



UNIVERSITY OF CALICUT

Abstract

BSc Programme in Geography-CUCBCSS UG 2014-Revised Syllabus-Approved-implemented-w.e.f 2017 admission-Orders issued.

U.O.No. 10039/2017/Admn

G & A - IV - J

Dated, Calicut University.P.O, 10.08.2017

- Read:-*
1. U.O. No. 3797/2013/CU, dated 07.09.2013
 2. U.O. No. 5180/2014/Admn, dated 29.05.2014
 3. U.O.No. 10144/2014/Admn dated 01.11.2014
 4. Item no. 3 of the minutes of the meeting of the Board of Studies in Geography held on 10.02.2017
 5. Item No. I in the minutes of the meeting of Faculty of Science held on 10.07.2017
 6. Item No. II(H) in the minutes of the LXXVI meeting of Academic Council held on 17.07.2017
 7. Orders of the Vice Chancellor in the file No. 191466/GA IV/J1/2013/CU dated 27.07.2017

ORDER

The Modified Regulations of Choice Based Credit Semester System for UG Curriculum w.e.f 2014 was implemented under the University of Calicut vide paper read as (1) and the revised CUCBCSS UG Regulations has been implemented vide paper read as (2).

The Scheme and Syllabus of Core and Complementary courses of BSc Programme in Geography w.e.f 2014 Admissions under CUCBCSS UG 2014, in the University has been implemented vide paper read as (3).

The Board of Studies in Geography has approved the Scheme and Syllabus of Core and Complementary courses of BSc Programme in Geography w.e.f 2017 Admissions vide paper read as (4).

Faculty of Science vide paper read as (5) and Academic Council vide paper read as (6), has approved the recommendations of the Board.

The Hon'ble Vice Chancellor has accorded sanction to implement the resolutions of the Academic Council vide paper read as (7).

Sanction has, therefore, been accorded for implementing the Scheme and Syllabus of Core and Complementary courses of BSc Programme in Geography w.e.f 2017 Admissions under CUCBCSS UG 2014, in the University.

Orders are issued accordingly.

Syllabus is available in the University Website: **www.universityofcalicut.info**.

Vasudevan .K

Assistant Registrar

To

All Affiliated Colleges U offering BSc Geography
Copy to: Pareekha Bhavan/ Digital wing

Forwarded / By Order

Section Officer

UNIVERSITY OF CALICUT

B.Sc. GEOGRAPHY CORE AND COMPLEMENTARY PROGRAMMES

STRUCTURE, SCHEME and SYLLABUS

2017 Admission Onwards

B.Sc. DEGREE PROGRAMME (GEOGRAPHY CORE) COURSE STRUCTURE

Semester	Course Code	Course Title	Instructional hours		Credit
			Total	Per Week	
I	A1	Common Course I – English	72	4	4
	A2	Common Course II – English	90	5	3
	A7	Common Course III – Language other than English	72	4	4
	GRY1B01	Core Course I-Fundamentals of Geomorphology	54	3	3
	GRY4B01(P)	Core Course Practical I - Representation of Geographical Data and Weather Map Analysis	36	2	*
	GRY1C01.1	Complementary I (Geography and Resource Management):- Development of Geography	36	2	2
	GRY4C01(P)	Complementary I- Practical I - Resource Mapping Techniques.	36	2	*
	GRY1C02	Complementary II- Statistical Methods	54	3	3
			Total	450	25
II	A03	Common Course IV – English	72	4	4

	A04	Common Course V – English	90	5	3
	A08	Common Course VI – Language other than English	72	4	4
	GRY2B02	Core Course II – Geomorphic Processes	54	3	3
	GRY4B01(P)	Core Course Practical I - Representation of Geographical Data and Weather Map Analysis	36	2	*
	GRY2C01.2	Complementary I (Geography and Resource Management): - Soil Geography	36	2	2
	GRY4C01(P)	Complementary I, Practical I - Resource Mapping Techniques.	36	2	*
	GRY2C02	Complementary II - Regression Analysis, Time series and Index numbers	54	3	3
	Total			450	25
III	A 05	Common Course VI – English	90	5	4
	A 09	Common Course VIII - Language other than English	90	5	4
	GRY3B03	Core Course III - Climatology	72	4	3
	GRY4B01(P)	Core Course Practical I- Representation of Geographical Data and Weather Map Analysis	72	4	*
	GRY3C01.3	Complementary I (Geography and Resource Management): - Geography of Water Resources	36	2	2
	GRY4C01(P)	Complementary-I Practical I - Resource Mapping Techniques.	36	2	*
	GRY3C02	Complementary II- Probability	54	3	3
	Total			450	25
IV	A06	Common Course IX – English	90	5	4
	A10	Common Course X - Language other than English	90	5	4
	GRY4B04	Core Course IV – Oceanography	72	4	3
	GRY4B01(P)	Core Course Practical I- Representation Geographical Data and Weather Map Analysis	72	4	4
	GRY4C01.4	Complementary I (Geography and Resource Management): - Spatial Planning and Development	36	2	2
	GRY4C01(P)	Complementary -I, Practical I - Resource Mapping Techniques.	36	2	4
	GRY4C02	Complementary II - Testing of Hypothesis	54	3	3
	Total			450	25
V	GRY5B05	Core Course V - Human Geography	36	2	3
	GRY5B06	Core Course VI - Methodology of Geographical Studies	36	2	3
	GRY5B07	Core Course VII - Cartography	36	2	3
	GRY5B08	Core Course VIII- Fundamentals of Remote Sensing	36	2	3
	GRY5B09	Core Course IX - Fundamentals of Geographic Information System	54	3	3
	GRY5D01.	Open Courses 1. Physical Geography 2. Geography of India 3. Fundamentals of Remote Sensing	36	2	2

VI

GRY6B02(P)	Core Course Practical II-Map Projections and Geoinformatics	108	6	*
GRY6B03(P)	Core Course Practical III- Topographical Map Analysis and Surveying	72	4	*
GRY6B(PR)	Course Project	36	2	*
Total		450	25	17
GRY6B10	Core Course X - World Regional Geography	54	3	3
GRY6B11	Core Course XI – General Geography of India	54	3	3
GRY6B12	Core Course XII- Geographical Appraisal of Kerala	36	2	3
GRY6B13	Core Course XIII – Biogeography	54	3	3
GRY6B14(E)	Core Course XIV- Elective-Introduction to Disaster Management	36	2	2
GRY6B02(P)	Core Course Practical II-Map Projections and Geoinformatics	72	4	4
GRY6B03(P)	Core Course Practical III- Topographical Map Analysis and Surveying	108	6	4
GRY6B(PR)	Course Project & Tour Report*	36	2	3
Total		450	25	25

*Study Tour Report may be evaluated with Core Course Practical III

CREDIT AND MARKS DISTRIBUTION FOR EACH SEMESTER

Total Credits: 120

Total Marks: 3600

Semester	Course	Credits	Marks
I	Common course: English	4	100
	Common course: English	3	100
	Common course: Additional Language	4	100
	Core Course- Fundamentals of Geomorphology	3	100
	Complementary Course I (Geography and Resource Management):- Development of Geography	2	80
	Complementary course II (Statistics): Statistical Methods	3	100
	Total	19	580
II	Common course: English	4	100
	Common course: English	3	100
	Common course: Additional Language	4	100
	Core Course - II – Geomorphic Processes	3	100
	Complementary Course I (Geography and Resource Management): - Soil Geography	2	80
	COMPLEMENTARY Course II (Statistics) - Regression Analysis, Time series and Index numbers	3	100
	Total	19	580
III	Common course: English	4	100
	Common course: Additional Language	4	100
	Core Course III - Climatology	3	100

	Complementary I (Geography and Resource Management):- Geography of Water Resources	2	80
	Complementary II (Statistics)- Probability	3	100
	Total	16	480
IV	Common Course IX – English	4	100
	Common Course X - Language other than English	4	100
	Core Course - IV – Oceanography	3	100
	Core Course: Practical I- Representation Geographical Data and Weather Map Analysis	4	80
	Complementary I (Geography and Resource Management):- Spatial Planning and Development	2	80
	Complementary I-Practical I - Resource Mapping Techniques.	4	80
	complementary II (Statistics)- Testing of Hypothesis	3	100
	Total	24	640
V	Core Course V- Human Geography	3	100
	Core Course - VI - Methodology of Geographical Studies	3	100
	Core Course - VII – Cartography	3	100
	Core Course -VIII - Fundamentals of Remote Sensing	3	100
	Core Course- IX- Fundamentals of Geographic Information System	3	100
	Open course - 1. Physical Geography	2	50
	2. Geography of India		
	3. Fundamentals of Remote Sensing		
	Total	17	550
VI	Core Course- X- World Regional Geography	3	100
	Core Course - XI – General Geography of India	3	100
	Core Course - XII – Geographical Appraisal of Kerala	3	100
	Core Course - XIV – Biogeography	3	100
	Core Course XV-Elective- 1. Introduction to Disaster Management	2	100
	Core Course: Practical II- Map Projections and Geoinformatics	4	90
	Core Course: Practical III- Topographical Map Analysis and Surveying	4	90
	Course Project	2	75
	Study Tour / Field Study*	1	15
		Total	25

*Study tour is compulsory and part of curriculum. Under unavoidable circumstances, in case a student is unable to participate in study tour he/she has to take a short term field study and submit a report.

Credit Distribution for Common, Core, Complementary & Open Courses of B.Sc. Geography Programme

Semester	Common Course	Core Course	Complementary Course	Open	Total
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	English	Language	Theory	Practical	Geography and Resource Management		Statistics	Course	
					Theory	Practical			
I	4+3	4	3		2		3		19
II	4+3	4	3		2		3		19
III	4	4	3		2		3		16
IV	4	4	3	4	2	4	3		24
V			3+3+3+3+3					2	17
VI			3+3+3+3+2	4+4+2*+1**					25
Total	22	16	41	15	8	4	12	2	120
* Project; ** Tour Report									

Mark Distribution and Indirect Grading System

Mark system is followed instead of direct grading for each question. After external and internal evaluations marks are entered in the answer scripts. All other calculations, including grading, will be done by the university using the software. Indirect Grading System in 7 point scale is followed. Each course is evaluated by assigning marks with a letter grade (A+, A, B, C, D, E or F) to that course by the method of indirect grading.

Distribution of Marks

Sl. No	Course	Marks
1	English	600
2	Additional Language	400
3	Core Course-Geography	1750
4	Complementary Course I: Geography and Resource Management	400
5	Complementary Course II: Statistics	400
6	Open Course	50
Total Marks		3600

Seven Point Indirect Grading System

% of Marks	Grade	Interpretation	Grade Point	Range of Grade Points	Class
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			Average		
90 and Above	A*	Outstanding	6	5.5 – 6	First Class With Distinction
80 to below 90	A	Excellent	5	4.5 - 5.49	
70 to below 80	B	Very Good	4	3.5 - 4.49	First Class
60 to below 70	C	Good	3	2.5 -3.49	Second Class
50 to below 60	D	Satisfactory	2	1.5 - 2.49	
40 to below 50	E	Pass / Adequate	1	0.5 - 1.49	Pass
Below 40	F	Failure	0	0 -0.49	Fail

CORE COURSE STRUCTURE
Total Credits: 56 (Internal 20%; External 80%)

Semester	Course Code	Course Title	Total hour	Hours/ week	Credit	Marks
I	GRY1B01	Core Course I- Fundamentals of Geomorphology	54	3	3	100
	GRY4B01(P)	Core Course Practical I - Representation Geographical Data and Weather Map Analysis	36	2	Exam in IV sem	
II	GRY2B02	Core Course II – Geomorphic Processes	54	3	3	100
	GRY4B01(P)	Core Course Practical I - Representation of Geographical Data and Weather Map Analysis	36	2	Exam in IV sem	
III	GRY3B03	Core Course III - Climatology	72	4	3	100
	GRY4B01 (P)	Core Course Practical I- Representation of Geographical Data and Weather Map Analysis	72	4	Exam in IV sem	
IV	GRY4B04	Core Course IV – Oceanography	72	4	3	100
	GRY4B01(P)	Core Course Practical I- Representation of Geographical Data and Weather Map Analysis	72	4	4	80
V	GRY5 B 05	Core Course V- Human Geography	36	2	3	100
	GRY5B06	Core Course VI – Methodology of Geographical Studies	36	2	3	100
	GRY5B07	Core Course VII – Cartography	36	2	3	100
	GRY5B08	Core Course VIII - Fundamentals of Remote Sensing	36	2	3	100
	GRY5B09	Core Course IX- Fundamentals of Geographic Information System	54	3	3	100
	GRY6B02(P)	Core Course Practical II- Map Projections and Geoinformatics	108	6	Exam in VI Sem	
	GRY6B03(P)	Core Course Practical III- Topographical Map Analysis and Surveying	72	4	Exam in VI Sem	
VI	GRY6B(PR)	Core Course Project	36	2	Exam: in VI Sem	
	GRY6B10	Core Course X- World Regional Geography	54	3	3	100
	GRY6B11	Core Course XI – Geography of India	54	3	3	100
	GRY6B12	Core Course XII –Geographic Appraisal of Kerala	36	2	3	100
	GRY6B13	Core Course XIII – Biogeography	54	3	3	100
	GRY6B14(E)	Core Course XIV- Elective-Introduction to Disaster Management	36	2	2	100
	GRY6B02(P)	Core Course Practical II- Map Projections and Geoinformatics	72	4	4	90
GRY6B03(P)	Core Course Practical III- Topographical Map Analysis and Surveying	108	6	4	90	

	GRY6B(PR)	Project & Tour Report*	36	2	3	90 (75+15)	
					Total	56	1750

CORE COURSE THEORY- EVALUATION SCHEME

The evaluation scheme for each course contains two parts: viz., internal evaluation and external evaluation. A maximum mark from each unit is prescribed in the syllabus.

1. INTERNAL EVALUATION

20% of the total marks in each course are for internal evaluation. The Colleges shall send only the marks obtained for internal examination to university.

Table 1: Components of Evaluation

Sl. No.	Components	Marks
1	Attendance	5
2	Test Papers: I & II	5 + 5
3	Assignment	2
4	Seminar / Viva	3
Total		20

Table 2: Percentage of Attendance and Eligible Marks

% of Attendance	Marks
Above 90%	5
85 -89%	4
80-84%	3
76-79%	2
75%	1

Table 3: Pattern of Papers

Duration	Pattern	Total number of questions	Number of questions to be answered	Marks for each question	Marks
1.5 Hours	One Word	5	5	1	5
	Short Answer	7	5	2	10
	Paragraph	7	5	3	15
	Essay	2	1	10	10
Total Marks*					40

*90% and above =5, 80 to below 90% =4.5, 70 to below 80% =4, 60 to below 70% =3.5, 50 to below 60% =3, 40 to below 50% =2, 35 to below 40% =1. Below 35% =0

2. EXTERNAL EVALUATION

External evaluation carries 80% marks, University examinations will be conducted at the end of each semester.

Table 1: Pattern of Questions Paper

Duration	Pattern	Total number of questions	Number of questions to be answered	Marks for each question	Marks
3 Hours	One Word or One Phrase or True /False	10	10	1	10
	Short Answer	7	7	2	14
	Paragraph	12	9	4	36
	Essay	4	2	10	20
Total Marks					80

CORE COURSE PRACTICAL: EVALUATION SCHEME

20% of the total marks in each course are for internal evaluation. The colleges shall send only marks obtained for internal examination to the university.

Table 1: Internal Evaluation – Subdivision of Marks (IV Semester)

Sl. No	Components of Evaluation	Marks
1	Attendance	4
2	Test Papers I & II	4 + 4
3	Viva	4
Total		16

Table 2: Internal Evaluation – Subdivision of Marks (VI Semester)

Sl. No	Components of Evaluation	Marks
1	Attendance	4
2	Test Papers I & II	5 + 5
3	Viva	4
Total		18

Table 3: External Evaluation – Subdivision of Marks (IV Semester)

Sl. No	Components of Evaluation	Marks
1	Practical Exam	56
2	Practical Record	08
Total		64

Table 4: External Evaluation – Subdivision of Marks (VI Semester)

Sl. No	Components of Evaluation	Marks
1	Practical Exam	64
2	Practical Record	08
Total		72

CORE COURSE PROJECT: EVALUATION SCHEME

Project evaluation will be conducted at the end of sixth semester.

Table 1: Internal Evaluation

Sl.No	Components of Evaluation	Marks
1	Punctuality	2.5
2	Skill in doing project work	2.5
3	Project presentation	5
4	Viva voce	5
Total		15

Table 2: External Evaluation

Sl. No.	Components of Evaluation	Marks	
1	Project Report	sub-component marks	30
	a. Geographic research relevance	05	
	b. Methodology	10	
	C. Analysis presentation – Maps, Graphs, Diagrams	15	
2	Project Presentation	15	
3	Viva voce	15	
Total		60	

STUDY TOUR

Study Tour: Visit to places/locations of Geographical significance in India with halt not exceeding seven days. The visits can also be split into two or three spells of field visits. Every Student has to submit individual study tour report describing the geographical learning and experiences accompanied by maps, diagrams and photographs.

Table 1: External Evaluation

Sl. No.	Components of Evaluation	Marks
1	Tour Report / Field Study Report*	15
Total		15

*Study tour is compulsory and part of curriculum. Under unavoidable circumstances, in case a student is unable to participate in study tour he/she has to take a short term field study and submit a report.

COMPLEMENTARY COURSE STRUCTURE

COMPLEMENTARY I - GEOGRAPHY AND RESOURCE MANAGEMENT

Total Credits: 12 (Internal: 20%; External: 80%)

Semester	Course code	Course Title	Total hours	Hours/ week	Credit	Marks
1	GRY1C01.1	Complementary I - Development of Geography	36	2	2	80
	GRY4C01(P)	Complementary I-Practical I - Resource Mapping Techniques.	36	2	Exam in IV sem.	
2	GRY2C01.2	Complementary I - Soil Geography	36	2	2	80
	GRY4C01(P)	Complementary I-Practical I - Resource Mapping Techniques.	36	2	Exam in IV sem.	
3	GRY3C01.3	Complementary I- Geography of Water Resources	36	2	2	80
	GRY4C01(P)	Complementary I-Practical I - Resource Mapping Techniques.	36	2	Exam in IV sem.	
4	GRY4C01.4	Complementary I- Spatial Planning and Development	36	2	2	80
	GRY4C01(P)	Complementary I-Practical I - Resource Mapping Techniques.	36	2	4	80
Total					12	400

COMPLEMENTARY COURSE THEORY: EVALUATION SCHEME

The evaluation scheme for each course contains two parts: *viz., internal and external evaluation. Maximum marks from each unit is prescribed in the syllabus*

1. INTERNAL EVALUATION

20% of the total marks in each course are for internal evaluation. The colleges shall send only marks obtained for internal examination to the university.

Table 1: Components of Evaluation

Sl. No.	Components	Marks
1	Attendance	4
2	Test papers: I & II	4+4
3	Assignment	2
4	Viva-Voce	2
Total Marks		16

Table 2: Percentage of Attendance and Eligible Marks

Sl. No.	% of Attendance	Marks
1	Above 90%	4
2	85 -89%	3.2
3	80-84%	2.4
4	76-79%	1.6
5	75%	0.8

Table 3: Pattern of Papers

Duration	Pattern	Total number of questions	Number of questions to be answered	Marks for each question	Marks
1.5 Hours	One Word	4	4	1	4
	Short Answer	4	4	2	8
	Paragraph	7	4	3	12
	Essay	2	1	8	8
				Total Marks*	32

*80% and above =2, 60 to below 80% =1.5, 50 to below 60% =1, 35 to below 50% =0.5, Below 35% =0

2. EXTERNAL EVALUATION

External evaluation carries 80% marks, University examination will be conducted at the end of each semester

Table 1: Pattern of Question Papers

Duration	Pattern	Total number of questions	Number of questions to be answered	Marks for each question	Marks
3 Hours	One Word or One Phrase or True /False	10	10	1	10
	Short Answer	7	7	2	14
	Paragraph	10	6	4	24
	Essay	4	2	8	16
				Total Marks	64

COMPLIMENTARY COURSE PRACTICAL: EVALUATION SCHEME

20% of the total marks in each course are for internal evaluation. The colleges shall send only marks obtained for internal examination to the university.

Table1: Internal Evaluation – Subdivision of Marks

Sl. No	Components of Evaluation	Marks
1	Attendance	4
2	Test Papers I & II	4 + 4
3	Viva	4
Total		16

Table2: External Evaluation – Subdivision of Marks

Sl. No	Criteria	Marks
1	Practical Exam	56
2	Practical Record	08
Total		64

OPEN COURSE STRUCTURE

(FOR STUDENTS OTHER THAN B.Sc.GEOGRAPHY)

Total Credits: 2 (Internal 20%; External 80%)

Semester	Course code	Open course Title	Total hours	Hours/ week	Credit	Marks
V	GRY5D 01	1. Physical Geography	36	2	2	50
		2. Geography of India				
		3. Fundamentals of Remote Sensing				

OPEN COURSE: EVALUATION SCHEME

The evaluation scheme contains two parts: viz., internal evaluation and external evaluation

1. INTERNAL EVALUATION

20% of the total marks are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

Table 1: Components of Evaluation

Sl.No.	Components	Marks
1	Attendance	2.5
2	Test Papers I & II	2.5+2.5
3	Assignment/Viva	2.5
Total Marks		10

Table 2: Percentage of Attendance and Eligible Marks

Sl. No	% of Attendance	Marks
1	Above 90%	2.5
2	85 -89%	2
3	80-84%	1.5
4	76-79%	1
5	75%	0.5

Table 3: Pattern of Papers (Internal)

Duration	Pattern	Total number of questions	Number of questions to be answered	Marks for each question	Marks
1 Hours	One Word	4	4	1	4
	Short Answer	2	1	2	2
	Paragraph	4	2	3	6
	Essay	2	1	8	8
Total Marks*					20

*80% and above =2.5, 60 to below 80% =2, 50 to below 60% =1.5, 40 to below 50% =1, 35% to below 40% = 0.5, Below 35% =0

2. EXTERNAL EVALUATION

External evaluation carries 80% marks, University examination will be conducted at the end of 5th semester

Table 1: Pattern of Question Papers

Duration	Pattern	Total number of questions	Number of questions to be answered	Marks for each question	Marks
3 Hours	One Word or One Phrase or True /False	6	6	1	6
	Short Answer	5	5	2	10
	Paragraph	6	4	4	16
	Essay	3	1	8	8
Total Marks					40

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY
(B.Sc. Geography)
SYLLABUS
CORE COURSES**

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER I
GRY1B01 FUNDAMENTALS OF GEOMORPHOLOGY**

Instruction Hours: THREE hours / Week

Credit: 3

Module	Theme	Contents
1	Origin and Interior of The Earth	<ul style="list-style-type: none"> • Introduction to Physical Geography, Terminologies and Definitions. • Scope, Content and trends in Physical geography. • Origin of Earth - Explanation through Nebular, Planetesimal, Binary Star & Tidal theories. • Basic Concepts - (uniformitarianism, Geologic Structure, Geomorphic Processes, Geomorphic Stage, Relief, Complexity of Geomorphic Evolution, Pleistocene Climate, Appreciation of World Climates, Historical Extensions) • Forces and Earth Movements.- Emphasis on Endogenetic forces.

- 2 **Continental Drift**
 - Geological Time Scale (GTS).
 - Structure and Interior of Earth.
 - Tetrahedral Theory - Critical Evaluation.
 - Continental Drift Theory - Critical Evaluation.
 - Developments leading to Plate tectonics - Convection Current, Sea Floor Spreading, Palaeomagnetism.
- 3 **Plate Tectonics & Volcanism**
 - Theory of Plate Tectonics - Geometric and Kinematic parts.
 - Evidences of Plate Movement.
 - The Driving Mechanism.
 - Critical Evaluation of the Theory of Plate Tectonics.
 - Volcanism.
- 4 **Plate Tectonics and Mountain Building**
 - Mountain building Processes.
 - The Geosynclinal theory.
 - Fold Mountain Orogeny and Plate Tectonics.
 - Orogeny and Continental Accretion.
- 5 **Plate Tectonics and Earthquakes**
 - Origin and Evolution of Earth's Crust.
 - Isostasy.
 - Earthquakes and Plate Tectonics.
 - Factors controlling Landform Development.

REFERENCES

1. Web Resources

- a. <http://www.physicalgeography.net/>
- b. http://en.wikipedia.org/wiki/Physical_geography
- c. <http://www.geography-site.co.uk/pages/physical.html>
- d. <http://ppg.sagepub.com/>
- e. http://www.earthonlinemedia.com/ebooks/tpe_3e/contents.html

2. Suggested Readings

#	Book Name	Author
1	Introduction to Physical Geography	Arthur N Strahler
2	Physical Basis of Geography	Woolridge & RS Morgan
3	The Earth, its origin & physical composition	H Jeffrey
4	Physical Geography	F J Monkhouse
5	Physical Geography	Lake P
6	Physical Geography	Morris Davis
7	Elements of Geography	Finch & Trewartha

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER II
GRY2B02 GEOMORPHIC PROCESSES

Instruction Hours: **THREE** hours / Week

Credit: 3

Module	Theme	Contents
1	Forces and Earth Movements	<ul style="list-style-type: none"> • Introduction to Landforms -First, Second and Third order. • Terminologies and Definitions. • Forces and Earth Movements -Endogenetic, Exogenetic and Extra-terrestrial Processes • Weathering and Erosion • Erosion and Change in Slope.
2	Landforms associated with Fluvial Action	<ul style="list-style-type: none"> • Running water as agent of Erosion and deposition. • Role of Geology & Structure. • Drainage System - Pattern. • Erosional Landforms. • Depositional Landforms. • Stages of Erosion. • Rejuvenation.
3	Landforms associated with Groundwater and Wind	<ul style="list-style-type: none"> • Normal Cycle of Erosion - young, mature, old. • Action of Water in Karst Topography. • Erosional & Depositional Karst Landforms. • Wind as an Agent of Erosion and Deposition. • Erosional and Depositional Landforms by Wind Action.
4	Coastal	<ul style="list-style-type: none"> • Wave Action - Erosional and Depositional.

- Landforms**
- Role of Current and Tides in Coastal Landforms.
 - Types of Coastlines - Emerged, Submerged, Dalmatian, Ria and Fjord Coastlines.
- 5 Landforms Associated with Glacial Action**
- Glacier Action.
 - Types of Glaciers.
 - Erosional and Depositional landforms.

REFERENCES

1. Web Resources

- <http://www.physicalgeography.net/>
- http://en.wikipedia.org/wiki/Physical_geography
- <http://www.geography-site.co.uk/pages/physical.html>
- <http://ppg.sagepub.com/>
- http://www.earthonlinemedia.com/ebooks/tpe_3e/contents.html

2. Suggested Readings

#	Book Name	Author
1	Introduction to Physical Geography	Arthur N Strahler
2	Physical Basis of Geography	Woolridge & RS Morgan
3	The Earth, its origin & physical composition	H Jeffrey
4	Physical Geography	F J Monkhouse
5	Physical Geography	Lake P
6	Physical Geography	Morris Davis
7	Elements of Geography	Finch & Trewartha
8	Principle of Geomorphology	Thornbury

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER III
GRY3B03 CLIMATOLOGY

Instruction Hours: **FOUR** hours / Week

Credit: 3

Module	Theme	Contents
1	Weather and Climate	<ul style="list-style-type: none"> • Climatology- branch of geography, Definition. • Atmosphere- Significance, Composition and layered structure. • Weather and Climate. • Climatic elements- Insolation- Characteristics, Controlling factors. • Temperature-controlling factors. • Distribution- Horizontal and vertical. • Heat budget. • Measurement of temperature- Diurnal, Annual and Seasonal ranges of temperature. • Temperature inversion.
2	Atmospheric Pressure and Winds	<ul style="list-style-type: none"> • Atmospheric pressure- Controlling factors. • Distribution- Vertical, Horizontal. • Surface Pressure belts- seasonal shifting and its effect. • Winds- Controlling factors. • Types of winds-planetary winds, Seasonal winds, Local winds • Monsoons- Formation and characteristics.
3	Humidity and Forms of Condensation	<ul style="list-style-type: none"> • Humidity- Significance of water vapour. • Relative humidity. • Hydrologic cycle. • Evaporation- controlling factors. • Condensation-forms. • Fog- formation and types. • Clouds - Formation. • significance to weather. • Precipitation- formation and types.

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|---|--|--|
| 4 | Air Masses, Fronts and Atmospheric Disturbances | <ul style="list-style-type: none"> • Air masses- Definition. • Source region, classification. • Fronts-definition, formation, types. • Atmospheric disturbances- cyclones, anticyclones and their characteristics. |
| 5 | Climate Change | <ul style="list-style-type: none"> • Human influence on climate; • Air Pollution and Ozone depletion, • Climatic Change - Greenhouse effect and Global warming |

REFERENCES

1. Web Resources

- a. <http://www.physicalgeography.net/>
- b. http://en.wikipedia.org/wiki/Physical_geography
- c. <http://www.geography-site.co.uk/pages/physical.html>
- d. <http://ppg.sagepub.com/>
- e. http://www.earthonlinemedia.com/ebooks/tpe_3e/contents.html

2. Suggested Readings

#	Book Name	Author
1	Atmosphere, Weather and Climate	Barry R.G. and Chorley R.J
2	Climatology	Lal D.S
3	Introduction to Physical Geography	Strahler, A.N
4	Physical Geography	Lake Philip
5	General Climatology	Critchfield H
6	An Introduction to Climate, International (Student's edition)	Trewartha G.T.
7	Principles of Physical Geography	Dasgupta, A. and Kapoor A.N
8	The Climate of the Earth.	Lydolph, Paul, E

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)

SYLLABUS

SEMESTER IV

GRY4B04 OCEANOGRAPHY

Instruction Hours: FOUR hours / Week

Credit: 3

Module	Theme	Contents
1	Historical Review and Development of Oceanography	<ul style="list-style-type: none">• Geographer and Oceanography.• Early Explorations and Development of Oceanography.• Oceanography as a Systemic Science.• Scope of learning Oceanography.• Major Oceans - Distribution and extend of all Oceans and Marginal Seas.• Oceanographic Institutions.• Oceans; International Cooperation and Development challenges.
2	Geomorphology of the Ocean Bottom and Ocean deposits	<ul style="list-style-type: none">• Origin of Earth's Oceans• Ocean Bottom Topography - Pacific, Atlantic, Indian, Arctic Oceans.• Plate Tectonic and Ocean Floor.• Ocean Deposits.• Coral Reefs - Types• Theories of Coral formation.
3	Physical and Chemical properties of Ocean water	<ul style="list-style-type: none">• Composition of Sea Water and its Salinity.• Horizontal and Vertical Distribution of Salinity.• Ocean water Temperature.• Horizontal and Vertical Distribution of Temperature.• Ocean Water Density and Distribution.• Global Thermostatic effects.• Climate Change and Sea level.
4	Movements of Ocean Water	<ul style="list-style-type: none">• Waves.• Tides.• Ocean Currents.• Upwelling and Downwelling.

5 Resources of the oceans and International Cooperation

- Thermohaline Circulation.
- El Nino and La Nina.
- Ocean Extremes - Tsunami.
- Physical Resources.
- Biological Resources.
- Marine Energy.
- Exclusive Economic Zone.
- United Nations and international Law of the Seas.
- Environmental Concerns - Oil Spleek, Waste Islands, Coastal pollution.

REFERENCES

1. Web Resources

- a. <http://www.physicalgeography.net/>
- b. http://en.wikipedia.org/wiki/Physical_geography
- c. <http://www.geography-site.co.uk/pages/physical.html>
- d. <http://ppg.sagepub.com/>
- e. http://www.earthonlinemedia.com/ebooks/tpe_3e/contents.html
- f. http://oceanworld.tamu.edu/resources/ocng_textbook/PDF_files/book.pdf

2. Suggested Readings

#	Book Name	Author
1	Ocean Science	Keith Stowe
2	Introduction To Physical Oceanography	Robert H. Stewart
3	Essentials of Oceanography	Alan P. Trujillo, Harold V. Thurman
4	Introduction to Physical Geography	A N Strahler
5	Essentials of Oceanography	Alan P Trujillo

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER V**

GRY5B05 HUMAN GEOGRAPHY

Instruction Hours: TWO hours / Week

Credit: 3

Module	Theme	Contents
1	Foundation in Human Geography	<ul style="list-style-type: none"> • Meaning ,Nature, Scope and content of Human Geography • Principles of Human geography. • Approaches of Human geography. • Development of Human geography.
2	Cultural Regions	<ul style="list-style-type: none"> • Stages of Human development- Primitive culture- Hunting and Food gathering- Pastoral nomadism- subsistence farming- Industrial revolution- Technological Era. • Major Races of the World and its distribution. • Major Languages of the World and its distribution. • Major Religions of the world and its distribution. • Geographic Pattern of Culture- World cultural regions
3	Man and Environment	<ul style="list-style-type: none"> • Man-environment relations- Forms of Human adaptation to the environment- Cold region- Eskimos, Hot region-Bushmen, Plateau-Masai, Mountains-Nomads.
4	Population	<ul style="list-style-type: none"> • Population- World Distribution and Density • Factors influencing spatial distribution of population- physical, economic and social • Concepts of Over population, Under population, Optimum population, Zero population growth. • Theories- Malthusian Theory. • Demographic Transition model. Migration- Types- Internal and International.
5	Geo-Politics	<ul style="list-style-type: none"> • Frontiers and Boundaries- Heartland and Rimland Theories. • India and its Neighbours

REFERENCES

1. Web Resources

- a. <http://www.prb.org/>
- b. http://en.wikipedia.org/wiki/Human_geography
- c. <http://www.learner.org/resources/series85.html>
- d. <http://www.hugeog.com/>
- e. <http://phg.sagepub.com/>

2. Suggested Readings

#	Book Name	Author
1	Human Geography	Majid Husain
2	Human Geography	R.Jagannathan
3	Human Geography concepts and Issues	Vaishali Singh
4	Human Geography	S.K.Shelar
5	Human Geography	Peter Danils
6	Population Geography	K.Chakraworthy
7	Fundamentals of Human Geography	L.R.Singh
8	Human Migration a social phenomenon	AmalDatta

Scientific Papers and Reports

- 1 Dudley Kirk, "Demographic Transition Theory," Population Studies, Vol. 50, No. (November) 1996), pp. 381-87.
- 2 Population Reference Bureau, 2006 World Population Data Sheet, <http://www.prb.org/pdf06/06WorldDataSheet.pdf>, pp. 5, 9.

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER V

GRY5B06 METHODOLOGY OF GEOGRAPHICAL STUDIES

Instruction Hours: TWO hours / Week

Credit: 3

Module	Theme	Contents
1	Geography as a Science	<ul style="list-style-type: none"> • Geography as a Science. • Approaches to the study of Geography- Systematic and Regional, Environmental and Humanistic. • Four traditions in Geography- Earth Science tradition, Man -land tradition, Spatial tradition and Area studies tradition.
2	Models and Paradigms	<ul style="list-style-type: none"> • Data, Information and knowledge. • Types of Knowledge- Practical, Theoretical, and Scientific knowledge. • Science & Its characteristics. • Fact, concept, hypothesis, theories, laws, and Models in the geographical explanation. • Paradigms in geography.
3	Data Collection	<ul style="list-style-type: none"> • Identification of problems from Local geography- Field work- Data collection- primary data • Methods of collection - Observation methods, interview, Schedules and Questionnaire and case study method-Secondary data -Published and unpublished sources - Selection of appropriate methods for data collection - problems in data collection
4	Sampling	<ul style="list-style-type: none"> • Sampling- purposes and principles of sampling-key terms in sampling. • Population, sample, sampling frame, sampling estimate and sampling error- Types of sampling- Probability sampling. • Simple random sampling, stratified, systematic, multi-stage, and cluster sampling-Non probability

- sampling- incidental, purposive, quota, and judgment sampling
- 5 Geographical Analysis**
- Methods of Geographical analysis- Data analysis - Tabulation, Representation, Diagrams, Thematic Maps, role of Hypothesis, Interpretation, Generalization.
 - Preparation of Report -Layout ,and Types of report.
 - Reference.
 - Bibliography.

REFERENCES

1. Web Resources

- a. <http://www.ccs.neu.edu/course/is4800sp12/resources/qualmethods.pdf>
- b. <http://www.st-andrews.ac.uk/~dib2/science.html>
- c. http://web.natur.cuni.cz/geografie/vzgr/monografie/modelling/modelling_dostal2.pdf.
- d. <http://118.97.161.124/perpus-fkip/Perpustakaan/Geography/Metodologi/ Metode %20Penelitian%20Geografi.pdf>

2. Suggested Readings

#	Book Name	Author
1	Geography - A Modern Synthesis	P. Haggett
2	Geography as a fundamental research discipline	Ackerman -
3	Explanation in Geography	Harvey D
4	Science in Geography Series 1-4	McCullagh
5	Qualitative Research Methods in Human Geography	Iain Hay
6	Handbook of Qualitative Research	Denzin NK, Lincoln YS
7	Research into Social Issues: Methodological Guidelines	Nkwi P, Nyamongo I, Ryan G. Field
8	<i>Nature of Geography: A Critical Survey of Current Thought in the Light of the Past,</i>	Richard Hartshorne
9	The Production of Space.	Henri Lefebvre's
10	Perspective on the Nature of Geography	Hartshorne R
11	Changing nature of Geography	Minshell R
12	Maps and Diagrams	Monkhouse FJ, Wilkinson

Journal

- 1 Journal of Geography

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER V

GRY5B07 CARTOGRAPHY

Instruction Hours: TWO hours / Week

Credit: 3

Module	Theme	Contents
1	History and Scope of Cartography	<ul style="list-style-type: none"> • Meaning and Definition • Overview - Historic Development of Cartography • Nature and Scope of learning Cartography • History of Maps • Properties of Maps - Scale, Direction and Shape • Institutions of Cartography • Survey of India - The Great Trigonometric Survey
2	Earth as a Cartographic Problem	<ul style="list-style-type: none"> • Geodesy - Definition and Meaning • Two Models of Earth - Mathematical (Spheroid) and Physical (Geoid) • Datum - Horizontal and Vertical Datum • Geographic and Projected Map Projections • Role of Cartography and Geodesy in Spatial Data Infrastructure - National Spatial Data Infrastructure
3	Classification of Maps	<ul style="list-style-type: none"> • Classification of Maps • Cartographic Coverage of The World • Survey of India Maps Topographic Maps - Classification and Naming and Numbering Scheme • Conventional Signs and Symbols Used by Survey of India
4	Map Making Process	<ul style="list-style-type: none"> • Map Making Processes • Surveying - Geodetic and Plane Surveying, Remote Sensing, Aerial Photography and Global Positioning System • Collection and Interpretation of Statistical Data

5 **Visualizati
on**

- Map Design and Layout
- Lettering and Toponymy
- Mechanics' of Map Construction
- Terrain Mapping
- Mapping Weather and Climate Data
- Mapping Socio-economic Data
- Thematic Mapping
- Special Purpose Maps

REFERENCES

1. Web Resources

- <http://www.ccs.neu.edu/course/is4800sp12/resources/qualmethods.pdf>
- <http://en.wikipedia.org/wiki/Cartography>
- <http://www.britannica.com/EBchecked/topic/97492/cartography>
- <http://www.geography.wisc.edu/histcart/>
- <http://www.incaindia.org/>
- www.surveyofindia.gov.in

2. Suggested Readings

#	Book Name	Author
1	Fundamentals of Cartography	Rameshwar Prasad Misra,
2	The Mapmakers	A. Ramesh
3	The Mapmakers	John Noble Wilford
4	Social Cartography: Mapping Ways of Seeing Educational Change	Mark S. Monmonier Timothy Scrase

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER V**

GRY5B08 FUNDAMENALS OF REMOTE SENSING

Instruction Hours: TWO hours / Week

Credit: 3

Module	Theme	Contents
1	Overview of Remote Sensing	<ul style="list-style-type: none"> • Definition and Overview of Remote Sensing • History and Evolution of Remote Sensing • Remote Sensing Systems • Electromagnetic Radiation (EMR) - Terms and Definitions, Laws of Radiation, EM Spectrum, Sources of EMR • Interaction between EM R and matter - Reflection, Absorption and Transmission. • Interactions between EM Radiation and Atmosphere, Atmospheric windows
2	Remote Sensing Systems	<ul style="list-style-type: none"> • Remote Sensing Systems - Active and Passive Systems, Imaging and Non Imaging Systems, • Principles of Thermal Remote Sensing including its use • Principles of Microwave Remote Sensing • Concept of Resolutions in Remote Sensing - Spatial, Spectral, Radiometric and Temporal
3	Earth Observation	<ul style="list-style-type: none"> • Orbits and Platforms for Earth Observation • Earth Observation Satellites (LANDSAT, SPOT, IRS, IKONOS) and their characteristics • Sensors for Stereo Data (MOMS, CARTOSAT) and their characteristics
4	Data Products	<ul style="list-style-type: none"> • Satellite based Indian Remote Sensing Programme • Data Reception, Processing and Data Products Generation • Remote Sensing data products- Aerial Photos and Satellite Imageries
5	Applications of Remote	<ul style="list-style-type: none"> • Introduction to Application of Remote Sensing • Application of Remote Sensing in Agriculture • Application of Remote Sensing in Disaster

Sensing

Management

- Application of Remote Sensing in Environment Conservation

REFERENCES

1. Web Resources

- a. <http://www.itc.nl/~bakker/rs.html>
- b. www.ccrs.nrcan.gc.ca/resource/tutor/fundam/index_e.php
- c. rst.gsfc.nasa.gov/
- d. <http://www.r-s-c-c.org/rscc/v1m1.html>
- e. www.isprs.org
- f. www.spaceimaging.com
- g. www.landsat.usgs.gov
- h. www.spotimage.fr
- i. www.nrsa.gov.in
- j. IRS 1C handbook: http://www.euromap.de/docs/doc_013.html
- k. IRS P6 Users handbook. http://www.nrsa.gov.in/IRS_Documents/Handbook/Resourcesat-1_handbook_HTML
- l. asterweb.jpl.nasa.gov

2. Suggested Readings

#	Book Name	Author
1	Remote Sensing and Image Interpretation	Lillesand Thomas M. & Kiefer Ralph
2	Introduction to Remote Sensing	Campbell John B
3	Remote Sensing and Principles and Image Interpretation	Floyd F. Sabins
4	Manual of Remote Sensing	-
5	Fundamentals of Remote Sensing	George Joseph
6	Computer Processing of Remotely sensed Images: An Introduction	Paul M. Mather

SEMESTER V
GRY5B09 FUNDAMENTALS OF GEOGRAPHIC INFORMATION SYSTEM
Instruction Hours: THREE hours / Week **Credit: 3**

Module	Theme	Contents
1	Foundation in GIS	<ul style="list-style-type: none"> • Spatial Thinking in Geography. • Geography and GIS. • Terminologies and their Use: - Understanding GI Science, GI Technology and GI System. • Scope of GIS. • History and Origin of GIS. • Components of GIS. • Geo-information Software's - Proprietary/ Open Source. • GIS Communities: - Contributing Technologies. • GIS Web Resources - Bhuvan, Google Earth and other resources listed. in teaching /learning and web resources.
2	Modeling Real world - Data modeling and data structures	<ul style="list-style-type: none"> • Introduction Modeling the real World. • Identifying Spatial Objects. • Data Models. • Vector Features. • Topology: - Polygon Topology, Network Topology, Linear Referencing. • Raster Surfaces: Exploring Thematic Raster Representation. • Scale and Resolution.
3	Geographic Data - Data Sources and Data Acquisition	<ul style="list-style-type: none"> • Introduction to Geographic data and Measuring Space. • Field or ground or terrestrial Surveying. • Global Positioning System. • Remote Sensing - data types. • Vectorization - Converting Raster to Vector Data. • Georeferencing. • Metadata - Standards and significance, Data catalogues. • Ethics of Using GIS Data and Legal Standards - Indian Standards.
4	Geo-Database	<ul style="list-style-type: none"> • Database Management System. • Data Elements, Data Structures and Data

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| Management System | <ul style="list-style-type: none"> • Organisation. • Relational Database Management System. • Data Modelling – Models, Conceptual Data models, Logical Data Models, Physical Data Models, Data Modelling Notations. • GIS and Database Management. |
| 5 Geographic Analysis and Application of GIS | <ul style="list-style-type: none"> • Spatial Thinking – Fundamental Concepts of Geography and Geographic Analysis in GIS. • Spatial Analysis - Buffer, Overlay and Network Analysis. • Spatial Interpolation. • Raster Surfaces Analysis. • Application of GIS in Water Resources. • Application of GIS in Health. • Application of GIS in Disaster Management. |

REFERENCES

1. Web Resources

a. Case Studies

i. Water Resources

- http://en.wikipedia.org/wiki/GIS_and_hydrology
- http://www.esri.com/industries/water_resources
- <http://pacewater.com/services/stormwater-management/gis-waterresource-hydraulics/>

ii. Health

- <http://www.phfi.org/our-activities/research-a-centres/key-areas/health-system-and-policy/203-application-of-geographic-information-systems-gis-to-public-health-practice-in-india>
- <http://www.cdc.gov/gis/applications.htm>
- <http://www.esri.com/news/arcuser/0499/umbrella.html>
- http://en.wikipedia.org/wiki/GIS_and_public_health

iii. Disaster Management

- <http://www.osdma.org/ViewDetails.aspx?vchglinkid=GL024&vchplinkid=PL049>
- <http://www.geospatialworld.net/Paper/Application/ArticleView.aspx?aid=985>
- <http://www.esri.com/industries/public-safety/emergency-disaster-management/gis-used>
- <http://www.directionsmag.com/articles/analysis-which-gis-technology-to-use-for-disaster-management/332986>

b. Online references

- http://en.wikipedia.org/wiki/List_of_geographic_information_systems_software

- <http://www.pasda.psu.edu/tutorials/gisbasics.asp>
- <https://www.youtube.com/user/GISTutorials>
- <http://hcl.harvard.edu/libraries/maps/gis/tutorials.cfm>
- <http://www.gistutor.com/>
- <http://www.startup.unigis.net>
- <http://www.training.esri.com>

c. Tools of the trade

- http://bhuvan.nrsc.gov.in/bhuvan_links.php
- Google Earth
- <https://maps.google.co.in/>
- <http://www.openstreetmap.org>
- <http://maps.bing.com>
- <http://explorer.arcgis.com>

2. Suggested Readings

#	Book Name	Author
1	Geographic Information System and Science	Paul A Longley, M F Goodchild, D J Maguire, David W Rhind
2	Concepts And Techniques of Geographic Information Systems	Lo.C.P., Yeung. K.W. Albert
3	Principles of Geographical Information systems	Burrough P A P A McDonnell
4	An Introduction to Geographical Information Systems	Haywood.L, Comelius.S and S. Carver
5	Introduction to Geographic Information Systems	Chang,Kang-tsung

SEMESTER VI
GRY6B10 WORLD REGIONAL GEOGRAPHY

Instruction Hours: **THREE** hours / Week

Credit: 3

Module	Theme	Contents
1	Concept of a Region	<ul style="list-style-type: none"> • World Regional Geography – content and scope. • Terminologies and Definitions. • Concept of a Region. • Types of regions – Natural, Cultural, Functional Regions. • Planning regions-micro and macro regions. • Approaches to regionalization.
2	Natural Regions	<ul style="list-style-type: none"> • Natural regions- Space relationships- relief, climate, drainage, flora and fauna. • Location and characteristics of the natural regions of the low. Latitudes- Equatorial forests or Amazon type. • Equatorial highlands of Ecuador type.
3	Tropical Regions	<ul style="list-style-type: none"> • Tropical rainforest region or Caribbean type. • Tropical monsoon region or India type. • Tropical grassland region or Sudan type. • Tropical desert region or Sahara type.
4	Temperate Regions	<ul style="list-style-type: none"> • Natural regions of the middle latitudes- Warm temperate west margin region or Mediterranean type. • Warm temperate east margin region or China type. • Cool temperate maritime region or West European type. • Cool temperate east margin region or St. Lawrence type. • Cool temperate grassland region or Prairie type.
5	The Taiga, and Tundra	<ul style="list-style-type: none"> • Natural regions of high latitudes. • Coniferous forest region or Taiga type; • Cold desert region or Tundra type; • Icecap region.

REFERENCES

1. Web Resources

- a. http://www.earthonlinemedia.com/ebooks/tpe_3e/contents.html
- b. http://en.wikipedia.org/wiki/Regional_geography
- c. <http://www.saylor.org/site/textbooks/World%20Regional%20Geography.pdf>
- d. <http://www.saylor.org/courses/geog101/>

2. Suggested Readings

#	Book Name	Author
1	World Regional Geography	Oliver H Heitzelman & Richard M Highsmith J R
2	e-Study Guide for: Fundamentals of World Regional Geography	Joseph Hobbs
3	The World Today: Concepts and Regions in Geography	H. J.De Blij and Peter O. Muller
4	Geography of the World's Major Regions	John Peter Cole
5	Temperate and Boreal Rainforests of the World: Ecology and Conservation	Dominick A. DellaSala
6	Certificate Physical and Human Geography	Goh Cheng Leong

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography) SYLLABUS SEMESTER VI

GRY6B11 GENERAL GEOGRAPHY OF INDIA

Instruction Hours: THREE hours / Week

Credit: 3

Module	Theme	Contents
1	Unity in Diversity	<ul style="list-style-type: none">• India - location and its strategic significance.• A land of unity in diversity.• Physiographic regions.• Drainage systems
2	Climate, Vegetation and Soil	<ul style="list-style-type: none">• Indian climate- characteristics-factors influencing climate.• Monsoons- formation and characteristics.• El-Nino and La-Nina effect.• Rainfall distribution.• Western disturbance and seasons.• Natural vegetation - types and distribution.• Major soil types and distribution.• Biogeographical Zones.
3	Indian agriculture	<ul style="list-style-type: none">• Indian agriculture - salient features• Production and distribution of major crops- Rice, Wheat, Cotton, Sugarcane, Tea and Coffee.• Green revolution and its impacts, problems of Indian

- agriculture and their solution.
- Agricultural regions of India.
- 4 Resources**
 - Mineral resources -Metallic minerals- iron ore, manganese, bauxite. Non metallic minerals- mica, limestone and gypsum,
 - Energy resources - Conventional and Non-Conventional
 - Conservation of resources.
- 5 Peopling India and Trade & Transport**
 - Population- growth, distribution, density, Problems.
 - Transportation- Roadways, Railways, Waterways, and Airways.
 - Foreign trade of India and its salient features.

REFERENCES

1. Suggested Readings

#	Book Name	Author
1	India a Regional Geography	Singh R L
2	India, Pakistan & Celon	Spate O H K
3	India Year Book	Govt. of India
4	Gazatteer of India	Govt. of India
5	Geography of India	Gopal Singh
6	India-A Comprehensive Geography	Khullar, D

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)

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SEMESTER VI

GRY6B12 GEOGRAPHICAL APPRAISAL OF KERALA

Instruction Hours: TWO hours / Week

Credit:

3

Module	Theme	Contents
1	Land and Climate	<ul style="list-style-type: none"> • Location- Absolute and relative. • Physiographic divisions. • Climate- Temperature and Rainfall distribution, Influence of Arabian Sea and Western Ghats. • Monsoons in Kerala - Distribution and Impact • Geology. • Soil types. • Drainage- Pattern, characteristics. • Major rivers basins. • Natural vegetation - Types and distribution • Biosphere Reserves, National Parks and Wildlife

- sanctuaries
- 2 Agriculture**
- Agriculture- favourable conditions.
 - Irrigation- role of reservoirs.
 - Areas and production of paddy, coconut, rubber, tea, & spices.
 - Problems of Kerala's agriculture - highlighting Urban and Infrastructure Development, its impact.
- 3 Resources**
- Mineral resources-occurrence, distribution.
 - Rare earths and their distribution.
 - Power resources – Conventional and Non Conventional.
 - Marine resources – fisheries.
 - Problems in fishing sector.
- 4 Industries**
- Overview of Industrial development in Kerala
 - Industries in Kerala: Locational factors and Limitation
 - Major industries - Cottage and small scale industries – SEZ;
 - IT Sector in Kerala -Opportunities for growth
 - Tourism Industry- Major tourist centers.
 - Problems and Prospects in Tourism Sector
- 5 Aspects of Population, Urbanization and Infrastructure Development**
- Population- growth and distribution.
 - Structure- density, literacy, sex-ratio.
 - Occupational structure.
 - Migration and its impacts.
 - Urbanization- trend, major urban centres, Urban Development Programmes.
 - Transportation Network - Roads, Railways, Waterways and Airways and Mass Rapid Transport System (MRTS) in Cities of Kerala.

REFERENCES

1. Suggested Readings

#	Book Name	Author
1	Geography of Kerala	Dr. George Kurian
2	Economy of Kerala	Karunakaran and Sankaranarayanan
3	Resource Atlas of Kerala	CESS, Trivandrum

- 4 Gazetteer of Kerala
- 5 Geology of Kerala
- 6 Water Atlas of Kerala

Govt. of Kerala
Dr. K. Soman
CWRDM

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
SEMESTER VI
GRY6B13 BIOGEOGRAPHY

Instruction Hours: THREE hours / Week

Credit: 3

Module	Theme	Contents
1	Basic Principles	<ul style="list-style-type: none"> • Biogeography- content and scope. • Meaning of ecology, ecosystem, environment. • Basic Ecological Principles. • Darwin's theory of Evolution.
2	Ecosystem	<ul style="list-style-type: none"> • Concepts of Habitat, Biome, community, Ecotone and ecological niche. • Biosphere and energy: Energy sources, energy flow, food chains and food webs.
3	Biomes	<ul style="list-style-type: none"> • Concept of biodiversity- Types of diversity- Species diversity, ecosystem diversity and genetic diversity. • Hotspots; Biomes- definition, types. • Major biomes- distribution and characteristics of i) forest biome, ii) grassland biome, iii) desert biome and iv) icecap biome.
4	Conservation	<ul style="list-style-type: none"> • Conservation of biodiversity- need for conservation; • Causes for destruction- natural and manmade, effect on biodiversity due to global climatic change,

- desertification, deforestation, overgrazing, modern agriculture and industries.
- 5 **Conservation Methods**
- Conservation methods-national parks, sanctuaries, biosphere reserves and international laws.
 - Biodiversity conservation strategies in India.
 - Case Study

REFERENCES

1. Web Resources

- a. <http://www.biogeography.org/>
- b. <http://en.wikipedia.org/wiki/Biogeography>
- c. <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291365-2699>

2. Suggested Readings

#	Book Name	Author
1	Geography as a fundamental discipline	Ackerman E A
2	The Citizen's Fifth Report on Environment	CSE India
3	Biogeography	Brett R. Riddle, James H. Brown, Robert J. Whittaker, Mark V. Lomolino
4	Frontiers of Biogeography	Mark V. Lomolino, Lawrence R. Heaney
5	Biogeography Of Microscopic Organisms: Is Everything Small Everywhere?	Fontaneto

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography) SYLLABUS SEMESTER VI

GRY6B14 (Elective)-INTRODUCTION TO DISASTER MANAGEMENT

Instruction Hours: TWO hours / Week

Credit: 2

Module	Theme	Contents
1	Natural Hazards	<ul style="list-style-type: none"> • Introduction to Natural hazards. • Definitions. • Classification. • Impact on the environment and society. • Geography and Disaster Management (scope from Geographers perspective). • National and international Institutions.
2	Geo-	<ul style="list-style-type: none"> • An overview of Anthropogenic Disasters. • Earthquakes.

- tectonic hazards**
 - Volcanoes.
 - Landslides.
 - Distribution, Vulnerability and Risk.
 - Consequences, Impact and Challenges.
 - Planning for Resilience.

- 3 Hydrological Extremes**
 - Introduction to Hydrological Extremes.
 - What are Floods?.
 - Describing Floods and Impact (how and why - including floods caused by geological activities like earthquake, landslides, volcanic activity and manmade).
 - Vulnerability & risk (natural regions Perspective).
 - Describing Floods (with example of flood prone regions of India), Consequences.
 - Drought -Characteristics, Types.
 - Describing Droughts - (with example of drought prone regions of India).
 - Flood and Drought Mitigation.
 - Tropical Cyclones, Tsunami
 - Planning for Resilience.

- 4 Mitigation and Management**
 - Disaster Preparedness
 - Disaster Response and Disaster Management.
 - Rehabilitation, Reconstruction and Recovery
 - Risk Assessment and Vulnerability Analysis.
 - Community Awareness and Participation.
 - Role of Government - National Disaster Management Framework (India).
 - Role of voluntary organizations and Individuals.

- 5 Geo-informati on Technology and Disasters**
 - Predicting Natural Hazards and Technology
 - Applications of Remote Sensing
 - Applications of Global Positioning System
 - Applications of Geographic Information System.
 - Warning Systems.
 - Case Studies from India

REFERENCES

1. Web Resources

- a. http://en.wikipedia.org/wiki/Emergency_management
- b. <http://www.wcpt.org/disaster-management/what-is-disaster-management>
- c. <http://www.ndmindia.nic.in/>
- d. <http://www.ndma.gov.in/en/>

2. Suggested Readings

#	Book Name	Author
1	Geographical Hazard	Majid Hussain
2	Environmental Education And Disaster Management	Pandey S K
3	Disaster Science And Management	Tushar Bhattacharya
4	Disaster Management Future Challenges and Opportunities	Jagbir Singh
5	Introduction to Environmental Impact Assessment	John Glasson

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS**

CORE PRACTICALS

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
CORE PRACTICAL I
GRY4B01 (P) REPRESENTATION OF GEOGRAPHICAL DATA AND WEATHER MAP
ANALYSIS

No. of contact hours: 2hrs (1st &2nd Sem.), 4hrs (3rd &4th Sem.)/week Credit: 4

Module	Contents
1	<ul style="list-style-type: none">• Maps - classification - components - map preparation - Isopleths, Choropleth, chorochromatic and Choroshematic Map - using recent socio-economic data.
2	<ul style="list-style-type: none">• Scales - Definition - Representation of scales - Plain, Diagonal, Comparative, Time scale & Vernier Scale
3	<ul style="list-style-type: none">• Direction- Latitude and Longitude-Time calculation - Longitude and time, IST and date line Grid of latitudes and longitudes and location of places on maps.• Enlargement and Reduction (Mechanical or Graphical methods)• Basin area or Administrative area measurement (Using planimeter or graphical method).
4	<ul style="list-style-type: none">• Reading recording and analysis of data obtained from Barometer, Hygrometer and Maximum-minimum Thermometer.• Weather map analysis<ul style="list-style-type: none">a. Analysis and interpretation of pressure and wind system, temperatureb. Distribution, precipitation and sky conditionc. Preparation of weather maps of India for different seasons of the yeard. Drawing of isobaric patterns and associated weather-cyclone,e. anticyclone, ridge, trough, wedge, secondary depression, col.
5	<ul style="list-style-type: none">• Data Representation Using Spreadsheet: Arrangement into Ascending and Descending Order; Cartograms Construction of climatic & statistical diagrams<ul style="list-style-type: none">a. Line graphb. Poly graphc. Simple bar diagramd. Compound bar diagrame. Pie Diagramf. Doughnut Chartg. Band graph

- h. Ergo graph
- i. Pyramid diagram
- j. Wind Rose diagram
- k. Hythergraph
- l. Taylors Climograph
- m. Radar Diagram
- n. Three dimensional Representation - Sten-de-Geer & Stil Gen Baur Method

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
CORE PRACTICAL II
GRY6B02 (P) MAP PROJECTION AND GEOINFORMATICS

No. of contact hours: SIX hrs. (V Sem.) and FOUR hrs. (VI Sem.) / Week

Credit: 4

Module

Contents

Map Projections

- 1 i. Maps – grids of latitude and longitudes.
 - ii. The globe and maps – their merits and demerits.
 - iii. Developable and non-developable surfaces.
 - iv. Classification of map projections.
 - v. Types – Graphical construction – Properties and uses
- of :-
- a. Zenithal – Equi-distant & Equal area projection – Gnomonic, Stereographic, Orthographic
 - b. Conical – Simple conical, Two standard parallel
 - c. Cylindrical – Equi-distant, Equal-area

Application of GIS and GPS

- 2 i. Capturing Location of a Place Using GPS;
- ii. Georeferencing and Vectorization of a Map
- iii. Creating Polygon, Network and TIN Topology table and diagram
- 3 Finding Attribute Values of a Raster (using Open Source Software)
- 4 Spatial Analysis - Buffer, Network and Overlay
- Preparing Thematic Map
- Interpretation of Remote Sensing data**
- 5 i. Interpretation of Aerial Photograph
- Preparing Land use Map

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
CORE PRACTICAL III**

GRY6B03 (P) TOPOGRAPHIC MAP ANALYSIS AND SURVEYING

No. of contact hours: FOUR hrs. (V Sem.) and SIX hrs. (VI Sem.) / Week

Credit: 4

**Module
s**

Content

Methods of relief representation.

- 1 a. Qualitative- hachure's, hill shading, layer tint
b. Quantitative- contours, form lines, spot height, bench mark, triangulation station

Representation of following features by contours

- 2 Representation of following features by contours- uniform slope, concave slope, convex slope, terraced slope, conical hill, plateau, ridge, V-shaped valley, U-shaped valley, waterfall cliff.

Concept of slopes – Gradient – Significance of Horizontal & vertical scales Calculation of gradient from topographic sheets.

- a. Identification of ground features using local area toposheet
- b. Measurement of Area by Graphical Method / Planimeter
- c. Construction of Profiles: Superimposed, Projected and Composite
- d. Stream Frequency and Drainage Density
- e. Average Slope (Wentworth's method)
- f. Interpretation of Relief, Drainage and Vegetation Characteristics

- g. Interpretation of Settlement, Transport and Communication Systems
- h. Relationship between Physical and Cultural Elements

Surveying and Mapping

- 3 Preparation of plan - Chain and Tape Survey - Open traverse, closed traverse and area calculation
- 4 Plane Table Survey - Radiation and Intersection Methods - Prismatic Compass Survey - Open Traversing and Intersection Methods
- 5 Dumpy Leveling - Profile drawing
Instruments & Determination of Height by Indian Clinometer

REFERENCES

1. Suggested Readings

#	Book Name	Author
1	Elements of Practical Geography	R L Singh
2	Fundamentals of Cartography	Rameshwar Prasad Misra, A. Ramesh
3	Advanced Practical Geography	Pijushkanti Saha, Partha Basu

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS**

COMPLEMENTARY COURSE

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
COMPLEMENTARY I: GEOGRAPHY AND RESOURCE MANAGEMENT
Course 1**

GRY1C01.1 - DEVELOPMENT OF GEOGRAPHY

No. of contact hours: TWO Hours / week

Credit: 2

Module	Theme	Contents
1	Introduction to Geography	<ul style="list-style-type: none"> • Meaning and definition of Geography • Nature and scope of Geography • Approaches and themes in Geography • Traditions in Geography
2	Evolution of Geography - Ancient Period	<ul style="list-style-type: none"> • Contribution of Greeks • Contribution of Roman • Contribution of Arabs • Contribution of Indians
3	Dichotomies in Geography	<ul style="list-style-type: none"> • Determinism • Possibilism • Neo determinism • Positivism • Radicalism
4	Quantitative Revolution and Spatial Thinking	<ul style="list-style-type: none"> • Quantitative Revolution • Kunh's Model of Scientific Revolution • Concept of Spatial Thinking • Evolution of Spatial Concept and theories
5	Models in Geography	<ul style="list-style-type: none"> • Models and modeling in Geography • Typology of Models • Systems Approach in Geography

REFERENCES

1. Web Resources

- a. <http://www.physicalgeography.net/fundamentals/1a.html>
- b. http://en.wikipedia.org/wiki/History_of_geography
- c. <http://www.eolss.net/sample-chapters/c01/e6-14-01-01.pdf>

- d. <http://people.wku.edu/charles.smith/essays/SMITH89.htm>
- e. http://meta-carto-semiotics.org/uploads/mcs_vol5_2012/MCS_Vol5_2012_Hess.pdf
- f. https://www.academia.edu/1824398/Spatial_Thinking

2. Suggested Readings

#	Book Name	Author
1	Perspectives on Nature of Geography	Hartshone, R
2	Evaluation of Geographical thought	Husain, M
3	Philosophy and Human Geography	johston, R.J.;
4	The Arts and Science of Geography Integrated Readings	Dikshit, R. D
5	The Geography of Puranas	Ali, S.M
6	Spatial Organization : The Geographer's View of the world	Abler, Ronald; Adams, John S. Gould, Peter
7	Introduction to scientific Reasoning in Geography	Amedeo, Douglas
8	The future of Geography	Johnston, R. H
9	The Changing Nature of Geography	Mishull, R

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
COMPLEMENTARY I: GEOGRAPHY AND RESOURCE MANAGEMENT
Course 2
GRY2C01.2 - SOIL GEOGRAPHY**

No. of contact hours: TWO Hours / week

Credits: 2

Module	Theme	Contents
1	Introduction to Soil Geography	<ul style="list-style-type: none"> • Meaning, scope and content of soil geography • Nature of soil Geography • Relationship of Soil Geography with Pedology • Significance of Soil Geography
2	Formation and Properties of Soil	<ul style="list-style-type: none"> • Factors influencing soil formation. • Process of soil formation and development. • Characteristics of soil profile • Components of soil. • Physical properties of soil - texture and structure. • Chemical properties of soil - pH, Organic Matter, NPK and other soil properties.
3	Soil classification	<ul style="list-style-type: none"> • Soil classifications • Zonal system of classification • Comprehensive system of classification - Marbut's & USDA • Classification Soils of India • Major soil groups in Kerala
4	Soil erosion and Conservation	<ul style="list-style-type: none"> • Soil erosion types - Mass Wasting • Soil conservation and its importance • Principles of soil conservation
5	Soil Management	<ul style="list-style-type: none"> • Concept of Soil Management • Need of Soil Management • Methods of Soil Management

REFERENCES

1. Web Resources

- a. <http://www.physicalgeography.net/fundamentals/10t.html>
- b. http://en.wikipedia.org/wiki/Soil_science
- c. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/geo/>
- d. <http://www.iiss.nic.in/index.html>
- e. <http://www.nbsslup.in/>
- f. <http://www.pedosphere.com/resources.cfm#cssc>
- g. <http://www.fao.org/soils-portal/soil-survey/soil-classification/en/>

2. Suggested Readings

#	Book Name	Author
1	Geography And Soil Properties	Pitty A.F.
2	Introduction to The Principles And Practice of Soil Science	White R.E.
3	Soils - Process and Response	Fenwick I. M. and Knapp B.J
4	Soil And Geomorphology	Birkeland P.W
5	The Nature And Properties of Soils. Macmillan Publishing Company	Brady N.C
6	Geomorphology And Time	Thomas J.B. and Brunsden
7	Geography of Soil	Bunting B.T. (
8	Soil Geography, David and Charles	Cruickshank J.
9	Fundamentals of Soil Science	Foth H.D and Turk L.M
10	Soils : Their Properties and Management	Charman P.E.V and Murphy B.W

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
COMPLEMENTARY I: GEOGRAPHY AND RESOURCE MANAGEMENT
Course 3
GRY3C01.3 - GEOGRAPHY OF WATER RESOURCES**

No. of contact hours: TWO Hours / week

Credits: 2

Module	Theme	Contents
1	Fundamentals of Water Resources	<ul style="list-style-type: none"> • Meaning and Scope- What is Water and how it is a Resource? • Scope - Geography of Water Resources • Occurrences and Forms of Water & Characteristics

- of Water
 - Natural Water Cycle - Dynamics of Hydrological Cycle
 - Components and Processes of Hydrological Cycle (Precipitation, Interception, Evapotranspiration, Infiltration, Run Off and Storage)
 - Water in system of Soil, Vegetation and Atmosphere
 - Heat balance and water budget
 - World Distribution of Surface Water Resources
 - Types and Significance
 - Watershed as a Geohydrological Unit, River/Drainage basin, Catchment Area
 - Watershed as a planning unit and review IWMP
 - Wetlands and their significance
 - Surface water pollution and Environmental
 - Groundwater - Porosity and Permeability
 - Water table, Saturated and unsaturated zones, Perched water table, Springs, Artisan Wells and Basins
 - Aquifer (types and significance), Aquitard, Aquiclude
 - Human dependence on Groundwater - Over extraction and Environmental issues
 - Traditional water harvesting and management
 - Rainwater harvesting
 - Forest Management and Water conservation
 - Water and Climate Change
 - Water conflicts - Between states and neighbouring countries
 - Water Parliament (Alwar, Rajasthan) - A Case Study on participatory water management
 - Interlinking of Rivers - India
 - National Water Policy
- 2 World Distribution of Surface Water Resources - Surface Water**
- 3 World Distribution of Surface Water Resources - Groundwater**
- 4 Water conservation**
- 5 Governance and Management**

REFERENCES

1. Web Resources

- a. <http://video.nationalgeographic.com/video/env-freshwater-whycare>
- b. http://en.wikipedia.org/wiki/Water_resources
- c. <http://www.cwrwm.org/>
- d. <http://www.cwc.nic.in/>

2. Suggested Readings

#	Book Name	Author
1	Hydrology: Principles, Analysis and Design	Raghunath, H.M
2	Hydrology in Practice	Van Nostrand Reibhold
3	Modern Physical Geography	Strahler, A.A. and Strahler
4	Introduction to Hydrology	Viessman, W. and Lewis
5	Hydrology: An Introduction.	Wilfried, B.,
6	Handbook of Applied Hydrology	Chow, V.T

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
COMPLEMENTARY I: GEOGRAPHY and RESOURCE MANAGEMENT
Course 4
GRY4C01.4 - SPATIAL PLANNING AND DEVELOPMENT

No. of contact hours: TWO Hours / week

Credit: 2

Module	Theme	Contents
1	Geographical Space	<ul style="list-style-type: none"> • Understanding space and place • Organizing space • Spatial Planning Terminologies • Need for Spatial Planning • Challenges for Spatial Planning • Goals of Spatial Planning • Institutions in Spatial Planning

- | | | |
|---|---|---|
| 2 | Principles and Process of Spatial Planning | <ul style="list-style-type: none"> • Scope and role of Geographer in Spatial Planning • The Principles of Spatial Planning :- The Democratic Principle, The Subsidiarity Principle, The Participation Principle, The Integration Principle, The Proportionality Principle, The Precautionary Principle • The Process / System of Spatial Planning:- Planning Tools, Policy formulation, Regulations, Implementation • Relevance of Spatial Planning for Kerala (from perspective of Rur-Urban growth Management) - Case Study • Government Schemes and Policies (National and State) |
| 3 | Land use and Watershed Planning | <ul style="list-style-type: none"> • Terminologies, Concepts and attributes • Principles of land use planning • Land capability classifications - USDA, India • Concept of Watershed (Geo-hydrological unit) • Watershed as a Spatial planning unit • Integrated watershed management Programme |
| 4 | Human Development Plan | <ul style="list-style-type: none"> • Concept of human development • Basic indicators of human development • Poverty line and measures of poverty alleviation • Measurement of human development. • Case Study from Kerala / India |
| 5 | New Paradigms in Planning | <ul style="list-style-type: none"> • Theories of balanced growth, limits to growth and beyond the limits • Environment and Natural Resource conservation in Spatial planning, • UN Millennium development goal • UN Agenda 21 • Planning for Sustainable development |

REFERENCES

1. Web Resources

- a. http://en.wikipedia.org/wiki/Spatial_planning
- b. http://www.unece.org/fileadmin/DAM/hlm/documents/Publications/spatial_planning.e.pdf
- c. http://www.mlit.go.jp/kokudokeikaku/international/spw/general/india/index_e.html

- d. [http://www.landuseindia.in/live/hrdpmp/hrdpmaster/hrdp-
asem/content/e48335/e48799/e48940/e54451/e54457/PlanningSysteminIndiaWS
19Mar2013Kulshrestha.pdf](http://www.landuseindia.in/live/hrdpmp/hrdpmaster/hrdp-
asem/content/e48335/e48799/e48940/e54451/e54457/PlanningSysteminIndiaWS
19Mar2013Kulshrestha.pdf)
- e. <http://www.townplanning.kerala.gov.in/pages/ldp/ch1.pdf>

2. Suggested Readings

#	Book Name	Author
1	<i>The New Spatial Planning</i>	Haughton, G., Counsell, D and Vigar, G
2	<i>Urban Complexity and Spatial Strategies</i>	Healey, P
3	<i>Conceptions of Space and Place in Strategic Spatial Planning</i>	Davoudi, S and Strange,
4	European Union Spatial Policy and Planning	D. Williams, R. H. Williams, Richard H. Williams
5	Spatial Planning Systems of Britain and France: A Comparative Analysis	-

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography) SYLLABUS

COMPLEMENTARY COURSE PRACTICAL

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
COMPLEMENTARY COURSE I
PRACTICAL I**

GRY4C01 (P) RESOURCE MAPPING TECHNIQUES

No. of contact hours: TWO Hours / (I to IV Semester)/Week

Credit: 4

**Module
s**

Content

- | | |
|----------|---|
| 1 | <ul style="list-style-type: none">• Introduction Survey Methods• Chain Survey- Open traverse and triangulation, Field Measurement Book preparation• Resource Mapping - Manual cadastral mapping of local area resources (Field Work)<ul style="list-style-type: none">a. Physical featuresb. Cultural Features |
| 2 | <ul style="list-style-type: none">• Community Resource Mapping• Preparation of Schedule /questionnaire• Conducting survey (Field Work)• Analyzing Data• Preparing Thematic maps and diagrams• Identifying community assets and resources• Watershed demarcation |
| 3 | <ul style="list-style-type: none">• Preparation of drainage map• Stream order Classification - Strahler and Horton• Recording groundwater data - (Field Work - well based water table measurement) |
| 4 | <ul style="list-style-type: none">• Representing groundwater data using interpolation method• Water Quality Analysis - (field Work - Ph, turbidity, Conductivity and BOD)• Soil Sampling Methods• Significance of Resource Mapping in Land Use Planning |
| 5 | <ul style="list-style-type: none">• Local area land use Map preparation (final product of Module 1 exercises) |

REFERENCES

1. Web Resources

a. <http://www.nios.ac.in/media/documents/316courseE/E-JHA-30-10A.pdf>

- b. <http://mnre.gov.in/sec/solar-assmnt.htm>
- c. <https://openknowledge.worldbank.org>
- d. <http://www.bercyproject.org/Mobilization.aspx>
- e. http://nrdms.gov.in/panchayat_level_resource.asp

2. Suggested Readings

Book / Report /Scientific Paper

- 1 Panchayat Resource Mapping to Panchayat-level Planning in Kerala: An Analytical Study (can be downloaded from <http://www.cds.ac.in/krpcds/publication/downloads/chatto.pdf>)
- 2 Participatory Natural Resources Mapping- A case study of Bhitara Panchayat in Banni Grassland, Kachchh, Gujarat (can be downloaded from [http://www.cabi.org/isc/FullTextPDF/2011/2011\)3189201.pdf](http://www.cabi.org/isc/FullTextPDF/2011/2011)3189201.pdf))
- 3 Standards For Bio-Geo Database Vol I & II
- 4 Application of GIS in decentralised planning - A free software approach. (can be downloaded from http://www.spc.tn.gov.in/SLUB_STUDIES_PDF/Study_11.pdf)

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**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
OPEN COURSE**

**UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
Semester V - OPEN COURSE
GRY5D01- 1 PHYSICAL GEOGRAPHY**

Instructional hours: TWO Hours/week

Credit: 2

Module	Theme	Contents
1	Evolution Geography	<ul style="list-style-type: none"> • Geography- Definition and scope • Major Branches- physical, human, regional, economical and environmental. • Origin of the earth. • Interior of the earth. • Earth movements- epierogenic and orogenic.
2	Geomorphology	<ul style="list-style-type: none"> • Folding and Faulting. • Volcanoes. • Earthquakes. • Weathering. • Denudation-Agents • Atmosphere and its importance. • Composition and structure.
3	Climatology	<ul style="list-style-type: none"> • Temperature. • Pressure belts and Wind systems. • Clouds and rainfall types. • Cyclones and anti-cyclones. • Major climatic types.
4	Oceanography	<ul style="list-style-type: none"> • Major oceans, distribution. • Relief of ocean floor.

5

Biogeography

- Physical properties of ocean water- Temperature.
- Salinity.
- Ocean deposits.
- Ocean currents, El Nino and La Nino.
- Waves and tides.
- Biogeography- Origin and types of soils.
- Major biomes of the world.
- Ecosystem and food chain.
- Environmental degradation and conservation.

REFERENCES

1. Web Resources

- a. <http://www.physicalgeography.net/>
- b. http://en.wikipedia.org/wiki/Physical_geography
- c. <http://www.geography-site.co.uk/pages/physical.html>
- d. <http://ppg.sagepub.com/>
- e. http://www.earthonlinemedia.com/ebooks/tpe_3e/contents.html

2. Suggested Readings

#	Book Name	Author
1	Certificate Physical and Human Geography	Goe Cheng Leong
2	Physical Geography through Diagrams	R B Bunnet
3	A Text book of Geomorphology	Dayal, P
4	Climatology	Lal, D.S.,
5	Modern Physical Geography	Strahler. A.H., and Strahler.A.N
6	Biogeography	Robinson, H.,
7	Human and Economic Geography	Leong, G. C. and Morgan, G. C
8	Physical Basis of Geography	Woolridge & RS Morgan
9	The Earth, its origin & physical composition	H Jeffrey
10	Physical Geography	F J Monkhouse
11	Physical Geography	Lake P
12	Physical Geography	Morris Davis
13	Elements of Geography	Finch & Trewartha

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography)
SYLLABUS
Semester V: OPEN COURSE
GRY5D01-2 GEOGRAPHY OF INDIA

Instruction Hours: TWO hours / Week

Credit: 2

Module	Theme	Contents
1	Unity in Diversity	<ul style="list-style-type: none">• India - location and its strategic significance.• A land of unity in diversity.• India and its neighbours• States of India
2	Physical Setting and Drainage	<ul style="list-style-type: none">• Physiography• Drainage
3	Climate	<ul style="list-style-type: none">• Indian climate- characteristics-factors influencing climate.• Monsoons- formation and characteristics.• Rainfall distribution.

- 4 **Vegetation and Soil**
 - Floods and Droughts
 - Natural vegetation – types and distribution.
 - Conserving Natural Spaces- Biosphere reserves, National Parks, Wildlife Sanctuaries
 - Major soil types and distribution.
 - Biogeographical Zones.
- 5 **Peopling India**
 - Population - growth, distribution, density, Major Problems.

REFERENCES

1. Suggested Readings

#	Book Name	Author
1	India a Regional Geography	Singh R L
2	India, Pakistan & Celon	Spate O H K
3	India Year Book	Govt. of India
4	Gazatteer of India	Govt. of India
5	Geography of India	Gopal Singh
6	India-A Comprehensive Geography	Khullar, D

UNDERGRADUATE PROGRAMME IN GEOGRAPHY (B.Sc. Geography) SYLLABUS Semester V: OPEN COURSE

GRY5D01 -3 FUNDAMENTALS OF REMOTE SENSING

Instructional hours: TWO hours / Week

Credit:

2

Module	Theme	Contents
1	Overview of Remote Sensing	<ul style="list-style-type: none"> • Definition and Overview of Remote Sensing • History and Evolution of Remote Sensing • Remote Sensing Systems • Electromagnetic Radiation (EMR) - Terms and Definitions, Laws of Radiation, EM Spectrum, Sources of EMR • Interaction between EMR and matter - Reflection,

- 2 **Remote Sensing Systems**
 - Absorption and
 - Interactions between EM Radiation and Atmosphere, Atmospheric windows
 - Remote Sensing Systems - Active and Passive Systems
 - Concept of Resolutions in Remote Sensing - Spatial, Spectral, Radiometric and Temporal
- 3 **Earth Observation**
 - Platforms for Earth Observation
 - Earth Observation Satellites (LANDSAT, SPOT, IRS, IKONOS) and their characteristics
 - Data Products: Aerial Photos , Satellite Imageries
- 4 **Indian's eyes in the Sky**
 - Satellite based Indian Remote Sensing Programme
 - Indian Remote Sensing Satellites
- 5 **Applications of Remote Sensing**
 - Introduction to Application of Remote Sensing
 - Application of Remote Sensing in Agriculture
 - Application of Remote Sensing in Disaster Management
 - Application of Remote Sensing in Environment Conservation

REFERENCES

1. Web Resources

- m. <http://www.itc.nl/~bakker/rs.html>
- n. www.ccrs.nrcan.gc.ca/resource/tutor/fundam/index_e.php
- o. www.rst.gsfc.nasa.gov/
- p. <http://www.r-s-c-c.org/rscc/v1m1.html>
- q. www.isprs.org
- r. www.spaceimaging.com
- s. www.landsat.usgs.gov
- t. www.spotimage.fr
- u. www.nrsa.gov.in
- v. IRS 1C handbook: http://www.euromap.de/docs/doc_013.html
- w. IRS P6 Users handbook. http://www.nrsa.gov.in/IRS_Documents/Handbook/Resourcesat-1_handbook_HTML
- x. asterweb.jpl.nasa.gov

2. Suggested Readings

Book Name

Author

1	Remote Sensing and Image Interpretation	Lillesand Thomas M. & Kiefer Ralph
2	Introduction to Remote Sensing	Campbell John B
3	Remote Sensing and Principles and Image Interpretation	Floyd F. Sabins
4	Manual of Remote Sensing	-
5	Fundamentals of Remote Sensing	George Joseph
6	Computer Processing of Remotely sensed Images: An Introduction	Paul M. Mather