National Development Council, Planning Commission and State Planning Board.

6. Management Techiniques :

- Programme Evaluation and Review Technique (PERT)
- Programming budgeting systems (PPBS) and their applications in educational organizations.

REFERENCES :

1. Thomas J. Sergiovann et al : Educational Governance and and Administratio , Prentice Hall, 1987.
2. NIEPA : Educational Management in India , New Delhi, NIEPA, 1986.
3. Bhagia, K.M. et al : Educational Administration in India and Other Developing Countries, New Delhi Commonwealth Publication, 1990.
4. Singhal R.P. et al : School Inspection System , A Modern approach, Vikas Publishing House, 1986.
5. Tanner D and Lawrel T : Supervision in Education Problems and Practices, New York, Mcmillan Pub. Co., 1987.
6. Ananda W.P. Guruge : General Principles of Management for Educational Planners and Administrators Paris, UNESCO., 1984.

7. Meredydd Hughes et al (Eds) : Managing Education, Holt Rinehart, 1985.

8. AIEPA : Modern Management Techniques in Educational Administration : New Delhi, Asian Inst. of Ed. Planning and Administration 1971.

9. Hostrop R.W : Managing Education for Results, ETC Publication, 1975.

10. Beare H. et al : Creating and Excellent School, Some new management techniques, London : Routledge , 1989.

11. Castetter, William B. : The Personnel function in Educational Administration, New York, McMillan Pub.Co., 1981.

12. Manson, Mark : Educational Administration and Organizational Behaviour, University of California, 1979.

13. Newell, Clarena A : Human Behaviour in Educational Administration, Prentice Hall, 1978.

14. Yukl, Gary A. : Leadership Organization, (2 edition) Prentice Hall, 1989.

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EC : 6 : ADVANCED SOCIOLOGY OF EDUCATION

1. Sociology of Education: Concept and Approaches

- Meaning and Scope of Sociology of Education
- Sociological approaches and methods of sociological analysis and their limitations
- Sociological perceptives and determinants of educations
- Sociological of Education in India-status and trends

2. Culture and Education :

- Concept of culture, characteristics and components of culture
- Cultural change and its determinants, cultural lag
- Culture as the basis of personality and social behaviour
- Influence of Education on salient features of culture

3. Education and Socialization

- Process of socialization, Bandura's theory of social learning
- Agencies of socialization- School/College, family, peer group, community and mass media.
- Development of self, self concept and self esteem theory of self and their educational significance (Cooley, Mead, Freud, Erick Son and Rogers.)
- Socio-psychological characteristics of students

4. Social Interactions and Group Dynamics in Education

- Social groups-process and basis of social interactions.
- Typology of social groups-primary, secondary and tertiary groups; formal and informal groups, ingroups and outgroups; their educational relevance
- Interpersonal relationships in classroom, classroom climate organizational climate-type, dimensions and educational effects.
- Group dynamics, group cohesion , group conflicts and their resolutions, Sociometry and Guess-Who techniques to study social interactions.

5. Education and Social System

- Education as a social sub-system, school/college as social organizations
- Education as a factor of social stratification and social mobility
- Egalitarian society, Equality of Educational Opportunity and education for social justice and peace.
- Concept of community, school-community relationships
- Community schools and colleges and their educational importance

6. Education, Social Change and Modernization :

- Process, theories and factors of social change
- Forms of social change in India-Westernization, Urbanization, Industrialization and Modernization, Sanskritization.
- Modernization at Individual and society levels, its attributes and adaptive demands
- Role of Education in Modernization and social change
- Education for social control and socio-emotional integration.

SUGGESTED READING :

1. Adiseshiah W.T.V and Pavanasam R. : Sociology in Theory and Practice, New Delhi, Santhi Publishers, 1974.

2. Barry H. A and Johnson L.V. : Classroom Group Behaviours : Group Dynamics in Education, New York; John Wiley & Sons, 1964.

3. Blackledge D and Hunt, Barry : Sociological Interpretations of Education, London, Groom Helm, 1985.

4. Cook L.A. and Cook E.E.A : Sociological Approach to Education , New Work : McGraw Hill, 1970.

5. D'Souz A.A. : The Human Factor in Education : New Delhi ; Orient Longmans, 1969.

6. Durkheim E : Education and Sociology, New York; The Free Press, 1966.

7. Gore, Ms.et al (eds) : Papers in Sociology of Education , New Delhi, NCERT; 1967.

8. Gore,MS : Education and Modernization in India ; Bombay, Allied Publishers, 1982.

9. Inkeles A. and Smith : Becoming Modern, New York, Haneman, 1982.

10. Jayaram : Sociology of Education, New Delhi, 1980

11. Kamath, A. R. : Education and Social Change in India, Bombay, Somaya Publications 1985.

12. Mohanty J : Indian Education in the Emergency Society, New Delhi, Sterling Publishers, 1982.

13. Musgrave P.M. : Sociology of Education, London, Meltwen and Co., 1975.

14. Ohaway A.K.C. : Education and Society, London; Routledge, and Kegan Paul, 1975.

15. Rao, M.S : Education, Social Stratification and Mobility, New Delhi, NCERT, 1976.

16. Rajendra Pade : Modernization and Social Change, New Delhi, Criterion Publication, 1988.

17. Ruhela S.P (ed) : Towards a sociology of Teaching Profession, New Delhi, NCERT, 1970.

18. Shukla S. and K. Kumar : Sociological Perspectives in Education, New Delhi, Chanakya Publication, 1985.

19. Srinavas M.N. : Social Change in Modern India, Bombay, Asia Publishing House, 1978.

20. UNESCO : Inequalities in Educational Development, ANIIEP Seminar, Paris; UNESCO, 1982.

EC : 7 : EDUCATIONAL TESTING AND EVALUATION.

1. Educational Objectives and Evaluation:

- Meaning, importance , level of educational objectives – cognitive, affective, and psychomotor domains
- Concept of Test, Measurement and Evaluation
- Purposes of Evaluation
- Summative and Formative Evaluation
- Trends in Educational Evaluation, [illegible] assessment, grading, semester system, Internal Question Bank, use of computer in evaluation.

2. Methods of Establishing Validity and Reliability of a Test.

- Validity of a Test - Different types of validation
- Reliability of a Test - Different types of reliability
- Factors affecting the reliability
- Relationship between reliability and validity

3. Norms:

Meaning and Significance of Norms

Types of Norms.

(a) Developmental Norms -Age Norms, Grade Norms, Ordinal Scales
(b) With-in- Group Norms -Percentiles
Standard Scores, T.Scores, stanine.

4. Achievement Tests:

- Construction and Standardisation of an Achievement test
- Learning for Mastery; criterion referenced tests and norms referenced tests.

5. Construction of Attitude Scales:

- Thurstone method
- Likert Method
- Guttman's Scale
- Semantic Differential.

6. Intelligence Tests:

- Concept
- A study of the following tests of Intelligence:

(i) Stanford - Binet Intelligence scale
(original and revised versions)

(ii) Wechsler Scales of Intelligence

(iii) Raven's Standard Progressive Matrices.

7. Aptitude Test :

- Differential approach in the measurement of aptitudes
- Differential Aptitude Test (DAT)

8. Personality Tests :

- Different techniques of assesing personality
- Thematic Apperception Test (TAT)
- Cattell's 16 PF
- Minnesota Multiphasic Personality Inventory

9. Interest Inventories :

- Kuder Preference Record
- Chatterji's Non-verbal Preference Record
- Strong's Vocational Interest Blank

SUGGESTED READINGS :

1. Anastasi A : Psychological Testing, (4 edition) McMillan Pub. Co., Inc., New York, 1976.

2. Freeman F.S : Theory & Practice of Psychological Testing, (3rd edition) Oxford & IBH Pub.Co., New Delhi, 1976.

3. Edwards A.L. : Techniques of Attitude Scale Construction, Vakils, Feffer & Simons private ltd., Bombay, 1975.

4. Sax G. : Principles of Educational Measurement and Evaluation, Woodworth Publishing, California, 1974.

5. Cronbach L.J. : Essentials of Psychological Testing, (3rd edition) Harper & Row Publishers, New York, 1970.

6. Tenbrink T.D : Evaluation : A Practical Guide for Teachers, McGraw Hill, Book Company, New York, 1974.

7. Ebel, R. L and Frisbei D.A : Essentials of Educational Measurement, Prentice Hall, 1986.

8. Bloom B.S and Others : Handbook of Formative and Summative Evaluation of Student Learning, McGraw Hill, Book Co., New York, 1971.

9. Thorndike R.L. and Hagen E.P : Measurement and Evaluation in Psychology and Education (4th edition) John Wiley and Sons, New York, 1977.

10. Tuckman B.W : Measuring Educational Outcome : Fundamentals of Testing, Harcourt Brace, Jovanovich, New York, 1975.

11. Harper (Jr.) A.E. and Harper E.S : Preparing Objective Examination-A Handbook for Teachers, Students and Examiners, Prentice Hall of India Pvt. Ltd., New Delhi, 1990.

12. Singh(Ed) : Criterion-Referenced Measurement, (selected Readings) NCERT, New Delhi, 1990.

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EC : 9 : EDUCATIONAL TECHNOLOGY

1. Introduction to Educational Technology :

- Meaning, Nature and scope of Educational technology
- Approaches to Educational Technology
- Hard ware and software approach
- Systems approach

2. Communication Process :

- Verbal and Non-Verbal communication
- Factors affecting classroom communication
- Forms of teacher-pupils interaction
- Observation schedules of classroom interaction :
  a. Flanders Interaction Analysis Categories System (FIACS)
  b. Equivalant Talk Categories (ETC)
  c. Reciprocal Category System (RCS)
  d. Galloway's System of Observation (IDER)

3. Models of Teaching :

- Concept of Models of Teaching
- Essential elements of four families of Teaching models ;
  a. the social interaction ; (Role play, Juris prudental)
  b. the information-processing (Inquiry training, Synectics)
  c. the personal models (Non-directive teaching,) ...tics)
  d. the behavioural systems (learning self-control)

4. Programmed Learning :

- Basic Principles
- Styles in programming -(a) linear, (b) branching, (c) mathetics)
- Mechanics of developing programmed learning material

5. Computers in Eduoati n :

- Basic concepts and Terminoloty
- Computer Aided Instruction

6. Distance Education :

- Concept, Need and Improtance of distance education
- Approaches in course development
- Multimedia approach and their uses in distance education; printmedium, radio, tape, T.V., satellite based instruction

SUGGESTED READINGS :

1. Sharma R.A. : Programmed Instruction; An Instructional Technology International Publishing House, Meerut, 1982.
2. Sharma R.A. : Technology of Teaching, International Publishing House, Meerut, 1991.

3. Chauhan S.S. : A textbook of Programmed Instruction, Sterling Publishers Pvt. Ltd., New Delhi, 1978.

4. Joyce B and Weil M. : Models of Teaching, (fourth editinn) Prentice Hall of India Pvt. Ltd., New Delhi, 1992.

5. Bloom B. S. : Taxonomy of Educational Objectives, Handbook 1, cognitive domain, Longman Group Ltd., London, 1974.

6. Skinner B.F : The Technology of Teaching, Appleton Century-Croft, New York, 1968.

7. Jose Chander N. : Management of Distance Education, Sterling Publishers Pvt. Ltd., New Delhi, 1991.

8. Flanders N. : Analysing Teaching Behaviour, Addison-Wesley Pub.Co., London, 1971.

9. Bajpai A.D. and Leedham J.F. : Aspects of Educational Technology Part IV, Pitman Pub. Co., New York, 1970.

10. Deceeco J.P : The Psychology of Learning and Instructional Technology, Prentice-Hall of India, Pvt. Ltd., New Delhi, 1970.

11. Deceeco J.P. : Educational Technology Readings in Programmed Instruction

12. Sampath K. : Instruction to Educational Technology :

13. Berlo D.K. : The process of Communication

14. Thiagarajan R. : Computers for Beginners, Sterling Publihers, Ltd., New Delhi, 1984.

15. Balaguruswamy E and Sharma K.D. (eds) Computers in Education and Training.

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EC : 10 : EDUCATIONAL SYSTEM IN A COMPARATIVE PERSPECTIVE

1. Introduction to Comparative Education :
   - Meaning purpose and scope
   - Methods and Approaches in comparative Education.
2. Education and Development :
   - Education for economic, social and culturel development.
3. Factors determining the Educational systems of a country.
   - Geographical, political, religious, racial and social
4. Systems of Education in Developed Countries : Structure and Distinctive features of the systems of Education in U.K., U.S.A., Japan.
5. Systems of Education in Third world Countries
   - Structure and distinctive features of the system of Education in China, Pakistan, Nepal, Srilanka, India.
6. Education for Human Welfare :
   - Educational Programmes for global consciousness and Development, Peace, security and environment protection
   - Role of UNESCO, UNICEF, ACEID, SAARC.
7. Problems of Third World Countries and the Role of Education :
   - Political and Economic stability and Education
   - Poverty, Hunger and Population Problem.
   - Universalization of Primary Education.
   - Equalization of Educa-tional Opportunities.

SUGGESTED READINGS :

1. John Francis Grammer and George Stephenson Brown : Contemporary Education : A comprehensive study of National Systems, 1965.
2. Kalil Geze : Educational Comparative and International Perspective 1971, Halt, Rinehart and Wineston, Inc., New York.
3. Philip E. Johnes : Comparative Education : Purposes and Methods 1971, University of Greenland Press, Australia.
4. Kandel R.L : Studies in Comparative Education, George G. Harrap and Co., Ltd., 1933.
5. Hans, Nicholas : Comparative Education, American View of Educational Research, 1936.
6. Harris Collin (ed) : World Perspective, 1974. Allied Publishers.

7. UNESCO : Growth and Change : Perspectives of Education in Asia 1973, Sterling Publishers.

8. UNESCO : International Year Book for Eaucation : Vol. XXXIII, 1981 and XXXV, 1983.

9. UNESCO : World Problems in Education, A brief analytical survey 1975.

10. A.P. Sharma : Contemporary Problems of Education, New Delhi, 1972.

12. George, Z.F. Bereday : Comparative Methods in Education

12. Sheodore L Repler and Edgar L. Merphet : Comparative Educational Administration Prentice Hall, Inc. Englwood Cliffs, London, 1962.

13. Smith W.O.L. : Education in Great Britain : Oxford University Press.

14. Ward H. : The Education System of England and Wales and its Recent History.

15. Kenneth R.K. : Education in U.S.A., Allwen Ltd. London, 1956.

16. Russel J.D and Judd G.H. : The American Educatinal System,

17. Department of Education : General Survey of Education in Japan, Tokyo, 1967.

18. Keenkysiel, H.L and Thomas A.P. : History of Japanese Education and Present Educational System.

EC : 13 : LABORATORY PRACTICALS

A Minimum of 6 experiments and 6 tests to be completed :

Experiments		Tests.
1. Learning	-	Creativity
2. Reaction time		Intelligence
3. Attention time	-	Interests
4. Concept Formation	-	Adjustments
5. Memory		Motivation
6. Association		Personality
7. Classroom interaction	-	Aptitude
8. Sociometry	-	Attidude
9. Psycho-Physical	-	Reading Comprehension
10. Sensation and perception	-	Aspiration

Evaluation Scheme :

Sessional = 25

Semester Exam = 75 (30 for expt + 30 for test + 15 viva voce)

SUGGESTED READINGS :

1. McGuigan : Experimental Psychology, New Delhi, Prentice Hall of India, 1990.

2. Parameswaran : Experimental Psychology, Bombay, Allied Publishers, 1984.

3. Choube : Experimental Psychology

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EC : 14 : HIGHER EDUCATION IN INDIA

1. Introduction to Higher Education in India :
   - Meaning and goals; structure of higher education constitutional provisions regarding higher education
   - Policy perspectives and emerging trends in higher education

2. Higher Education in a historical perspective :
   - Higher education in India - vedic period, Buddhistic period and Muslim periods.
   - Modern higher education in India - the Despatch of 1854 and subsequent developments during the British period.
   - Development of higher education in free India, commission and committee reports
   - National Policy on education in 1968, 1986.
   - Higher education through various five year plans.

3. Planning and Management of Higher Education :
   - Bodies involved: Ministry of education at the centre and in the states, planning commission and planning boards, UGC
   - Association of Indian Universities
   - IGNOU and its role in open education
   - National Assessment and Accredition council.
   - Managing and institution of higher learning
   - Financing of higher education -sources, management of finances; issues in financing of higher education

4. Curriculum in Higher Education :
   - Curriculum planning
   - Curriculum development
   - Curriculum transaction
   - Curriculum Evaluation

5. Higher Education In India-issues and problems :
   - Higher education and socio-economic development
   - Quality vs.quantity in higher education-considerations
   - Campus problems in Universities-politicization of higher education, pressure groups in campuses.
   - Privatization of higher education-considerations
   - Autonomy in higher education
   - Innovations in higher education

6. Emerging social role of higher education :
   - Emergence of contemporary Indian society-role of higher education
   - The emerging professional role of teachers in higher education institutions
   - Teachers' interventions in social change-issues
   - Role of research in development-issues.

SUGGESTED READINGS :

1. Moonis Raza (ed) : Higher Education in India : Retrospect and Prospect New Delhi: Association of Indian Universities, 1991.

2. Philip Altbach : Turmoil and Transition : Higher Education and Student Politics in India, Bombay, Lalvani Pub. 1968.

3. Philip Altback, : Comparative Perspective on the Academic Profession. New York, Praeger, 1987.

4. Ravi Mathai : The Rural University, New Delhi: Popular, 1985.

5. UGC : Development of Higher Education in India, New Delhi : University Grants Commission, 1977.

6. Amrit Lal Vohra and S.R. Sharma : Management of Higher Education in India, New Delhi, Ammol Publications, 1990.

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Elective OP A 1 : Environmental Education

1. Introduction to Environmental Education :
   - Concept, Importance and Scope of Environmental Education
   - Aims and Objectives of Environmental Education
   - Guiding Principles and Foundations of Environmental education
   - Special significance of environmental education for sustainable development of North-East India.

2. Environmental Hazards :
   - Environmental pollution; physical-air, water, noise, chemical
   - Extinction of Flora and fauna, deforestation, soil erosion
   - Need for conservation, preservation and protection of rich environmental heritage.

3. Curriculum for environmental education :
   - Special nature of curriculum on environmental education
   - Concept of environment and eco-system
   - Natural system-earth and biosphere, abiotic and biotic components
   - Natural resources, abiotic resources (forests, wildlife, fisheris, biodiversity, degradation of resources.)
   - Human system-human beings as part of environment, human adaptations to environment, population and its effect on environmental resources.
   - Technological system-industrial growth, scientific and technological inventions and their impact on the environmental system.

4. Methods and Approaches of Environmental Education :
   - Stategies and Approaches for environmental education, seperate subject, topical units, Integration and Interdisciplinary approaches.
   - Methods-discussion, seminar, workshop, dialogues, problem-solving, field surveys, projects, exhibition
   - Role of Media-print, films, T.V. etc.

5. Evaluation in Environmental Education :
   - Objectives of evaluation in environmental education- estimating awareness, understanding, and application of knowledge for protection of environment, attitudinal and value change.
   - Tools and Techniques- Achievement and performance test, attitude and value scales, their use and limitations.
   - Importance of practicals and reports.

6. Teacher Preparation and Research Needs for Environmental Education :

- Role of teachers and community in environmental education
- Need for effective environmental education, teacher preparation strategies for various levels of education, teachers for formal and Non-formal streams.
- Teacher qualification, specialization and skills
- Importance of inservice and orientation courses for teachers.
- Nature of Research in environmental education interdisciplinary studies, environmental survey, cost-benefit analytical studies, managerical research, research for developing tools and techniques.
- Status of Research in environmental education in India- Trends and Issues.

SUGGESTED READINGS :

1. Bakshi, T.S and Navch Zev (ed) : Environmental Education Principles, Methods and Applications, New York, 1980.

2. Huncle J (ed) : Geographical Education; Reflection and Action, New York, Oxford University Press, 1983.

3. Sharma R.C : Environmental Education : New Delhi, 1986.

4. Trivedi R. N. (ed) : Environmental Pollution and its impact on the organism, Patna, Bharati Bhavan, 1986.

5. Proceedings of North-East India Educations Society Third Annual Conference December, 1993.

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Elective OPA 2 : ECONOMICS OF EDUCATIONS

1. Introduction to Economics of Education :

- Scope and principles of economics.
- Education as utility and necessity
- Education as capital and investment, indirect benefits
- Contributions of classical, neo-classical and modern economists to education
- Five - Year Plans in India-perspectives and prospects.

2. Human Resource Development :

- Concept of Human capital, relation to other capital resources
- Need for man-power planning
- Man-power recession, Under-employment and Un-employment
- Education as a factor affecting employment
- Role and functions of MHRD

3. Education and Economic Growth :

- Educational pre-requisites for economic growth, theoritical and emperical considerations.
- Correlation between educational attainment and per capita income
- Education as an investment component and consumer factor
- Effective utilization of educational resources for the economic growth

4. Educational Planning and Financing :

- Approaches to Educational Planning
  (a) Social demand approach, (b) Man-power approach
  (c) Rate-of-Return approach
- National and state bodies of educational planning
- Factors influencing the determination of priorities in educational planning
- Financing of Education; need, importance & principles
- Cost of education and educational expenditure : developmental and maintainance, plan and non-plan expenditures.
- Sources of finance, grant-in-aid, matching grants
- Institutional planning-concept, principles and process.

5. Productivity of Education :

- Process and product approach
- Productivity of educational system, learning for productivity and development, skill development
- Managerial training for man-power development
- Strategies for productivity development and efficiency
- Technical, vocational and agricultural education
- Efficiency of educational system-internal and external indicators

6. Economic Indicators of Education :

- Cost-benefit analysis
- Correlational approach
- Residual appr ach
- Man-power fore-casting approach
- Differential needs approach
- Tools and techniques for evaluation of economic growth

SUGGESTED READINGS :

1. Misra : Financing of In ian Education, Asia Publishing House 1967.

2. Azed J.L. : Financing of Higher Education in India, Sterling Publishers, Pvt.Ltd., New Delhi.

3. Vaizy John. : The Economics of Education, Fabber, London.

4. John Vaizy and Cheshes J.D. : The costing of Educational Plan, UNESCO.

5. Benson, C.S. : The Economics of Public Education, New York, Honghton Miffilin, 1961.

6. Pandit H.N (Ed) : Measurement of Cost, Effeciency an Productivity of Education, NCERT.

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Elective OPA 3: COMPUTER EDUCATION

Units.

1. -History and Development of Computers
   -Characteristics and functions

2. Principles of Data Processing
   - Computer operations
   - Information input and output
   - Basic concepts of data processing: Manual, mechanical and electronic data processing
   - Information storage and retrieval, peripheral devices and storage devices.

3. Computer language and programming
   - Programming languages: Operating commands machine and symbolic language, low-Level and high level languages.
   - Learning BASIC: preliminaries, input and output statements, control and looping statements, processing of files
   - Training in operation of the computer programme entry, data entry, execution, preparation of short programme on given topics: average of raw scores, frequency distribution, ranking of scores.

4. Styles of Computer Based Learning:
   - Computer Literacy
   - Computer Assisted Learning (CAL)
   - Computer Managed Learning (CML)
   - Educational Paradigms - the instructional, the revelatory, the conjectural and the emancipatory

5. Computer Applications:
   - Levels of Computerisation
   - Common and particular application areas: Managerial, social data processing, preservation and storage.
   - Uses of computer for evaluation.

SUGGESTED READINGS:

1. Rajaram, V. Fundamentals of Computers : Prentice Hall of India Pvt. Ltd. New Delhi-1985.
2. Shelley, J & Hunt, R.M. Computer & Commonsense, Prentice Hall of India Pvt. Ltd, Delhi. 1991.
3. Thiagarajan, R. Computers for Beginners, sterling Publishers. Pvt. Ltd, New Delhi, 1984.
4. Shelley, J. & Hunt, R. Computer Studies-First Course A.H. Wheeler & Co, Delhi, 1986.
5. Balaguruswamy, E. & Sharma, K.D. (Eds) Computer in Education and Training.

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Elective OPA 4 : EARLY CHILDHOOD EDUCATION

1. Introduction to Early Childhood Education

- Need, importance and objectives
- Methods of child study
- Pre School Education in India.

2. Contributions of Philosophers and Educationists to pre-School Education.

- Jean Jacques Rousseau
- Frederich Wilhelm August Froebel
- Maria Montessori
- Macmillam sisters
- Mahatma Gandhi
- Tarabai Modak

3. Different Aspects of Child Development

- Physical Development
- Cognitive Development
- Personality development
- Emotional development
- Social Development
- Factors affecting Child Development.

4. Learning Readingss among children.

- Development of Language
- Developmental norms among children and their significance on child rearing practices and learning.

5. Pre-School Curriculum :

- Characteristics of a balanced pre-School Curriculum
- Activities and programmes for pre-school education.
- Planning of pre-School curriculum
- Evaluation of pre-school curriculum and its activities.

6. Organization Methods and Administration in Pre-School:

- Major types of pre -School: Kendergarten, Montessori, Nursery, Pre-Basic, Balwadi, Angawadi and Day-Care types
- Activities and programme for Pre-Schools of different types.
- Equipments and materials for pre-aschools
- agencies conducting pre-school and their management

7. Teacher Preparation for Pre-school Education in India.

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SUGGESTED READINGS :

1. Aggarwal J.C : Methods and Materials of Nursery Education, Delhi : Doaba House, 1990.

2. Grewal J.S. : Early Childhood Education, Agra : National Psychological Corporation, 1984.

3. Pankajam : Pre-school Education in India.

4. Day Barbara : Early Childhood Education : Organizing Learning Activities, New York; Mac Millan, 1983.

5. Spodek B.L (Ed): Handbook of Research in Early Childhood Education, New York ; The Free Press, 1982.

6. Travers J.E. : The Growing Child : Introduction to Child Development, New York; John Kluley, 1977.

Elective Category 'A' OPA 5 : EDUCATIONAL GUIDANCE & COUNSELLING :

1. Introduction to guidance :

Meaning, Nature and scope of guidance, Need for guidance

Principles of guidance,

Historical development of guidance & counselling movement with special reference to India.

2. Types of guidance :

- Nature Scope and Functions of each of the following
- Educational guidance
- Vocational guidance
- Personal guidance
- Social guidance

3. Counselling :

- - Nature and Principles of counselling
- Approaches to counselling-Directive, Non-directive, eclectic, characteristics, Role and Functions of counsellor; carrier master
- Professional education of the counsellor.

4. Techniques of collecting information for guidance :

- Testing techniques-types of tests used in guidance
- Tests of intelligence, aptitude, interest, achievement and Personality.
- Uses and limitations of testing techniques in guidance.
- Non-testing techniques-Observation, questionnaire, rating scale, interview, aneedotal record, cumulative record, Case study

5. Guidance Services :

- Organization of guidance services in Schools and Colleges, Types of organization-centralised form, Decentralised form, Mixed form.
- Functions of School guidance servics
- Individual information service-types of data to be collected about the individual/student-sources of information
- Occupational information service-types of information materials-sources; methods of classifying and disseminating occupational information
- Placement service-educational placement, vocational placement
- Remedial services and follow up service
- Evaluation of guidance programme

6. Group Guidance :

- Need and scope of group guidance; Activities or organising group guidance services in educatinal institutions

7. Trends in Guidance and Counselling :

- Guidance for special groups
- Trends of researches in guidance and counselling in India.

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SUGGESTED READINGS :

1. Bernard H.W and Fullner D.W : Principles of guidance, A Basic Test (Indian Education), New Delhi, Allied Allied Publishers Pvt. Ltd.

2. Bhattacharya H : Guidance in Education, Bombay, Asia Publishing House, 1964.

3. Crow L.D and Crow A : An Introduction to Guidance, New York, American Book Co., 1951.

4. Fuster J.M. : Psychological Counselling in India, Bombay, McMillan and Co.Ltd. 1964.

5. Mathewson, Robert H : Guidance Policy and Practice, New York, Harper and Row., 1962.

6. Kochhar S.K. : Guidance in Indian Education, New Delhi, Sterling Publishers Pvt.Ltd., 1979.

7. Pasricha, Prem : Guidance and Counselling in Indian Education, New Dehhi, NCERT., 1976.

8. Pasricha, Prem and Screck, Thomas C. : A Handbook for Developing Guidance Services in Secondary Schools, M.S. University, Baroda, 1964.

9. Vanghan T.D : Education and Vocational Guidance Today, London, Routledge and Kegar Paul, 1970.

10. Williamson E.G. : Student Personnel Services in Colleges and Universities, New York, McGraw Hill Book, Co, Inc., 1961.

11. Swamy R.V. (ed) : Guidance Service in Colleges and Universities Bangalore : Bangalore University and Directorate of Employment and Training, Bangalore, 1971.

12. Wadia, Khershed A and Rohila Pritam K : Guidance Services in Schools, New Delhi, Albio Press., 1964.

13. Jayaswal S : Guidance and Counselling, Lucknow, Prakashan, Kendra, 1981.

14. Anastasi, Anne : Psychological Testing, New York, London, The McMillan Co., 1982.

15. Cronbach, Lee J : Essentials of Psychological Testing, London, Harper and Row, 1960.

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Elective OPA 6 : FUTUROLOGY IN EDUCATION

1. The Concept of change and role of education in planned change.

   Life long education to cope with change.
   The learning society and human destiny-UNESCO and its efforts.

2. Impact of science and technology on society and education.
   science education, society and development.

3. Developments in communication technology and education
   Mass media and education.
   Computer education and its possibilities.

4. Illiteracy, poverty, deprivation and addiction in society their impact on education and development

   Approcaches for eradicating them
   Agencies involved.

5. Global consciousness and global economics.
   Changing patterns of global economics
   Economic reforms and liberalisation policies.
   Impact of economic reforms on education.

SUGGESTED READINGS:

1. Circircoine, Coles Kalhrijn : The Future of Education Sage Publications, 1981.

2. Friere P. Education: The practice of Freedom, London; writers and Readers, 1976.

3. Haptrop, Richart P (ed) : Foundations of Futurology in Education, Etc, Publications, 1976.

4. Hummel, Charles : Education today for the World of Tomorrow, Paris, UNESCO, 1977.

5. Agarwal J.C and Agarwal S.P : The role of UNESCO in Education, Vikas, 1982.

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6. Castles, S. : Westernberg W. :
The Education of the Future, Plato Press, Ltd., 1979.

7. Clerk, B.R. : Education the expert society, Chandler Publishing Co., 1962.

8. Hallak Jaques ; Reflections on the future development, (UNESCO 1985.)

9. Hallak Jaques : Investing in the Future, Setting priorities for the developing world (UNESCO) 1990.

10. Daham O.P. & Bhatnagar .O.P. :
Education and Communication for development, Oxford Pub. 1980.

11. Sharma Jai Krishnan : Education for 3rd World Countries, B.R. Publishing House.

12. Woods, Peter : Sociology and the School, An internationalist view point, Routledge, and Kegan Paul, 1983.

13. UNESCO : Inequalities in Educational Development, An IIEP Seminar, UNESCO, 1982.

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OPA 7 : EDUCATION AND RURAL DEVELOPMENT

1. Rural Education and Rural Development :
   - Concept, need, importance and objective of rural education
   - Types of rural educatinn
   - Programmes for rural development

2. Educational Programmes for Rural Development :
   - Basic education
   - Work experience, Socially Useful Productive Work (SUPW)
   - Vocational education for rural areas.
   - Integrated Rural Development Programme (IRDP)
   - Adult education programme.

3. Role of Educational Institutions in Rural Development :
   - Schools, colleges and Universities,
   - Availability and accessibility of schools in rural community
   - Types of schools (single teacher, two/three teacher schools)
   - Primary and secondary levels-quality of education
   - Nature of rural school curriculum
   - Co-curricular activities and its problems
   - School as a community centre
   - Community and school relationships.

4. Role of Others Agencies in Rural Development :
   - Role of voluntary Organization
   - Role of Local Bodies in education
   - Non-formal education programme for rural areas.
   - Role of the various Mass-media promoting education in rural areas ; T.V., Radio, Movies, Theatre, Clubs, Exhibition, Newspapers, Periodicals and magazines etc.

5. Leadership Training for Rural Education :
   - Need for leadership training : Local leaders.
   - Identification of leaders in rural areas.
   - School Teachers as rural leaders.
   - Leadership training programme such as-workshop, forum, discussion, field trips.

6. Aspects of Rural Development :
   - Education as an investment in Human Resource development
   - Equa it of educational Opportunities
   - Education as an instrument of change in rural areas.
   - Economic and non-economic factors affecting rural development.

SUGGESTED READINGS :

1. B.D. Sharma : Planning for Tribal Development, 1979.
2. Hoshier Singh : Rural Development in India, New Delhi

3. Tandhyala & B.G.Tilak : Education & Regional Development, New Delhi, 1986.

4. Lonis Malassis:: The Rural World, Education & Development UNESCO Press Paris, 1976.

5. Mooris Raza : Schooling & Rural Transformation NIEPA, New Delhi, 1990.

6. Kishore Chandra Pandhy : Rural Development in modern India.

7. R. Govinda : School Education in Rural Areas (society for Educational Research and Development) Baroda, 1987.

8. D.V. Chikermane : 'Experiments in Rural Education' 1978, Gokarne, Karnataka.

9. A.S. Seetharance & Usha Devi. : Education in Rural Areas, Constants and Prospects, New Delhi, 1985.

10. A.S. Seetharamme : Education and Rural Development, New Delhi, 1980.

11. John A. Dawson & John C. Dornkamp : Evaluating the Human Environment Essays in Applied Geography, London, 1985 (Reprint.)

12. A. Mohsini S.R. : Adult & Community Education : An Indian Experiment Indian Adult Education Association, New Delhi, 1973.

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Non-Formal and Adult Education.

Elective OPA.8:

Units

1. Meaning, nature and scope of non-formal and adult education.
   - Aims and objectives of non-formal and adult education.
2. Curriculum, method and materials in non-formal and adult education.
   - Content, technique, strategies of instruction.
   - Development of instructional materials.
3. Agencies of non-formal and adult education.
   - Government and non-governmental organs.
   - Role of Universities in non-formal and adult education.
4. Non-formal and adult education for development.
   - Economic, social, cultural.
5. Problems of non-formal and adult education with special reference to materials, personnel and motivational aspects.
   Organisation and administration.
6. Evaluation and follow-up of non-formal and adult education programmes.
7. Modern trends in non-formal and adult education in India.
   - Mass media, National Literacy Mission,
   - Total Literacy Campaign, Education for all.

SUGGESTED READINGS :

1. Smith R.M. et.al. (eds): Handbook of Adult Education, McMillan Publishing Co., Inc., New York, 1970.
2. A. Mohsini S.R. : Adult and Community Education : An Indian Experiment, Adult Education Association, New Delhi 1973.
3. Anil Bordia (Ed) : Adult Education in India, Indian Adult Education Association, New Delhi, 1982.
4. Curriculum Construction for Non-formal Education, Indian Adult Education Association, New Delhi.

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5. Styler, W.E.: Adult Education in India, Oxford University Press, 1966.

6. Mohsini, S.R.: Adult and community Education, Indian Adult Education Association, New Delhi, 1973.

7. Datta, S.C.: Adult Education in Third World, Criterion Publications, New Delhi.1987.

8. Pati, Sura Prasad: Adult Education, Ashish Publishing House, New Delhi, 1989.

9. Mohsini, S.R.: History of Adult Education in India, Anmol Publication, New Delhi, 1993.

10 Coles, Edwin K.Townsend : Adult Education in Developing countries, 2nd Edition, Pergamon Press, Oxford, New York, 1977.

11 Sharma : Adult Education in India International Book House, Delhi.

12. Chopra Rita : Adult Education, International Book House, Delhi.

13. Mohanty : Adult and Non Formal Education, International Book House, Delhi.

14. Thakur.: Adult Education and Mass Literacy, International, Book House, Delhi.

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Elective OPB 1 : (i) SPECIAL EDUCATION

Education of the Creative and Gifted.

1. Education of Exceptional Children :

   - Exceptionality, Concept of positive and negative deviations special needs and problems of exceptional children status of exceptional a historical perspective.
   - Classification of exceptional children, conventional approach and functional approaches and their relative merits and limitations.
   - Special Education, need and significance, foundations of special education (Philosophical, psychological and socio-cultural), objectives and basic principles.
   - Special education programme in India-current status, issues and trends, agencies of special education Governments and non-governmental organizations.

2. Education of the Gifted :

   - Concept of giftedness, and characteristics of the gifted
   - Factors promoting giftedness and its development
   - Identification of the Gifted children, methods and techniques.
   - Importance of special education programmes for the gifted
   - Problems related to social, emotional and educational adjustment.

3. Education of the Creative :

   - Creativity, Nature, characteristics and components of creativity
   - Theories of creativity and Development of Creativity Models and techniques
   - Identification of creative-different measures, creativity tests (Torrance, Wallach and Kongans, Baquer Mehdi, Passi and Khiangte's test- their merits and limulations limulations.)
   - Factors Fostering creavivity, classroom conditions for nurturing and stimulaturing creativity.

4. Approaches to Education of the Gifted and Creative :

   - Objectives of special education schemes for the gifted and creative.
   - Educational practices and approaches, grouping, acceleration, enrichment individualized instructions, motivating the gifted, self learning and tutorials their merits and limulations.
   - Curricular modifications for the education of the gifted and creative
   - Bright under achievers their characteristics and causes and remedial programmes.

Unit 5. Guidance and counselling for the gifted and creative

- Need for guidance and counselling
- Process of guiding the gifted and talented
- Role of Teachers, parents and community agencies in guiding the gifted and the creative.

Suggested Readings.

1. S.Kirk and Gallagher, Education of the Exceptional Children, New Delhi- Oxford IBH, 1979.
2. Heck, A.O. The Education of the Exceptional Children New York: Mc Graw Hill, 1953.
3. Sumptom and Lucking Education of the gifted, New York Ronald Press, 1960.
4. Torrance, E.P. Guiding creative Talent, Englewood Cliffs : Practice Hall, 1962.
5. Torrance and Myers creative Learning and Teaching, New York: Dodd Mead, 1970.
6. Desmukh : Creativity in classrooms, New Delhi, Prentice Hall, 1988.
7. Horowitz and Brien (Eds) : The Gifted and Talented, Developmental Perspectives, Washington, 1985.
8. Lindsay M : Training Teachers of the Gifted and Talented New York; Teachers College Press, 1980.
9. Anne M. Baner & Thomas M. Shea : Teaching Exceptional Students in your Classroom, London; Allyn and Bacon, 1989.
10. Cruick Shank M.M. & Johnson (eds) : Education of Exceptional Children and Yourth , London: McGraw, 1975.

REFERENCES :

1. Kirk S.A and Gallagher J.J. : Education of Exceptional Children, 1979.

2. Cruickshank M : Psychology of Exceptional Children, London, 1955.

3. Cruickshank M.M. and Johnson Co. (ed) : Education of Exceptional Children and Youth, 1975.

4. Dechan R.F. and Sanighuser R.J : Education Gifted Children, 1957.

5. Gallagher J.J. : Teaching the Gifted Child, (2nd edition), Boston; Allyn and Bacon, 1975.

6. Kramer, A.H. Biten (eds) : Gifted Children:Challenging their potential,New York,1981.

7. Horocoitz F.D. & M.O. Brien (Eds) : The Gifted and Talented, Developmental perspectives, Washington, 1985.

8. Lindsay M.(1980) : Training Teachers of the Gifted and Talented, New York; Teachers College Press, 1980.

Elective OPB 1 (ii) SPECIAL EDUCATION:

EDUCATION OF DISABLED AND BACKWARD

1. - Exceptionality; negative dimentions
   - Treatment of disabled and handicapped in a historical perspective
   - Need for humane treatment, welfare schemes and special education programmes for the disabled children.

2. Education of the Physically Disabled :
   - Characteristics of children with different types of physical disability - Visual disorders, Hearing impaired, speech defective and orthopedically handicapped and their education.

3. Education of the Mentally Retarded :
   - Nature and types mentally retarded children
   - Criterion for the classification of the mentally retarded
   - Etiology and causes of mental retardation
   - Detection and special education schemes for the mentally retarded

4. Education of the Backward Children :
   - Defining backwardness, concept of deprivation
   - Slow learners ; their characteristics, procedures for identification and education
   - Socio-economically disadvantaged children-their needs and problems of education.

5. Education of the Deviant Children :
   - Different types of deviance; severe maladjustment, juvenile delinquency, drug addiction, stress and strain
   - Causative factors and curative measures for the problem of deviant behaviour
   - Role of teachers, parents, media, government and non-governmental organizations in special education programme for deviant children.

6. Approaches of Special Education Programmes for the Diabled and Backward :
   - Special schools, special classes, mainstreaming and and integrated education.
   - Curricular modification for the education of the disabled; sensory training, self-help skills, social competency; need for flexible and non-graded curriculum
   - Support services-medical, counselling, placement services.
   - Training of teachers and other personnels for the education of the disabled and backward.

SUGGESTED READINGS:

1. Anne M. Baner Thomas M. Shea :
Teaching Exceptional Students in Your Classroom
1989, U.S.A.

2. Kirk S.S.: Educating Exceptional Children, 1970.

3. Smith R.M. : An Introduction to Mental Retardation, 1971.

4. Gearheart B.R. : Education of the Exceptional Child-
History , practices and Trends 1972.

5. Blair, G.M. : Diggnostic and Remedial Teaching, 1980.

Elective OP B 2 : (1) EDUCATIONAL THOUGHT :

INDIAN EDUCATIONAL THOUGHT

1. Vedic Education :
   a. Educational Thought of Manu
   b. Education in the Epic Age.
   c. Budhistic Educational Thought
2. Islamic Educational Thought and Sufism in Education.
3. Influence of western Thought on Modern Indian Educational system and practices.
4. Education ideas governing constitutional provisions of Education and Educational policies in post Independent India.
5. Views on education of the following Indian educational thinkers :
   a) Raja Ram Mohan Roy
   b) Vivekananda
   c) Aurobindo Ghosh
   d) J. Krishnamoorthy
   e) Radhakrishnan
   f) Zakir Hussain
   g) Vinobha Bhave

SUGGESTED READINGS :

1. Atchutban M : Educational Practices in Manu, Panini and Kautilya
2. R.K.Mookerjee : Ancient Indian Education (Brahmanical and Budhist.)
3. D.H. Bishop : Indian Thought; An Introduction (1973).
4. S.P.Chaube : Recent Educational Philosophies Indian, 1972.
5. M.R. Nawaz : Development of Muslim Educational Thought, Michigan, 1982.
6. M.W.Khan (ed) : Education and Society in the Muslim World, 1987.
7. S.S. Dikshit : Education, Nationalism and India, Sterling Publishers, Delhi, 1966.
8. S. Adhedananda : Ideal of Education, Ram Krishna Vendanta Math, Calcutta, 1945.
9. Sri. Aurobindo : On Education
10. S.K. Maitra : The Meeting of the East and the West in Sri Aurobindo's Philosophy.

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Elective OPB : 2 (ii) EDUCATIONAL THOUGHT :

WESTERN EDUCATIONAL THOUGHT:

1. Greek Educational Thought :
   - Aims, methods, curricula and organization of sparten and Athenian systems of education.
   - Views on Education of the Greek classical Educational theoriests: socrates, plato and Aristotle.
2. Contribution of Marcustullius Cicero and Marcus Fabius Quintilianus in Roman Education
3. Christian Education Movement-contribution of Tertullian, Clement and Origen : Franciscan and Dominican Education.
4. Educational trends during the Renaissance and Reformation period, their influence on Western Educational thought and practices.
5. Foundation of Modern Education :
   - The age of industrilization
   - The beginnings of Mass Education with reference to English system : the monitorial systems and the common school system.
6. Psychological Movement in Education :
   - Views of Johann Heinrich Pestalozzi, Wilhelm Froebel, John Holt, Bruner.
7. De-schooling movement in Education :
   - Views of Ivan Illich, Everett Remier, Paulo Freire, Paul Goodman.

SUGGESTTED READINGS :

1. Curtis S.J and Boultwood M.E.A : A Short History of Educational Idea, London, University Tutorial, Press, 1953.
2. Meyer F : A History of Educational Thought, 1964.
3. Rusk R.R. : Doctrines of the Great Educators, 1969.
4. Banner, Frauldin Z : Main Currents of Western Thought, Readings in Western European Intellectual History from the Middle Ages to the Present. New York, 1952.
5. Gwynn A : Roman Education from Cicero to Quintilian, Clarendon Oxford, 1926.
6. Willkins A.S : Roman Education, Cambridge University Press, 1905.
7. John Holt : How Children Fail.
8. Bruner : Process of Education.
9. Paul Goodman : Compulsory miseducation.

7. Cole, Luella : A History of Education Berates to Montessori.

8. Nettleship R.L. : The theory of Education in Plato's Republic, Oxford University Press, 1961.

9. Hulme E.M : The Renaissance, Revolution and the Catholic Reformation in Continental Europe, New York, 1914.

10. Woodward W.H. : Studies in Education during the Renaissance

11. Mouroe Will S : Comenius School of Infancy.

12. Illich, Ivan : Deschooling Society, New York, Harper & Row, 1971.

13. M.Reimer : School is Dead ; New York, Harper

14. Freire P : Education for cultural Consciousness, New York, Seabury Press, 1974.

15. Freire P : Pedagogy of the Oppressed, New York, Harder and Harker, 1970.

16. Green J.A : Life and Work of Pestolozzi, London University, Tutorial Press, Ltd, 1913.

17. Boyd W : The Educational Theory of Jean Jacques, Rousseau,

18. Anderson, Lewis F : Pestalozzi ; His life and Work.

Elective OPB 3 (i) **Value Education**

1. - Meaning, nature and scope of value education
   - Need for value education
   - Objectives of value education

2. - Types and hierarchies of values
   - Relativity and hierarchies of values
   - Terminal values vs instrumental values
   - Dysfunctionality of values

3. Theories of Value Development :
   - Philosophical basis of value Development
   - Psychological basis of value Development
   - Socio-cultural basis of value Development

4. Content of value Education :
   - Cultural heritage and values
   - Democracy
   - Social justice
   - Scientific temper
   - Secular and sacred values

5. - Social change and values
   - Traditions vs. modernity
   - Value crisis

6. Methods and Approaches in Value Education :
   - Direct and indirect methods
   - Models of value development
   - Assessment of values
   - Role of school, media and Community in Education of values

SUGGESTED READINGS :

1. Seshardri et.al.(eds) : Education in Values : A Scource Book, New Delhi, NCERT, 1992.
2. Byrappa S.L. : Values in Modern Indian Educational Thought, New Delhi, NCERT, 1981.
3. Feather, N.T. : Values in Education and Society, New York, Free Press, 1975.
4. Rokeach M. : The Nature of Human Values, New York, Free Press, 1973.

Yoga Education

Elective OPB(3)(ii): Yoga Education

1. Meaning and Nature and Scope of Yoga.Yoga Education Need for Yoga Education.
2. Bases and Types of Yoga :
   a) Bases - Philosophical
      Psychological
      Physiological
   b) Types - Raja Yoga
      Bhakti Yoga
      Karma Yoga
      Jnana Yoga
3. Steps in Yoga Practice.
   - Yama (Abstinence)
   - Niyama (Observance)
   - Asana (Body postures)
   - Pranayama (Breath control)
   - Pratyahara (Sense withdrawal)
   - Dharana (Concentration)
   - Dhyana (Meditation)
   - Samadhi(State of equanimity)
4. Yoga and Natural Living
5. Yoga and Mental Health
6. Yoga and world peace.

SUGGESTED READINGS :

1. Kapur C.L. : Yoga and Education SCERT Himachal Pradesh, Simla Hills.
2. Yoga Asanas in Theory and Practice : Bihar, School of Yoga, Manghyr.
3. Dynamics of Yoga : Bihar School of Yoga, Monghur
4. The Science of Yoga : Bihar School of Yoga, Monghyr.
5. Gopi Krishna : Higher Consciousness D.I. Taraporaevade sons and Co., Pvt. Ltd.
6. Morarje Desai : nature cure S. Chand and Company Ltd. New Selhi.

Elective B : OP 4 **TEACHER EDUCATION**

1. Introduction to Teacher Education :
   - Meaning, nature and scope of teacher education
   - Need for education of teachers
   - Objectives of teacher education at pre- primary, Primary, Secondary and college levels.
   - Development of teacher education in India- before and after independence

2. Agencies of Teacher Education :
   - National Council of Teacher Education (NCTE)
   - National Council of Educational Research and Training (NCERT)
   - University Grants Commission (UGC)
   - University Departments and Colleges of Education
   - State Institutes of Education (SIE)/State Council of Educational Research and Training (SCERT)
   - District Institute of Education and Training (DIET)

3. Teacher Education Programmes :
   - Preservice Teacher Educatinn ; organization, types-NCTE curriculum framework-objectives, content, methods and evaluation at various levels.
   - Inservice Teacher Education ; need, objectives, types, organization and evaluation
   - Comprehensive teacher education programme.
   - Integrated teacher education programme

4. Techniques of Teacher Education :
   - Simulation
   - Interaction analysis
   - Micro-teaching
   - Programmed instruction

5. Student Teaching :
   - Role of student teaching in teacher education programme
   - Organization of student teaching; various patterns- block-teaching, internship, integrating theory and practice
   - Supervision and evaluation of student teaching

6. Professionalism in Teacher Educatinn :
   - Meaning of a Profession
   - Teaching as a profession, professional ethics of a teacher
   - Teacher as a member of professional organization
   - Professional organizations of teachers in India- History and present status.

7. Major issues and Research in Teacher Education :
   Major issues - Admission policies and procedure quality in teacher education - reguiar and competence courses
   - Trends of Research in teacher education in India.

SUGGESTED READINGS :

1. Anand C.L. : Aspects of Teacher Education, Delhi, S.Chand and Co.1988.

2. Mukherjee S.N. (ed) : Education of the Teacher in India, Vol.I & II, Delhi, S. Chand, and Co., 1968.

3. - do - : Admission and Organization Teacher Training Institutions, New Delhi,NCERT, 1987.

4. Singh L.C.(ed): Teacher Education in India- A Resource Book, New Delhi, NCERT? 1990.

5. Moffit, John Clifton: Inservice Education for Teachers, Wahington The centre for applied research in Education Inc., 1983.

6. NCTE: Teacher Education Curriculu, - A framework, New Delhi, NCERT, 1978.

7. Tibble J.W (ed) : Tha Furture of Teacher Education, London, Routledge and Kegar Paul, 1971

8. Passi B.K. : Becomming of Better Teacher, Microteaching approach, Ahmedabad, Sahitya Mudranalaya 1976.

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Elective OPB 4.2 METHODS OF TEACHING AT TERTIARY LEVEL

1. Learning and Instruction :

- Meaning of Learning and instruction
- Concept of system-system approach to instruction
- Role of the teacher in the instructional system

2. Teaching and Teacher Competencies :

- Concept of teaching, time effectiveness and teacher competence
- Teacher competencies at the tertiary level
- Classification of teacher competencies
- Repertoire of teacher competencies

3. Theories of Learning and Teaching :

- Theories of learning; Behaviourism and cognitivism-
- Devleopmental theory of learning (Jean Piaget)
- Discovery approach to learning (J.S.Bruner)
- Meaningful verbal learning (David Ausubel)

Theories of Teaching : Normative theory or TL (Teaching Learning) theory

Positivistic theory or TA (Teaching Act) theory

4. Teaching skills and Teaching strategies :

Teaching skills-Introductng a lesson,questioning,stimulus variation,reinforcement,increasing pupil participation,achieving closure, etc. integration of different skills

Teaching strategies - Autocratic style,permissive style.

5. Methods of Teaching at the tertiary level :

- Teacher central - Lecture, Demonstration, Team teaching
- Learner centred - programmed learning, personalised system of instruction, computer assisted instruction
- Other methods -Seminar,workshops,tutorial etc, group discussion, projects.

6. Audio - visual - aids :

Meaning and types of audio-visual aid- Audio -visual aids,

- Their value and use in classroom instruction.

7. Research on Teaching at tertiary level :

Need, focus, area and approaches

Trends of research teaching in India.

SUGGESTED READINGS :

1. Chauhan S.S. (1989) : Innovations in Teaching Learning Process, New Delhi: Vikas Publishing House Pvt. Ltd.

2. Kulkarni S.S. (1986) : Introduction to Educational Technology, Bombay: Oxford and IBH Publishing Co.

3. Sharma G.D and Shakti R. Ahmed (1986) : Methodologies of Teaching in Colleges, New Selhi NIEPA.

4. Vedanayagam E.G. (1988) : Teaching Technology for College Teachers, New Delhi ; Sterling Publishers Pvt.Ltd.

5. Pervival, F and Ellington H. (1984) : A Handbook of Educational Technology, New York: Nichols Publishing Company.

6. Bloom B.S. Et al. (1956) : Taxonomy of Educational Objectives, Handbook I. cognitive Domain, New York, David McKay (Co.) Inc.

7. Dale E. (1954) : Audio-Visual Methods in Teaching, New York: Holt Rinehart and Winston

(v) Revised syllabus for M.A/M.Sc Geography.

The School Board of Humanities and Environmental Sciences in its meeting held on 17.10.95 approved the revised syllabus for M.A/M.Sc Geography. The syllabus is placed at Annexure-'A' for consideration of the Council

ANNEXURE-'A'

Background

The Department of Geography was started in June, 1976 at Shillong under School of Environmental Sciences. Since its inception the department started M.A./M.Sc., M.Phil. and Ph.D. programme.

Over the past two decades the Department has tried to fullfill the requirement of the students by revising and updating academic programme of the Department.

The last major revision of the courses was undertaken in 1991. When the whole emphasis was on M.Sc. programme. In 3rd and 4th semesters more or less in all the papers practical component was included. Later on University decided to award M.A./M.Sc. degree in Geography. Meantime the honours course in Geography has been revised and implemented as B.A./B.Sc. Major and General since 1993. The first batch of B.A./B.Sc. Major and General students will pass out in 1996. Thus keeping in mind above mentioned changes it was felt by the department to revise the M.A./M.Sc. syllabus. It was also felt that the practical content from 3rd and 4th semester papers should be withdrawn due to some practical difficulties.

The new revised syllabus has been prepared taking into account all above mentioned points. Now the practical in first semester will be of 4 credit instead of two credit. The practical of Ist semester and 2nd semester has been combined and put in first semester. The course No. GE-403 Principal of ecology a theory paper of two credit has been shifted to 2nd semester.

As is the practice in NEHU at present the evaluation at sessional and semester level shall be 25:75

- II

COURSE OUTLINES

Course No.	Title of the Course	Credit	Mark Distribution Theo	Pract.	Total
	I SEMESTER				
GE-401	Geomorphology	4	100	-	100
GE-402	Climatology & Hydrology	4	100	-	100
GE-403	Systematic & Regional Geog. of India.	4	100	-	100
GE-404	Introduction to Mathematical & Statistical Techniques.	2	-	50	50
GE-405	Cartographic Techniques	4	-	100	100
		18	300	150	450
	IInd SEMESTER				
GE-406	Elements and Principals Of Ecology	2	-	50	50
GE-407	History and Philosophy Of Geography	4	100	-	100
GE-408	Principals and Techiques Of Economic Geography	4	75	-	75
GE-409	Fundamentals Of Social and Cultural Geography	3	75	-	75
GE-410	Settlement and Population Geography	3	75	-	75
GE-411	Remote Sensing and Surveying	3	-	75	75
		18 -	325 -	125 -	450

III and IV SEMESTERS

Course No	Title Of The Course	Credits	Marks Distribution Theory	Pract.	Total
GE-501	Environmental Science and Geography	4	100	-	100
GE-505	Applied Climatology	4	100	-	100
GE-511	Tropical Geomorphology	4	100	-	100
GE-513	Advance Geomorphology	4	100	-	100
GE-515	Social Geography Of India	4	100	-	100
GE-516	Geography of Tribes of India	4	100	-	100
GE-522	Political Geography	4	100	-	100
GE-523	Historical Geography	4	100	-	100
GE-525	Geography & Development	4	100	-	100
GE-527	Regional Planning - I	4	100	-	100
GE-532	Urban Geography	4	100	-	100
GE-534	Integrated Area Planning	4	100	-	100
GE-535	Agricultural Geography	4	100	-	100
GE-536	Micro Level Planning	4	100	-	100
GE-548	Regional Structure of North East.	4	100	-	100
E-549	Project	4	-	-	100
GE-550	Remote Sensing & Image Interpretation.	4	50	50	100

GE 401: Geomorphology

Credit : 4
Marks : 100
Lectures: 45

UNIT - I

1. The nature and scope of geomorphology.(2)
2. Modern trends in development of geomorphology. (2)
3. Earth movements and ocean basins. Theory of sea-floor spreading. Wegener's Theory land its implications. Important theories of mountain building with special emphasis on convection current theory, continental drift and plate tectonics. (6)

4. Isostasy, earthquakes and volcanosity. (5)

UNIT - II

5. Origin,classification and characteristics of Rocks. (2)

6. Geomorphic processes and agents. Landform development in humid, arid, glacial, periglacial, karst and coastal regions. Concept of cycle of erosion. (6)

UNIT - III

7. The erosion surface and their identification. (3)

8. Interruption and movement of base level. (2)

9. The evolution of multicyclic landscape, Evolution of structural rock benches and river terraces. (3)

10. Evolution of drainage patterns. (3)

UNIT - IV

11. Study of slope elements and their characteristics. (3)d
12. Morphometric techniques and their application. (4)
13. Micro study of landforms of Meghalaya Plateau, Chhotanagpur Plateau and Aravali region (4)

Suggested Readings

1. Birkeland, P.U.: Soils & Geomorphology, Oxford Univ.Press, New York 1984.
2. Bloom, Arthur L:Geomorphology-A systematic Analysis of Late Cenozoic Landforms, Prantice Hall, Englewood Cliffs, N.J., 1978.
3. Chorley, R. J.& Hagget, P. :Physical and Information Models in Geography, Methuen, London, 1967.
4. Chorley, R. J.: Spatial Analysis in Geomorphology, Methuen London, 1972.

5. Clowes A.& Comfort P. : Process & Landforms: Conceptual Frameworks Geography, Oliver & Boyd, Edinburgh, 1983.

6. Cooke, R.U. & Doornkamp, J.C.: Geomorphology in Environmental Management- An Introduction, Clarendon Press, Oxford, 1974.

7. Doornkamp, J. C. & King, C.A.M.:Numerical Analysis in Geomorphology,Arnold,London,1971.

8. Dury, G.H: The Face of the Earth, Penguin, Harmondsworth, 1959.

9. Davis, W.M.: Geographical Essays,Dover, New York, 1954.

10. Dayal, P. : A Text Book of Geomorphology, Patna, 1990.

11. Easterbrook, D.J. : Principles of Geomorphology, McGraw Hill,New York, 1969.

12. Garner, H.F.: The Origin of Landscapes - A Syntheses of Geomorphology, Oxford Univ. Press. London,1974.

13. King,L.C.: The Morphology of the Earth., Hafner, New York, 1962.

14. King, C.A.M.:Techniques in Geomorphology, Arnold, London 1968.

15. Leopold, L.B. et.al:Fluvial Processes in Geomorphology, Eurasia Publishing House,N.Delhi,1969.

16. Mellhorn, W.N.(ed) Theories of Landform Development, George Allen & Unwin. London,1981.

17. Mitchell, C.W.: Terrain Evaluation, Longmans, London, 1973.

18. Morisawa, M:Geomorphology Text:Riwas, Longman Group Ltd. London, 1985.

19. Pedenck, W.: Morphological Analysis of landforms, St.Mrtin Press, London, 1953.

20. Pitty,Alister F: introduction to Geomorphology, Methuen & Co.,London, 1971.

21. Sparks, B.W.: Geomorphology: Geomorphology Geomorphology,London, 1960.

22. Small, R.J. : The study of Landforms, Cambridge, 1972.ddd

23. Thornbury, W.D. : Principles of Geomorphology,John Willey, New York.

24. Thornes, J. B & Budadon, D: Geomorphology & Jime,Methuen & Co Ltd., London, 1977.

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GE-402 :CLIMATOLOGY & HYDROLOGY

Credit :4
Marks :100
Lectures : 45

UNIT - I Climatology

1. Nature and scope of climatology and its relationship with meteorology (3)

2. Insolation , heat balance of the earth and distribution of temperature (temporal, vertical and horizontal). (5)

3. Distribution of atmospheric pressure and winds; wind system, monsoon winds, and local winds; jet stream (3).

4. Air masses and fronts (3).

5. Atmospheric disturbances and associated weather types (3).

UNIT - II

6. Climatic classifications-Koppen's & Thornthwaite classificational, critical appraisal. Classification of Indian Climate (6).
7. Theories of climatic changes (4).

UNIT - III(Hydrology).

8. Nature and scope of Hydrology. (3).

9. Water bodies of the world ground water resources (3).

10. The hydrological cycle (precipitation,evaporation, evapotranspiration,and , and infliltrationn) (3)

11. Water Balance and related equations and laws (3)

12. Basin Hydrology (2)

13. Water as a key resource of man (2)

GE-402's suggested Reading.

2. Critechfield, H.J. : General Climatology, Prantice-Hall of India, New Delhi, 1975.
3. Chorley, R. J. and Barry, R. G. : Atmosphere, Weather and Climate, Methuen Co. Ltd., London. 1971.
4. Chorley , R. J. :Earth, Water and Man, Methuen & Co. London
5. Das,P. K. : Monsoons, National Book Trust,New Delhi, 1968.
6. Kendrew, W.G.: Climates of the Continents, Clarendon Press, Oxford, 1927.
7. Lal, D. S. : Climatology Chaitanya Publishing House, Allanabad.
8. Landsberg, H.E. : Weather and Health, Grden City, Double Day and Co., New York,1969.
9. Lydolph, Paul E. : The Climate of the Earth, Rowman and Allahabad, Totowa, N.J., 1985.
10. Rumney George, R. : Climatology and the World's Climates,Macmillan,London, 1968.
11. Strahler Arthur, N.: Physical Geography, Willey Eastern Pvt. Ltd., New Delhi, 1971.
12. Trewartha, G. T. & Horn, L. A. : An Introduction to Climate. International Studies, 1980.
13. Trewartha, G. T. : the Earth's Problem Climates, University of Wisconsin Press, Madison, 1961.

HYDROLOGY:

1. Chorley, R. J. (Ed.): Water Earth and Man, Methuen, London, 1969.
2. Chobu : Introduction to Geographic Hydrology.
3. Dakshinamurthy et.al. : Water Resources of India and their Utilization in Agriculture, IARI New Delhi, 1973.
4. Gregory, K.J. & Waeling DE: Drainage Basin Form and Processes, Edward Arnold London, 1973.
5. Jackson, I. J. : Climate, Water and Agriculture in the tropics, London, 1977.
6. Kirkbey: Hill Slope Hydrology
7. Klimentov: General Hydrology

GE-403: SYSTEMATIC AND REGIONAL GEOGRAPHY OF INDIA

Credit : 4
Marks : 100
Lecture :45

UNIT - I
(Systematic Geography)

1 Land: Major Physical units of India and their characteristics; drainage systems; the Ibndian monsoon: Its origin and implication on drought and floods.. Climate and climatic divisions; soil types, distribution, and problems of soil conservation; distribution of vegetation; forest resources and conservation.(8)

2. People: Growthdistribution and density: implications of population growth, patterns of urbanisation. (5)

3. Mineral and power resource - reserves, production and problems of energy crisis. Resource regions of India. (3)

4. Transport and Trade: Development of transport network and its functional significance. Internal and International trade composition land change. Contribution of major ports to-International tarde. (3)

5. Economy: Chnging nature of Indian economy (1)

6. Agricultue: Characteristics: Transformation of Indian agriculture; Corpping patterns; spatial aspects of irrigation development; technological developments; Green Revolution and its spatial dimensions: Agricultural regionalisation. (5)

7. Indistry: Locational pattern of industrial activity; changing pattern of industrial location; locational factors of major industries: Iron and steel, engineering goods, textiles, chemicals, cement, sugar, paper. Industrial regions of Indi (5)

UNIT - II
(Regional Geography)

SUGGESTED READING

8. Bases of regional Division of India; Macro-Macro-, Micro-level: Case study of one selected region at each level.(15)

1. Bose, A. (ed): Ptterrn of Population Change in India, 1995-61. A llied Publishers, Bombay, 1967.

2. Davis, K : Population of India and Pakistan. Princeton University Press, Princeton, 1951.

3. Farmer, B.H. : An Introduction to south Asia. Methuen, London, 1983.

4. Government of India : The Gazatteer of India Publication Division , Ministry of Information & Broadcasting, N.Delhi,1965.

5.Mitra, Asok: Levels of Regional Development of India Vol.i,Pt.I-A(i) & (ii), Census of India Publication,New Delhi,1967.

6.NATMO (GOI): National Atlas of India NATMO, Calcutta.

7.Puri, G. S. : Indian Forest Ecology, Vol.I & II ,Oxford Book & Stationery Co., New Delhi, 1960.

8. Sadasuk, G. & Sengupta, P. : Economic Regionalisation of India Census of India Publication, New Delhi,1968.

9. Sharma, T.R : Location of Industries in India, Hind Kitab, Bombay,1949.

10. Singh R. L. (ed.)India: Regional Studies, Published for the

11. International Geographical Congress held at New Delhi,1968.

12. Spate O.H.K. and Learmonth, A.T.A.; India and Pakistan, Land, People and Economy, Methuen & Co., London, 1967.

13. Srivastava, M.A. : Trade of India, S. Chand & Co.,Delhi,1967.

14. Wadia, D. N. : Geology of India McMillan & Co., London.

15. Wadia, Mehar & Wadia D.N. : Minerals of India, National Book Trust, New Delhi, 1966.

GE 404: Introduction to Mathematical & Statistical Techniques

Credits :2
Marks :50
Lectures :25(p)

Section - A
Mathematical Techniques

UNIT -I

1. coordinate Geomatry and Equations :Simultaneous, Quadratic,polynomial and growth rates (simple, compund and exponential).(3)

UNIT-II

2. Elementary set theory,permutation & Combination, Probabiiity theory and distribution (normal, poisson and binomial).(5)

UNIT-III

3. Elementary matrik algebra : Addition, multiplication, determinants of square matrices and inversion.(5)

Section - B
Statistical Techniques

UNIT - IV

4. Quantity,measures of Central Tendency,measures of disperasion,measures of inequality (Lorenz curve, Ginni coefficient, C.V. and Sopher Index).(4)

UNIT-V

5. Bivariate correlation (Rank and Pearson's) & regression testing 't','f' and 'X^2' statistics.(4)

UNIT-VI

6. Sampling theory, design,testing of small and large samples (4)

Suggested Readings

1. Mahmood, Aslam : Statistical Methods in Geographical studies, Rajesh Publications,Delhi,1977.

2. Duncan,O.D.et.al. : Statistical Geography (problems in Analysing Areal data),Free Press of Glenco, New York,1961.

3. Gregory,S.:Statistical Methods and the Geographer. Longman's London,1963.

4 King,L.J. : Statistical Analysis in Geography,Prentice Hill Englewood Cliffs,N.J.

5. Lewis,Peter : Maps and Statistics, Methuen & Co.,London,1967.

6. Mathews,J.A. : Quantitative and Statistical Approaches to Geography, Rawat,Jaipur,1981.

7. Monga,G.S. : Mathematics and Statistics for Economics, Vikas New Delhi,1972.

8. Monkhouse : Maps and Diagrams, Methuen & Co., London,1967.

9. Norchiffe : Interential Statistics for Geographers, BI. Publications,Madras,1985.

10,Pal,S.K. : Quantitative GeographyDelhi,1984.

11.Singh,R.L. : Elements of Practical Geography,Kalyani pub., New Delhi,1979.

12.Yeats,Maurice,M. : An Introduction to Quantitative Analysis in Economic Geography McGraw Hill, New York, 1968.

GE-405: Cartographic Techniques

Credit:4
Marks: 100
Lecture:50(P)

UNIT - I

1. Interpretation of Relief and Drainage Analysis (10)

a. Advance techniques of slope measurements , Calculation of gradient Determination of average slope by Wentworth and Smith methods.

b. Preparation and interpretation of Drainage Density and Drainage Frequency maps.

2. Interpretation of Geological maps: Some exercises from horizontal inclined formations, Unconformity, folded, faulted formations and their cross-section with interpretation (5)

3. Representation of climatic Data : (10)

Rainfall - dispersion Diagrams,
Eroographs and Hydrographs,
Potential Evapo-transpiration and analysis.

Unit - II

4. Interpretation of Socio-economic Dazta:
a. Population and settlement Analysis:
Nearest Neigh;b;our, Rank-Size Rule, Ternary diagram for functional classification of Towns,Age-Se Pyramids, Distribution of Social Groups (15)

b. Representation of Economic Data: Agricultural distribution of Efficiency;,Crop-Combination; Traffic flow,gravity; model.(10)

GE-405 Suggested Readings

1. Bierch, T.W.: Maps: Tropical and Statistical Clarendon Press, Oxford, 1949

2. Garmett, Alice: Geographical Interpretation of Topographical Maps. George Harrap & Co., London, 1945.

3. Monkhouse, F. J. : Maps and diagrams, Methuen and Co., London, 1967.

4. Raisz, Erwin :Principles of Cartography McGraw-Hill,New York,1962.

5. Rammurthy, K. : Map and Interpretation - Indian Landscapes Through Survey of India Topographic Maps, K. Krishnamurthy,220,R. K. Mutt Road, Madras, 1982.

6. Robinson, A. H. and Others: Elements of Cartography,John Wiley & Sons, New York(Latest edition).

GE-406 ELEMENTS AND PRINCIPLES OF ECOLOGY

Credit : 2
Marks : 50
Lectures : 25

UNIT - I

1. Man-Environmental Relationship (4)

2. Concept of Ecology land Ecosystem (3)
3. Environmental factors in Elucidating plant growth and their tyeps. (2)
4. Energy in the Ecosystem, energy budget and energy cycle.Food chain, food web, food wave and tropic levels(5)

5. Nutrients in the ecoslystem and nutrient cycles (Carbon and Migrogen cycles (4)

UNIT - II

6. Concepts and principels of preservation and management of eco-system(land,foresst and warter resources). (4)

7. Environmental pollution, Geosystem monitering and controll. (3)

8. Principles of human ecology: population growth and meterial demands and sustinability of the earth ecosystem (2)

Suggested Reading

1. Arvill, R. : Man and Environment: Crisis and Strategy of Choice, Penguin, Harmondsworth, 1967.

2. Berril, N. J.: Inherit the Earth - The Study of man and Changing Planet Fawcett, Greenwich, Cnnecticut, 1967.
3. Botkin, Daniel B. and Keller, Edwrd A. : Environmental Studies,Charles E. Merril Publishing Co., Columbus, Ohio, 1982.

4. Marsh, C. P. : Man and Nature, Harvard, 1967.

5. C.S.E. : The State of India's Environment - The 2nd Citizens Report,, Cetre for Science & Environment, New Delhi.

6. C.S.E. : The State of India's Environment - The 2nd Citizen's Report,Centre for Science and Environment, New Delhi,1984.

7. Dasman, R. F. : Environmental Conservation John Wiley & Sons, New York, 1972.

8. Detwyler J. R. : Man's Impact on Environment.John Wiley & Sons, New York, 1975.

9. Odum, E.P. : Fundamentals of Eclogy Printice Hall.

10. Duffery, E. : Conservation of Nature. Collins London, 1970.

11. Edington, J.M. and Edington, M.A : Ecology and Environmental Planning, Chapman and Hall, London, 1977.

12. Harvey, R. and Hallet, J. D. : Environment and Society: An Introductory analysis Macmillan, London, 1977.

13. Hewitt, K & Hare, F. K. : Man and Environment: A Conceptual Frame Work Commission on College Geog. Resource, Paper 20, 1973(AAG).

14. Park C. C. : Ecology and Environmental Management. Butterworths, London, 1980.

15. Sherlock, R. L. : Man as a Geological Agent, Witherby, London, 1922.

16. Thomas, W. L. (ed): Man's Role in Changing the Face of the Earth. University of Chicago Press, Chicago, 1956.

GE-407:HISTORY AND PHILOSOPHY OF GEOGRAPHY

Credit : 4
Marks : 100
Lectures: 45

UNIT-I

1. The general character of Geography;in the Ancient period; contributions of Herodotus, Hecatus.Strabo and Ptolomy; contribu;;tion of zindian scholars (4)

2. The character of Geography in the Medieval period and contribution and Kant(2)

3. The contributions of Pre-Modern Geographers: Verenius, Buffon and Kant(2).

UNIT -II

4. The beginning of modern geography: Humboldt and Ritter (4)

5. The general course of geographic thought in the second half of the 19th century and the first half of the 20th Century:

(a) Impact of Darwinism on geographic thought (1).
(b) Shifting viewpoints in Geography with special reference to deterministic & possibilistic schools of thought. (3)
(c) Development of dualism between

(i) Physical and Human Geography
(ii) As primarily the study of distributions. (1)
(iii) As the study of aerial differentiation (1)

(d) The development of the Concept of Geography
i) As primarily the study of human ecology. (2)
ii) As primarily the study of distributions. (1)
iii) As the study of aerial differentiation . (1)

UNIT- III

i) Positivism; Empiricism & Quantitative Revolution(2)
ii) Behaviouralism in Geography (2)
iii) Radicalism and Maxist Approach in Geography (2)
iv) Humanism and Post-modernism (2)

UNIT -IV

i) General position of Geography; in Scientific revolution: a search for Scientific Geography. (2)
ii) Paradigm, Paradigm shift and methodology in Geography(2)
iii) Law, theories and explanations in Geography. (3)
iv) Position of Scientific Geography and Socialrelevance(3)

GE-407: Suggested Readings

1. Ackerman, E. A. : Geography as a Fundamental Research Discipline, Chichago Univ. Press, Chicago. 1958.
2. Ali. S.M.: Arab Geography, Aligarh Muslim Univ. Press, Aligarh.
3. Board, C & others: Progress in Geography Vols. I-VIII; Edward Arnold (Publishers) Ltd., London.
4. Dickinson. R.E.: The Makers of Modern Geography, Routledge & Kegan Paul, London, 1969.
5. Freeman, T.W. : A Hundred Years of Geography, Duckworth, London, 1961.
6. Gould, John R.: An introduction to Behavioral Geography, Oxford, 1980.
7. Hartshone, R. : The Nature of Geography, Association of American Geographers, Lancaster, Penn., 1939.
8. Hartshone, R.: Perspective pon the Nature of Geography Rand MacNally, Chicago, 1958.
9. Harvey, D : Explanation in Geography, Edward Arnold Ltd., London, 1969.
10. James P.E.: New Viewpoints in Geogrpahy, ; National Council of Social Science Studies, US, 1959.
11. James P. E. : All Possible World-History of Geographical Ideas, New York , 1972.
12. Johnston, R.J. : Philosophy and Human Geography, Arnold, London, 1983.
13. Johnston, R.J.: Geography and Geographers: Anglo-American Human Geography Since 1945, Arnold 1979.
14. Loy D & Samuel, M.S.: Humanistic Geography, Chicago, 1978.
15. Minakhuli, R. : The Changing Nature of Geography, Hutchinson , Univ. Library, London, 1970.
16. National academy of Sciences: The Science of Geography, National Research Council, Washington, 1965.
17. Peet Richard: Radical Geography Methuen, London, 1977.
18. Sauer, C.O. : Land and Life Univ. of California Press, Berkley, 1983.
19. Smith, David M: Human Geography : A Welfare Approach, Arnold, London, 1977.
20. Stamp, L.D. (ed) : London Essays in Geography, Longmans, London, 1951.
21. Taylor, G. : Geography in the 20th Century, Methuen & Co., London, 1951.
22. Tozer, H.F. : History of Ancient Geography, Cambridge, 1951.
23. Wooldridge, S.W.: The Geographer as Scientist, T. Nelson London. 1951.
24. Wooldridge, S.E. & East, G.: The Sprit and Purpose of GeographyHutchinson, London, 1955.

GE-408: PRINCIPLES AND TECHNIQUES OF ECONOMIC GEOGRAPHY

Credit : 3
Marks :75
Lectures:38

UNIT- I

1. Definition and scope of Economic Geography its position within the subject matter of Human Geography. Evolution of Economic Geography and its branches. (2)

2. Concept of Economy. Approaches to Classification of economies:Technical Approach, Resource Base Approach, Functional Approach, Mode of Production Approach, Evolutionary Approach and World System Approach (5)

3. Theories, Concepts and models of developed and underdeveloped economies. (3)

UNIT - II

4. Concept of Resource: Taxonomy of resources and identification of world resource regions (3)

5. Spatial pattern of distribution of renewable and non-renewable resources i.e. forest,coal, petroleum, Iron ore and Bauxite. (5)

6. Resource management, Planning and conservation in the developed and under developed countries.(3)

7. Resource and sustainable development, resource regions of India (2).

UNIT - III

8. Resource mobilisation and economic development under different economic conditions i.e. self subsistence economies, market economies, plantation economies, capitalist economies, socialist economies, co-operative and state economies and mixed economies. (4)

9. Location and distribution of important industries: Iron and steel, aluminum, paper and pulp, automobile, chemical engineering and electronics (4)

10. Concept of Industrial region formation. (1)

11. International trade formation of core - periphery, Metropolis - satellite, unequal exchange and development of regional economic dependencies. (3)