KANNUR UNIVERSITY

(Abstract)

M Sc Geography Programme in the Department of Geography, Swami Anantha Theertha Campus, Payyanur - Revised Scheme & Syllabus (1st Semester Only) - Approved- Implemented w.e f 2023 admission- Orders Issued

ACADEMIC C SECTION

ACAD C/ACAD C3/24382/2023 Dated: 01.12.2023

Read:-1. U.O.No ACAD C/ ACAD C3/22373/2019 dated 12/09/2023
2. Circular No dated ACAD C/ ACAD C3/22373/2019 dated 12/09/2023
3. Email dated 14/11/2023 from the Head, Dept of Geography, SAT Campus, Payyanur
4. Minutes of the meeting of the Department Council dated 14/10/2023

ORDER

1. The revised Regulations for Post Graduate Programmes under Choice Based Credit and Semester System in the University Teaching Departments/ Schools were implemented w.e.f 2023 admissions vide paper read 1 above.
2. As per paper read 2 above, Heads of all Teaching Departments were requested to submit the revised Syllabus in accordance with the approved Regulations along with a copy of the Department Council Minutes.
3. As per paper read 3 above, the Head, Department of Geography, SAT Campus, Payyanur submitted the Scheme and the Syllabus (1st Semester Only) of M.Sc Geography Programme to be implemented in the University Teaching Department w.e.f 2023 admissions.
4. Department Council vide the paper read 4 above approved the aforementioned scheme and syllabus of M.Sc Geography programme to be implemented in the Dept. of Geography, SAT Campus, Payyanur w.e.f.2023 admission.
5. The Vice Chancellor, after considering the matter in detail and in exercise of the powers of the Academic Council conferred under section 11(1), Chapter III of Kannur University Act 1996, ***approved the Scheme & Syllabus (1st Semester Only) of M.Sc Geography Programme and accorded sanction to implement the same in the Department of Geography, SAT Campus, Payyanur w.e.f 2023 admissions, subject to report to the Academic Council***
6.The Scheme and Syllabus (1st Semester Only) of M.Sc Geography Programme under CBCSS implemented in the Department of Geography, SAT Campus, Payyanur with effect from 2023 admission, is appended and uploaded in the University website (www.kannuruniversity.ac.in)
7. Orders are issued accordingly.

Sd/-
Narayanadas K
DEPUTY REGISTRAR (ACAD)
For REGISTRAR

To: 1. Head, Department of Geography, SAT Campus, Payyanur
2. Convenor, Curriculum Committee

Copy To: 1.PS to VC/ PA to PVC/ PA to R
2. To Examination Branch (through PA to CE)
3. EP IV/ EXC I
4. Computer Programmer
5. Webmanager (to publish in the website)
6. SF/DF/FC

KANNUR UNIVERSITY Central Campus KANNUR Pin-670 002 THAVAKKARA

Forwarded / By Order
SECTION OFFICER

KANNUR UNIVERSITY

(Abstract)

M. Sc Geography Programme in the Department of Geography, Swami Anandatheertha Campus, Payyanur - Syllabi of II, III & IV Semesters - Approved- Implemented w. e. f 2023 admissions- Orders Issued

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ACADEMIC C SECTION

ACAD C/ACAD C3/24382/2023 Dated: 26.05.2024

Read:-1. UOs No ACAD C/ACAD C3/22373/2019 dated 12/09/2023, 08/11/2023 & 16/02/2024

2. U.O. of even number dated 01/12/2023

3. Circulars No dated ACAD C/ ACAD C3/22373/2019 dated 01/02/2024 & 12/03/2024

4. Email dated 14/05/2024 from the Head, Dept of Geography, SAT Campus, Payyanur

5. Minutes of the meeting of the Department Council dated 09/05/2024

ORDER

1. The revised regulations for PG Programmes under CBCSS in the University Teaching Depts/ Schools were implemented w.e.f 2023 admissions and certain modifications are effected vide paper read (1) above.

2. As per paper read (2) above, Scheme (All Semesters) & Syllabus (1st Semester Only) of M. Sc Geography Programme was approved and implemented in the Dept. of Geography, SAT Campus, Payyanur w. e. f 2023 admission.

3. As per paper read (3) above, Heads of all Teaching Departments were requested to submit the Syllabi of the remaining semesters in accordance with the approved Regulations and along with a copy of the Department Council Minutes.

4. As per paper read (4) above, the Head, Dept. of Geography, SAT Campus, Payyanur submitted the Syllabi (II, III & IV Semesters) of M. Sc Geography Programme to be implemented in the University Teaching Department w. e. f 2023 admissions.

5. Department Council vide the paper read (5) above recommended the aforementioned Syllabi (II, III & IV Semesters) of M. Sc Geography Programme to be implemented in the Dept. of Geography, SAT Campus, Payyanur w.e.f.2023 admission.

6. The Vice Chancellor, after considering the matter in detail and in exercise of the powers of the Academic Council conferred under section 11(1), Chapter III of Kannur University Act 1996, ***approved the Syllabi (II, III & IV Semesters) of M. Sc Geography Programme and accorded sanction to implement the same in the Dept. of Geography, SAT Campus, Payyanur w. e.f 2023 admissions, subject to report to the Academic Council .***

7. The Syllabi (II, III & IV Semesters) of M. Sc Geography Programme under CBCSS implemented in the Dept of Geography, SAT Campus, Payyannur with effect from 2023 admission, is appended and uploaded in the University website *(www.kannuruniversity.ac.in)*.

8. Orders are issued accordingly.

Sd/-

Narayanadas K

DEPUTY REGISTRAR (ACAD)

For REGISTRAR

To: 1. Head, Dept. of Geography, SAT Campus, Payyanur

2. Convenor, Curriculum Committee

Copy To: 1.PS to VC/ PA to R/PA toCE

2. Examination Branch(Through PA to CE-to circulate among the sections concerned under Examination Branch)

3. EP IV/ EXC I

4. Computer Programmer

5. Web manager (to publish in the website)

6. SF/DF/FC

KANNUR UNIVERSITY * CIVIL STATION P.O. KANNUR Pin-670 002 * THAVAKKARA

Forwarded / By Order

SECTION OFFICER

KANNUR UNIVERSITY

Master of Science
(GEOGRAPHY)

REGULATIONS, SCHEME AND SYLLABUS

Choice **B**ased **C**redit **S**emester **S**ystem

(Effective from 2023 admission)

DEPARTMENT OF GEOGRAPHY
KANNUR UNIVERSITY
Swami Anandatheertha Campus
Payyannur, Edat P.O, Kannur 670 327

Phone 0497 2806400

M.Sc DEGREE PROGRAME IN GEOGRAPHY
Under Choice Based Credit and Semester System

(Effective from 2023 Admission)

About the Department

The Post Graduate Department of Geography of Kannur University was established in 2003 with an intake of 12 students and housed in a rented building at Edat, about two kilometres from Payyanur town towards south. Subsequently, the Department was shifted to Swami Anandatheertha Campus of Kannur University in 2007. From the academic year 2012-13 onwards the sanctioned strength of the students for the M.Sc Degree has been enhanced to 17. In addition to this, one seat has been sanctioned to accommodate a student in each year from Lakshadweep islands. The course is being offered under Choice Based Credit and Semester System. The design of the semesters are in such a way that the students learn topics common to the general M.Sc. course in Geography of the University and specific application oriented topics in Geoinformatics. The students have to undertake a project and a field study in the final semester of the course. The major objective of the course is to train students to get an integrative perspective about the world and earth related phenomena. The Department of geography with a vision of achieving excellence and to promote professional education in the field of geography, has been developing itself with better infrastructural facilities and qualified faculties for undertaking a full range of degree programmes from post graduate to Ph.D courses in Geography. The Department was able to conduct academic and research oriented activities in many emerging and frontier areas of geography and there are many agendas to be fulfilled in this regard. In the field of research oriented activities the Department has successfully completed two minor projects funded by Kannur University. Behind every successful achievements of the Department the infrastructural facilities and sincere effort of faculties always stood as a strong support. At present the Department of Geography is well equipped with the basic infrastructural facilities which include smart class rooms, library, GIS and Remote Sensing lab, Cartography lab, and Geodesy lab. The Department is planning for conducting multiple courses in future to mould the Department of Geography of Kannur University as a Center of Excellence in Earth sciences.

Course Details

The M.Sc. Programme shall be offered in four semesters during a period of two academic years. Each semester will have 17-18 weeks duration. The minimum duration for completion of the programme is four semesters. The maximum period for the completion of the programme is eight semesters. The programme is offered at the Department of Geography, Swami Ananthatheertha Campus of Kannur University situated at Edat, Payyanur. The programme is based on Choice Based Credit and Semester system. A total of 80 credits shall be the minimum for successful completion of the programme in which a minimum of 60 credits for core courses and 20 credits for electives are mandatory. The number of periods allotted per week for a topic is considered as its credit. For practical, three hours is considered as one credit. Elective courses will be offered depending on the availability of the teaching staff /resource person at that time. At least 10 students have to register for an offered elective course

Programme Objective

The aim of Master of Science in Geography programme is to provide up to date instruction to our students to meet the requirement of trained manpower in Geography for teaching, research, technological and other vocations mainly to benefit the aspiring students and to contribute to society in a responsible way.

Choice Based Credit Semester System

The Choice based Credit Semester System provides an opportunity for the students to choose courses from the prescribed courses comprising core and elective courses. The courses are evaluated following the grading system, which provides uniformity in the evaluation and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations which enables the student to move across institutions of higher learning. The uniformity in evaluation system also enables the potential employers in assessing the performance of the candidates.

Programme Details

The first semester consists of five core course. In the second semester, there are 3 core courses and 6 elective courses. Among elective courses, two courses (Interdisciplinary and Skill development) courses of 2 credits each should be obtained from from other departments. In the third semester, there are 3 core and 4 elective. Among elective courses, The Open Elective courses should be obtained from from other departments. In Fourth semester, there four core course with 16 credits and one elective courses of 3 credits each. During the fourth semester, each student shall carry out project under the supervision of a teaching staff of the Department nominated by the Head of the Department. The departmental council shall make decisions regarding

the project During the fourth semester, the students will have to conduct Study tour/Field work. The report of the same may be submitted to the Head of the Department for valuation.

Programme Outcomes

PO1 Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives

PO2 Problem Solving: Identify, formulate, conduct investigations, and find solutions to problems based on in-depth knowledge of relevant domains

PO3 Communication: Speak, read, write and listen clearly in person and through electronic media in English/language of the discipline, and make meaning of the world by connecting people, ideas, books, media and technology

PO4 Responsible Citizenship: Demonstrate empathetic social concern, and the ability to act with an informed awareness of issues

PO5 Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them

PO6 Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio- technological changes

PO7 Environmental Sustainability and Global Perspective: Develop an understanding of global standards to foster legal environment. Learn and practice to critically analyze the legal issues from local, national and international concerns.

Programme Specific Outcomes (PSOs) of M.Sc Geography

All the post graduate courses are at advanced level, and have been constructed as continuity over the under-graduate courses, which are seen as basic, and are taught at foundation level. The present structure thus covers the foundational aspects of the discipline, and also builds towards specialization. Programme Specific Outcomes (PSOs) of M Sc Geography of Kannur University are given below

PSO1. Analyse the dimensions of complex biophysical and social patterns in the world, and mold out young geographers with wide and deep knowledge about contemporary issues in geography.

PSO2. Critically examine various concepts, laws, theories, and models in geography and evaluate their significance at the local, regional, and global scales.

PSO3. Master and update the students in the developments in geographic information science and technology, through real-world practical applications

PSO4. Equip the learner to collect, analyze, and interpret geographic data and suggest potential solutions in socio-economic-ecological systems at the man-environment interface.

PSO5. Apply systems thinking as well as critical thinking skills to analyze contemporary issues and encourage inter-disciplinarily, multi-disciplinarily and trans-disciplinarily for developing a responsible geo community

The courses offered in the programme are addressing various dimensions and developments of the discipline and can be classifiable as follows

A. **Theoretical Base of Geography** – Courses on Nature and Philosophy of Geography, Advanced Geomorphology, Applied Climatology and Oceanography, Urban geography etc builds up the theoretical and ideological foundations of geography.
B. **Methodological Base in geographical analysis**–Courses on Principles of Remote Sensing, Principles of Geographical Information System, Natural Resource Management, Research Methods in Geography etc. strengthens the methodological foundations of geography.
C. **Systematic Approach** –Courses on Geographies of Environment and Health , Geography of Tourism, etc address the contemporary issues in Geography, both physical and human.
D. **Regional perspective** – Papers like Advanced Geography of India, Kerala Environment and Development, Social Geography with special reference to India etc perceive the regional dimensions of geography in a non-conventional way.
E. **Lab exercises & Field techniques –** Four core courses are included as *Practicals*, to equip the learner to handle the advanced tools and techniques of geographical analysis, in all semesters.
F. **Case study & Applications** – Courses on Natural Resource Management and Sustainable Development, Applied Geomorphology, Geo-informatics, Geography and Disaster Management etc are intended to carry out problem issue based and micro level analysis. Student has to carry out a Dissertation in the last semester.

Kannur University M.Sc. Geography Programme

Curriculum Structure

I Semester

Course Code	Course Name	Contact Hrs/Week			Marks			Credits
		L	T/S	P	ESE	CE	Total	
CORE COURSES								
MSGGY01 DSC01	Nature and Philosophy of Geography	4	-	-	60	40	100	4
MSGGY01 DSC02	Advanced Geomorphology	4	-	-	60	40	100	4
MSGGY01 DSC03	Applied Climatology and Oceanography	4	-	-	60	40	100	4
MSGGY01 DSC04	Fundamentals of Geographic Information System	4	-	-	60	40	100	4
MSGGY01 DSC05	**Practical – I** Advanced Cartography	-	-	12	60	40	100	4
	Total for Core Courses	**28**			**300**	**200**	**500**	**20**

II Semester

Course Code	Course Name	Contact Hrs/Week			Marks			Credits
		L	T/S	P	ESE	CE	Total	
CORE COURSES								
MSGGY02 DSC06	Methodology of Geographical Research	4	-	-	60	40	100	4
MSGGY02 DSC07	Principles of Remote Sensing	4	-	-	60	40	100	4
MSGGY02 DSC08	Practical - II Geospatial Techniques	-	-	12	60	40	100	4
Total for Core Courses		**20**			**180**	**120**	**300**	**12**
ELECTIVE COURSES								
MSGGY02 DSE01	Geographies of Environment and Health	2x3	-	-	60	40	100	6
MSGGY02 DSE02	Geography of Tourism							
MSGGY02 DSE03	Geography of Water Resources							

MSGGY02 DSE04	Social Geography with Special Reference to India							
INTER-DISCIPLINARY COURSES								
MSGGY02 IDC01	India – Land, People, and Economy (**Offered to other department students)**	2	-	-	60	40	100	2
MSGGY02 IDC02	Kerala Environment and Development (**Offered to other department students)**							
----------	**(To be obtained from other departments)**							
SKILL ENHANCEMENT COURSES								
MSGGY02 SEC01	Fundamentals of Cartography (**Offered to other Department students)**	2	-	-	60	40	100	2
MSGGY02 SEC02	Basics of Geographical Information System (**Offered to other Department students)**							
----------	**(To be obtained from other departments)**							
VALUE ADDED COURSES								
MSGGY02 VAC01	Advances in Geospatial analysis	2	-	-	60	40	100*	2*
	Total	**30**			**420**	**280**	**700**	**22**

***Not to be added to the total marks and credits*

III Semester

Course Code	**Course Name**	**Contact Hrs/Week**			**Marks**			**Credits**
		L	T/S	P	ESE	CE	Total	
CORE COURSES								
MSGGY03 DSC09	Regional Planning and Development	4		-	60	40	100	4
MSGGY03 DSC10	Urban Geography	4		-	60	40	100	4
MSGGY03 DSC11	**Practical– III** Geospatial Techniques for Field Assessment	-	-	12	60	40	100	4
Total for Core Courses		**20**			**180**	**120**	**300**	**12**

ELECTIVE COURSES								
MSGGY03 DSE05	Advanced Geography of India	3		-	60	40	100	3
MSGGY03 DSE06	Geography and Disaster Management: Kerala Perspective							
MULTI DISCIPLINARY COURSES								
MSGGY03 MDC01	Fundamentals of Physical Geography **(Offered to other Department students)**	4			60	40	100	4
MSGGY03 MDC02	Fundamentals of Human Geography **(Offered to other Department students)**							
----------	**(to be obtained from other Departments)**							
	Total	**30**			**300**	**200**	**500**	**19**

IV Semester

Course Code	**Course Name**	**Contact Hrs/Week**			**Marks**			**Credits**
		L	T/S	P	ESE	CE	Total	
CORE COURSES								
MSGGY04 DSC12	Geography of Agriculture and Land Use Planning	4	-	-	60	40	100	4
MSGGY04 DSC13	**Practical – IV** Advanced Techniques of Geo-spatial analysis	-	-	12	60	40	100	4
MSGGY04 DSC14	Dissertation	-	-	12	100	-	100	4
MSGGY04 DSC15	Comprehensive Viva Voce and Study tour/ Field work report	-	-	-	75	25	100	4
Total for core courses		**28**			**295**	**105**	**400**	**16**
ELECTIVE COURSES								
MSGGY04 DSE07	Population and Welfare Geography	3	-	-	60	40	100	3
MSGGY04 DSE08	Natural Resource Management and Sustainable Development							
Total		**31**			**355**	**145**	**500**	**19**
Grand Total (I – IV Sem)							**2200**	**80**
Marks – 2200		**Core credits: 60**					**Elective Credits: 20**	

MS	– Master of Science	**L**	- Lecture
GGY	– Geography	**T**	- Tutorial
C	- Core Course	**S**	- Seminar
E	- Elective Course	**CE**	- Continuous Evaluation
O	- Open course	**ESE**	- End Semester Examination
P	- Practical Course	**DEC**	- Discipline Elective Course
DSC	– Discipline Specific Course	**SEC**	– Skill Enhancement Course
AEC	– Ability Enhancement Course	**OEC**	– Open Elective Course

SEMESTER WISE CREDIT DISTRIBUTION

Course	Credit/ Paper	**Semester I**		**Semester II**		**Semester III**		**Semester IV**		**Total Credits**
		No. of papers	Credit	No. of papers	Credit	No. of papers	Credit	No. of papers	Credit	
Discipline Specific Course	4	5	20	3	12	3	12	4	16	**60**
Discipline Elective Course	3	--	--	2	6	1	3	1	3	**12**
Multi Disciplinary Course	2	--	--	--	--	1	4	--	--	**04**
Inter Disciplinary Course	2	--	--	1	2	--	--	--	--	**02**
Skill Enhancement Course	2	--	--	1	2	--	--	--	--	**02**
TOTAL		**5**	**20**	**7**	**22**	**5**	**19**	**5**	**19**	**80**

SEMESTER I
CORE COURSE

NATURE AND PHILOSOPHY OF GEOGRAPHY

Course Code: **MSGGY01DSC01**

Description of the course:

The course Nature and Philosophy of Geography offers students the opportunity to delve into the rich history of geographical thinking, tracing its development from ancient civilizations to the present day. The course typically covers key concepts and theories that have shaped geographical thought. Moreover; the course explores the relationship between geography and other disciplines such as Anthropology, Sociology and so on. By the end of the course, students will have a solid understanding of the historical development of geographical thought and the various perspectives within the class.

Course Objectives

- To know that Geography as a discipline has evolved with time and has remained dynamic.
- To understand that geographical scholarship is intimately related larger to the ensuing socio-political processes that exists during different time periods.
- To analyse the influence of various philosophical perspectives on contemporary geography
- To know that the ever-changing content and direction of the discipline by the scholars

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Trace the historical evolution of the philosophy of Geography.
CO2	Analyse conceptual developments in the discipline and paradigm shifts
CO3	Understand in wider sense that geographical thought is always political
CO4	Distinguishes the relationship of Geography and Geographers to the social and political struggles.
CO5	Demonstrate the inclusive nature of postmodern geographies and appreciate the metaphysical dynamism and academic progress of the discipline

COURSE CONTENTS

Module I

1.1 Geography as a discipline; Basic concepts in the philosophy of geography
1.2 Historical development of Geographical Thought-Contributions to ancient, medieval and modern phases of geography
1.3 Multidisciplinary nature of geography-Conceptual developments: Quantitative revolution, Laws, Theories, and models in Geography
1.4 Spatial analysis, Locational analysis, Systems approach, areal differentiation, spatial integration and diffusion of innovation

Suggested Readings

Adhikari S (1992), Geographical Thought, Chaithanya Publishing House, Allahabad
Bonnet, Alastair, 2008.What is Geography? Sage publications
Castree, R, A. Rogers and D. Sherman, (2005). Questioning Geography: Fundamental Debates, Blackwell
Dikshit R.D (2007), Geographical Thought-A Contextual History of Ideas, Prentice Hall of India, New Delhi
Ellen Churchill Semple (1911) Influence of Geographic environment on the basis of Ratzel's system of Anthropogeography, New York. Russel and Russell
Harvey D (1969) Explanation in Geography, London
Holt Jenson Arid (1999). Geography: History and concepts, Sage publications
Majid Hussain (2007), Evolution of Geographical thought, Rawat Publication, Jaipur

Module 2

2.1 Imperialistic influences in conceptual nature of geography-A historical discourse
2.2 Paradigms of science-Thomas Kuhn's Model, Paradigm shift;
2.3 Darwin's influences on geographical knowledge- Lebensraum and Darwin's influence
2.4 Four Traditions in Geography: Dualism and dichotomies in Geography-Environmental determinism and critics

Suggested Readings

Bassin, M (1987) Imperialism and the Nation-state in Fredrich Ratzel's political geography, Prog.Hum.Geog. 11,473-495, 1987
Majid Hussain (2007), Evolution of Geographical thought, Rawat Publication, Jaipur
Neil Roberts, "The idea of evolution in Geographical thought" in John Agnew and David N. Livingstone. The Sage handbook of Geographical knowledge, pp 441-451
Stoddart D.R (1966)" Darwin's Impact on Geography", Annals of the association of American Geographers, Vol.56:683-698
https://www.yourarticlelibrary.com/geography/impacts-of-charles-darwin-on-the-development-of-geographical-concepts/24566

Module 3

3.1 Philosophical Influences on Modern geographical though Positivism, Pragmatism, Functionalism, Humanism, Behaviouralism, Existentialism, Idealism,
3.2 Radical approaches in geography- liberal and radicalism, Marxism, Anarchism
3.3 Welfare approach in geography; Geography as Human Ecology; Gender Geography, Feminist Geography
3.4 Post modern Geography, Space and time, Third space by Edward Soja

Suggested Readings

Benko, Georges, Strohmayer, Ulf, (1997). Space and social theory, Blackwell Publishers
Frazire J.W (1982) Applied Geography, Prentice Hall, New Delhi
Gillian Rose (1993)," Feminism and Geography: An introduction and 'Women and everyday spaces", in Geography: The limits of Geographical knowledge (Minneapolis: University of Minnesota press.
Linda McDowell and Doreen Massey (1984), "A women's place? Pp 458-475 in J. Agnew, D. Livingstone and A. Rogers (eds) Human Geography: An Essential Anthology, Oxford: Blackwell
Peet (2004), Modern Geographical thought, Blackwell publishers, Oxford
Saraswathi Raju (2013), Gendered Geographies: Space and Place in South Asia, Sage Publications

Module 4

4.1 Post structuralism and post colonialism-subaltern geographies-Decolonizing Geography
4.2 Geographies of sexuality and queer approach, sexual identities and space
4.3 Justice and ethics, Inequality, Geography of poverty (GOP), Geographers and policy
4.4 Development of geographical thought in India

Suggested Readings

Johnson RJ (1985), The future of Geography, Metheun
Satish Kumar (2006) Colonial and post colonial Geographies of India, Sage Publications
Ravi S. Singh (2009) Indian Geography: Perspectives, Concerns, and Issues, Rawat publications, Jaipur
Minshull R (2014), The Changing Nature of Geography, Routledge

Core Compulsory Readings (*Books, Journals, E-sources Websites/web links*)

Adhikari S (1992), Geographical Thought, Chaithanya Publishing House, Allahabad.
Bonnet, Alastair, (2008). What is Geography? Sage publications.
Dikshit R.D (2007), Geographical Thought-A Contextual History of Ideas, Prentice Hall of India, New Delhi
Ellen Churchill Semple (1911) Influence of Geographic environment on the basis of Ratzel's system of Anthropogeography. New York. Russel and Russell.

Gillian Rose (1993)," Feminism and Geography: An introduction and 'Women and Everyday spaces", in Geography: The limits of Geographical knowledge (Minnepolis: University of Minnesota press.
Harvey D (1969) Explanation in Geography, London
Linda McDowell and Doreen Massey (1984), "A women's place? Pp 458-475 in J. Agnew, D. Livingstone and A. Rogers (eds) Human Geography: An Essential Anthology, Oxford: Blackwell
Neil Roberts, "The idea of evolution in Geographical thought" in John Agnew and David N. Livingstone. The Sage handbook of Geographical knowledge, pp 441-451 9. Peet (2004), Modern Geographical thought, Blackwell publishers, Oxford
Stoddart D.R (1966)" Darwin's Impact on Geography", Annals of the association of American Geographers, Vol.56:683-698.
https://link.springer.com/chapter/10.1007/978-94-009-0483-5_3
https://journals.sagepub.com/doi/10.1068/a261021
https://www.blackwellpublishing.co.uk/content/BPL_Images/Content_store/Sample_chapter/9780631220190/moss.pdf
https://www.geos.ed.ac.uk/~gisteac/gis_book_abridged/files/ch02.pdf

Core Suggested Readings (Books, Journals, E-sources Websites/web links)

Bassin, M (1987) Imperialism and the Nation state in Fredrich Ratzel's political geography, Prog.Hum.Geog. 11,473-495, 1987
Benko, Georges, Strohmayer, Ulf, (1997). Space and social theory, Blackwell Publishers
Majid Hussain (2007), Evolution of Geographical thought, Rawat Publication, Jaipur
Holt Jenson Arid (1999). Geography: History and concepts, Sage publications
Frazire J.W (1982) Applied Geography, Prentice Hall, New Delhi
Ravi S. Singh (2009) Indian Geography: Perspectives, Concerns and Issues, Rawat publications, Jaipur
Saraswathi Raju (2013), Gendered Geographies: Space and Place in South Asia, Sage Publications
Satish Kumar (2006) Colonial and post colonial Geographies of India, Sage Publications
Hill, Michael R. (1981). Positivism: a hidden philosophy in geography. In Milton Harvey & Brian P. Holly (eds.), Themes in Geographic Thought. St. Martin's Press. pp. 38--60.
Sayer, A. (1992). Radical geography and Marxist political economy: towards a re-evaluation. Progress in Human Geography, 16(3), 343–360. https://doi.org/10.1177/030913259201600302.

SEMESTER I
CORE COURSE

ADVANCED GEOMORPHOLOGY
Course Code: MSGGY01DSC02

Description of the Course:

The course Advanced Geomorphology mainly deals with scientific exploration of landforms, their origin and the processes that shape and reshape Earth's surface. It offers a comprehensive understanding of these natural features and dynamic forces that have shaped the planet over millions of years. By the end of the course students will gain insights into the principles, theories and methods used to analyse and interpret these natural features.

Course Objectives

- To examine the development of modern geomorphic thought and critical appreciation of fundamental concepts in Geomorphology.
- To understand the relationships that exists between the landforms and the earth processes.
- To analyse and appreciate the processes in Tropical geomorphology with special reference to coastal and fluvial systems.
- To analyse the scope and significance of applied geomorphology and its applicability in Engineering projects and managing disaster management

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Analyse the conceptual basis of Geomorphology and its evolutionary phases.
CO2	Understand the process that sculpts surface features.
CO3	Assess the magnitude of tropical processes in the development and alteration of landforms.
CO4	Critically analyse and interpret various approaches in landscape evolution.
CO5	Acquire problem solving skills in the way of application of geomorphological principles in various contexts.

COURSE CONTENTS

Module 1

1.1 Nature and development of geomorphology-Branches- approaches
1.2 Fundamental concepts in geomorphology
1.3 Geological time scale- Origin and evolution of earth crust-rocks and lithification, Landforms
1.4 Geomorphic Processes-Plate tectonics-Sea floor spreading-vulcanicity and seismicity

Suggested Readings

Arthur L. Bloom (2003) Geomorphology – A systematic Analysis of Late Cenozoic Landforms, Pearson Education, Singapore.
Arthur N Strahler and Alan H Strahler (1998) Modern Physical Geography, John Wiley and Sons, Inc
Thornbury W.D (1969) Principles of Geomorphology, Wiley Intl. Edn & Wiley Eastern Reprints 1984.
Bloom, A.L. (1991): Geomorphology, 2nd Ed Englewood Cliffs, M.J. Prentice Hall
Christopherson, R.W. (1995): Elemental Geosystems: A Foundation in Physical Geography, Prentice Hall Englewood Cliffs, New Jersey.
Richard John Haggett (2003) Fundamentals of Geomorphology, Rutledge, London

Module 2

2.1 Factors of Landform evolution- form and processes
2.2 Evaluation of landforms development theories – Hutton, Davis, Penck, L C King, Hack, Denudation chronology- erosion Surfaces.
2.3 Study of hill slopes form and processes
2.4 Slope evolution models of Davis, W. Penck, L.C. King and A. Wood

Suggested Readings

Arthur N Strahler and Alan H Strahler (1998) Modern Physical Geography, John Wiley and Sons, Inc
Leopold, L.B. Wolman, M.G. & Miller, J.P. (1964): Fluvial Processes in Geomorphology, W.H. Freeman, San Francisco
Richard John Haggett (2003) Fundamentals of Geomorphology, Routledge, London
Arthur L. Bloom (2003) Geomorphology – A systematic Analysis of Late Cenozoic Landforms, Pearson Education, Singapore
Christopherson, R.W. (1995): Elemental Geosystems: A Foundation in Physical Geography, Prentice Hall Englewood Cliffs, New Jersey

Module 3

3.1 Weathering and mass wasting-
3.2 Pedogenesis and Soil characteristics, soil processes.
3.3 Fluvial processes and river valley development- channel Dynamics and morphology
3.4 Coastal Morphodynamics: Quantification and Interpretation of Coastal features and Processes

Suggested Readings

Robinson, Harry (1969): Morphology and Landscape, University Tutorial Press Ltd. London
Richard John Haggett (2003) Fundamentals of Geomorphology, Routledge, London
Morgan, R.S. & Wooldridge S.W (1959): Outline of Geomorphology the Physical basis of Geography, Longmans Green, London
Briggs, K. (1985): Physical Geography Process and System, Hodder and Stoughton, London
Chorley, R.J. Schumm, S.A. & Sugden, D.E. (1985): Geomorphology, Methuen & Co. Ltd., London, New York.
Darrel Hess (2012), MCKNIGHT'S Physical Geography -A Landscape Appreciation, PHI Learning Private Limited, New Delhi.

Module 4

4.1 Regional geomorphology- terrain analysis and modelling
4.2 Climatic geomorphology and Morphogenetic regions
4.3 Trends in applied Geomorphology.
4.4 Geo-informatics and geomorphology

Suggested Readings

Cook, R.U. & Doornkamp, J.C. (1974): Geomorphology in Environmental Management, an Introduction. Clarendon Press. Oxford
Richard John Haggett (2003) Fundamentals of Geomorphology, Routledge, London
Morgan, R.S. & Wooldridge S.W (1959): Outline of Geomorphology the Physical basis of Geography, Longmans Green, London
Briggs, K. (1985): Physical Geography Process and System, Hodder and Stoughton, London
Hart, M.G. (1986): Geomorphology Pure and Applied, George Allen and Unwin, London
Verstappen H. (1983) Applied Geomorphology, Geomorphological Surveys for Environmental Development, Elsevier, Amsterdam

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Arthur L. Bloom (2003) Geomorphology – A systematic Analysis of Late Cenozoic Landforms, Pearson Education, Singapore
Arthur N Strahler and Alan H Strahler (1998) Modern Physical Geography, John Wiley and Sons, Inc
Bloom, A.L. (1991): Geomorphology, 2nd Ed Englewood Cliffs, M.J. Prentice Hall

Chorley, R.J. Schumm, S.A. & Sugden, D.E. (1985): Geomorphology, Methuen & Co. Ltd., London, New York
Thornbury W.D (1969) Principles of Geomorphology, Wiley Intl. Edn & Wiley Eastern Reprints 1984.
Christopherson, R.W. (1995): Elemental Geosystems: A Foundation in Physical Geography, Prentice Hall Englewood Cliffs, New Jersey
Cook, R.U. & Doornkamp, J.C. (1974): Geomorphology in Environmental Management, an Introduction. Clarendon Press. Oxford
Hart, M.G. (1986): Geomorphology Pure and Applied, George Allen and Unwin, London.
Richard John Haggett (2003) Fundamentals of Geomorphology, Routledge, London
Strahler, A.N (1992): Physical Geography. John Wiley & Sons Inc., New York
Verstappen H. (1983) Applied Geomorphology, Geomorphological Surveys for Environmental Development, Elsevier, Amsterdam
Wooldridge S W and R. S. Morgan (2004)–The Physical Basis of Geography - An Outline of Geomorphology, Orient Longman Private Limited
https://doi.org/10.2307/2561059
https://www.questjournals.org/jrees/papers/vol8-issue8/A08080110.pdf
https://www.jstor.org/stable/30085042
https://www.jstor.org/stable/2561059

Core Suggested Readings (*Books, Journals, E-sources Websites/web links***)**

Brierley, G.J. & Fryirs, K.A. (2005): Geomorphology and River Management, Blackwell Publishing, Oxford UK
Briggs, K. (1985): Physical Geography Process and System, Hodder and Stoughton, London
Darrel Hess (2012), MCKNIGHT'S Physical Geography -A Landscape Appreciation, PHI Learning Private Limited, New Delhi
Dayal P (1996) A Textbook of Geomorphology, Shukla Book Depot, Patna, India
Fairbridge, R.W., ed. (1968): Encyclopedia of Geomorphology Reinhold, New York
John P Miller and Luna Bergere Leopold, Fluvial Processes in Geomorphology
Kale V S and Gupta A (2010) Introduction to Geomorphology, Orient Longman, Calcutta
Leopold, L.B. Wolman, M.G. & Miller, J.P.(1964): Fluvial Processes in Geomorphology, W.H.Freeman, San Fransisco
Robinson, Harry (1969): Morphology and Landscape, University Tutorial Press Ltd. London
Spark, B. W. (1986): Geomorphology, Longman, London
Thomas, M.F. (1974): Tropical Geomorphology, Macmillan, London
Wadia, D.N. (1993): Geology of India, Tata McGraw Hill Edition, New Delhi
https://www.iasj.net/iasj/download/1309ece36042e463

SEMESTER I
CORE COURSE

APPLIED CLIMATOLOGY & OCEANOGRAPHY

Course Code: **MSGGY01DSC03**

Description of the course:

The course on Climatology and Oceanography offers a comprehensive exploration of Earth's atmospheric and oceanic systems, focusing on their dynamic interactions and influence on the global climate. The syllabus encompasses a broad range of topics, including atmospheric circulation patterns, climate zones, ocean currents, El Niño and La Niña phenomena, climate change, and the impact of human activities on the environment. Through a combination of theoretical lectures, practical lab sessions, and fieldwork, students gain a deep understanding of climate processes, ocean dynamics, and their intricate relationship with the Earth's ecosystems. Moreover, the course equips students with essential analytical and research skills, enabling them to assess climate data, develop climate models, and propose effective strategies for climate adaptation and mitigation.

Course Objectives

- To gain advanced knowledge about the climatic processes, their types and distribution
- To learn the ensuing climate changes, their magnitude, causes and strategies which can be adopted for the mitigation of climate change.
- To gain advanced knowledge about ocean circulation and the salinity temperature variations in oceans of the world
- To examine the relevance of ocean resources and laws concerning them

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Understand the mechanism of climatic phenomena.
CO2	Understand the extreme weather phenomena, their occurrence, and its impact.
CO3	Classification of climate & analysis of climatic data, their interpretation, modeling, and weather forecasts.
CO4	Understanding ocean relief features along with ocean circulations and physiochemical characteristics
CO5	To develop a solid idea about ocean resources and laws concerning oceans

COURSE CONTENTS

Module I

1.1 Scope and Content of Climatology; Elements and controls of climate
1.2 Atmospheric motion- Atmospheric pressure and circulation, Air Masses – Source Regions, Characteristics
1.3 Fronts - Polar Front Theory, Polar vertex
1.4 Monsoons – Theories on the formation of monsoons; Regional aspects of Indian Monsoon – Monsoon Trough, Jet stream, Tibetan High; El Nino–La Nina, Indian ocean dipole

Suggested Readings

Critchfield, Howard J (2008): General Climatology, Prentice Hall, London
Barry, R.G., and Chorley, R.J. (2010): Atmosphere, Weather and Climate, Routledge, London
Das P. K. (1995): The Monsoon, Prayag Pustak Bhavan, Allahabad, National Book Trust.India
Khullar, D.R (2018): India- A comprehensive geography, Kalyani Publishers, Noida
Lal D S (2003) Climatology, Sharda Pustak Bhavan, Allahabad.

Module 2

2.1 Stability and Instability; Thunderstorms, Cloud Bursts, Squalls, formations of Tornadoes
2.2 Downburst, Flash flood and Derecho
2.3 Tropical Cyclones – Recent tropical cyclones, Extra-Tropical Cyclones
2.4 Dust Storm, Hail Storms, Blizzards, Heat and cold Waves.

Suggested Readings

Burt, Christopher C (2004): Extreme Weather – A Guide and Record Book, W.W Norton and Company, New York
https://www.weather.gov/lmk/derecho - NOAA page on Derecho storms
Vijayakumar, K. (2005): Cyclone Devastations – its implications, Serials Publications, New Delhi
Oliver, John E & Hidore, John J (2001): Climatology- An atmospheric science, Pearson Education
Singh, Savindra (2020): Climatology, Pravallika publications, Allahabad
https://www.egyankosh.ac.in/bitstream/123456789/25165/1/Unit-17.pdf - IGNOU material on heat waves and cold waves

Module 3

3.1 Climatic classifications of Koeppen, Trewartha, and Thornthwaite
3.2 Major Climates of the World: Tropical Rain Forest, Mediterranean, Tropical Deserts and Tundra Climates

3.3 Applied climatology, Weather forecasts - Collection and analysis of climatic data, their interpretation, Forecasting, and tracking of Extreme Weather Phenomenon, Weather industry

3.4 Climate Change, International Climate Change Agreements, Organizations and Local Governance

Suggested Readings

Sidhartha, K (2016): Atmosphere, Weather and Climate, Kisalaya Publications Private Limited, Delhi

Lal D S (2003): Climatology, Sharda Pustak Bhavan, Allahabad.

Gilbert Loren, (2019): Concepts and Applications of Climatology, Syrawood Publishing House.

Trewartha, G.T (1968): An Introduction to Climate, McGraw Hill Book Co. New York.

Thompson & Perry (1997): Applied Climatology- Principles and practice, Routledge, New York

Dubash, Navroz, K (2012): Handbook of Climate Change and India, Oxford Press, New Delhi

Module 4 - Oceanography

4.1 Classification, characteristics, and origin of the major structural and morphological features of the ocean floor (Pacific, Atlantic, Indian, and Arctic)- Plate tectonics and ocean floor

4.2 Temperature, salinity, and density and their distributions in Pacific, Atlantic, Indian and Arctic Oceans

4.3 Ocean circulation: classification and significance- Ocean currents, upwellings, and downwelling, thermohaline circulations, Ocean extremes- Tsunami

4.4 Ocean resources and international cooperation- Physical and biological resources, marine energy, international laws of the sea, and the United Nations Convention on laws of the sea.

Suggested Readings

Stewart, Robert H (2004): Introduction to physical Oceanography, Orange Grove books,

Singh, Savindra (2001): Oceanography, Pravallika publications, Allahabad

Sidhartha, K (2014): Oceanography- A brief introduction, Kisalaya Publications Private Limited, Delhi

Thurman, Harold V (2011): Essentials of Oceanography, Prentice Hall India, New Delhi

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Critchfield, Howard J (2008): General Climatology, Prentice Hall, London

Barry, R.G., and Chorley, R.J. (2010): Atmosphere, Weather and Climate, Routledge, London

Oliver, John E & Hidore, John J (2001): Climatology- An atmospheric science, Pearson Education

Singh, Savindra (2020): Climatology, Pravallika publications, Allahabad

Sidhartha, K (2016): Atmosphere, Weather and Climate, Kisalaya Publications Private Limited, Delhi

Lal D S (2003): Climatology, Sharda Pustak Bhavan, Allahabad.
Sidhartha, K (2014): Oceanography- A brief introduction, Kisalaya Publications Private Limited, Delhi
Thurman, Harold V (2011): Essentials of Oceanography, Prentice Hall India, New Delhi

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Negi, B.S (2000): Climatology and Oceanography, Kedar Nath ram Nath publishers, Meerut
Mayes and Hughes (2004): Understanding weather- a visual approach, Arnold publishers
Lutgens, Frederick K et.al (2018): The Atmosphere- An Introduction to Meteorology, Prentice Hall India, New Delhi
https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-currents
https://worldoceanreview.com/en/wor-1/climate-system/great-ocean-currents/

SEMESTER I
CORE COURSE

FUNDAMENTALS OF GEOGRAPHIC INFORMATION SYSTEM

Course Code: **MSGGY01DSC04**

Description of the course:

Geoinformatics is an interdisciplinary course that explores the fusion of geographic information science and technology to analyze, interpret, and visualize spatial data. Throughout the course, students delve into various topics such as remote sensing, geographic information systems (GIS), cartography, and spatial analysis, learning how to harness these tools to solve real-world problems related to urban planning, environmental management, natural resource exploration, disaster response, and more. By mastering geospatial data collection techniques and applying advanced computational methods, students develop a comprehensive understanding of geoinformatics and its vital role in shaping sustainable and data-driven decisions in an increasingly interconnected and dynamic world.

Course Objectives

- To understand the basic concepts of Geographical Information Systems
- To familiarize with the potential of GIS for modeling the real world.
- To understand various applications of GIS for the conservation and management of natural and material resource
- To analyze the recent trends in GIS

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	To understand the basic concepts of Geographical Information Systems
CO2	To familiarize with the potentials of GIS for modeling the real world
CO3	To understand various applications of GIS for the conservation and management of natural and material resource
CO4	To analyze recent trends in GIS

COURSE CONTENTS

Module I- Fundamentals of GIS

1.1 Evolution of advanced cartography and GIS– components of GIS - Information Systems, Modeling Real World Features
1.2 Data and its treatment- Data Formats, Database Management, Compression Techniques
1.3 GIS Software- Principle functions in GIS, Standard Packages, Open-source GIS
1.4 Recent trends in GIS- Web GIS and Web mapping: Geographic Markup Language - commercial web mapping programs

Suggested Readings

M. Anji Reddy (2008) Textbook of Remote sensing and Geographical information systems, BS Publications, Hyderabad
Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Basudeb Bhatta (2011) Remote sensing and GIS, Oxford University Press, New Delhi
Bert Veenendaal et.al (2011) Advances in Web-based GIS, Mapping Services and Applications, CRC Press, Florida, USA

Module 2- Data in GIS

2.1 Geospatial data- Geodetic datum, spatial data models, Layer concept of GIS
2.2 Errors in GIS data and its types, Data precision and data organization; Ethics of using GIS data
2.3 Metadata, Standards, and Significance
2.4 Data Catalogues – Indian standards, NSDI metadata standards, data model in GIS

Suggested Readings

Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
M. Anji Reddy (2008) Textbook of Remote sensing and Geographical information systems, BS Publications, Hyderabad
IGNOU course material on GIS data quality, retrieved from: https://egyankosh.ac.in/bitstream/123456789/39555/1/Unit-10.pdf
Basudeb Bhatta (2021) Remote sensing and GIS, Oxford University Press, New Delhi
NSDI website page on standards, retrieved from: http://www.nsdiclearinghouse.gov.in/erdas-apollo/nsdiportal/nsdistandards.html

Module 3

3.1 Georeferencing, Vectorization, Topological error correction
3.2 Spatial Analysis and Modeling – Proximity Analysis, Overlay Analysis, Buffer Analysis, Network Analysis, Spatial Auto Correlation, Gravity Modeling
3.3 DTM/DEM, Integration with Remote Sensing Data

3.4 Thematic Mapping

Suggested Readings

Chrisman N R (2001) Exploring Geographic Information System, Wiley
Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.
Basudeb Bhatta (2021) Remote sensing and GIS, Oxford University Press, New Delhi
R.P Misra (2014) Fundamentals of Cartography, Concept publishing company, New Delhi

Module 4

4.1 Applications in LU/LCC, Urban planning, Transport planning, Tourism
4.2 Disaster management, defense, crime mapping
4.3 Agriculture, natural resource management, meteorology, marine studies
4.4 Planning social support systems, health care

Suggested Readings

Burrough, P.A. (2005) Principles of GIS for Land Resource Assessment, Oxford Publications
Monika Kannan et.al (2020) Geographical Information System and Crime Mapping, CRC Press, Florida
Anil K Singh (2007) Geoinformatics applications in Agriculture, New India Publishing Agency, New Delhi
Aronoff S, (1989) Geographic Information Systems: A Management Perspective, WDL Publications

Core Compulsory Readings (*Books, Journals, E-sources, Websites/weblinks***)**

M. Anji Reddy (2008) Textbook of Remote sensing and Geographical information systems, BS Publications, Hyderabad
Basudeb Bhatta (2021) Remote sensing and GIS, Oxford University Press, New Delhi
Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.
Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.
Paul A Longley et.al (2001) Geographic Information System and Science, John Wiley and Sons, Chichester.
Star J and Estes (1989) Geographic Information Systems: An Introduction, Prentice Hall
Peter A Burrough et.al (2016) Principles of Geographical Information System, Oxford University Press, New York
https://www.esri.com/en-us/what-is-gis/history-of-gis - A Weblink on history and evolution of GIS

Core Suggested Readings (*Books, Journals, E-sources, Websites/weblinks***)**

ESRI material on Metadata and GIS, retrieved from:
https://www.esri.com/content/dam/esrisites/sitecore-archive/Files/Pdfs/library/whitepapers/pdfs/metadata-and-gis.pdf
https://downloads.esri.com/esripress/PDFs/The-ArcGIS-Book-second-edition.pdf - ESRI Ebook on GIS
Kvamme, K.L: Recent directions and developments in geographical information systems. J Archaeol Res 7, 153–201 (1999).
D F Marble (1990): Introductory Readings In Geographic Information Systems, CRC Press, Bristol
Goodchild, M. F. (1991). Geographic information systems. Progress in Human Geography, 15(2), 194–200. https://doi.org/10.1177/030913259101500205
Michael F. Goodchild (2009) Geographic information systems and science: today and tomorrow, Annals of GIS, 15:1, 3-9, DOI: 10.1080/19475680903250715

SEMESTER I
CORE COURSE

Practical I ADVANCED CARTOGRAPHY
Course Code: **MSGGY01DSC05**

Description of the Course:

The course on Advanced Cartography offers a hands-on and immersive learning experience focused on mastering cutting-edge cartographic techniques and technologies. Through this practical syllabus, students will delve into the art and science of map design, exploring advanced principles of data visualization, thematic mapping, and geospatial analysis. The syllabus covers the latest software tools used in cartography, including GIS platforms.

Course Objectives

- To acquire understanding and hands-on training in advanced techniques in Cartography with special reference to GIS.
- Provide insight and practice to analyze climatic, geomorphic, and socio-economic data and interpret the result
- To familiarize the students with the techniques in geography for the analysis of the elements constituting the physical environment and to apply the knowledge in practice.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
--	4	4	--	12	12	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Practice techniques to calculate the average slope and gradients of the earth's surface and interpret terrain
CO2	Acquire technical skills in the analysis of the morphological aspects of the drainage basin
CO3	Acquire skills in performing various spatial analyses in GIS
CO4	Analyse and interpret hydro-meteorological data for better water resource management.
CO5	Analysis of regional lithology, form, and processes

COURSE CONTENTS

Module I

1.1 Toposheet and Open Series Maps
1.2 Interpretation, Comparative Analysis at Different Scales, Slope and Distance Calculation,
1.3 Thematic Mapping Techniques – Isopleth, Choropleth, Chorochromatic, Choroschematic,
1.4 Projections – International Projection, Cylindrical, Conical, Zenithal (Polar Case) using G. Projector

Suggested Readings

Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan, Kolkata.
Singh L R (2009) Fundamentals of Practical Geography, Sharda Pustak Bhavan
R P Misra (2014) Fundamentals of Cartography, Concept Publishing Company, new Delhi
Grafarend and Krumm (2006) Map Projections, Springer, Germany

Module 2

2.1 QGIS based Georeferencing, Vectorization, Data Editing, Topological error correction
2.2 Spatial Analysis and Modeling –Proximity Analysis, Overlay Analysis, Buffer Analysis, Network Analysis, Spatial Auto Correlation
2.3 Gravity Modeling, DTM/DEM, Integration with Remote Sensing data
2.4 Mapping Layout.

Suggested Readings

Saha, Pijushkanti (2017) Advanced Practical Cartography, Books and Allied, Kolkata
Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
https://docs.qgis.org/3.28/en/docs/user_manual/index.html- QGIS User Manual

Module 3

3.1 Terrain Profiling, Slope Analysis, Landscape Modeling
3.2 Calculation of Average Slopes- Smith, Robinson, and Went Worth
3.3 Delineation of Watershed, Morphometric analysis –
3.4 Linear, Aerial, Relief aspects,
Calculation of area, stream ordering – Calculating Drainage Frequency

Suggested Readings

Strahler, A. N. (1964): Quantitative Geomorphology of Drainage Basins and Channel Networks, In: Handbook of Applied Hydrology, Ven Te Chow, Ed., Section 4-II, McGraw-Hill Book Company, New York
Chorley, R.J. (ed.) 1972. Spatial Analysis in Geomorphology, Harper and Row.
Mayer, L. 1990. Introduction to Quantitative Geomorphology, Prentice Hall, New Jersey.

Module 4

4.1 Preparation of climatic maps- Isopleths, Isotherms, Isobars, Isohytes, Equipluves, and Equi-Variable maps
4.2 Graphs and Diagrams- Columnar, Linear, and Circular graphs – Frequency graphs – Trend graphs
4.3 Open-Source Climatic Data Derivation.
4.4 Cyclonic track analysis

Suggested Readings

Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan, Kolkata.
Saha, Pijushkanti (2017) Advanced Practical Cartography, Books and Allied, Kolkata
Singh L R (2009) Fundamentals of Practical Geography, Sharda Pustak Bhavan

Core Compulsory Readings (*Books, Journals, E-sources Websites/we blinks***)**

Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan, Kolkata.
Saha, Pijushkanti (2017) Advanced Practical Cartography, Books and Allied, Kolkata
Singh L R (2009) Fundamentals of Practical Geography, Sharda Pustak Bhavan
Singh RL and Rana B Singh (2004) Elements of Practical Geography, Kalyani Publishers, New Delhi

Core Suggested Readings (*Books, Journals, E-sources Websites/web links***)**

Bangulia A M (2006) Practical Geography, Anmol Publishers Pvt. Ltd.
Chorley, R.J. (ed.) 1972. Spatial Analysis in Geomorphology, Harper and Row.
Doornkamp, J.C. and King, C.A.M. 1971. Numerical Analysis in Geomorphology: An Introduction, Arnold, London.
King, C. A. M. (1966): Techniques in Geomorphology, Edward Arnold Ltd., London
Monkhouse F J & Wilkinson H R (1973), Maps and Diagrams, Methuen & Co. Ltd. London
Morisawa, M. 1983. Geomorphological Laboratory Manual, John Wiley & Sons, New York.
Navarra, J. G. (1979): Atmosphere, Weather and Climate, W. B. Saunders Company, Philadelphia

SEMESTER II

CORE COURSE

METHODOLOGY OF GEOGRAPHICAL RESEARCH

Course Code: MSGGY02DSC06

Description of the course:

A research methodology course is designed to provide students with a comprehensive understanding of the principles, techniques, and processes involved in conducting research across various disciplines. The course aims to equip students with the necessary skills to design, implement, analyze, and interpret research studies effectively.

Course Objectives

- To acquaint the students with the basic knowledge about research in terms of identification of research problem, research design, data collection, analysis and report writing.
- To get an idea about scientific processes and ethics of quality research
- To develop a keen interest in geographical research and use the knowledge for future work

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Analyse the conceptual background of research in geography
CO2	Identify and formulate a Research Problem
CO3	Examine the various methods of data Collection and Field survey
CO4	Developing skills in Processing and Analysis of Data and writing dissertation
CO5	Acquires expertise in Interpretation, Report writing and presentation

COURSE CONTENTS

Module I

1.1 Research – meaning, Objectives, Types. Fundamental research in Geography.
1.2 Research methodology versus research methods, Research Approaches- Ontology and epistemology;
1.3 Scientific Methods and Scientific Research, Bias and Prejudice.
1.4 Research Process, Research Ethics.

Suggested Readings

Montello, Daniel R. and Sutton, P.C. 2006. An Introduction to Scientific Research in Geography, Sage Publications, London.
Preece, R. 1994. Starting Research: An Introduction to Academic Research and Dissertation Writing, Continuum, London.
Sharma, P.R., R. S. Yadava and Sharma, V.N. 2011. Research Methodology: Concepts and Studies, R. K. Books, New Delhi
Gerald Guthrie (2010) Basic Research Methods, Sage Publication, New Delhi.
Hay I (2005) Qualitative Research Methods in Geography, Oxford University Press

Module 2

2.1 Identification of the problem, Defining the problem. Aims, Objectives, Research questions. Literature review – purpose of literature review.
2.2 Framework of searching, managing your search, search tools: Library Catalogs.
2.3 Abstracts and Reviews, Citation Indices, Websites, Sources of literature, Evaluating the literature
2.4 Formulation of hypothesis and methodology. Research proposal, Research design – need and importance.

Suggested Readings

Misra H N and V P Singh (1998) Research Methodology in Geography, Social, Spatial and Policy Dimensions, Rawat Publications, New Delhi.
Britha Mikkelsen (2005) Methods for Development Work and Research, Sage Publication, New Delhi
Sharma, P.R., R. S. Yadava and Sharma, V.N. 2011. Research Methodology: Concepts and Studies, R. K. Books, New Delhi
C R Kothari and Gaurav Garg (2019) Research Methodology Methods and Techniques, New Age International Publisher

Module 3

3.1 Sources of Data- Primary and Secondary, Qualitative and Quantitative data.
3.2 Data collection- Questionnaire interview – Semi structured interview and Focused Group Discussions, Field Survey, Sampling and data processing- Sampling errors
3.3 Ground truth verification, Ethnography of Participants Observation, Photovoice, Participatory research methods
3.4 Data processing analysis and presentation, Using statistics to describe and Explore data , descriptive statistics, explanatory statistics, Computer assisted qualitative

and quantitative data analysis

Suggested Readings

Lunsbury J.F. and Aldrich, F.T. 1979. Introduction to Geographic Field Methods and Techniques, Charles E. Mercill Publishing Company, Columbus
Stoddard, Robert H. 1982. Field Techniques and Research Methods in Geography, Kendall/Hunt for National Council for Geographic Education
Hay. I. (2010). Qualitative Research Methods in Human Geography, 3rd ed. Oxford University Press, South Melbourne, Australia

Module 4

4.1 Writing research paper, abstracts and Synopsis.
4.2 Thesis writing –literature review- bibliography
4.3 Plagiarism checking, Software
4.4 Research and project proposals, Intellectual Property Rights

Suggested Readings

John C Almack (2006) Research and Thesis Writing, Cosmo Publications, New Delhi.
Oliver, Paul, 2004. Writing Your Thesis, Vistaar Publications, New Delhi
Preece, R. 1994. Starting Research: An Introduction to Academic Research and Dissertation Writing, Continuum, London.
Chris Hart (2005) Doing Your Masters Dissertation, Vistar Publications, New Delhi.

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Britha Mikkelsen (2005) Methods for Development Work and Research, Sage Publication, New Delhi.
Chris Hart (2005) Doing Your Masters Dissertation, Vistar Publications, New Delhi.
Gerald Guthrie (2010) Basic Research Methods, Sage Publication, New Delhi.
Hay I (2005) Qualitative Research Methods in Geography, Oxford University Press
John C Almack (2006) Research and Thesis Writing, Cosmo Publications, New Delhi.
Misra H N and V P Singh (1998) Research Methodology in Geography, Social, Spatial and Policy Dimensions, Rawat Publications, New Delhi.
Ranjit Kumar (1996) Research Methodology, Sage Publication, London.
Varma C A (2013) Research in Applied Geography, Swastik Publication, New Delhi
Hay. I. (2010). Qualitative Research Methods in Human Geography, 3rd ed. Oxford University Press, South Melbourne, Australia,
Lunsbury J.F. and Aldrich, F.T. 1979. Introduction to Geographic Field Methods and Techniques, Charles E. Mercill Publishing Company, Columbus.
Misra, R. P. 2015. Research Methodology: A Handbook, Concept Publishing Company, New Delhi.
Montello, Daniel R. and Sutton, P.C. 2006. An Introduction to Scientific Research in Geography, Sage Publications, London.
Oliver, Paul, 2004. Writing Your Thesis, Vistaar Publications, New Delhi
Preece, R. 1994. Starting Research: An Introduction to Academic Research and Dissertation Writing, Continuum, London.
Sharma, P.R., R. S. Yadava and Sharma, V.N. 2011. Research Methodology: Concepts and Studies, R. K. Books, New Delhi.

Stoddard, Robert H. 1982. Field Techniques and Research Methods in Geography, Kendall/Hunt for National Council for Geographic Education
C R Kothari and Gaurav Garg (2019) Research Methodology Methods and Techniques, New Age International Publishers

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

UWE Flick (2009) An Introduction to Qualitative Research, SAGE Publications India Pvt Ltd
Limb Melanie and Dwyer Claire (2001) Qualitative Methodologies for Geographers Issues and Debates, Arnold publishers.
Walliman Nicholas (2011) Your Research project, SAGE Publication India Pvt Ltd.
K.L.Narasimha Murthy(2014) Research methodology in Geography, Concept Publishing Company (P) LTD.
G.L Ray and Sagar Mondal (1999) Research Methods in Social sciences and Extension Education, Kalyani Publishers.
George Argyrous (2011) Statistics for Research with a Guide to SPSS, SAGE Publications India Pvt Ltd
Madhuri Kulkarni (2016) Advanced Research in Geography, Gaurav Books

SEMESTER II

CORE COURSE

PRINCIPLES OF REMOTE SENSING

Course Code: MSGGY02DSC07

Description of the course :

The course "Principles of Remote Sensing" provides an in-depth exploration of the fundamental concepts, theories, and techniques used in remote sensing. This course aims to develop a comprehensive understanding of remote sensing principles and their applications in various fields such as environmental science, geography, geology, agriculture, and urban planning. By the end of the course, students will have gained a solid foundation in the principles of remote sensing and the ability to apply remote sensing techniques to solve real-world problems. They will be equipped with the necessary skills to acquire, process, analyze, and interpret remote sensing data, and make informed decisions based on the insights derived from such data.

Course Objectives

- To create a basic knowledge on different types of remote sensing, basic principles of remote sensing.
- To make the students aware about the advantages of the applications of remote sensing as a tool for monitoring objects & phenomena and suggesting their strategic management.
- To apply the potentials of remote sensing technology in multidisciplinary research for making suggestions for various problems.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Analyze the energy interactions in the atmosphere and earth surface features
CO2	Select the type of remote sensing technique / data for the required purpose
CO3	Develop theoretical knowledge about the skill of photogrammetry and identify the earth surface features from satellite images
CO4	Examines various techniques in Digital Image Processing
CO5	Develop a sound knowledge of the applications of remotely sensed data for monitoring and managing atmospheric and terrestrial features.

COURSE CONTENTS

Module I

1.1 Evolution of Remote Sensing. Electromagnetic Radiation. Energy Interactions with Atmosphere and Ground.
1.2 Types of sensors and platforms, Advances in Indian remote sensing.
1.3 Recent Trends in Remote Sensing, LIDAR, Drone Mapping, Hyperspectral Remote Sensing.
1.4 Application of RS in various fields.

Suggested Readings

James B Campbell and Randolph H W (2011) Introduction to Remote Sensing, Gulford Press, New York.
Paul Curran P.J. (1985) Principles of Remote Sensing, ELBS Publications.
Sabins, F F (1987) Remote Sensing; Principles and Interpretation, W.H Freeman & Co. New York.
M Anji Reddy (2014) Remote Sensing and Geographical Information Systems, BS Publications.
Basudeb Bhatta (2008) Remote Sensing and GIS, OUP India Publication.
Christian Matzler (2006) Thermal microwave radiation: Applications for remote sensing, The Institution of Engineering and Technology, London .

Module 2

2.1 Development of Aerial remote Sensing
2.2 Basic Principles-Types of Aerial Photographs-Film-Filters-Aerial cameras
2.3 Concept of Photogrammetry – Definition-Geometry of Vertical Photographs
2.4 Flight Planning Mission; Overlapping concept – Stereoscopic Neat Model-B\H Ratio-Parallax-Scale of Vertical Photographs- Orthophotos.

Suggested Readings

M Anji Reddy (2014) Remote Sensing and Geographical Information Systems, BS Publications.
Basudeb Bhatta (2008) Remote Sensing and GIS, OUP India Publication.
Rampall K K (1999) Handbook of Aerial Photography and Interpretation, Concept Publishing Co. New Delhi
Arnold R H (2015) Interpretation of Air photos and Remotely Sensed Imagery, CBS publication.

Module 3

3.1 Principles of Satellite remote sensing.
3.2 LANDSAT, SPOT, IRS, ERS, INSAT programmes and their characteristics.
3.3 Types of satellites and sensors, Platforms / Sensor properties-. Multispectral- Hyperspectral- Thermal and micro wave Remote Sensing.
3.4 Data products- Geometric Characteristics.

Suggested Readings

Rees, W. G.(2001), Physical Principles of Remote Sensing, Cambridge University Press, 2001
Charles Elach & Jakob van Zyl. (2006) Introduction to the physics and techniques of Remote Sensing, John Wiley & Sons publications.
ASPRS; Subsequent edition (September 1, 1983) Manual of Remote Sensing. Volumes I & II. Second Edition

Module 4

4.1 Data Products and their Characteristics
4.2 Data Pre-processing – Basic Principles of Visual Interpretation, Ground Truth verification.
4.3 Procedures in Digital Image Processing- Information Extraction; Image Classification- Supervised and Unsupervised Classification, Image Classifiers; Accuracy Assessment.
4.4 Indices; NDVI-SAVI-NDWI-EVI

Suggested Readings

Lillesand T M, Kiefer R W and J W Chipman (2008) Remote sensing and Image Interpretation, John Wiley, New Delhi.
Charles Elach & Jakob van Zyl. (2006) Introduction to the physics and techniques of Remote Sensing, John Wiley & Sons publications.
Sabins, F F (1987) Remote Sensing; Principles and Interpretation, W.H Freeman & Co. New York.

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

James B Campbell and Randolph H W (2011) Introduction to Remote Sensing, Gulford Press, New York.
Charles Elach & Jakob van Zyl. (2006) Introduction to the physics and techniques of Remote Sensing, John Wiley & Sons publications.
Christian Matzler (2006) Thermal microwave radiation: Applications for remote sensing, The Institution of Engineering and Technology, London .
Jenson J R (2004) Remote sensing of the Environment, Pearson Education Pvt. Ltd, Delhi.
Lillesand T M, Kiefer R W and J W Chipman (2008) Remote sensing and Image Interpretation, John Wiley, New Delhi.

Panda B C (2005) Remote Sensing -Principles and Applications, Viva Books, New Delhi.
Rampall K K (1999) Handbook of Aerial Photography and Interpretation, Concept Publishing Co. New Delhi
Rees, W. G.(2001), Physical Principles of Remote Sensing, Cambridge University Press, 2001
Paul Curran P.J.(1985) Principles of Remote Sensing, ELBS Publications.
Sabins, F F (1987) Remote Sensing; Principles and Interpretation, W.H Freeman & Co. New York.
ASPRS; Subsequent edition (September 1, 1983) Manual of Remote Sensing. Volumes I & II. Second Edition
ISPRS Journal of Photogrammetry and Remote Sensing, Elsevier Publication.
International Journal of Applied Earth Observation and Geoinformation, Elsevier Publication.

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Remote Sensing and Environment, Elsevier Publication
Journal of Geodesy, Springer Publication.
IEEE Transactions on Geoscience and Remote Sensing, Institute of Electrical and Electronics Engineers Inc.
Remote Sensing in Ecology and Conservation, Zoological society of London, Online ISSN:2056-3485
https://natural-resources.canada.ca/maps-tools-and-publications/satellite-imagery-and-air-photos/tutorial-fundamentals-remote-sensing/image-interpretation-analysis/9303 -:~:text=Interpretation%20and%20analysis%20of%20remote,extract%20useful%20information%20about%20them.
Sailesh Samanta, A Text Book of Remote sensing , GIS and GNSS, Nation press Publication.

SECOND SEMESTER

CORE COURSE

GEOSPATIAL TECHNIQUES

Course Code : MSGGY02DSC08

Description of the course :

Techniques of Geo-informatics" is a comprehensive and interdisciplinary course that focuses on the use of geographical information systems (GIS), remote sensing, and related technologies to analyze, visualize, and interpret spatial data for various applications. This course combines principles from geography, computer science, environmental science, and engineering to provide students with a strong foundation in utilizing spatial information for decision-making and problem-solving. The course typically involves a combination of lectures, practical lab sessions, assignments, group projects, and possibly fieldwork. It aims to equip students with the skills to effectively analyze spatial data, make informed decisions, and contribute to various industries where geo-informatics plays a crucial role.

Course Objectives

- To understand the applications of GIS in various fields
- Train and equip the students with advanced techniques of Digital Image Processing and Aerial Photogrammetry
- To utilize the techniques of Geoinformatics in various research works.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
--	4	4	--	12	12	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes : At the end of the course, the Student will be able to

CO1	Hands on experience of different type of map mking.
CO2	Spatial planning model for land use
CO3	Hands on training of interpretation of aerial and satellite images
CO4	Hands on training of survey technique.

COURSE CONTENTS

Module I

1.1 Preparation of Maps - Land Use Change, Flood Prone Area, Landslide Susceptibility,
1.2 Groundwater Potential Zone, Utility Network, Water Quality Disaster Management
1.3 Spatial Planning and Modeling – Urban, Rural, Asset.
1.4 Phython Programming and Scripting

Suggested Readings

Alan M. MacEachren (2008) How Maps Work, Representation, visualization, and Design, Rawat Publications.
R.P. Misra and A. Ramesh(2002), Fundamentals of Cartography Revised and Enlarged, Concept Publishing Company.
Eric Matthes (2019) Python Crash Course A Hands-on, Project based introduction to Programming, No Starch Press,US
https://youtu.be/kqtD5dpn9C8
https://youtu.be/BbUctneHfKc

Module 2

2.1 Aerial photographs, Methods of Stereoscopic viewing, Stereographic test. Elements of Visual Image Interpretation
2.2 Natural environment, Geomorphology and Lineaments, Vegetation, Drainage Pattern, Mapping terrain forms, Land use / Land cover..
2.3 Mapping Cultural features and Transportation.
2.4 Determination of Photo Scale and Focal Length.

Suggested Readings

Pijushkanti Saha and Partha Basu (2009) Advanced Practical Geography, Books and Allied (P) Ltd
https://youtu.be/bDupHqpsEcE
https://youtu.be/0qJdQT6UsIA
https://youtu.be/xskBV_fV_88
https://youtu.be/Ia0Fg08QMjo
https://youtu.be/JAQVT4z8ZEw

Module 3

3.1 Data Products and their Characteristics. Data Pre-processing and Basic Principles of Visual Interpretation.
3.2 Procedures in Digital Image Processing- Information Extraction; Image Classification- Supervised and Unsupervised.
3.3 Ground Truth verification, Accuracy Assessment.
3.4 Indices; NDVI-SAVI-NDWI-EVI

Suggested Readings

https://youtu.be/EcLPYfiin_A
https://youtu.be/tx3d5ECf0Gg
https://youtu.be/WerR0ALjIfs
https://youtu.be/Tcr3CYiK0Fc
https://youtu.be/dJrpkRFplRM

Module 4

4.1 Survey Analyst based Surveying Techniques,
4.2 Total Station and DGNSS
4.3 Distometer based survey and mapping.
4.4 Preparation of Maps and Spatial Data Management using AutoCAD and QGIS.

Suggested Readings

Rangwala (2005) Surveying and Levelling, Charotar Publishing House
https://youtu.be/cMJ7AfcdJSA
https://youtu.be/3XDTl6ECvU8
https://youtu.be/HjaWYVxT1cE
https://youtu.be/oon5ayl9DYs
https://youtu.be/UVJHDLCeRxk

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Alan M. MacEachren (2008) How Maps Work, Representation, visualization, and Design, Rawat Publications.
R.P. Misra and A. Ramesh(2002), Fundamentals of Cartography Revised and Enlarged, Concept Publishing Company.
Eric Matthes (2019) Python Crash Course A Hands-on, Project based introduction to Programming, No Starch Press,US
Rangwala (2005) Surveying and Levelling, Charotar Publishing House
Pijushkanti Saha and Partha Basu (2009) Advanced Practical Geography, Books and Allied (P) Ltd
https://youtu.be/EcLPYfiin_A
https://youtu.be/tx3d5ECf0Gg
https://youtu.be/WerR0ALjIfs
https://youtu.be/Tcr3CYiK0Fc
https://youtu.be/dJrpkRFplRM
https://youtu.be/cMJ7AfcdJSA
https://youtu.be/3XDTl6ECvU8
https://youtu.be/HjaWYVxT1cE
https://youtu.be/oon5ayl9DYs
https://youtu.be/UVJHDLCeRxk
https://youtu.be/kqtD5dpn9C8
https://youtu.be/BbUctneHfKc

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

K. Kavitha et al. (2021) Python Crash Course A Tutorial Approch, Notion Press
Renganathan Sekar (2019), Crash Course on Python Scripting For Abaqus
Jawahar Lal Jain(2023), Fundamentals of Cartography and Geoinformatics, Atlantic Publishers and Distributors (P) Ltd
https://youtu.be/_uQrJ0TkZlc
https://youtube.com/playlist?list=PLu0W_9lII9agwh1XjRt242xIpHhPT2llg
https://youtu.be/ihnWXGPxNEk
https://youtu.be/RYYQcjchV6A
https://youtu.be/GsojLuJpe_0
https://youtu.be/ACIINtBkCY8
https://youtube.com/playlist?list=PLXOYj6DUOGrrjyRKpD0U0bIKGOXCAOHkE
https://youtube.com/playlist?list=PLm_MSClsnwm9I2iviE0YKt6PZTyQCYc8j
https://youtu.be/Jxa66pOXZGM

SECOND SEMESTER

ELECTIVE COURSE

GEOGRAPHIES OF ENVIRONMENT AND HEALTH

Course Code: MSGGY02DSE01

Description of the course:

The course explores the complex relationship between the environment and human health, aiming to understand how environmental factors can affect individual and population well-being.

Course Objectives

- To analyse the scope, significance and various approaches to environmental geography
- To understand the structure of the ecosystem as well as the man – environment interrelationships
- Examine the causes and consequences of Environmental deterioration
- To outline the developing role of geography in the theoretical and practice-based issues in the area of heath and health care
- To explain the dimensions of geographical determinants of health in a region.
- To engage students in multidisciplinary perspectives on people's health issue at different geographical scales

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Understanding the dimensions of man nature interrelationship, discussing the elements of ecosystem and types of ecosystem constituting the environment
CO2	Examine the dimensions of environmental disasters and hazards and knowledge of anthropogenic interventions, impacts and conservation strategies, planning and environmental policies
CO3	To outline the developing role of geography in the theoretical and practice-based issues in the areas of health and healthcare
CO4	To explain the dimensions of geographical determinants of health in a region
CO5	To analyse the spatial pattern of availability of health resources and its inequalities

COURSE CONTENTS

Module I

1.1 Nature and scope of environmental geography.
1.2. Man, and environment relationship – Human settlements and environment – Urban environment- Environment and development
1.3 Ecosystem, Food Web, Food Pyramid, and Nutrient Cycle
1.4 Biodiversity, Leopold Matrix, Ecological footprint, Desert and coastal ecosystems; integrated coastal zone management

Suggested Readings

Savindra Singh (2008) Environmental Geography, Prayag Pusthak Bhavan, Allahabad
Saxena H M (2004) Environmental Geography, Rawat Publication, New Delhi.
Daniel Coith (2019) Environmental Geography, Ecology, Biodiversity and Climate change, Amiga press inc, Newdelhi
Bhaskar C B (2006) Environmental Geography, GNOSIS Publishers, Delhi

Module 2

2.1 Environmental disasters and hazards
2.2 Changes in patterns of land use; Population explosion and food security
2.3 Environmental degradation; Deforestation, desertification and soil erosion Emerging environmental issues
2.4 Eco-crisis – Environmental management and planning. Environmental quality, Environmental laws and legislation, policies, and programs,

Suggested Readings

Balakrishnan, M., 1998: Environmental Problems and Prospects in India, Oxford & IBH Pub., New Delhi.
Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, Academic Press. London
Savindra Singh (2008) Environmental Geography, Prayag Pusthak Bhavan, Allahabad
Mohan Singh (2011) Environmental Geography, A B D Publishers, New Delhi.

Module 3

3.1 Geography of health- nature, scope and history- Concept of health, Geography of illness; Health and environment- climate change, natural hazards, air quality
3.2 Disease classification genetic, communicable, non-communicable, occupational, deficiency diseases
3.3 WHO classification of diseases. Diseases diffusion
3.4 Epidemiology and geography, Epidemiological transition-The theory of epidemiological transition (Omran theory)

Suggested Readings

Anthamatten, P. and Hazen, H. 2011. An introduction to the Geography of Health, Routledge, New York
Mc. Glashan N.D (1972): 'Medical Geography, Methuen, London
Meade M. S and R.J. Erickson (2005), Medical Geography, Guilford press
Misra, R.P. 2007. Geography of Health: A Treatise on Geography of Life and Health in India, Concept Publishing Company, New Delhi.
Rais A S Learmonth A T A (1990): 'Geographical aspects of health and diseases in India' Rawat Publication, Jaipur

Module 4

4.1 Urban Health and well being- Gender equity in health; migration and health
4.2 Life style and diseases; ageing and health, adolescent/youth and health
4.3 Concept of health care, health care system worldwide
4.4 Structure and evolution of health care system in India from ancient period, health care services in India, Health care policy in India

Suggested Readings

Husain Majid (1994): 'Medical Geography', Anmol Publication Pvt.Ltd. New Delhi
Freudenberg, N., Klitzman, S., and Saegert, S. (eds.) 2009. Urban Health and Society: Interdisciplinary Approaches to Health and Practice, San Francisco, CA: Jossey-Bass.
May J M (1970): 'The World Atlas of Diseases' National Book Trust, New Delhi
Rais A S Learmonth A T A (1990): 'Geographical aspects of health and diseases in India' Rawat Publication, Jaipur

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Odum E P (1959) Fundamentals of Ecology, Saunders
Misra, R.P. 2007. Geography of Health: A Treatise on Geography of Life and Health in India, Concept Publishing Company, New Delhi.
Journal of Health and Social science, The scientific Journal of SIPISS, ISSN 2499-2240
Journal of Health science, ISSN 2232-7576(Print) ISSN1986-8049 (Online)

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Savindra Singh (2008) Environmental Geography, Prayag Pusthak Bhavan, Allahabad
*https://onlinelibrary.wiley.com/doi/abs/10.1002/9781118410868.wbehibs420***.**
Anthamatten, P. and Hazen, H. 2011. An introduction to the Geography of Health, Routledge, New York
Gatrell, A.C. and Elliott, S.J. 2015. Geographies of Health: An Introduction. 3rd edition, Wiley- Blackwell, Oxford

SECOND SEMESTER

ELECTIVE COURSE

GEOGRAPHY OF TOURISM

Course Code: MSGGY02DSE02

Description of the course:

The course "Geography of Tourism" explores the relationship between tourism and geography, focusing on the spatial aspects of tourism development, destinations, and impacts. It examines how geographical factors shape and influence tourism activities, patterns, and experiences around the world.

Course Objectives

* To understand geographical factors driving tourism industry
* To analyse the cultural, economic, social and environmental impacts of tourism industry
* To examine the recent trends in tourism industry and changing paradigms
* To model and plan the sustainable development of tourism industry according to the potentials of locations.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Critique the significance of tourism as a human expression in spatial context.
CO2	Evaluate the significance of tourism in the cultural, social, economic and environmental milieu of geographic spaces.
CO3	Analyse various types of tourism and their geo-backup
CO4	Examine the spatial dimensions of tourism attractions at national and international level
CO5	Evaluation of emerging tourist research paradigms and tourism planning

COURSE CONTENTS

Module I

1.1 Tourism – Concept, nature, scope, and importance
1.2 Components of tourism – approaches to the study of tourism
1.3 Significance of tourism in social, cultural and economic realms
1.4 Tourism and resources: water, climate, natural and cultural landscape and Wildlife resources

Suggested Readings

Bhatia A K (1996), Tourism Development, Principles and Practices, Sterling Publishers, New Delhi
Sandeep Bhardwaj (2012) Handbook of Tourism Geographies, Arise Publishers New Delhi.
Stephen Williams,1998, Tourism Geography, Routledge, London
Charles R. Goeldner, J.R. Brent Ritchie (2007), Tourism Principles, Practices, Philosophies, Gopaljee Enterprises, Newdelhi

Module 2

2.1 Factors influencing the growth of tourism – Infrastructure and support systems
2.2 Concepts of mobility and spatialities in tourism, tourism fluxes
2.3 Cultural geography of tourism and leisure, Gender differences in Leisure
2.4 Place marketing and place formation- Spatial tradition of mobility, Time space Geography, Tourism Area Life Cycle.

Suggested Readings

Stephen Williams,1998, *Tourism Geography*, Routledge, London
Bishwanath Ghosh, (2006), Tourism and Travel Management, Vikas Publishing House, New Delhi
A.K. Bhatia, (2004), International Tourism Management, Sterling Publishers, Newdelhi
Sandeep Bharadwaj, (2012), Handbook of Tourism Geographies New Perspective On Space, Place and Tourism, Arise Publishers and Distributors, Newdelhi

Module 3

3.1 Types of Tourism -Eco-tourism, green tourism, Heritage tourism, Adventure tourism, Monsoon tourism, Niche tourism and medical tourism
3.2 Participation and community-based tourism, Responsible tourism, rural tourism and Urban tourism
3.3 Social, cultural and Economic significance of tourism, Multiplier effect on the Economy - Impact of tourism on environment, carrying capacity and tourism development.
3.4 Climate change and tourism

Suggested Readings

Arpita Mathur,2019, Fundamentals of Travel and Tourism, Ane Books Pvt.Ltd
V. Dhulasi Birundha, (2011), Environmental Challenges Towards Tourism, Kanishka Publishers
A.K. Bhatia, (2004), International Tourism Management, Sterling Publishers, New Delhi
Bishwanath Ghosh, (2006), Tourism and Travel Management, Vikas Publishing House, New Delhi

Module 4

4.1 Global tourism flows – Distance decay and power curves, spatial dimensions of tourism attractions at national and international level
4.2 Major natural and cultural attractions in India with special reference to Kerala
4.3 Growth and development of tourism in spatio-temporal context Problems and prospects of Tourism in India, National Tourism Policy
4.4 Tourist Research Paradigms, Tourism-energy model, Tourism planning – Application of Geospatial Technology in tourism planning and modelling – Case studies

Suggested Readings

Krishan K Kamra Mohinder Chand, (2006), Basics of Tourism Theory, Operation And Practice, Kanishka Publishers
Naveen Kumar, (2018), Global Tourism Policies, Laws and Action Plans, Paradise Press, New Delhi
Arpita Mathur,2019, Fundamentals of Travel and Tourism, Ane Books Pvt.Ltd
Sampad Kumar Swain, Jitendra Mohan Mishra, (2012), Tourism Principles and Practices, Oxford University Press, New Delhi
Guptajit Pathak, (2015), Tourism in India Continuity, Development, Challenges And Issues, Avon Publications, New Delhi

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

R.K. Goswami, (2007), Tourism and Environment, Cybertech Publications, New Delhi
Julie Wilson, (2012), The Routledge Handbook of Tourism Geographies, Routledge Publishers
Bhatia A K (1996), Tourism Development, Principles and Practices, Sterling Publishers
Kennell, J., 2016. Carrying capacity. In Encyclopedia of Tourism (pp. 133-135) Springer International Publishing

Core Suggested Readings (Books, Journals, E-sources Websites/weblinks**)**

Velvet Nelson, (2013), An Introduction to the Geography of Tourism, Rawat Rawat Publications
Sandeep Bhardwaj (2012) Handbook of Tourism Geographies, Arise Publishers, New Delhi.
https://www.sciencegate.app/keyword/823576
https://www.semanticscholar.org/author/W.-Hassan/74687662

SEMESTER II
ELECTIVE COURSE

GEOGRAPHY OF WATER RESOURCES
Course Code: MSGGY02DSE03

Description of the course:

It explores the fundamental principles of hydrological processes and their implications for managing and sustaining water resources. It provides a comprehensive understanding of the distribution, movement and availability of water within the earth's hydrological cycle and how it influences various aspects of our environment and society

Course Objectives

- To appraise the significance of hydrology and to understand the complex water systems of the earth and to find solutions for water problems.
- To know the water cycle and its relevance in the sustenance of water resources and to apply the water balance equation to various hydrological problems
- To analyse the nature of processes involved in surface and ground water systems
- To examine the impact of human activities on water resources and contributing to the water resource management of the area based on the analysis of hydrological data.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Understand the fundamental concepts in Hydrology and to analyse the components of hydrological cycle
CO2	Analyse the elements of surface as well as ground water hydrology
CO3	Examine the dimensions of contemporary water crisis
CO4	Acquire knowledge on challenges in hydrology water resource planning and management
CO5	Examines the prospects of Water Resource Management and Policy

COURSE CONTENTS

Module I

1.1 Water – The environmental, technological of societal complexities system concepts in Hydrology
1.2 Sustainable water management and sustainable water development goals (SDG6).
1.3 Hydrological Cycle; systems concepts, lumped and distributed systems, deterministic and stochastic Systems
1.4 Human impact on the hydrological cycle, Global Water Balance – water balance equation

Suggested Readings

Savindra Singh - Fundamentals of Hydrology, Pravalika Publishers Allahabad
Viessman, W and Lewis (1996) Introduction to Hydrology, Harper Collins College Publishers
Jain, S.K., Aggarwal, P.K. and Singh, V.P. 2007. Hydrology and Water Resources of India, Springer, The Netherlands.
Jaya Rami Reddy (2011) A Textbook of Hydrology, University Science Press

Module 2

2.1 Surface Water Systems, Drainage Basin as Geohydrological unit, – Basin Hydrological Phenomena- stream flow, stream flow measurement rainfall runoff relationship
2.2 Hydrograph analysis - runoff analysis.
2.3 Ground water - factors affecting groundwater, Aquifers and their characteristics/classification, groundwater basins
2.4 Springs Darcy's Law and elementary groundwater flow equation, Ground water monitoring, groundwater resource estimation

Suggested Readings

Todd, D.K. 1980. Groundwater Hydrology, John Wiley, New York
Mysooru R Yadupathu Putty (2013) Principles of Hydrology I.K. International, New Delhi, 2013
Savindra Singh - Fundamentals of Hydrology, Pravalika Publishers Allahabad
Beek, E., Loucks, P.D. 2005. Water Resource Systems Planning and Management: An Introduction to Methods, Models and Applications, UNESCO, Paris
Karanth, K.R. 1988. Groundwater: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.

Module 3

3.1. Water use conflicts
3.2 Water quality and major water pollutants (points and non-point source)
3.3 Water quality criteria for different uses; Flood and drought studies – flood frequency analysis, flood plain zoning, estimation of flood for different frequencies, flood forecast
3.4 Drought assessment and monitoring

Suggested Readings

Abbas, B.M. 1982. The Ganges Water Dispute, Vikas Publishing House Pvt. Ltd., New Delhi
Andrew, D. W. and Trimble, S. 2004. Environmental Hydrology, 2nd Edition, Lewis Publishers, CRC Press
Jaya Rami Reddy (2011) A Textbook of Hydrology, University Science Press

Module 4

4.1 Concept and Practice of Water Management- Traditional Water Harvesting, Storing and Management practices in India
4.2 Approaches of Surface Water Management - Watershed based approaches
4.3 Rainwater Harvesting –Significance. Artificial groundwater recharge.
4.4 Wetlands Management, Government of India and State Government Initiatives for Water Management

Suggested Readings

Beek, E., Loucks, P.D. 2005. Water Resource Systems Planning and Management: An Introduction to Methods, Models and Applications, UNESCO, Paris.
Pietro Laureano (2001) Water Conservation Techniques in Traditional Human Settlements, Copal Publishing House
Mahajan G. 1989. Evaluation and Development of Groundwater, Ashish Publishing House, New Delhi.
Savindra Singh - Fundamentals of Hydrology, Pravalika Publishers, Allahabad
Micklin, Philip, P. 1996. Man, and the water cycle: Challenges for the 21st century, Geojournal, 39 (3): 285-298

Core Compulsory Readings (Books, Journals, E-sources Websites/weblinks**)**

Savindra Singh - Fundamentals of Hydrology, Pravalika Publishers, Allahabad
Jaya Rami Reddy (2011) A Textbook of Hydrology, University Science Press
Chow, V.T., Maidment, D.R. and Mays, W.L. (1988) Applied Hydrology, McGraw-Hill International Editions, McGraw-Hill Book Company, New York.
Viessman, W and Lewis (1996) Introduction to Hydrology, Harper Collins College Publishers
Karanth, K.R. 1988. Groundwater: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi
Raghunath, H.M (1987) Groundwater, Wiley Eastern Ltd., New Delhi.

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Beek, E., Loucks, P.D. 2005. Water Resource Systems Planning and Management: An Introduction to Methods, Models and Applications, UNESCO, Paris
Jain, S.K., Aggarwal, P.K. and Singh, V.P. 2007. Hydrology and Water Resources of India, Springer, The Netherlands
Joseph Holden (2013) Water Resources-An Integrated Approach, Routledge
Karanth, K.R. 1988. Groundwater: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
Beek, E., Loucks, P.D. 2005. Water Resource Systems Planning and Management: An Introduction to Methods, Models and Applications, UNESCO, Paris
Andrew, D. W. and Trimble, S. 2004. Environmental Hydrology, 2nd Edition, Lewis Publishers, CRC Press

SECOND SEMESTER

ELECTIVE COURSE

SOCIAL GEOGRAPHY WITH SPECIAL REFERENCE TO INDIA

Course Code: MSGGY02DSE04

Description of the course :

The course Social Geography with Special Reference to India delves into the relationship between geographic space and societal dynamics. It explores the historical evolution of social geography, aiming to deepen comprehension of how human behavior, culture, and customs interact with the environment, particularly within India. The course fosters an understanding of diverse cultural patterns, promotes ethical values, and encourages empathy for various perspectives in the country. Additionally, it analyzes the impact of globalization and technological advancements on India's social fabric, equipping students to engage with and contribute to the evolving societal landscape.

Course Objectives

- Examines the nature and scope of social geography and its development
- To acquire knowledge with respect to social and cultural pattern of the society, inculcate social ethics, human values, welfare well being.
- To have sense of appreciation and respect for the diversity of perspectives, world views and culture in India
- To analyse the dimensions of social change and transformation in the globalized technological era.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes : At the end of the course, the Student will be able to

CO1	Understand the link between social aspects with that of Geographical patterns in a region.
CO2	Trace out the social inequalities in a region and evaluating the role of historical, social and that of political economies.
CO3	Study socio-cultural diversity at national, state and local level; highlight the major impacts of such cultural diversity in a region.
CO4	Evaluate the social and cultural well being of population in a region and access its positive and negative impact on the development of a region

CO5	Analyse the trends in the process of social change and transformation in contemporary India

COURSE CONTENTS

Module I : Introduction to Social Geography

1.1 Nature, Scope and Contents of Social Geography-
1.2 Emergence of Social Geography-
1.3 Social variations in space- Causes and Consequences.
1.4 Social Geography as an academic discipline in India

Suggested Readings

Adhikari S (2017) Fundamentals of Political Geography, Rawat Publications
Robestein J H & Robert S Barren (1990) The Cultural Landscape: An Introduction to Human Geography, Prentice Hall of India Pvt. Ltd, New Delhi.

Module 2 : Social evolution in India

Part A : Social Evolution of India Before Colonization:

1.1 The Concept, Sources, Limitation and problems of reconstruction: The Prehistoric and the historic Scene
1.2 Peopling of India, The Janapadas of Ancient India and Mughal Subhas- continuity and change.

Part B : Social Evolution of India during Colonization and after:

1.3 Transformation of the regional structure During colonial period and after Independence - The social, economic and Political consequences.
1.4 The racial composition. The tribal Social Formation: The Problem of definition, distribution/redistribution.

Suggested Readings

Ali S.M (1966) The Geography of Puranas, Peoples Publishing House, New Delhi
Ranjith Tirtha (2002) Geography of India, Rawat Publication, Jaipur
Johns E (Ed.) (1975)– Readings in Social Geography, Oxford University Press

Module 3 : Social structure in India

1.1 Spatial distribution of various components of India's Social Structure: - The racial composition.
1.2 The tribal Social Formation: The Problem of definition, distribution/ redistribution.
1.3 The social and spatial organization of agrarian communities with special reference to the Institution of Caste.
1.4 Linguistic diversity and the question of identity, Religion in Indian Society

Historical background and pattern of current distribution.

Suggested Readings

Dikshit RD (1999) Political Geography, Tata McGraw Hill
Hussain M (1999) Human Geography, Rawat Publications Jaipur
Singh R Y (2003) Geography of Settlements, Rawat Publications, Jaipur

Module 4 : Contemporary India

1.1 The process of social change and transformation in the globalized technological era.
1.2 Racial-Caste-Religious-Linguistic and ethnic Minorities their problems and redressal.
1.3 Communalism, terrorism and bribery.
1.4 Dimensions of marginalization

Suggested Readings

Chris Hamnett (1966) – Social Geography A Reader, Taylor and Francis Ltd
David M. Smith (1973) The Geography of Social Well-Being in the United States: An Introduction to Territorial Social Indicators, McGraw-Hill, New York
Dwivedi RL (2007) - Fundamentals of Political Geography, Chaithanya Publishing House
Johns E (Ed.) (1975) – Readings in Social Geography, Oxford University Press
Paul Knox (1975) Social Wellbeing, A Spatial Perspective, Oxford University Press
Smith D M Social Problems and the City, Geographical Perspectives, Oxford University

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Aijazuddin Ahmad (1999) – Social Geography, Rawat Publications
Ali S.M (1966) The Geography of Puranas, Peoples Publishing House, New Delhi
Adhikari S (2017) Fundamentals of Political Geography, Rawat Publications
Chris Hamnett (1966) – Social Geography A Reader, Taylor and Francis Ltd
David M. Smith, (1973) The Geography of Social Well-Being in the United States: An Introduction to Territorial Social lndicators, McGraw-Hill, New York,
Dikshit RD (1999) Political Geography, Tata McGraw Hill
Dwivedi RL (2007) - Fundamentals of Political Geography, Chaithanya Publishing House
Johns E (Ed.) (1975)– Readings in Social Geography, Oxford University Press
Hussian M (1999) Human Geography, Rawat Publications Jaipur
Paul Knox (1975) Social Wellbeing, A Spatial Perspective, Oxford University Press
Ranjith Tirtha (2002) Geography of India, Rawat Publication, Jaipur
Robestein J H & Robert S Barren (1990) The cultural landscape : An Introduction to Human Geography, Prentice Hall of India Pvt. Ltd,New Delhi
Singh R Y (2003) Geography of Settlements, Rawat Publications, Jaipur
Smith D M Social Problems and the City, Geographical Perspectives, Oxford University

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Books:

"Social Geography: A Critical Introduction" by Vincent J. Del Casino Jr., Mary E. Thomas, Paul Cloke, Ruth Panelli

"Geographies of Development: An Introduction to Development Studies" by Robert Potter, Tony Binns, Jennifer Elliott

"The Cultural Landscape: An Introduction to Human Geography" by James M. Rubenstein

"Political Geography: World-Economy, Nation-State, and Locality" by Kevin R. Cox

"The Oxford India Short Introduction to Political Geography" by Yogesh Atal

Journals:

"Environment and Planning A: Economy and Space"

"Journal of Cultural Geography"

"Progress in Human Geography"

"Journal of Political Ecology"

"Geoforum"

E-Sources:

World Bank - Data (for socio-economic indicators and global trends): World Bank Data

United Nations Development Programme (UNDP) - Human Development Reports (for global human development data): UNDP HDR

IndiaStat (for comprehensive Indian socio-economic data): IndiaStat

Census of India (for demographic and social data): Census of India

National Sample Survey Office (NSSO) (for various socio-economic data): NSSO

Websites/Weblinks:

"Human Development Index" - UNDP's interactive HDI map and data: HDI

"Social Progress Index" - Comparative assessment of social progress worldwide: Social Progress Index

"Indian Council of Social Science Research (ICSSR)" - Research initiatives in social sciences: ICSSR

"Centre for the Study of Developing Societies (CSDS)" - Research on Indian society and politics: CSDS

"Geography and You" - Magazine focusing on environmental and social issues: Geography and You

SEMESTER II
INTER DISCIPLINARY COURSE
(Offered to other department students)

INDIA – LAND,PEOPLE AND ECONOMY

Course Code: **MSGGY02IDC01**

Description of the course:

Geography of India is the study of physical, cultural, and socio-economic aspects of India. It offers a comprehensive understanding of the diverse landscapes, natural resources, climate patterns, and human interactions within the Indian subcontinent. Understanding the geography of India provides insights into the country's immense diversity and the physical, cultural, and socio-economic dimensions of the country. It encompasses with analytical skills to comprehend the complexities of India's diverse landscapes, environmental challenges, and the interplay between geography and human societies.

Course Objectives

- Enable students to broaden and deepen their understanding of India's geographical setting
- Understand how the geo-physical setting is contributing to our "Unity in diversity".
- Acquire knowledge on the dynamism of human geographical dimensions in the country
- Examine the physical and social settings of Kerala

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
2	--	2	2	--	2	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Analyse the influence of physical setting on its climate, soil, vegetation and economic activities
CO2	Examines the resources and its distribution of India
CO3	Analyse the salient features of peopling India
CO4	Examines trend of urbanization and infrastructure development
CO5	Analyse the physical and social setting of Kerala

COURSE CONTENTS

Module I

1.1 Location –Strategic setting, Relief, physiographic divisions
1.2 Drainage –North Indian & South Indian Rivers
1.3 Climate – Monsoon- Origin & spread -Distribution of rainfall-Variability
1.4 Soil , Natural Vegetation –Types, Wildlife sanctuaries and National parks

Suggested Readings

Arunachalam P (2014) Geography of India: Physical, Political and Commercial,Swastik Publications, New Delhi
Gopal Singh (2005), Geography of India, Atma Ram and Sons, Delhi.
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi.
PranayLal (2016) Indica-A Deep Natural History of the Indian Subcontinent, Penguin
Siddhartha K and S Mukherjee (2004), Indian Industry - A Geographical Perspective, Kisalaya Publication Pvt. Ltd, Delhi.

Module 2

2.1 Salient features of Indian Agriculture, Multipurpose Projects
2.2 Climate and climate change – its impact on Agriculture, Problems of Indian agriculture
2.3 Distribution of Mineral resources- Iron ore, coal, petroleum
2.4 Manufacturing industries - Iron & Steel, Cotton textile,

Suggested Readings

Arunachalam P (2014) Geography of India: Physical, Political and Commercial, Swastik Publications, New Delhi
Gopal Singh (2005), Geography of India, Atma Ram and Sons, Delhi
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi
Singh, Jagdish, (2003). India: A Comprehensive Geography, Radha Publications, Gorakhpur
Siddhartha K and S Mukherjee (2004), Indian Industry - A Geographical Perspective, Kisalaya Publication Pvt. Ltd, Delhi.

Module 3

3.1 Distribution and Density of Population,
3.2 Population growth
3.3 Ethnic and religious composition
3.4 Literacy, Sex-ratio,

Suggested Readings

Deshpande, C. B. (1992), India a Regional Interpretation. New Delhi: Northern Book

Center.
Husain Majid. (2020), Geography of India, McGrawHill, Uttar Pradesh
Kapur, Anu. (2002). Indian Geography: Voice of Concern, Concept Publishing Co
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi
Singh K S (2003), People of India- Introduction, Oxford University Press, New Delhi

Module 4

4.1 Transportation -Road - Railway
4.2 Major ports – Air transport
4.3 Trend of Urbanization
4.4 Major Urbanization Problems

Suggested Readings

Chattopadhyay. S. (2021), Geography of Kerala, Concept Publishing Company, New Delhi
Chattopadhyay, S. 2017. Geomorphological Field Guide Book on Laterites and Backwaters of Kerala (Edited by AmalKar). Indian Institute of Geomorphologists, Allahabad
AbooIshaque, P, K. (2018): Geography of Kerala, The Land, People, Economy and ecology. Lipi Publication. Calicut.
Chattopadhyay, S. (2013): Glimpses Of Kerala through Maps, Centre for Earth Science Studies, Thiruvananthapuram.
Chattopadhyay, S, Velayutham,S and Salim,M B, (1986): Trends of deforestation in Kerala. In India's Environment: Problems and Perspectives, eds. B P Radhakrishna and K K Ramachandran.

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks****)***

Aboo Ishaque, P, K. (2018): Geography of Kerala, The Land, People, Economy and ecology. Lipi Publication. Calicut.
Chattopadhyay. S. (2021), Geography of Kerala, Concept Publishing Company, New Delhi
Drèze, Jean and Amartya Sen. (1996). India: Development and Participation. Oxford University Press
Gopal Singh (2005), Geography of India, Atma Ram and Sons, Delhi.
Jayaram, N. 2004. The Indian Diaspora: Dynamics of Migration. Sage Publications
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi.
Krishan, Gopal. (2017). The Vitality of India: A Regional Perspective, Rawat Publications.
Nanda H (2014), Indian Stratigraphy, Anmol Publications Pvt.ltd, New Delhi.
PranayLal (2016) Indica-A Deep Natural History of the Indian Subcontinent, Penguin Allen Lane
Singh K S (2003), People of India- Introduction, Oxford University Press, New Delhi.
https://www.gsi.gov.in/webcenter/portal/OCBIS
.https://www.researchgate.net/publication/332877201_The_Indian_Monsoon_Past_Present_and_Future
.https://www.researchgate.net/publication/228538389_The_Indian_monsoon_and_its_variability
https://www.un.org/en/climatechange/science/climate-issues/water?gclid
https://www.un.org/en/climatechange/what-is-climate-change

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks****)***

Arunachalam P (2014) Geography of India: Physical, Political and Commercial, Swastik Publications, New Delhi

Deshpande, C. B. (1992) India a Regional Interpretation. New Delhi: Northern Book Center

Kapila Uma (2007), Indian Economy: Issues in Development and Planning and Sectoral Aspects, Academic Foundation, New Delhi.

Kapur, Anu. (2010). Vulnerable India: A Geographical Study of Disasters. Sage Publications

Kapur, Anu. (2015). Made Only in India: Goods with Geographical Indications. Routledge.

Kapur, Anu. (2002). Indian Geography: Voice of Concern, Concept Publishing Co.

McKinsey & Company Inc. (2013). Reimagining India: Unlocking the Potential of Asia's Next Superpower. Simon & Schuster.

Ram Ahuja (2005), Society in India- Concepts, Theories and Recent Trends, Rawat Publications, Jaipur.

Raza, M. and Ahmed, A. (1990) An Atlas of Tribal India, Concept Publishing Co, Delhi.

Siddhartha K and S Mukherjee (2004), Indian Industry - A Geographical Perspective, Kisalaya Publication Pvt. Ltd, Delhi.

Singh, Jagdish, (2003). India: A Comprehensive Geography, Radha Publications, Gorakhpur.

Shukla, Sandhya. (2003). India Abroad. Hyderabad: Orient Longman

https://rmets.onlinelibrary.wiley.com/doi/abs/10.1002/qj.49712253408

http://slusi.dacnet.nic.in/index_English.html

https://www.keralatourism.org/

SEMESTER II
INTER DISCIPLINARY COURSE
(Offered to other department students)

KERALA – ENVIRONMENT AND DEVELOPMENT

Course Code: **MSGGY02IDC02**

Description of the course:

Kerala- environment and development is the study of physical, cultural, and socio-economic aspects of Kerala. It offers a comprehensive understanding of the diverse landscapes, natural resources, climate patterns, and human interactions within the state of Kerala. Understanding the geography of Kerala provides insights into the States's immense diversity and the physical, cultural, and socio-economic dimensions. It encompasses analytical skills to comprehend the complexities of Kerala's diverse landscapes, environmental challenges, and the interplay between geography and human societies.

Course Objectives

- Enable students to broaden and deepen their understanding of Kerala's geographical setting
- Acquire knowledge on the dynamism of human geographical dimensions I Kerala
- Examine the physical and social settings of Kerala

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
2	--	2	2	--	2	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	To analyse the salient features of bio-physical setting of Kerala
CO2	To provide students with understanding of current state of environment of Kerala.
CO3	To equip students with an understanding of intersections of environmental issues with the process of development.
CO4	Examine the socio-cultural and economic base of Kerala and evaluate the approaches of development in Kerala context

COURSE CONTENTS

Module I

1. Locational setting and Physiographic system
2. Geology, drainage, vegetation types, WLS and national parks
3. Climatic characteristics, soil, agriculture, land utilization, agro-climatic zones,
4. Tourism in Kerala

Suggested readings:

Chandrasekharan C., Forest as resource-perspectives in The Natural Resources of Kerala, WWF, Thiruvananthapuram, 1997, pp. 422-423.
Chattopadhyay, S. 2017. Geomorphological Field Guide Book on Laterites and Backwaters of Kerala (Edited by AmalKar). Indian Institute of Geomorphologists, Allahabad.
Cooke, R. U. and Doornkamp, J.C., (1974). Geomorphology in Environmental
Government of Kerala. Urban policy and Action Plan for Kerala. Available from http://www.kerala.gov.in/annualprofile/urban.htm.
Human Development Report,(2005) State Planning Board Government of Kerala.

Module 2

1. The Western Ghats and Foothills -Ecological history and significance, Major conservation sites; Western Ghats protection reports
2. Environmental issues – human intervention and impacts – land use change, mining, soil erosion, pollution;
3. Status of rivers and Wetlands –Environmental significance,
4. Dimensions of human intervention on natural setting and and impacts

Suggested Readings

Nair, K. K (.2007) Quaternary geology and geomorphology of coastal plains of Kerala, Geological Survey of India.
Prasannakumar,V.(2007)Geomorphology, International Centre for Kerala Studies, University of Kerala.
State of Environment Report Kerala, (2007). Land environments, Wetlands of Kerala and Environmental Health. Vol I.
State of Environment Report Kerala, (2007). Natural Hazards. Vol I. KSCSTE, Government of Kerala.
State Planning Board, Thiruvananthapuram (2017). Economic Review.

Module 3

1. **Salient Valley movement of Palakkad, Anti Coco Cola Movement of Plachimada.**
2. **Anti Endosulfan movement of Kasargod, Anti Nitta Gellatin movement of Kathikudam,**
3. **Western Ghat conservation and Anti Quarrying movements-**
4. **Status of Environmental policy in Kerala**

Suggested Readings

Human Development Report,(2005) State Planning Board Government of Kerala.
Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub.

House, Delhi 284 p.
Kamalakshan Kokkal, Environmental Problems of Kerala. (Malayalam, Keralathile Paristhithi Prashnangal), Thiruvananthapuram, STEC, 2002, pp. 3 1-32. Management- A Introduction, Clarendon Press, Oxford.
Nair, K. K (.2007) Quaternary geology and geomorphology of coastal plains of Kerala, Geological Survey of India.
Prasannakumar,V.(2007)Geomorphology, International Centre for Kerala Studies, University of Kerala.
State of Environment Report Kerala, (2007). Land environments, Wetlands of Kerala and Environmental Health. Vol I.

Module 4

1. Demographic scenario-migration- socio-economic as well as cultural back up of Kerala
2. State of Trends of Urbanization
3. Kerala Model of development
4. Disaster management in Kerala, Sustainable development - Rebuild Kerala initiative,

Suggested Readings

State of Environment Report Kerala, (2007). Land environments, Wetlands of Kerala and Environmental Health. Vol I.
State of Environment Report Kerala, (2007). Natural Hazards. Vol I. KSCSTE, Government of Kerala.
State Planning Board, Thiruvananthapuram (2017). Economic Review.
The Ministry of Environment and Forests Government of India,(2011).Report of the Western Ghats Ecology Expert Panel Part I

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks****)***

Aboo Ishaque, P, K. (2018): Geography of Kerala, The Land, People, Economy and ecology. Lipi Publication. Calicut.
Chattopadhyay. S. (2021), Geography of Kerala, Concept Publishing Company, New Delhi
Drèze, Jean and Amartya Sen. (1996). India: Development and Participation. Oxford University Press
Gopal Singh (2005), Geography of India, Atma Ram and Sons, Delhi.
Jayaram, N. 2004. The Indian Diaspora: Dynamics of Migration. Sage Publications
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi.
Krishan, Gopal. (2017). The Vitality of India: A Regional Perspective, Rawat Publications.
Nanda H (2014), Indian Stratigraphy, Anmol Publications Pvt.ltd, New Delhi.
PranayLal (2016) Indica-A Deep Natural History of the Indian Subcontinent, Penguin Allen Lane

SEMESTER II
SKILL ENHANCEMENT COURSE

(Offered to other department students)

FUNDAMENTALS OF CARTOGRAPHY

Course Code: **MSGGY02SEC01**

Description of the course:

This course is designed to provide the knowledge and skills for understanding the process of map making. This course covers the design, purpose, use, and proper development of maps. provides a general introduction to Cartography, broadly defined as the art, science, and ethics of mapmaking and map use.

Course Objectives

- Enable students to understand basics of the art and science of mapping
- Understand how the basic process of map making works

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
2	--	2	2	--	2	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Understand the types of maps and importance of maps
CO2	Learn about the history of map making
CO3	Understand the different methods to represent earth-map relations
CO4	Understand the methods of representation of geographical data

COURSE CONTENTS

Module I

1.1 Definition of a map
1.2 Essentials of a Good Map
1.3 Classification of maps
1.4 Importance of maps

Suggested Readings

Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan, Kolkata.
Singh L R (2009) Fundamentals of Practical Geography, Sharda Pustak Bhavan
R P Misra (2014) Fundamentals of Cartography, Concept Publishing Company, new Delhi

Module 2

2.1 History of maps- ancient period
2.2 Medieval period
2.3 Modern period
2.4 History of changing techniques in map making

Suggested Readings

Bangulia A.M : Practical Geography, Anmol Publishers Pvt. Ltd
Gopal Singh : Map work and Practical Geography, Vikas Publishing Pvt. Ltd
Monkhouse and Wilkinson : Maps and Diagrams, Metheun and Company
Saha P and Basu P : A Practical Geography, Books and Allied Ltd. Kolkata

Module 3

3.1 Geographical coordinates and direction
3.2 Scale
3.3 Map Projections
3.4 Surveying and Remote Sensing Techniques

Suggested Readings

Saha P and Basu P : A Practical Geography, Books and Allied Ltd. Kolkata
Singh R L and Rana P B Singh, Elements of Practical Geography, Kalyani Publishers
Siya Ram Sharma : Practical Geography, Murali Lal & Sons Pvt. Ltd.
Zulfequar Ahmad Khan M D Text book of Practical Geography, Concept Publishing Company

Module 4

4.1 Methods of mapping and representation of terrain on a map
4.2 Mapping the weather and climatic data
4.3 Thematic and complex mapping
4.4 Map reproduction

Suggested Reading

Ashish Sarkar : Practical Geography-A systematic approach, Orient Blackswan Pvt. Ltd
Bangulia A.M : Practical Geography, Anmol Publishers Pvt. Ltd
Gopal Singh : Map work and Practical Geography, Vikas Publishing Pvt. Ltd
Monkhouse and Wilkinson : Maps and Diagrams, Metheun and Company

Essential Readings:

Ashish Sarkar : Practical Geography-A systematic approach, Orient Blackswan Pvt. Ltd
Bangulia A.M : Practical Geography, Anmol Publishers Pvt. Ltd
Gopal Singh : Map work and Practical Geography, Vikas Publishing Pvt. Ltd
Monkhouse and Wilkinson : Maps and Diagrams, Metheun and Company
Saha P and Basu P : A Practical Geography, Books and Allied Ltd. Kolkata
Singh R L and Rana P B Singh, Elements of Practical Geography, Kalyani Publishers
Siya Ram Sharma : Practical Geography, Murali Lal & Sons Pvt. Ltd.
Zulfequar Ahmad Khan M D Text book of Practical Geography, Concept Publishing Company

SEMESTER II
SKILL ENHANCEMENT COURSE
(Offered to other department students)

BASICS OF GEOGRAPHIC INFORMATION SYSTEM

Course Code: **MSGGY02SEC02**

Description of the course:

This course is designed to provide students with basic idea about geographical information system as an emerging tool. Through a combination of theoretical understanding and practical exercises, students will explore cutting-edge tools in spatial analysis, remote sensing, and Geographic Information Systems (GIS). Emphasis will be placed on real-world applications, enabling students to develop practical skills that are essential for careers in fields such as environmental science, urban planning, and geospatial technology.

Course Objectives:

- To understand the basics of geographic information system
- To enable students to identify and use various GIS software
- To develop an understanding of the real-world application of GIS

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
2	--	2	2	--	2	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Understand and operate GIS software
CO2	Identify various types of GIS softwares
CO3	Generate ideas to solve real world problems using GIS

COURSE CONTENTS

Module I- Introduction to GIS

1.1 Definition and components
1.2 Evolution of advanced cartography and GIS
1.3 Terrestrial Data Structure (Coordinates, Datum, Projection)
1.4 Advantages of GIS

Suggested Readings

Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan, Kolkata.

Bolstad, P., 2016: GIS Fundamentals: A first text on geographic information systems, Eider Press.

Chang, K-T., 2017: Introduction to Geographic Information Systems. McGraw-Hill.

Dent, B. D. (1985). Principles of thematic map design. Massachusetts: Addision-Wesley Publishing Co.

Module 2- Data structures

2.1 GIS Software, Open-source GIS, Web GIS
2.2 Spatial and Non-spatial Data; Raster and Vector Data Structure
2.3 Methods of data input in GIS platform
2.4 Data errors

Suggested Readings

Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.

Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.

Paul A Longley et.al (2001) Geographic Information System and Science, John Wiley and Sons, Chichester.

Star J and Estes (1989) Geographic Information Systems: An Introduction, Prentice Hall

Peter A Burrough et.al (2016) Principles of Geographical Information System, Oxford University Press, New York

Module 3- GIS Data Analysis and Data Display

3.1 Geo-referencing
3.2 Vectorization, Data editing,
3.3 Topological error correction
3.4 Mapping layout

Suggested Readings

Paul A Longley et.al (2001) Geographic Information System and Science, John Wiley and Sons, Chichester.

Star J and Estes (1989) Geographic Information Systems: An Introduction, Prentice Hall

Peter A Burrough et.al (2016) Principles of Geographical Information System, Oxford University Press, New York

Module 4- Preparing thematic maps

4.1 Data collection and sorting
4.2 Data joining
4.3 Thematic mapping
4.3 Thematic map layout

Suggested Readings

Chang, K-T., 2017: Introduction to Geographic Information Systems. McGraw-Hill.
Dent, B. D. (1985). Principles of thematic map design. Massachusetts: Addision-Wesley Publishing Co.

Essential Readings:

Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan, Kolkata.
Bolstad, P., 2016: GIS Fundamentals: A first text on geographic information systems, Eider Press.
Chang, K-T., 2017: Introduction to Geographic Information Systems. McGraw-Hill.
Dent, B. D. (1985). Principles of thematic map design. Massachusetts: Addision-Wesley Publishing Co.
Heywoods, I., Cornelius, S and Carver, S. 2006: An Introduction to Geographical Information System. Prentice Hall.
Konecny, G., 2014: Geoinformation Remote Sensing, Photogrammetry, and Geographic Information Systems, CRP Press.
Saha, Pijushkanti (2017) Advanced Practical Cartography, Books and Allied, Kolkata.

SEMESTER II
VALUE ADDED COURSE

ADVANCES IN GEOSPATIAL ANALYSIS
Course Code: **MSGGY02VAC01**

Description of the course:

This course is designed to provide students with hands-on experience in applying advanced geospatial techniques to address complex spatial challenges. Through a combination of theoretical understanding and practical exercises, students will explore cutting-edge tools in spatial analysis, remote sensing, and Geographic Information Systems (GIS). Emphasis will be placed on real-world applications, enabling students to develop practical skills that are essential for careers in fields such as environmental science, urban planning, and geospatial technology.

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
2	--	2	2	--	2	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Apply advanced spatial analysis techniques to analyze and interpret complex spatial patterns and relationships.
CO2	Process and interpret various types of remote sensing data for accurate land cover classification and change detection.
CO3	Create and analyze spatial models using GIS tools to simulate and understand complex spatial processes.
CO4	Develop and present interactive maps using web GIS technologies to effectively communicate geospatial information.

COURSE CONTENTS

Module I

1.1 Introduction to advanced geospatial techniques
1.2 Spatial data management
1.3 GIS Modelling
1.4 Integrating geospatial techniques

Suggested Readings

Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.

Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.

Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic

Module 2

2.1 Raster surface preparation using various interpolation methods
2.2 Density analysis
2.3 Hydrological analysis
2.4 Image classification techniques

Suggested Readings

Bolstad, P., 2016: GIS Fundamentals: A first text on geographic information systems, Eider Press.

Chang, K-T., 2017: Introduction to Geographic Information Systems. McGraw-Hill.

Dent, B. D. (1985). Principles of thematic map design. Massachusetts: Addision-Wesley Publishing Co.

Heywood, I., Cornelius, S and Carver, S. 2006: An Introduction to Geographical Information System. Prentice Hall.

Module 3

3.1 WEB GIS
3.2 3D Data Preparation
3.3 Build 3D earth model
3.4 Terrain analysis

Suggested Readings

Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.

Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.

Module 4

4.1 Suitable site analysis
4.2 Weighted overlay analysis techniques
4.3 Network analysis
4.4 Change detection

Suggested Readings

Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.

Essential Readings:

M. Anji Reddy (2008) Textbook of Remote sensing and Geographical information systems, BS Publications, Hyderabad
Basudeb Bhatta (2021) Remote sensing and GIS, Oxford University Press, New Delhi Ian
Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.

SEMESTER III
CORE COURSE

REGIONAL PLANNING AND DEVELOPMENT

Course Code:**MSGGY03DSC09**

Description of the course:

Regional planning and development in geography is a field that focuses on understanding and managing the spatial organization and development of regions. The goal of regional planning and development is to promote sustainable and balanced growth, address regional disparities, and enhance the quality of life for people within a region. It encompasses both theoretical frameworks and practical applications, aiming to guide decision-making processes and policy interventions related to regional development and develop a comprehensive understanding of the complexities and dynamics of regions, and develop skills in spatial analysis, policy analysis, and strategic planning.

Course Objectives

- To develop and apply new knowledge in the field of Regional planning and Development
- Equip students with thorough knowledge of the concepts, theories and issues in Regional Planning and Development
- Provide service to government, communities, and others concerned with urban and regional planning

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Explain major planning paradigms and their applications; and articulate processes leading to regional growth and development and provide rationales for planned interventions
CO2	Apply regional planning Concepts, Theories and Methods to organize, analyze, interpret and present information
CO3	Analyse the meaning and concept of modern economic growth
CO4	Examine various Development issues and dimensions of Regional inequalities
CO5	Analyse the salient features of Indian planning

COURSE CONTENTS

Module I

1.1 Region: Meaning, Types Characteristics and Hierarchy.
1.2 Planning: Definition, Concept, Types and Characteristics.
1.3 Regional Planning: Scope, objective, Principles, Methods, techniques characteristics, significance
1.4 Types of Regional Planning, Delimitations of regions, Purposes of regional planning, Regional planning processes, Regional growth and development.

Suggested Readings

Chandna, R. C. (2000): Regional Planning: A Comprehensive Text. Kalyani Publishers., New Delhi.
Friedmann, J. and Alonso, W. (ed.) (1973): Regional Development and Planning. The MIT Press, Mass.
Gupta, H. S (2017): Regional Development and Planning: Concepts, theories and Techniques. Kalyani Publishers., New Delhi.
Isard, W. (1960): Methods of Regional Analysis. MIT Press, Cambridge, MA.
Mahesh Chand and Puri V K (2011), Regional Planning in India, Allied Publishers Private Limited, New Delhi.
Misra, R. P. (ed.) (1992): Regional Planning: Concepts, Techniques, Policies and CaseStudies. 2nd edition. Concept Publishing Company. New Delhi.

Module 2

2.1 Economic Systems, Types, Classical theory of economic development, Marxian theory of economic development
2.2 Schumpeter theory of economic development, Myrdal theories of circular causation, Leontief-input output model,
2.3 Francis Perroux-Growth pole theory, Hirschman theory of Balanced and unbalanced growth
2.4 R.P. Misra - Growth Foci, Core Periphery model- J. Friedmann, Export Base Theory by Doughlass C North

Suggested Readings

AlkaGautam. (2010): Advanced economic geography. Sharda PustakBhavan. Allahabad.
Chandna, R. C. (2000): Regional Planning: A Comprehensive Text. Kalyani Publishers., New Delhi.
Gupta, H. S (2017): Regional Development and Planning: Concepts, theories and Techniques. Kalyani Publishers., New Delhi.
Mahesh Chand and Puri V K (2011), Regional Planning in India, Allied Publishers Private Limited, New Delhi.
Majid Hussain (1994), Models in Geography, Rawat Publication. Jaipur.
Misra, R.P. and Natraj, V.K. (1978): Regional Planning and National Development. Vikas, New Delhi.

Module 3

3.1 Meaning and concept of modern economic growth. Measurement of development and Indicator, Theories of limits to Growth Model and beyond the limits
3.2 Spatial pattern of regional imbalance, Studies in regional imbalance- Ashok Mehta and V. Nadh, The dependency theory of underdevelopment- Human capital formation and manpower.
3.3 Regional development strategies: Growth Center, Special Economic Zones, watershed approach, micro level planning.
3.4 Sustainable Development - Millennium Development Goals and UN Agenda 21.

Suggested Readings

AlkaGautam. (2010): Advanced economic geography. Sharda PustakBhavan, Allahabad.
Amitabh shukla. (2000): Regional planning and sustainable development, Kanishka publishers. New Delhi.
Chandna, R. C. (2000): Regional Planning: A Comprehensive Text. Kalyani Publishers., New Delhi.
Gupta, H. S. (2017): Regional Development and Planning: Concepts, theories and Techniques. Kalyani Publishers., New Delhi.
Mahesh Chand and Puri. V. K, (2011), Regional Planning in India, Allied Publishers Private Limited, New Delhi.
Majid Hussain. (1994): Models in Geography, Rawat Publication. Jaipur.

Module 4

4.1 History of planning in India, Five year Plans and NitiAyog
4.2 Economic development and Regional Imbalance in India
4.3 Micro and multilevel planning, Rural and urban planning, Decentralized Planning
4.4 Government Planning Programmes in India and Kerala

Suggested Readings

Mahesh Chand and Puri V K (2011), Regional Planning in India, Allied Publishers Private Limited, New Delhi.
Mishra, S.N., (2000): Decentralised Planning and Panchayati Raj Institutions. MittalPublications. New Delhi.
Misra, R.P. and Natraj, V.K. (1978): Regional Planning and National Development. Vikas, New Delhi.
Nath, V. 2009. Regional Development and Planning in India, Concept Publishing Company.
Sundaram K V 1997, Decentralised Multi level Planning – Principles and Practice, Concept Publishing Company, New Delhi
Sury, M.M. (2013). Five year plans of India. New century publications. New Delhi.

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Chandna, R. C. (2000): Regional Planning: A Comprehensive Text. Kalyani Publishers., New Delhi.
Friedmann, J. and Alonso, W. (ed.) (1973): Regional Development and Planning. The MIT

Press, Mass.
Gupta, H. S. (2017): Regional Development and Planning: Concepts, theories and Techniques. Kalyani Publishers., New Delhi.
Isard, W. (1960): Methods of Regional Analysis. MIT Press, Cambridge, MA.
Mahesh Chand and Puri V K (2011), Regional Planning in India, Allied Publishers Private Limited, New Delhi.
Misra, R. P. (ed.) (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies. 2nd edition. Concept Publishing Company. New Delhi.
Nath, V. 2009. Regional Development and Planning in India, Concept Publishing Company
Issac, T.M and Richard, W. Franke. (2000): Local Democracy and Development: People's Campaign for Decentralisation in Kerala, Rowman and Littlefield publishers.UK.
Chathukulam, Jos &Moolakkattu, John. (2002). Five Years of Participatory Planning in Kerala: Rhetoric and Reality. Economic and Political Weekly. 37. 4917-4926. 10.2307/4412934
https://niti.gov.in/
http://tcpo.gov.in/regional-planning
https://townplanning.kerala.gov.in/
.*https://ncrpb.nic.in/*

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Bikramaditya Kumar Choudhary. (2014): Regional Development and Planning in India. Geography and You. 14. 34-38.
Chaudhuri, J. R. (2001): An Introduction to Development and Regional Planning with special reference to India. Orient Longman, Hyderabad.
Cowen, M.P. and Shenton, R.W. (1996): Doctrines of Development, Routledge, London.
Devadas, V, A. (2011). Planning for Special Economic Zone: A Regional Perspective. Institute of Town Planners, India Journal 8 - 2, 53 - 58.
Doyle, T. and McEachern, D. (1998): Environment and Politics. Routledge, London.
Friedmann, J. (1992): Empowerment: The Politics of Alternative Development. Blackwell, Cambridge MA and Oxford.
Hettne, B., Inotai, A. and Sunkel, O. (eds.) (1999 – 2000): Studies in the New Regionalism. Vol. I-V. Macmillan Press, London.
Kuklinski, A. R. (1972): Growth Poles and Growth Centres in Regional Planning. Mouton and Co., Paris.
Kuklinski, A.R. (ed.) (1975): Regional Development and Planning: International Perspective, Sijthoff-Leydor.
Leys, C. (1996): The Rise and Fall of Development Theory. Indian University Press,Bloomington, and James Curry, Oxford.
Mahapatra, A.C. and Pathak, C. R. (eds.) (2003): Economic liberalisation and Regional Disparities in India. Special Focus on the North Eastern Region. Star Publishing House, Shillong.
Raffiullah.S. M. (1967): Regionalization in Geography. The Geographer. Aligarh Muslim University. Vol. XIV. P-55.
Stamp, L, D. (1962): The delimitation of Planning Region. National Geography. Vol-5

SEMESTER III
CORE COURSE

URBAN GEOGRAPHY
Course Code: **MSGGY03DSC10**

Description of the course:

Urban geography is a field of study within human geography that focuses on the spatial aspects of cities and urban areas. It explores the patterns, processes, and dynamics of urban spaces, examining how cities are organized, function, and change over time. It focusses on the interplay between human activities and the physical environment within urban areas, as well as the social, economic, cultural, and political factors that shape urban development and equips with the knowledge and skills to understand urban challenges, critically analyze urban policies, and contribute to the planning and development of sustainable and livable cities.

Course Objectives

- To examine various approaches to study urban centres
- To critically understand the complexities of urban cities and the experience of living in these cities.
- To critically understand a broad range of issues that cities face today.
- To provide a basic social, cultural, political and economic understanding of the urban areas
- To analyse the salient features of urbanization in India

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Understand the scope and approaches of urban studies and complexities of urban area
CO2	Understand the development of transformation of cities over time, morphology and structure of cities
CO3	Analyse the social organization of the city
CO4	Develop a basic social, political and economic understanding of contemporary urban issues
CO5	Assess and evaluate the dimensions of urbanization in India and its trends

COURSE CONTENTS

Module I

1.1 **Nature and evolution of Urban Geography– approaches and trends –Post Colonialism and - Critical approaches to urban questions-**
1.2 Origin and Evolution of urban centres
1.3 Dimensions of Urban Growth and structural changes
1.4 World urbanization –trends, patterns; challenges in developing world.

Suggested Readings

Hall, T. (2002) Urban Geography (2nd Edition), Routledge: London and NewYork
Harold Carter (1995) The Study of Urban Geography, Arnold, London

Majid Husain (2003) Urban Geography, Anmol Publications, New Delhi.
Mandal R B (2000) Urban Geography, Concepts Publishing Company, New Delhi.

Module 2

2.1 Urban settlement system, City region- city periphery relations-–rural urban fringe
2.2 Urban Economic base- Urban function, interaction and classifications
2.3 Urban hierarchy, rank size rule, primate cities, Central places – Christaller and Losch models
2.4 Morphology of cities – landuse Models - Urban Ecology, urban transport

Suggested Readings

Hall, T. (2002) Urban Geography (2nd Edition), Routledge: London and NewYork
Harold Carter (1995) The Study of Urban Geography, Arnold, London
James H Johnson, Urban Geography-An Introductory Analysis
Majid Husain (2003) Urban Geography, Anmol Publications, New Delhi.
Mandal R B (2000) Urban Geography, Concepts Publishing Company, New Delhi.
Singh R Y (2002) Geography of Settlement, Rawat Publication, Jaipur.
*Vaysali Sin*gh (2011) Urban Geography, Alfa Publication, New Delhi.

Module 3

3.1 Social organisation of the city, urbanism, emergence of urban cultures and sub-cultures, Social area analysis.
3.2 Globalization and cities; Smart Cities; Gentrification and social exclusion in cities
3.3 Problems of Urban growth in developing countries- Urban slums and squatters, urban crimes
3.4 Principles of urban planning, climate change and cities

Suggested Readings

Brunn, S.D., Hays-Mitchell, M., Ziegler, D.J. 2012. Cities of the World: World Regional Urban Development (5th edition), Rowman and Littlefield Publishers: England
Friedmann, J. 1995. Where we stand: A Decade of World City Research, In: P. L. Knox and P. Taylor (eds) World Cities in a World-system. 21-47. Cambridge University Press,Cambridge
Knox, P and Pinch, S. 2010.Urban Social Geography (6th edition), Pearson:England
Misra, R.P. (ed.) 2013. Urbanization in South Asia: Focus on Mega Cities, Cambridge University Press, NewDelhi.

Module 4

4.1 Nature of and pattern of Indian Cities, Trends of urbanization in India
4.2 Problems of Urban transport and housing in India
4.3 Salient features of urbanization in Kerala
4.4 Urban Governance and Planning in India.

Suggested Readings

Bhattacharya, B. 2006. Urban Development in India since Pre-Historic Times, Concept Publishing Company, NewDelhi.
Hardoy, J. E., Mitlin, D. Satterthwaite, D. 1992. Environmental Problems in Third World Cities, Earthscan, GreatBritain.
Ramachandran R (1992) Urbanization and Urban Systems in India, Oxford University Press, Delhi.
Sivaramakrishnan (1996) Urbanization in India, Concepts Publishing Company, New Delhi.

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks****)***
Andrew, E.G.J, McCann, E and Thomas, M 2015. Urban Geography: A Critical Introduction, Wiley, Blackwell,UK.
Friedmann, J. 1995. Where we stand: A Decade of World City Research, In: P. L. Knox and P. Taylor (eds) World Cities in a World-system. 21-47. Cambridge University Press,Cambridge:
Hall, T. 2002. Urban Geography (2nd Edition), Routledge: London and NewYork
Harold Carter (1995) The Study of Urban Geography, Arnold, London
Knox, P and Pinch, S. 2010.Urban Social Geography (6th edition), Pearson:England
Majid Husain (2003) Urban Geography, Anmol Publications, New Delhi.
Mandal R B (2000) Urban Geography, Concepts Publishing Company, New Delhi.
Misra, R.P. (ed.) 2013. Urbanization in South Asia: Focus on Mega Cities, Cambridge University Press, NewDelhi.
Ramachandran R (1992) Urbanization and Urban Systems in India, Oxford University Press, Delhi.
Singh R Y (2002) Geography of Settlement, Rawat Publication, Jaipur.

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks****)***
Bhattacharya, B. 2006. Urban Development in India since Pre-Historic Times, Concept Publishing Company, NewDelhi.

Bridge, G Watson, S. (eds.) 2010. The Blackwell City Reader (2nd Edition), Wiley-Blackwell,UK.
Brunn, S.D., Hays-Mitchell, M., Ziegler, D.J. 2012. Cities of the World: World Regional Urban Development (5th edition), Rowman and Littlefield Publishers:England
Datta, A. and Shaban, A. (eds), 2017. Mega-Urbanisation in Global South: Fast Cities and New Urban Utopias of the Post-colonial State, Routledge: London and NewYork.
Hardoy, J. E., Mitlin, D. Satterthwaite, D. 1992. Environmental Problems in Third World Cities, Earthscan, GreatBritain.
James H Johnson, Urban Geography-An Introductory Analysis
LeGates T.R. and Stout F. (ed.) 2016. The City Reader (6th edition), Routledge: London and New York.
Nandy, A, 2001. An Ambiguous Journey to the City: The Village and other Odd Ruins of the Self in the Indian Imagination, New Delhi:OUP.
Roberts, P., Ravetz, J. and George, C. 2009. Environment and the City. Routledge,London
Sassen, S (ed.) 2002. Global Network, Linked Cities, New York:Routledge.
Scott, A.J. 2002. Global City-Regions: Trends, Theory, Policy, Oxford:OUP.
Sivaramakrishnan (1996) Urbanization in India, Concepts Publishing Company, New Delhi.
Southhall, A. 1998. The City in Time and space, Cambridge, Cambridge UniversityPress.
Vaysali Singh (2011) Urban Geography, Alfa Publication, New Delhi.
White, R. 1994. Urban Environmental Management, Routledge,London

SEMESTER III

CORE COURSE

PRACTICAL III- GEOSPATIAL TECHNIQUES FOR FIELD ASSESSMENT

Course Code: **MSGGY03DSC11**

Description of the course:

Geospatial techniques for field assessment encompass a range of tools and methods used to collect, analyze, and interpret spatial data in the field. These techniques leverage the power of geospatial technologies, such as Global Positioning System (GPS), Geographic Information System (GIS), remote sensing, and mobile mapping, to support data collection, monitoring, and decision-making processes in field assessments which are essential for understanding and evaluating the physical and socio-economic characteristics of an area. These techniques enhance the efficiency, accuracy, and comprehensiveness of such assessments by providing spatial context and enabling data integration and visualization. Geospatial Techniques for Field Assessment is designed to provide students with practical knowledge and skills in utilizing geospatial technologies for conducting field assessments and data collection.

Course Objectives

- To appraise students with the techniques of field surveying and focus on the practical applications in various fields.
- Assess the importance of primary data in the field of various geographical research
- To examine theoretical concepts with hands-on training to equip students with the skills needed to interpret geospatial data for decision-making and problem solving purposes.
- To understand the complexity and significance of resource planning using Geospatial Technology.

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
--	4	4	--	12	12	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Evaluate practical application of geospatial technologies and methodologies in various fields such as geography, environmental science, urban planning, and natural resource management.
CO2	Acquire the techniques for Field survey, spatial data acquisition, Land use and Asset data plotting and geospatial modeling.

CO3	Analyze spatial patterns, relationships, and trends using GIS software, and how to create maps and visualizations to communicate the findings effectively.
CO4	critically analyze micro level region based spatial database generation
CO5	Develop a general understanding about the techniques of digital surveying, and to generate thematic maps

COURSE CONTENTS

Module I

1.1 Field research methods of the study, Sample collection and testing – Water, Soil, Air
1.2 GNSS based field survey for data inventory
1.3 Physical and Chemical Testing of sample, Analysis of samples using Index and Models
1.4 Importing sample data in QGIS and Mapping.

Suggested Readings

Abdul-Rahman, Alias, Pilouk, and Morakot (2008), Spatial Data Modeling for 3D GIS
Archer. J. E. and Dalton, T, H. (2022): Fieldwork in Geography. Rawat publication. New Delhi
HananSamet (2006), Foundations of Multidimensional and Metric Data Structures, Morgan Kaufmann Publishers
Lillesand T M., and Kiefer R W., (2000), Remote Sensing and Image interpretation, New York, John Wiley and Sons.
Peter A. Burrough, Rachael A. Mcdonnell and Christopher D. Lloyd (2014), Principles of Geographical Information Systems, International Third Edition, Oxford University Press, United Kingdom,
QGIS 3.16 Manual
https://locatepress.com/book/dq32
https://www.youtube.com/watch?v=NHolzMgaqwE
https://www.youtube.com/watch?v=-7v5qfJYWxA

Module 2

1.1 Digital Surveying of Socio – Economic, Cultural, Health, Demographic data.
1.2 Preparation of Master data, Analysis of samples using Index and Models
1.3 Importing surveyed data in QGIS
1.4 Mapping. Preparation of Socio-Economic Data Inventory using QGIS, Socio – Economic Vulnerability Mapping.

Suggested Readings

Anita Graser (2016): Learning QGIS - Third Edition: Create great maps and perform geoprocessing. Kendle Publication. New Delhi.

QGIS 3.16 Manual
https://www.youtube.com/watch?v=NHolzMgaqwE
https://www.youtube.com/watch?v=-7v5qfJYWxA
https://gisgeography.com/how-to-create-qgis-atlas-mapbooks/

Module 3

1.1 Cadastral Map based resource surveying
1.2 Land Use and Asset data plotting, Importing data into QGIS
1.3 Preparation of Spatial Data Base, Generate thematic maps
1.4 PRA based development of Resource Management Plan.

Suggested Readings

Abdul-Rahman, Alias, Pilouk, and Morakot (2008), Spatial Data Modeling for 3D GIS
Anita Graser (2016): Learning QGIS - Third Edition: Create great maps and perform geoprocessing. Kendle Publication. New Delhi.
QGIS 3.16 Manual
https://link.springer.com/book/10.1007/978-3-030-90998-7
https://www.youtube.com/watch?v=WAbOR_E2xtI
https://www.youtube.com/watch?v=Zer558SnKX4
https://www.youtube.com/watch?v=YJ656VaZAeM
https://www.youtube.com/watch?v=Eg4_duqH5Q4
https://www.youtube.com/watch?v=V-uBKvrKfwU

Module 4

1.1 Micro Level Region based Spatial Database generation
1.2 Water, Soil, Socio – Economic data based Atlas generation.
1.3 Demographic and Health data based Atlas generation
1.4 Report generation for Resource Management based Spatial Planning

Suggested Readings

Abdul-Rahman, Alias, Pilouk, and Morakot (2008), Spatial Data Modeling for 3D GIS
Anita Graser (2016): Learning QGIS - Third Edition: Create great maps and perform geoprocessing. Kendle Publication. New Delhi.
QGIS 3.16 Manual
https://link.springer.com/book/10.1007/978-3-030-90998-7
https://www.youtube.com/watch?v=WAbOR_E2xtI
https://www.youtube.com/watch?v=Zer558SnKX4
https://www.youtube.com/watch?v=YJ656VaZAeM
https://www.youtube.com/watch?v=Eg4_duqH5Q4
https://www.youtube.com/watch?v=V-uBKvrKfwU

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks****)***

1. *Abdul-Rahman, Alias, Pilouk, and Morakot (2008), Spatial Data Modeling for 3D GIS*
2. *Anita Graser (2016): Learning QGIS - Third Edition: Create great maps and perform geoprocessing. Kendle Publication. New Delhi.*
3. *QGIS 3.16 Manual*
4. *https://locatepress.com/book/dq32*
5. *https://www.youtube.com/watch?v=NHolzMgaqwE*
6. *https://www.youtube.com/watch?v=-7v5qfJYWxA*
7. *https://link.springer.com/book/10.1007/978-3-030-90998-7*
8. *https://www.youtube.com/watch?v=WAbOR_E2xtI*
9. *https://www.youtube.com/watch?v=Zer558SnKX4*
10. *https://www.youtube.com/watch?v=YJ656VaZAeM*
11. *https://www.youtube.com/watch?v=Eg4_duqH5Q4*
12. *https://www.youtube.com/watch?v=V-uBKvrKfwU*

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks****)***

1. *Archer. J. E. and Dalton, T, H. (2022): Fieldwork in Geography. Rawat publication. New Delhi*
2. *Basil Gomez and John Paul Jones (2010) Research Methods in Geography . Blackwell Publishing Ltd. United Kingdom*
3. *Ebdon, D. (1985) Statistics in Geography . Oxford: Blackwell.*
4. *HananSamet (2006), Foundations of Multidimensional and Metric Data Structures, Morgan Kaufmann Publishers*
5. *Lillesand T M., and Kiefer R W., (2000), Remote Sensing and Image interpretation, New York, John Wiley and Sons.*
6. *Peter A. Burrough, Rachael A. Mcdonnell and Christopher D. Lloyd (2014), Principles of Geographical Information Systems, International Third Edition, Oxford University Press, United Kingdom,*
   https://locatepress.com/book/dq32

SEMESTER III
ELECTIVE COURSE

ADVANCED GEOGRAPHY OF INDIA

Course Code: **MSGGY03DSE05**

Description of the course:

Geography of India is an in-depth study of the physical, cultural, and socio-economic aspects of India. It offers a comprehensive understanding of the diverse landscapes, natural resources, climate patterns, and human interactions within the Indian subcontinent. Understanding the geography of India provides insights into the country's immense diversity and the physical, cultural, and socio-economic dimensions of India's geography. The advanced study of Geography of India encompasses with analytical skills to comprehend the complexities of India's diverse landscapes, environmental challenges, and the interplay between geography and human societies.

Course Objectives

- Enable students to broaden and deepen their understanding of India's geographical setting
- Understand how the geo-physical setting is contributing to our "Unity in diversity".
- Acquire knowledge on the dynamism of human geographical dimensions in the country
- Examine the geo-politics of the country and its relations with other nations

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES
Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Analyse the influence of physical setting on its climate, soil, vegetation and economic activities
CO2	Examines the economic landscape of India
CO3	Analyse the salient features of peopling India
CO4	Critically examines various internal conflicts and problems of nation building
CO5	Analyses the geopolitics of International Relations in Indian context

COURSE CONTENTS

Module I

1.1 India- a spatial entity; Landforms and landscapes of India – distribution, characteristics, geological and hydrological influences on its evolution
1.2 Climatic phenomena and its manifestations
1.3 Dimensions of Monsoon mechanism
1.4 Impacts of climate change on food security, Water, Ecosystems , Biodiversity and Health sectors

Suggested Readings

Arunachalam P (2014) Geography of India: Physical, Political and Commercial, Swastik Publications, New Delhi
Gopal Singh (2005), Geography of India, Atma Ram and Sons, Delhi.
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi.
PranayLal (2016) Indica-A Deep Natural History of the Indian Subcontinent, Penguin Allen Lane
Siddhartha K and S Mukherjee (2004), Indian Industry - A Geographical Perspective, Kisalaya Publication Pvt. Ltd, Delhi.

Module 2

2.1 Peopling India - demographic setting
2.2 Ethnic and religious composition, Spatial Pattern of Multi-culturalism
2.3 Migration–Displacement, Indian Diaspora
2.4 Economic landscape of India- challenges and opportunities, significance of trade and Transport

Suggested Readings
Arunachalam P (2014) Geography of India: Physical, Political and Commercial, Swastik Publications, New Delhi
Drèze, Jean and Amartya Sen. (1996). India: Development and Participation. Oxford University Press
Jayaram, N. 2004. The Indian Diaspora: Dynamics of Migration. Sage Publications
*Singh K S (2003), Peop*le of India- Introduction, Oxford University Press, New Delhi.

Module 3

3.1 Religious and linguistic conflicts
3.2 Insurgency and separatist movements
3.3 River water disputes
3.4 Spatial Pattern of Poverty, Hunger, and Disability

Suggested Readings
Deshpande, C. B. (1992) India a Regional Interpretation. New Delhi: Northern Book Center
Drèze, Jean and Amartya Sen. (1996). India: Development and Participation. Oxford University Press
Kapila Uma (2007), Indian Economy: Issues in Development and Planning and Sectoral Aspects, Academic Foundation, New Delhi.

Raza, M. and Ahmed, A. (1990) An Atlas of Tribal India, Concept Publishing Co, Delhi.
*Singh K S (2003), People o*f India- Introduction, Oxford University Press, New Delhi.

Module 4

4.1 India in Indian Ocean- Geo politics
4.2 India's bilateral relations with neighbouring nations
4.3 India in UN, SAARC, ASEAN and G 20
4.4 India's position in world politics, relation with US and Russia.

Suggested Readings

Drèze, Jean and Amartya Sen. (1996). India: Development and Participation. Oxford University Press
Krishan, Gopal. (2017). The Vitality of India: A Regional Perspective, Rawat Publications
McKinsey & Company Inc. (2013). Reimagining India: Unlocking the Potential of Asia's Next Superpower. Simon & Schuster.
Shukla, Sandhya. (2003). India Abroad. Hyderabad: Orient Longman

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Drèze, Jean and Amartya Sen. (1996). India: Development and Participation. Oxford University Press
Gopal Singh (2005), Geography of India, Atma Ram and Sons, Delhi.
Jayaram, N. 2004. The Indian Diaspora: Dynamics of Migration. Sage Publications
Khullar, D.R. (2008). India: A Comparative Geography, Kalyani Publishers, New Delhi.
Krishan, Gopal. (2017). The Vitality of India: A Regional Perspective, Rawat Publications.
Nanda H (2014), Indian Stratigraphy, Anmol Publications Pvt.ltd, New Delhi.
PranayLal (2016) Indica-A Deep Natural History of the Indian Subcontinent, Penguin Allen Lane
Singh K S (2003), People of India- Introduction, Oxford University Press, New Delhi.

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks***)**

Arunachalam P (2014) Geography of India: Physical, Political and Commercial, Swastik Publications, New Delhi
Deshpande, C. B.(1992) India a Regional Interpretation. New Delhi: Northern Book Center
Kapila Uma (2007), Indian Economy: Issues in Development and Planning and Sectoral Aspects, Academic Foundation, New Delhi.
Kapur, Anu. (2010). Vulnerable India: A Geographical Study of Disasters. Sage Publications
Kapur, Anu. (2015). Made Only in India: Goods with Geographical Indications. Routledge.
Kapur, Anu. (2002). Indian Geography: Voice of Concern, Concept Publishing Co.
McKinsey & Company Inc. (2013). Reimagining India: Unlocking the Potential of Asia's Next Superpower. Simon & Schuster.
Ram Ahuja (2005), Society in India- Concepts, Theories and Recent Trends, Rawat Publications, Jaipur.
Raza, M. and Ahmed, A. (1990) An Atlas of Tribal India, Concept Publishing Co, Delhi.
Siddhartha K and S Mukherjee (2004), Indian Industry - A Geographical Perspective, Kisalaya Publication Pvt. Ltd, Delhi.
Singh, Jagdish, (2003). India: A Comprehensive Geography, Radha Publications, Gorakhpur.
Shukla, Sandhya. (2003). India Abroad. Hyderabad: Orient Longman.

SEMESTER III
ELECTIVE COURSE

GEOGRAPHY AND DISASTER MANAGEMENT: KERALA PERSPECTIVE

Course Code:**MSGGY03DSE06**

Description of the course:

The geography of disaster management is a multidisciplinary field that focuses on understanding the relationship between natural hazards, the physical environment, and human populations. It encompasses the study of geographical factors that influence the occurrence, impact, and management of disasters. Geographical tools and techniques play a vital role in disaster management. The field of geography of disaster management also emphasizes the importance of preparedness, mitigation, and resilience-building. Kerala's unique geographical features, including the Western Ghats, coastline, and river systems, shape its vulnerability to natural hazards. Understanding the geography of disaster management from a Kerala perspective is crucial to mitigate the impact of disasters and implementing robust disaster management practices.

Course Objectives

- To analyze the bio-physical setting of Kerala, state of environment and to identify major disaster prone areas
- To Examines the key concepts and approaches in disaster management
- Analyze the geographical base in Disaster management with reference to Kerala
- To Evaluate the scope and significance of DM in Kerala and role of Geo-informatics in it

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Understand the nature, scope, basic concepts and approaches towards Disaster Management
CO2	Evaluate various concepts, theories and models related to Human ecology at international, national, state and local level in present scenario.
CO3	Assess the significance of Concepts in physical and social/human geography as determinants in disasters.
CO4	Assessing the various responses in the State of environment of Kerala and its threats.
CO5	Examines the background of disasters in Kerala and analyze the significance of Disaster Management in Kerala.

COURSE CONTENTS

Module I

1.1 Locational significance of Kerala. Physiographic setting of Kerala, Geology, drainage, vegetation types
1.2 Soil, agriculture, land utilization
1.3 Climatic characteristics – Monsoon, Agro-climatic zones
1.4 The Western Ghats and Foothills - Ecological history and significance, Environmental issues – land use change, mining, soil erosion, pollution

Suggested Readings

Aboo Ishaque, P, K. (2018): Geography of Kerala, The Land, People, Economy and ecology. Lipi Publication. Calicut.
Centre for Earth Science Studies. (1997): Report of the workshop of Research Agenda, Environment Development Interface in Kerala. Trivandrum.
Chattopadhyay, S. (2021): Geography of Kerala. Concept Publishing Company. New Delhi.
Chattopadhyay, S. (2013): Glimpses of Kerala through Maps, Centre for Earth Science Studies, Thiruvananthapuram. Chattopadhyay, S and Chattopadhyay, M., (1995): Terrain Analysis of Kerala: Concept, Method and Application (Technical Monograph No.1/95, State Committee on Science, Technology and Environment, Government of Kerala, Thiruvananthapuram.
Chattopadhyay, S, Velayutham,S and Salim,M B, (1986): Trends of deforestation in Kerala. In India's Environment: Problems and Perspectives, eds. B P Radhakrishna and K K Ramachandran.
Kerala State Land Use Board. (1995): Land Resources of Kerala, Government of Kerala, Trivandrum.

Module 2

2.1 Nature and type of disasters- Key concepts and approaches in DM.
2.2 Crisis approach – early detection, warnings and communication, Risk and risk reduction
2.3 Phases of Disaster Management, Standard Operating Procedure, Geography and DM
2.4 Vulnerability types, vulnerable communities and resilience, Adaptation and mitigation

Suggested Readings

Agarwal Anil and Narain Sunita (Ed) (1999): State of India's Environment the Citizens Report, Centre for Science and Environment, New Delhi
Bryant Edward (2000): Natural Hazards, Cambridge University Press
Delica-Willison, Z. (2005). Community-based disaster risk management: Local level solutions to disaster risks. Tropical Coasts, 12(1), 66–73.

Dupont, R.R. Baxter, T.E. and Theodore, L. (1998): Environmental Management: - Problems and Solutions, CRC Press.
Marathe, P, P. (2021): Concepts and practices in DesasterMangement. Diamond Publications, Pune.

Module 3

3.1 Disasters in the context of changes in climate and weather in mountainous terrain (relief, climate, soil, drainage, vegetation), Land use and landslides, Floods.
3.2 Ocean acidification and fishing communities – Sea level rise impacts on coasts and Islands, Tropical cyclones and disaster risk mitigation.
3.3 History of hazards and disasters and emerging geographical patterns in Kerala.
3.4 Case studies – Tsunamis-2014, Ockhi and Kerala flood 2018 and deluge, Critical evaluation of Expert Committee reports on Western Ghats.,

Suggested Readings

Sinha P, C. (1998) Land Related Disasters. Anmol Publication. New Delhi.
Viju, B. (2019): Flood and Fury; Ecological Devastation in the Western Ghats. Penguin eBury Press. U. P.
Kasthurirangan, K. (2013). Report of the High Level Working Group on Western Ghats. Ministry of Environment and Forest, New Delhi, India.
Gadgil, M. (2011). Western Ghats Ecology Expert Panel. Ministry of Environment and Forest, New Delhi, India.
Oommen, O, V., Rajasekharan, V, N., &Cyriac, C, P. (2013). Expert Committee report on Kasthurirangan committee. State Biodiversity Board, Kerala.

Module 4

4.1 Inequality, social stratification and disasters
4.2 Culture and the social construction of disasters – culture as a source of resilience and vulnerability
4.3 Conceptual, ethical and methodological issues in disaster research
4.4 Managem ent issues: community based disaster management., Application of Geo-informatics

Suggested Readings

Anu Kapur. (2006): Disasters in India, Studies in Grim reality. Rawat. New Delhi.
Delica-Willison, Z. (2005). Community-based disaster risk management: Local level solutions to disaster risks. Tropical Coasts, 12(1), 66–73.
DIPECHO. (2010). Community-based best practices for disaster risk reduction (pp. 1–119). Maputo: UNDP.
Narayan, S. and Amit K. T. (2018): Disaster management, corporate social responciblity and conservation issues. TERI. New Delhi.

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks***)**

Aboo Ishaque, P, K. (2018): Geography of Kerala, The Land, People, Economy and ecology. Lipi Publication. Calicut.

Bryant Edward (2000): Natural Hazards, Cambridge University Press
Chattopadhyay, S. (2013): Glimpses Of Kerala through Maps, Centre for Earth Science Studies, Thiruvananthapuram
Chattopadhyay, S. (2021): Geography of Kerala. Concept Publishing Company. New Delhi.
Delica-Willison, Z. (2005). Community-based disaster risk management: Local level solutions to disaster risks. Tropical Coasts, 12(1), 66–73.
Gadgil, M. (2011). Western Ghats Ecology Expert Panel. Ministry of Environment and Forest, New Delhi, India.
Kasthurirangan, K. (2013). Report of the High Level Working Group on Western Ghats. Ministry of Environment and Forest, New Delhi, India.
Kerala State Land Use Board. (1995): Land Resources of Kerala, Government of Kerala, Trivandrum.
Sinha P, C. (1998) Land Related Disasters. Anmol Publication. New Delhi.
Viju B. (2019): Flood and Fury; Ecological Devastation in the Western Ghats. Penguin eBury Press. U. P.
https://ndma.gov.in/
https://www.ndrf.gov.in/
https://sdma.kerala.gov.in/
https://ildm.kerala.gov.in/en/

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks****)***

Agarwal Anil and NarainSunita (Ed) (1999): State of India's Environment the Citizens Report, Centre for Science and Environment, New Delhi
Anu Kapur. (2006): Disasters in India, Studies in Grim reality. Rawat. New Delhi
Asian Disaster Preparedness Centre. 2008. Monitoring and reporting progress on community-based disaster risk management in Philippines, partnerships for disaster reduction—South East Asia Phase 4. Bangkok: Asian Disaster Preparedness Centre.
Centre for Earth Science Studies. (1997): Report of the workshop of Research Agenda, Environment Development Interface in Kerala. Trivandrum.
Chattopadhyay, S and Chattopadhyay, M., (1995): Terrain Analysis of Kerala: Concept, Method and Application (Technical Monograph No.1/95, State Committee on Science, Technology and Environment, Government of Kerala, Thiruvananthapuram.
Chattopadhyay, S, Velayutham,S and Salim,M B, (1986): Trends of deforestation in Kerala. In India's Environment: Problems and Perspectives, eds. B P Radhakrishna and K K Ramachandran.
CSE (2019) State of India's Environment 2019. http://www.downtoearth.org.in/
Daly Herman E and TwonseedKeneth N (Ed) (1993): Valuing the earth – Economics, Ecology and Ethics, MIT Press, London
DIPECHO. (2010). Community-based best practices for disaster risk reduction (pp. 1–119). Maputo: UNDP.
Dupont, R.R. Baxter, T.E. and Theodore, L. (1998): Environmental Management: - Problems and Solutions, CRC Press.
Franke R, 1993. Life Is a Little Better: Redistribution as a development strategy in Nadur village, Kerala. Westview Press, Colorado Geological Society of India, 1976.
Gardner, M.G., Graham,G., (1995):. Sustainability at landscape and regional scale. In Defining and Measuring Sustainability - The Bio-geophysical Foundations, edited by Mohan Munshinge and Walter Shearer (The United Nations University and the World Bank), pp 137-143.

Geology and Mineral Resources of the States of India, Part IX, Kerala, Misc. Pub. 30 72 Geological Society of India, Bangalore. PP 289 – 298.

Kerala State Land Use Board. (1995): Land Resources of Kerala, Government of Kerala, Trivandrum.

Marathe, P, P. (2021): Concepts and practices in DesasterMangement. Diamond Publications, Pune.

Morrisawa M (Ed) (1994): Geomorphology and Natural Hazards, Elsevier, Amsterdam

Munasinghe,M and McNeely,J, 1995. Key concept and terminology of sustainable development. In Defining and Measuring Sustainability - The Bio Geophysical Foundations, edited by Mohan

Nair, K. M., 1995. Geological history and natural resources of lowlands of Kerala in Science and Technology for Development (State Committee on Science, Technology and Environment, Government of Kerala, Thiruvananthapuram

Narayan, S. and Amit K. T. (2018): Disaster management, corporate social responciblity and conservation issues. TERI. New Delhi.

Oommen, O, V., Rajasekharan, V, N., &Cyriac, C, P. (2013). Expert Committee report on Kasthurirangan committee. State Biodiversity Board, Kerala.

SEMESTER III

MULTI DISCIPLINARY COURSE

(Offered to other department students)

FUNDAMENTALS OF PHYSICAL GEOGRAPHY

Course Code: MSGGY03MDC01

Description of the course:

It provides comprehensive understanding of the earth's physical environment and its dynamic interactions. It equips them with the knowledge and skills to analyse and interpret the complex systems that shape our earth and to address contemporary environmental challenges.

Course Objectives

- To examine the development of modern geomorphic thought and critical appreciation of fundamental concepts in geomorphology
- To understand the relationships that exist between the landforms and the earth processes
- To gain advanced knowledge about the climatic processes, their types, distribution, its influence on human activities
- Provide holistic understanding of the oceans of the world and the importance of conservation of marine resources
- Critically thinking about various factors influencing biodiversity and understanding the Spatial distribution of life on earth.

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Analyse the conceptual basis of geomorphology and its evolutionary phases
CO2	Critically analyse and interpret various approaches in landscape evolution
CO3	Understand the mechanism of climatic phenomena
CO4	Provides a solid foundation knowledge about the oceans and their role in earth systems
CO5	Provides a comprehensive understanding of the distribution of organisms on earth, biodiversity conservation and management

COURSE CONTENTS

Module I

1.1 Origin and evolution of earth crust, land forms, Rocks
1.2 Geomorphic processes – Diastrophism, Continental drift, Seismicity, Volcanism Sea-floor spreading, Plate tectonics, Mountain building
1.3 Weathering and Mass wasting
1.4 Agents of Gradations and associated landforms

Suggested Readings

Thornbury W.D (1969) Principles of Geomorphology, Wiley Intl. Edn & Wiley Eastern Reprints 1984
Wooldridge S W and R. S. Morgan (2004)–The Physical Basis of Geography – An Outline of Geomorphology, Orient Longman Private Limited
Bloom, A.L. (1991): Geomorphology, 2nd Ed Englewood Cliffs, M.J. Prentice Hall
Arthur N Strahler and Alan H Strahler (1998) Modern Physical Geography, John Wiley and Sons, Inc

Module 2

2.1 Nature of Climatology, Layers of atmosphere, Elements of weather -
2.2 Insolation, Temperature - Horizontal and Vertical distribution, Seasons, Humidity, Condensation, Precipitation
2.3 Atmospheric pressure and wind circulation, Air Masses, Fronts, Monsoons, Jet stream,
2.4 Cyclones: Tropical and Temperate Cyclones,

Suggested Readings

Critchfield, H.J, (2009): General Climatology; Prentice Hall, London
Barry, R.G., and Chorley, R.J. (2010): Atmosphere, Weather and Climate, Routledge, London, 516 pp
Savindra Singh (2006) Climatology, Prayaga Pusthak Bhavan, Allahabad
Lal D S (2003) Climatology, Sharda Pustak Bhavan, Allahabad

Module 3

3.1 World Ocean - Distribution of Temperature & Salinity in Oceans
Submarine relief: Continental shelf, Continental Slope, Deep Sea plain, Ocean Trenches
3.2 Tides, Coral Reefs
3.3 Currents- Causes and distribution in Atlantic & Pacific Ocean
3.4 Oceanic Resources and their economic significance, Sea level changes.

Suggested Readings

Savindrasingh, (2020) Oceanography Pravalika Publication, Allahabad
K. Siddhartha, (2014) Oceanography A Brief Introduction, Kisalaya Publication, New Delhi
D.S. Lal, (2017) Oceanography, Sharda Pustak Bhawan, Allahabad
Duxbury, (2004), (Fundamentals of Oceanography, Mcgrawhill Education

Module 4

4.1 Nature of Biogeography, Man and environment relationship
4.2 Biogeographic Regions and Patterns- Ecosystem – Structure, Classification, Biomes
4.3 Pollution – Types and Causes, Environmental degradation and conservation
4.4 Recent Concepts- Environmental Justice, Ecological Footprint, Green Economy, Global Warming

Suggested Readings

Savindra singh, (2015), Biogeography, Pravalika Publication, Allahabad
C. Barrycox, Peter.D. Moore, (2016) Biogeography: An Ecological and Evolutionary Approach, Wiley-Blackwell Publication
Richard John Hugget, (2005), Fundamentals of Biogeography, Routledge London
R.B. Singh, (2009), Biogeography and Biodiversity, Rawat Publications

Core Compulsory Readings (*Books, Journals, E-sources Websites/weblinks****)***

Savindrasingh (2020) Physical Geography, Pravalika Publication, Allahabad
Strahler, A.N (1992): Physical Geography. John Wiley & Sons Inc., New York
https://www.sciencedirect.com/journal/geomorphology
https://rmets.onlinelibrary.wiley.com/doi/full/10.1002/joc.8159

Core Suggested Readings (*Books, Journals, E-sources Websites/weblinks****)***

Moor, W.G. (1949): A Dictionary of Geography, Penguin Books, England
Trewartha, G.T (1968) An Introduction to Climate, McGraw Hill Book Co. New York.
https://www.researchgate.net/publication/259706424_Biogeography
https://www.researchgate.net/publication/338386692

SEMESTER III
MULTI DISCIPLINARY COURSE
(Offered to other department students)

FUNDAMENTALS OF HUMAN GEOGRAPHY

Course Code: MSGGY03MDC02

Description of the course:

Human Geography is an interdisciplinary course that explores the dynamic relationship between human populations and their well-being within the context of geographic space. The course encompasses four modules, each focusing on different aspects of human dynamics and its influence on environment. It provides comprehensive understanding of the earth's cultural environment and its dynamic interactions. It equips them with the knowledge and skills to analyse and interpret the complex human systems that modify our natural setting and to address contemporary environmental as well as socio-cultural challenges.

Course Objectives

- To understand the nature and scope of human geography
- To analyse the spatial dimensions of human population and varied dimensions of man-nature interface.
- To introduce the students to the changing approaches in population studies, To understand the nature and scope of population geography
- To analyse the spatial dimensions of urbanization as well as Mobility and displacement
- To understand/evaluate the association between geographic, demographic and socio-economic attributes of population and the resultant levels of social wellbeing and economic development in an ever-changing space time continuum

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Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the student will be able to

CO1	Analyse the conceptual basis of human geography along with varied dimensions of man-environment interactions.
CO2	Critically analyse and interpret various approaches in population and settlement studies

CO3	Understand the mechanism of human mobility and its multifaceted impacts
CO4	Provides a solid foundation knowledge about the settlement patterns in the world and their features

COURSE CONTENTS

Module I

1.5 Human geography- evolution, scope and content
1.6 Man environment relations
1.7 Determinism, Possibilism and neo-determinism
1.8 Human activities

Suggested Readings

Adhikari S (1992), Geographical Thought, Chaithanya Publishing House, Allahabad
Bonnet, Alastair, 2008.What is Geography? Sage publications
Castree, R, A. Rogers and D. Sherman, (2005). Questioning Geography: Fundamental Debates, Blackwell
Dikshit R.D (2007), Geographical Thought-A Contextual History of Ideas, Prentice Hall of India, New Delhi
Ellen Churchill Semple (1911) Influence of Geographic environment on the basis of Ratzel's system of Anthropogeography, New York. Russel and Russell
Harvey D (1969) Explanation in Geography, London
Holt Jenson Arid (1999). Geography: History and concepts, Sage publications
Majid Hussain (2007), Evolution of Geographical thought, Rawat Publication, Jaipur

Module 2

2.1 World population Growth and distribution
2.2 Fertility and Mortality
2.3 Migration- world pattern and trends, refugees
2.4 Demographic transition, Theories of Malthus and Marx

Suggested Readings

Bogue D J (1969), Principles of Demography, Wiley, New York
Chandana R C (2006) Geography of Population: Concept, Determinants and Patterns, Kalyani, Publishers
Clarke, John I, (1971) Population Geography. McGraw Hill
Demeny, Paul and Geoffrey McNicoll (1998) Population and Development, Earthscan, London.
Garnier B J,(1993) Geography of Population, Longman. London
Hassan, Mohammad Izhar,(2005) Population Geography, Rawat Publication, Jaipur
Majumdar P K (2010) Fundamentals of Demography, Rawat Publication, Jaipur.
Mamoria C B (1970) India's Population Problem, Kitab Mahal
Meadow, D.H., Meadows D.L., Randers J., and Behrens W.W. III. 1973. The Limits to Growth. I Report of the Club of Rome, The New American Library, New York.
Meadows, D.M. and Meadows, D.L. and Randers, J. 1992. Global Collapse or A

Sustainable Future, Earthscan Publications, London.
National Research Council 1986. Population growth and economic development: policy questions, Washington DC: National Academic Press.

Module 3

3.1 Human races
3.4 Religions , ethnicity
3.5 Languages
3.4 Cultural realms

Suggested Readings

Bogue D J (1969), Principles of Demography, Wiley, New York
Chandana R C (2006) Geography of Population: Concept, Determinants and Patterns, Kalyani, Publishers
Clarke, John I, (1971) Population Geography. McGraw Hill
Demeny, Paul and Geoffrey McNicoll (1998) Population and Development, Earthscan, London.
Garnier B J,(1993) Geography of Population, Longman. London
Hassan, Mohammad Izhar,(2005) Population Geography, Rawat Publication, Jaipur
Majumdar P K (2010) Fundamentals of Demography, Rawat Publication, Jaipur.
National Research Council 2003. Cities transformed: demographic change and Its implications in the developing world. Panel on Urban Population Dynamics, M.R. Montgomery, R. Stren, B. Cohen, and H.E. Reed, eds., Committee on Population, Division of Behavioral and Social Sciences and Education, Washington, DC: The National Academies Press.
Newbold, K Bruce (2012), Population Geography: Tools and Issues, Rawat Publication, Jaipur
Ragavender B V, (2014), Migration: Causes, Consequences and Problems, Abhijeet Publications, New Delhi
Sharma, Siya Ram (2008) Population Geography, Murali Lal and Sons, New Delhi
Weeks, J.R. 2008. Population: an introduction to concepts and issues. 10th edition, Belmont, CA: Thomson Wadsworth.

Module 4

4.5 Human settlements
4.6 Patterns and features of Rural settlements
4.7 Urbanization and features of urban settlements
4.8 Problems of urbanization

Suggested Readings

1. Bose, A. (1980): India's Urbanisation, Tata McGraw Hill, New Delhi

2. Carter, H. (1979): The Study of Urban Geography, Arnold Heinemann, London
3. Hagget, Peter, Andrew D. Cliff and Allen Frey (edited), Location Models , Arnold Heinemann, 1979.
4. Hall, T. (2006): Urban Geography, Routledge, London
5. Hudson, F. S. (1976) Geography of Settlements, Macdonald, London
6. King, Leslie, J.(1986), Central Place Theory, Sage Pub., New Delhi.
7. Mayer, M. Harold and Clyde F. Kohn (editors), Reading in Urban Geography, Central Book Depot, Allahabad, 1967.
8. Mitra, Ashok, Mukherjee, S and Bose R., Indian Cities, Abhinav Pub., New Delhi.
9. Northam Ray, M. (1979). Urban Geography, John Wiley and Sons, New York.
10. Pacione, M. (2009): Urban Geography, Routledge, New York
11. Ramachandran, R.,(1992) Urbanization and Urban Systems in India, Oxford University Press, New Delhi..
12. Singh, R.L. and Kashi Nath Singh (editors), Readings in Rural Settlement Geography,
13. National Geographical Society of India, Varanasi, 1975. Syllabus 2017-2
14. Singh, R.Y. (1994): Geography of Settlements, Rawat Publications, Jaipur

SEMESTER IV

CORE COURSE

COURSE NAME: GEOGRAPHY OF AGRICULTURE AND LAND USE PLANNING
COURSE CODE: MSGGY04DSC12

Description of the course :

This course focuses on the study of agriculture from a geographical perspective, exploring its spatial pattern, process and its role in land use activity in a geographical area. The course delves into various aspects of agriculture, including crop cultivation, livestock management, agroforestry, aquaculture etc. Additionally the course will examine the historical development of agriculture and its transformation over time, taking into account technological. Here advanced focus is given on the concept of land use planning providing an in-depth exploration of land use planning. It mention about a critical process that involves the systematic allocation and management of land for various purposes while considering social, economic and environmental factors. From this course students will gain an understanding of the impact of environment factors such as climate, soil and topography on agricultural activities. They also have an opportunity to study the principles and techniques of land use planning, understanding the role of government, planners and stakeholders in shaping land use policies.

Course Objectives

- Understand the fundamental concepts of agriculture geography and land use planning.
- Analyze the spatial patterns of agricultural systems and their impacts on the environment.
- Examine the social, economic, and environmental factors influencing agricultural practices.
- Explore the role of land use planning in promoting sustainable agriculture.
- Evaluate case studies and best practices in agricultural geography and land use planning.

Credit			Teaching Hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
4	--	4	4	--	4	60	40	100

Lecture/Tutorials, P/I=Practical/Internship, CE =Continuous Evaluation, ESE =End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the Course, the Student will be able to -

C01	Analyse various approaches to agricultural geography.
C02	Examines the scope of various theories on agriculture and land use.
C03	Develops skill to undertake land use surveys and land capability analysis at different scales

C04	Integrates the concepts of Agriculture and land use planning and develop suitable agricultural models.
C05	Critically evaluates the scenario of Indian agriculture and land use management

*Course outcomes based on revised blooms taxonomy

COURSE CONTENTS

Module 1 : Introduction to Agriculture Geography and Land Use Planning

1.1 Definition and scope of agriculture geography and land use planning
1.2 Historical developments and theories in agriculture geography
1.3 Key concepts and approaches in studying agricultural systems
1.4 Spatial distribution of agriculture worldwide

Suggested readings specific to the module.

Dyson T (1996) Population and Food – Global Trends and Future Prospects, Routledge
Gobind N (1986)- Regional Perspectives on Agricultural Development. Concept Publishing Company. New Delhi
Goh Cheng Leong & Gillian C Morgan (2009) Human and Economic Geography, Oxford University Press, New Delhi, New York
Grigg, D.B. 1984. Introduction to Agricultural Geography, Hutchinson, London.
Jasbir Singh and Dhillon S S (2004) Agricultural Geography, Tata Mcgraw Hill, New Delhi.
Majid Hussain (2003) Agricultural Geography, Anmol Publication, New Delhi.
Majid Hussain (2007) Systematic Agricultural Geography, Rawat Publication, New Delhi.
Mamoria C B (2008) Agricultural problems of India, Kitab Mahal, Patna.
Mannion.A.M.(1995) Agriculture and Environment Change, Wiley Blackwell
Mohammad, N. 1992. New Dimension in Agriculture Geography, Vol. I to VIII, Concept Publishing Company, New Delhi.

Module 2 : Agricultural Systems and Environmental Impacts

2.1 Classification and characteristics of agricultural systems
2.2 Factors influencing agricultural land use patterns
2.3 Environmental impacts of agriculture on landforms, soils, and water resources
2.4 Deforestation, land degradation, and biodiversity loss in relation to agriculture

Suggested readings specific to the module.

Uma Kapila (2006): Indian Economy-Since Independence-17th Edition, Academic Foundation, New Delhi.
" Mohammed Shafi (2006) Agricultural Geography, Pearson Education, New Delhi.
Roling, N.G., and Wageruters, M.A.E. (eds.) 1998. Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.
Shafi. M (1984) Agricultural Productivity and regional Imbalances – A Study of Uttar Pradesh, Concept Publishing Company
Sharma B L (1991) Applied Agricultural Geography, Rawat Publication, New Delhi.
Singh, J., and Dhillon, S.S. 1994. Agricultural Geography, Tata McGraw Hill, New

Delhi.
Mamoria C B (2008) Agricultural problems of India, Kitab Mahal, Patna.
Mannion.A.M.(1995) Agriculture and Environment Change, Wiley Blackwell
Mohammad, N. 1992. New Dimension in Agriculture Geography, Vol. I to VIII, Concept Publishing Company, New Delhi.
Mohammad, N. and Rai, S.C. 2014. Agricultural Diversification and Food Security in the Mountain Ecosystem, Concept Publishing Company, New Delhi

Module 3 : Socio - cultural Factors and Sustainable Agriculture

3.1 Social and cultural dimensions of agricultural systems
3.2 Agricultural labor, migration, and rural livelihoods
3.3 Gender roles and inequalities in agriculture
3.4 Sustainable agriculture practices and approaches

Suggested readings specific to the module.

"Land Use Planning and Management in India: Challenges and Opportunities" by R. K. Maikhuri and K. G. Saxena
"Planning for Sustainable Land Use" edited by P. S. Ramakrishnan and K. G. Saxena
"Land Use Policy and Planning" by S. K. Kulshrestha and D. R. Khanna
"Land Resource Management in India: An Overview" by A. Senthil Kumar and K. Palanisami
"Geoinformatics in Land Use Mapping" by Anand Krishna and S. N. Tiwari
"Agricultural Change in Rural Wales: Farmers, Innovation, and the European Union" by Matt Lobley
"Gender and Agriculture: Inequalities, Opportunities, and Challenges" edited by Agnes Andersson Djurfeldt, Helena Fredriksson, and Pamela Golah
3.8 "Agriculture and Rural Development in a Globalizing World: Challenges and Opportunities" edited by Prabhu Pingali and Gershon Feder
3.9 "Agriculture and Food in Crisis: Conflict, Resistance, and Renewal" edited by Fred Magdoff and Brian Tokar

Module 4 : Land Use Planning for Sustainable Agriculture

4.1 Principles and objectives of land use planning
4.2 Zoning and land allocation for agricultural purposes
4.3 Sustainable land management practices in agriculture
4.4 Case studies and best practices in land use planning for sustainable agriculture

Suggested readings specific to the module.

"GIS Applications in Agriculture, Volume One: Climate Change, Land Use and Management" edited by M. L. Madan and Pradeep K. Goel
"Geospatial Techniques in Land Use Mapping and Monitoring" edited by R. K. Maikhuri and K. G. Saxena
"Sustainable Land Use Planning: Fundamentals of Land Use Planning" by R. B. Singh and S. K. Kulshrestha
"Land Use Change: Science, Policy and Management" edited by G. B. Reddy and M. V. K. Sivakumar

"Integrated Watershed Management in Rainfed Agriculture" edited by V. U. M. Rao and S. R. Hegde

"Land Use Planning and the Environment: A Casebook" edited by John R. Nolon and Patricia E. Salkin

"Sustainable Land Management: Challenges, Opportunities, and Trade-Offs" edited by Raymond L. Nkongolo-Bakenda

"Land Use Planning and Sustainable Development: Emerging Themes and Strategies" edited by Silvia Serrao-Neumann, Serena Hamilton, and Jamie Trammell

"Land Use Planning in the Global Era: Urban and Regional Planning and Development Series" by Richard H. Williams

Core Compulsory Readings (*Books, Journals, E-sources Websites/ weblinks)*

Dyson T (1996) Population and Food – Global Trends and Future Prospects, Routledge

Gobind N (1986)- Regional Perspectives on Agricultural Development. Concept Publishing Company. New Delhi

Goh Cheng Leong & Gillian C Morgan (2009) Human and Economic Geography, Oxford University Press, New Delhi, New York

Grigg, D.B. 1984. Introduction to Agricultural Geography, Hutchinson, London.

Jasbir Singh and Dhillon S S (2004) Agricultural Geography, Tata Mcgraw Hill, New Delhi.

Majid Hussain (2003) Agricultural Geography, Anmol Publication, New Delhi.

Majid Hussain (2007) Systematic Agricultural Geography, Rawat Publication, New Delhi.

Mamoria C B (2008) Agricultural problems of India, Kitab Mahal, Patna.

Mannion.A.M.(1995) Agriculture and Environment Change, Wiley Blackwell

Mohammad, N. 1992. New Dimension in Agriculture Geography, Vol. I to VIII, Concept Publishing Company, New Delhi.

Mohammad, N. and Rai, S.C. 2014. Agricultural Diversification and Food Security in the Mountain Ecosystem, Concept Publishing Company, New Delhi

Mohammed Shafi (2006) Agricultural Geography, Pearson Education, New Delhi.

Roling, N.G., and Wageruters, M.A.E. (eds.) 1998. Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.

Shafi. M (1984) Agricultural Productivity and regional Imbalances – A Study of Uttar Pradesh, Concept Publishing Company

Sharma B L (1991) Applied Agricultural Geography, Rawat Publication, New Delhi.

Singh, J., and Dhillon, S.S. 1994. Agricultural Geography, Tata McGraw Hill, New Delhi.

Singh, R. B. 2000. Environmental Consequences of Agricultural Development: A Case Study from the Green Revolution state of Haryana, India, Agriculture, Ecosystems and Environment 82, 97–103.

Symons, Leslie (2018)– Agricultural Geography, Routledge

White P. 2007. Emergence of agriculture: A global view, Routledge, London.

Journal Article:

- *"Agricultural Geography: A Review" by Jonathan Rigg (Progress in Human Geography, 2006)*
- *"Agricultural Transformation in India: Implications for Subsistence Farmers" by P. K. Joshi and Ashok Gulati (Economic and Political Weekly, 2007)*
- *"Climate Change and Agriculture: An Integrated Approach to Adaptation and Mitigation" by Cynthia Rosenzweig and Martin L. Parry (Annual Review of Environment and Resources, 2014)*
- *"Sustainable Agriculture in India: Challenges and Opportunities" by Parvinder Singh*

(Indian Journal of Agricultural Economics, 2012)

- *"Land Suitability Analysis: A Review of Principles, Methods, and Applications" by Gergely Tóth et al. (Journal of Land Use Science, 2013)*
- *"Land Use Planning for Sustainable Development: A Case Study of Punjab, India" by Anjali Gupta (Environmental Management, 2006)*
- *"Land Use and Cover Change (LUCC): Implementation Strategy" by Lambin, E. F., and Geist, H. J. (International Human Dimensions Programme on Global Environmental Change, 2006)*
- *"Challenges and Prospects of Sustainable Agriculture in India" by R. C. Dalei (Agricultural Economics Research Review, 2011)*

E-source:

- *Food and Agriculture Organization (FAO)*
- *Ministry of Agriculture and Farmers Welfare (India) - The official website of the Ministry of Agriculture and Farmers Welfare (www.agricoop.nic.in)*
- *World Agroforestry Centre (ICRAF) - The ICRAF website (www.worldagroforestry.org)*
- *Indian Council of Agricultural Research (ICAR) - The ICAR website (www.icar.org.in)*
- *United Nations Human Settlements Programme (UN-Habitat) - The UN-Habitat website (unhabitat.org)*
- *National Remote Sensing Centre (NRSC) - NRSC (www.nrsc.gov.in)*
- *The Land Portal (www.landportal.org)*
- *National Bank for Agriculture and Rural Development (NABARD) - NABARD's website (www.nabard.org)*

Core Suggested Readings (*Books, Journals, E-sources Websites/ weblinks)*

Book:

- *Dyson T (1996) Population and Food – Global Trends and Future Prospects, Routledge*
- *Gobind N (1986)- Regional Perspectives on Agricultural Development. Concept Publishing Company. New Delhi*
- *Goh Cheng Leong & Gillian C Morgan (2009) Human and Economic Geography, Oxford University Press, New Delhi, New York*
- *Grigg, D.B. 1984. Introduction to Agricultural Geography, Hutchinson, London.*
- *Jasbir Singh and Dhillon S S (2004) Agricultural Geography, Tata Mcgraw Hill, New Delhi.*
- *Majid Hussain (2003) Agricultural Geography, Anmol Publication, New Delhi.*
- *Majid Hussain (2007) Systematic Agricultural Geography, Rawat Publication, New Delhi.*
- *Mamoria C B (2008) Agricultural problems of India, Kitab Mahal, Patna.*
- *Mannion.A.M.(1995) Agriculture and Environment Change, Wiley Blackwell*
- *Mohammad, N. 1992. New Dimension in Agriculture Geography, Vol. I to VIII, Concept Publishing Company, New Delhi.*
- *Mohammad, N. and Rai, S.C. 2014. Agricultural Diversification and Food Security in the Mountain Ecosystem, Concept Publishing Company, New Delhi*
- *Mohammed Shafi (2006) Agricultural Geography, Pearson Education, New Delhi.*
- *Roling, N.G., and Wageruters, M.A.E. (eds.) 1998. Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.*

- *Shafi. M (1984) Agricultural Productivity and regional Imbalances – A Study of Uttar Pradesh, Concept Publishing Company*
- *Sharma B L (1991) Applied Agricultural Geography, Rawat Publication, New Delhi.*
- *Singh, J., and Dhillon, S.S. 1994. Agricultural Geography, Tata McGraw Hill, New Delhi.*
- *Singh, R. B. 2000. Environmental Consequences of Agricultural Development: A Case Study from the Green Revolution state of Haryana, India, Agriculture, Ecosystems and Environment 82, 97–103.*
- *Symons, Leslie (2018)– Agricultural Geography, Routledge*
- *White P. 2007. Emergence of agriculture: A global view, Routledge, London.*

Journal:

- *"Journal of Agricultural Geography"*
- *"Indian Journal of Agricultural Economics"*
- *"Agriculture, Ecosystems & Environment"*
- *"Indian Journal of Agricultural Sciences"*
- *"Land Use Policy"*
- *"Indian Journal of Regional Science"*
- *"Climate Change"*
- *"Current Science"*

E-sources:

- *Food and Agriculture Organization of the United Nations (FAO) - www.fao.org*
- *Ministry of Agriculture and Farmers' Welfare, Government of India - www.agricoop.nic.in*
- *Sustainable Agriculture Research and Education (SARE) - www.sare.org*
- *National Bank for Agriculture and Rural Development (NABARD) - www.nabard.org*
- *United States Department of Agriculture (USDA) National Agricultural Library - www.nal.usda.gov*
- *Ministry of Rural Development, Government of India - www.rural.nic.in*
- *Intergovernmental Panel on Climate Change (IPCC) - www.ipcc.ch*
- *Indian Council of Agricultural Research (ICAR) - www.icar.org.in*

SEMESTER IV

CORE COURSE

PRACTICAL IV - ADVANCED TECHNIQUES OF GEO-SPATIAL ANALYSIS

Course Code: MSGGY04DSC13

Description of the Course:

The course is an introduction to the application of quantitative techniques in geographical research. Students will develop a foundational understanding of key statistical methods, data collection, and analysis techniques used in geographic research. Emphasis will be placed on practical applications and their relevance to various geographical phenomena.

Course Objectives

- To equip students with advanced statistical techniques for geographical research.
- Provide hands-on practical exercises using R Software.
- Equip students to handle various Statistical analysis to suggest remedies for contemporary issues.***-**

Credit			Teaching hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
--	4	4		12	12	60	40	100

L/T Lecture/Tutorials, P/I - Practical/Internship CE - Continuous Evaluation
ESE – End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the course, the Student will be able to

CO1	Apply advanced sampling and testing physical parameters in geographical research works.
CO2	Prepare QGIS software supported Socio-Economic Data Inventory
CO3	Contribute in Resource Mapping and PRA based Resource Management Plan
CO4	Utilize QGIS for Spatial Data Management and Atlas Preparation
CO5	Work with R Software for Statistical Analysis and Geospatial Mapping

COURSE CONTENTS

Module I : Advanced Sampling and Testing Physical Parameters

1.1 Introduction to field research methods
1.2 Types of sampling and its significance, Errors and their rectification
1.3 Analysis of Samples using Index and Models
1.4 Importing Sample data from field instruments, survey sheets and GPS to QGIS

Suggested Readings

ArcGIS 10.3 Manuals, 2019.
Aronoff S,(1989) Geographic Information Systems: A Management Perspective, WDL Publications
Burrough, P.A. (2005), Principles of GIS for Land Resource Assessment, Oxford Publications, 2005
Canty, M.J. (2014). Image Analysis, Classification and Change Detection in Remote Sensing, 3rd Edition, CRC Press.
Chrisman N R (2001) Exploring Geographic Information System, Wiley
Lunsbury J.F. and Aldrich, F.T. (1979). Introduction to Geographic Field Methods and Techniques, Charles E. Mercill Publishing Company, Columbus.
Misra, R. P. (2015). Research Methodology: A Handbook, Concept Publishing Company, New Delhi.
Montello, Daniel R. and Sutton, P.C. 2006. An Introduction to Scientific Research in Geography, Sage Publications,London.
Stoddard, Robert H. 1982. Field Techniques and Research Methods in Geography, Kendall/Hunt for National Council for GeographicEducation

Module 2 : Socio-Economic Surveying Techniques

2.1 Introduction to Socio-Economic Surveying Techniques
2.2 Preparation of Master Table, Preparation of Socio-Economic Data Inventory
2.3 Introduction to SPSS for statistical analysis using sample data
2.4 Thematic mapping of Socio-Economic Data using QGIS

Suggested Readings

M. Anji Reddy (2008) Textbook of Remote sensing and Geographical information systems, BS Publications, Hyderabad
Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Basudeb Bhatta (2011) Remote sensing and GIS, Oxford University Press, New Delhi
Bert Veenendaal et.al (2011) Advances in Web-based GIS, Mapping Services and Applications, CRC Press, Florida, USA
Department of Geography (2023) Certified Course in Geographic Information System, Kannur University,India
https://docs.qgis.org/3.28/en/docs/user_manual/index.html- QGIS User Manual

Module 3 : Resource Mapping

1.1 Cadastral Map based resource surveying
1.2 Land Use and Asset data plotting
1.3 PRA based development of Resource Management Plan.
1.4 Report generation of Resource Management Plan.

Suggested Readings

Chrisman N R (2001) Exploring Geographic Information System, Wiley
Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.
Basudeb Bhatta (2021) Remote sensing and GIS, Oxford University Press, New Delhi
R.P Misra (2014) Fundamentals of Cartography, Concept publishing company, New Delhi
Britha Mikkelsen (2005) Methods for Development Work and Research, Sage Publication, New Delhi.
Chopra, K., K.G. Kadekodi, and M.N. Murthy. (1990) Participatory Development: People and Common Property Resource. Sage Publications.
Francois Ramade (1984) Ecology of Natural Resources, John Wiley & Sons Ltd.
Knight, Richard L., editor, et al. (1995) A New Century for Natural Resources Management, Island Press.
Mather, A.S. and Chapman, K. 1995. Environmental Resources, Longman, Harlow, England.
Mc Clay, K.R. 1995. Resource Management Information System: Process & Practice, Taylor Francis, London.
Mitchell B. 1988. Geography and Resources Analysis, 2nd edition, Longman, London.
Mitchell, B. 1997. Resource and Environmental Management, Longman, Harlow, England.
Newson, M.D. 1991. Land, Water and Development: River Basin Systems and Management, Routledge,London.
Odum, E.P. (1971) Fundamentals of Ecology, W.B. Saunders Co. USA
Owen, S. and Owens, P.L. 1991. Environment, Resources and Conservation, Cambridge University Press, New York.

Module 4 : Spatial Data Management

1.1 **Micro Level Region based Spatial Database generation**
1.2 **Atlas generation**
1.3 **Land Use data mage Land Use Change detection**
1.4 **Preparation of Land Use Planning report**

Suggested Readings

Chrisman N R (2001) Exploring Geographic Information System, Wiley
Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.
Basudeb Bhatta (2021) Remote sensing and GIS, Oxford University Press, New Delhi
R.P Misra (2014) Fundamentals of Cartography, Concept publishing company, New Delhi
Ashish Sarkar (2009) Practical Geography – A systematic approach, Orient Black Swan,

Kolkata.
Chopra, K., K.G. Kadekodi, and M.N. Murthy. (1990) Participatory Development: People and Common Property Resource. Sage Publications.
Francois Ramade (1984) Ecology of Natural Resources, John Wiley & Sons Ltd.
Knight, Richard L., editor, et al. (1995) A New Century for Natural Resources Management, Island Press.
Mather, A.S. and Chapman, K. 1995. Environmental Resources, Longman, Harlow, England.
Mc Clay, K.R. 1995. Resource Management Information System: Process & Practice, Taylor Francis, London.
Mitchell B. 1988. Geography and Resources Analysis, 2nd edition, Longman, London.
Mitchell, B. 1997. Resource and Environmental Management, Longman, Harlow, England.
Newson, M.D. 1991. Land, Water and Development: River Basin Systems and Management, Routledge,London.
Odum, E.P. (1971) Fundamentals of Ecology, W.B. Saunders Co. USA
Owen, S. and Owens, P.L. 1991. Environment, Resources and Conservation, Cambridge University Press, New York.
Burrough, P.A. (2005), Principles of GIS for Land Resource Assessment, Oxford Publications, 2005
Canty, M.J. (2014). Image Analysis, Classification and Change Detection in Remote Sensing, 3rd Edition, CRC Press.
Chrisman N R (2001) Exploring Geographic Information System, Wiley
Gibson, P.J., Power, C.H., Rudahl, K.T. and Goldin, S.E. (2000) Introductory Remote Sensing: Digital Image Processing and Applications, Routledge.
Gonzalez, R.C. and Woods, R.E. (2007) Digital Image Processing, 3rd Edition, Pearson.
Jensen, J.R. (2015). Introductory Digital Image Processing: A Remote Sensing Perspective, 4th Edition, Pearson.
John E. Harmon & Steven J. Anderson (2003) The design and implementation of Geographic Information Systems, John Wiley & Sons, Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.

Core Compulsory Readings (*Books, Journals, E-sources Websites/we blinks***)**

ArcGIS 10.3 Manuals, 2019.
Aronoff S,(1989) Geographic Information Systems: A Management Perspective, WDL Publications
Burrough, P.A. (2005), Principles of GIS for Land Resource Assessment, Oxford Publications, 2005
Canty, M.J. (2014). Image Analysis, Classification and Change Detection in Remote Sensing, 3rd Edition, CRC Press.
Chrisman N R (2001) Exploring Geographic Information System, Wiley
Gibson, P.J., Power, C.H., Rudahl, K.T. and Goldin, S.E. (2000) Introductory Remote Sensing: Digital Image Processing and Applications, Routledge.
Gonzalez, R.C. and Woods, R.E. (2007) Digital Image Processing, 3rd Edition, Pearson.
Jensen, J.R. (2015). Introductory Digital Image Processing: A Remote Sensing Perspective, 4th Edition, Pearson.

John E. Harmon & Steven J. Anderson (2003) The design and implementation of Geographic Information Systems, John Wiley & Sons, Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.
Kraak, M. and Brown, A (2001) Web Cartography: Development and Prospects, Taylor and Francis, London.
Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.
Liang, S. (2004) Quantitative Remote Sensing of Land Surfaces, Wiley.
Mather, P. M. and Koch, M. (2011) Computer Processing of Remotely Sensed Images: An Introduction, 4th Edition, Wiley-Blackwell.
Marble, D.F & Calkins, H.W.(1990) Basic Readings in Geographic Information System, Spad System Ltd.
Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.
Paul A Longley et.al (2001) Geographic Information System and Science, John Wiley and Sons, Chichester.
ENVI Image processing software User Manual
Richards, J.A. (2013) Remote Sensing Digital Image Analysis: An Introduction, Springer.
Star J and Estes (1989) Geographic Information Systems: An Introduction, Prentice Hall
Tereshenkov, A (2009). Web GIS Application in Local Government, VDM Verlag,
Thanappan Subash. (2011) Geographical Information System, Lambert Academic Publishing,
W. B. Green (1982) Digital Image Processing- A Systems Approach, Van-Nostrand Pub. Co.
Department of Geography (2023) Certified Course in Geographic Information System, Kannur University,India

Core Suggested Readings (*Books, Journals, E-sources Websites/web links****)***

ArcGIS 10.3 Manuals, 2019.
Aronoff S,(1989) Geographic Information Systems: A Management Perspective, WDL Publications
Burrough, P.A. (2005), Principles of GIS for Land Resource Assessment, Oxford Publications, 2005
Canty, M.J. (2014). Image Analysis, Classification and Change Detection in Remote Sensing, 3rd Edition, CRC Press.
Chrisman N R (2001) Exploring Geographic Information System, Wiley
Gibson, P.J., Power, C.H., Rudahl, K.T. and Goldin, S.E. (2000) Introductory Remote Sensing: Digital Image Processing and Applications, Routledge.
Gonzalez, R.C. and Woods, R.E. (2007) Digital Image Processing, 3rd Edition, Pearson.
Jensen, J.R. (2015). Introductory Digital Image Processing: A Remote Sensing Perspective, 4th Edition, Pearson.
John E. Harmon & Steven J. Anderson (2003) The design and implementation of Geographic Information Systems, John Wiley & Sons, Ian Heywood et.al (2002) An Introduction to Geographical Information System, Pearson Education Private Limited, Delhi.

Kraak, M. and Brown, A (2001) Web Cartography: Development and Prospects, Taylor and Francis, London.
Kang Tsung Chang (2008) Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
Loo C P and Albert K W Y (2004) Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi.
Liang, S. (2004) Quantitative Remote Sensing of Land Surfaces, Wiley.
Mather, P. M. and Koch, M. (2011) Computer Processing of Remotely Sensed Images: An Introduction, 4th Edition, Wiley-Blackwell.
Marble, D.F & Calkins, H.W.(1990) Basic Readings in Geographic Information System, Spad System Ltd.
Michael N DeMers (2005) Fundamentals of Geographic Information System, John Wiley and Sons, New Delhi.
Paul A Longley et.al (2001) Geographic Information System and Science, John Wiley and Sons, Chichester.
ENVI Image processing software User Manual
Richards, J.A. (2013) Remote Sensing Digital Image Analysis: An Introduction, Springer.
Star J and Estes (1989) Geographic Information Systems: An Introduction, Prentice Hall
Tereshenkov, A (2009). Web GIS Application in Local Government, VDM Verlag,
Thanappan Subash. (2011) Geographical Information System, Lambert Academic Publishing,
W. B. Green (1982) Digital Image Processing- A Systems Approach, Van-Nostrand Pub. Co.
Department of Geography (2023) Certified Course in Geographic Information System, Kannur University,India

SEMESTER IV
CORE COURSE
DISSERTATION
Course Code: MSGGY04DSC14

Description of the course :

Students are required to search, collect and review various research articles published in chosen area of research. A student has to select a topic for his dissertation, based on his/her interest. The project can be taken highlighting any issue relating to geographic knowledge, from within any one of the systematic branches of the subject, or of its interfaces. M.Sc dissertations are to demonstrate a student's ability to formulate a geographic research problem, collect and analyze relevant data or appropriate literature, arrive at logical conclusions, and to present the entire exercise at a seminar in the department.

Course Objectives

- To develop skills which enable the synthesis of knowledge and improve scientific field work, data collection, analysis and writing skills.
- To develop and enhance independent research skills.

Credit			Teaching Hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
--	4	4	--	12	12	--	100	100

Lecture/Tutorials, P/I=Practical/Internship, CE =Continuous Evaluation, ESE =End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the Course, the Student will be able to -

C01	Identify a topic related to the discipline which necessarily has a spatial component
C02	To formulate research objectives, research questions and a suitable research design.
C03	Make a critical review of the available literature on the topic
C04	Conduct independent research to formulate and solve the chosen problem

*Course outcomes based on revised blooms taxonomy

COURSE CONTENTS

Project proposal: Each student has to prepare and present a project proposal towards the end of the third semester. The proposal may consists of

1. Tentative Title of the study:
2. Introduction: Brief explanation of the study and its relevance
3. Statement of the research problem: Discuss the problem to be addressed in the Research: the gaps, perplexities, or inadequacies in existing theory, empirical knowledge, practice, or policy that prompted the study. First state the problem generally, and then state the specific that your research will address.
4. Briefing on the Study area : A brief description of the study area dealing the bio-physical as well as socio-economic setting of the region selected for case study with base maps.
5. Review of literature: The literature review should portray the theoretical foundations of research paradigm and methodology. It should examine prior research and thought relevant to key aspects of proposed dissertation work.
6. Brief discussion on the proposed theoretical framework of your study, relevance, rationality etc.
7. Research Questions/Hypothesis
8. Aims and objectives
9. Methodology
10. An outline of the proposed chapters of the dissertation
11. Expected outcome
12. Time line of project
13. References

M.Sc Geography dissertations are more often-learning experiences than substantive contributions to the field. Students can select the topic in consultation with their supervisor. The dissertation may be carried out within one of the systematic branches of the subject, or in an interdisciplinary nature. There will be generally no restrictions on the type of geographical study that one can undertake. But it should invariably follow all the steps in research methodology of Geography. A student shall be required to submit three copies of dissertation report on the research work carried out by him/her under the supervision of a faculty member or in a research institute/industry with guidance from expert there to the department 10 days before the commencement of the fourth end semester examinations. The project report / dissertation should contain minimum of 50 pages or 15,000 words excepting maps and figures.

Essential Readings

Baxter, L., Hughes, C. & Tight, M. (1996) How to research. Open University Press.
Bell, J. (1993) Doing your research project. Open University Press.
Bird, J. (1993) The changing worlds of geography: a guide to concepts and methods. Clarendon
Clifford, N. & Valentine, G., (2003) Key Methods in Geography. Sage.
Cooper, B.M. (1964) Writing technical reports. Penguin.
Creswell, J.W. (1994) Research design: qualitative and quantitative methods. Sage.
Daniel R. Montello and Paul Sutton, (2006), An Introduction to Scientific Research Methods in Geography and Environmental Studies

Haines-Young, R.H. & Petch, J.R. (1986) Physical Geography: its nature and methods. Harper. Johnston, R. (1991) Geography and geographers. 4th edition. Arnold.
Kate L. Turabian, (2018), A Manual for Writers of Research Papers, Theses, and Dissertations,
Eighth Edition: Chicago Style for Students and Researchers (Chicago Guides to Writing, Editing, and Publishing) Eighth Edition

SEMESTER IV
CORE COURSE
COMPREHENSIVE VIVA VOCE AND STUDY TOUR/FIELD WORK REPORT
Course Code: MSGGY04DSC15

Description of the course :

Comprehensive Viva voce is to be conducted along with the Practical examination of the Fourth Semester. The viva shall normally cover the subjects taught in all the semesters of M Sc Geography programme with special reference to their project work. Viva will be conducted at the end of 4th semester which will be covering the complete syllabus. This will test the student's knowledge, Understanding and skills in geography acquired during the course of their M.Sc programme. It will help the students to face interviews both in the academic and the industrial sector.

Course Objectives

- Assess the overall knowledge of the student in the relevant field of Geography acquired over 2 years of study in the Post graduate program
- Provide opportunities for experiential learning and offer both group and self-directed activities that enable students to explore spatially varied features, cultures, practices and people.
- Enhance the knowledge of the students through observing, mapping, measuring and recording real world phenomena and to explore the processes that form and transform environments.

Credit			Teaching Hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
--	--	4	--	--	--	25	75	100

Lecture/Tutorials, P/I=Practical/Internship, CE =Continuous Evaluation, ESE =End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the Course, the Student will be able to -

C01	Comprehensive Viva Voce asses the student's skill at presenting his/her understandings, views and perceptions in the subject.
C02	Demonstrate his/her ability to participate in academic discussion with research colleagues.
C03	Confirm the state of knowledge level of the student and he/she can defend it verbally.
C04	Investigate student's genuineness of their project work and establish whether the student is of sufficiently high standard to merit the award of the degree for which he/she is undergoing.
C05	Viva provide students an opportunity to clarify and develop the written thesis/examination in response to the examiners' questions

COURSE CONTENTS

- **Comprehensive Viva voce** is to be conducted along with the Practical examination of the Fourth Semester.

On completion of the course learner should be able to

1. Comprehensive Viva Voce asses the student's skill at presenting his/her understandings, views and perceptions in the subject.
2. It will demonstrate his/her ability to participate in academic discussion with research colleagues.
3. Viva voce confirm the state of knowledge level of the student and he/she can defend it verbally.
4. Viva investigate student's genuineness of their project work and establish whether the student is of sufficiently high standard to merit the award of the degree for which he/she is undergoing.
5. Viva provide students an opportunity to clarify and develop the written thesis/examination in response to the examiners' questions

- **Study tour / Field work** will be conducted during the Third/fourth semester of the M.Sc Geography programme and a report of the same should be submitted by the students

On completion of the course, learner should be able to

1. To understand the significance of travel & field work in geographical studies and to know about different types of field techniques. It enables them to prepare and disseminate the study tour/ fieldwork report.
2. Study Tour/Field Work exposes the students to the outside world, be it local & global issues.
3. This allows them to acquire fresh perspectives based on their presence in an informal environment. It improves them with a new prospective understandings and helps in developing overall personality.
4. While classroom/ Laboratory based learning may give students an opportunity to apply their learning on hypothetical situations, Study Tour/Field Work, on the other hand, makes them face real-life problems. Coming up with solutions makes them innovative thinkers.
5. Study Tour/Field Work away from the comfort of University Campus and home fosters independence, leadership skills, and communication skills among young geographers.

SEMESTER IV

ELECTIVE COURSE

COURSE NAME: POPULATION AND WELFARE GEOGRAPHY
Course Code: MSGGY04DSE07

Description of the course :

Population and Welfare Geography is an interdisciplinary course that explores the dynamic relationship between human populations and their well-being within the context of geographic space. The course encompasses four modules, each focusing on different aspects of population dynamics and its influence on human welfare. Through a combination of theoretical discussions, empirical case studies, and practical applications, students will gain a comprehensive understanding of how population patterns, processes, and movements impact various aspects of human welfare, including health, resources, and sustainability.

Course Objectives

- Understand the scope and significance of population and welfare geography as a subfield of human geography.
- Familiarize with key concepts, theories, and terminology related to population dynamics and welfare.
- Develop an understanding of the role of migration in shaping demographic and social structures.
- Analyze the distribution and availability of natural resources in relation to population growth.
- Examine the environmental consequences of population dynamics and resource consumption.

Credit			Teaching Hours			Assessment		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	--	3	3	--	3	60	40	100

Lecture/Tutorials, P/I=Practical/Internship, CE =Continuous Evaluation, ESE =End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the Course, the Student will be able to -

C01	Apply critical thinking and analytical skills to interpret population-related data and assess their implications for social and environmental systems.
C02	Demonstrate the ability to analyze real-world case studies and propose evidence-based solutions to address population and welfare challenges.
C03	Develop an awareness of the ethical considerations and social implications of population policies and interventions.
C04	Collaborate in teams to work on research projects, fostering cooperation and adaptability in diverse group settings.

CO5	Recognize the importance of interdisciplinary approaches in understanding complex population and welfare issues and appreciate the interconnectedness of various fields within geography.

*Course outcomes based on revised blooms taxonomy

COURSE CONTENTS

Module 1 : Introduction to Population and Welfare Geography

1.1 Overview of population and welfare geography as a subfield of human geography
1.2 Understanding the relationship between population dynamics and human Welfare, Key concepts and theories in population and welfare geography
1.3 Methods and approaches used in studying population and welfare issues
1.4 Case studies highlighting the importance of population dynamics on human welfare

Suggested readings specific to the module.

Bogue D J (1969), Principles of Demography, Wiley, New York
Chandana R C (2006) Geography of Population: Concept, Determinants and Patterns, Kalyani, Publishers
Clarke, John I, (1971) Population Geography. McGraw Hill
Demeny, Paul and Geoffrey McNicoll (1998) Population and Development, Earthscan, London.
Garnier B J,(1993) Geography of Population, Longman. London
Hassan, Mohammad Izhar,(2005) Population Geography, Rawat Publication, Jaipur
Majumdar P K (2010) Fundamentals of Demography, Rawat Publication, Jaipur.
Mamoria C B (1970) India's Population Problem, Kitab Mahal

Module 2 : Population Dynamics and Migration

2.1 Demographic transition theory and its implications for population growth
2.2 Analysis of population distribution and density
2.3 Study of population composition, including age, gender, and ethnicity
2.4 Causes and consequences of international and internal migration, Impact of migration on population and welfare patterns at different scales

Suggested readings specific to the module.

National Research Council 1986. Population growth and economic development: policy questions, Washington DC: National AcademicPress.
National Research Council 2003. Cities transformed: demographic change and Its implications in the developing world. Panel on Urban Population Dynamics, M.R. Montgomery, R. Stren, B. Cohen, and H.E. Reed, eds., Committee on Population, Division of Behavioral and Social Sciences and Education, Washington, DC: The National AcademiesPress.
Newbold, K Bruce (2012), Population Geography: Tools and Issues, Rawat Publication, Jaipur
Ragavender B V, (2014), Migration: Causes, Consequences and Problems, Abhijeet Publications, New Delhi

Module 3 : Population and Health

3.1 Examination of the relationship between population and health outcomes
3.2 Analysis of health disparities and their connection to population characteristics
3.3 Study of disease patterns and epidemiological transitions, assessing the impact of population growth on healthcare systems
3.4 Exploration of population-based interventions for improving health and well-being

Suggested readings specific to the module.

"Population and Health in Developing Countries" by F. N. Khan
"Public Health and Epidemiology at a Glance" by Margaret Somerville and K. Kumaran
"Health Transition in India: Evidence from National Family Health Surveys" edited by K. Srinivasan and A. K. Mohanty
"Healthcare and Public Health in India" by K. R. Nayar
"Social Determinants of Health: A Comparative Approach" by S. Dey
"Population Health: Concepts and Methods" by T. Kue Young
"Sick Societies: Responding to the Global Challenge of Chronic Disease" by David Stuckler
"The Health Gap: The Challenge of an Unequal World" by Michael Marmot
"The Spirit Level: Why Equality is Better for Everyone" by Richard Wilkinson and Kate Pickett
"Population and Community Health Nursing" by Mary Jo Clark

Module 4 : Population, Resources, and Sustainability

4.1 Analysis of the relationship between population and resource availability
4.2 Understanding the concept of carrying capacity and its relevance to human welfare
4.3 Examination of resource distribution and its implications for population welfare
4.4 Study of environmental impacts of population growth and consumption patterns, Strategies for sustainable population and resource management

Suggested readings specific to the module.

"*Sustainable Development and India: Confronting Environmental Challenges" by A. Ravindra and D. V. Subba Rao*
"Resource Management and Environmental Sustainability in India" edited by P. S. Ramakrishnan and A. V. S. Raju
"Sustainable Development: Issues and Challenges" by S. P. Gupta
"Environment and Development in India: A Holistic Analysis" by M. V. Naidu and R. Sudarshan
"Environmental Science: Human Population and the Environment" by Anil Kumar De and P. K. Gupta
"The Population Bomb" by Paul R. Ehrlich
"Limits to Growth: The 30-Year Update" by Donella H. Meadows, Jorgen Randers, and Dennis L. Meadows
"Resource Rebels: Native Challenges to Mining and Oil Corporations" by Al Gedicks

"Sustainable Development: Principles, Frameworks, and Case Studies" edited by Okechukwu Ukaga and Idowu Biao
"The End of Plenty: The Race to Feed a Crowded World" by Joel K. Bourne Jr.

Core Compulsory Readings (*Books, Journals, E-sources Websites/ weblinks)*
Book:

"Population Geography: A Concise Introduction" by R. C. Chandna
"India's Human Geography: Socio-Economic, Gender and Health Issues" by Gopal Krishan and Nita D. Shah
"Population, Environment, and Development: A Geographical Perspective" by M. R. Bhagat and T. P. Singh
"Population Geography" by R. J. Johnston and Michael J. Watts
"Population and Development: A Critical Introduction" by Tim Dyson
"Geographies of Health: An Introduction" by Anthony C. Gatrell and Susan J. Elliott
"The Age of Migration: International Population Movements in the Modern World" by Stephen Castles and Mark J. Miller
"International Migration: A Very Short Introduction" by Khalid Koser
"Theories of Migration" by Robin Cohen
"Demography and Population Problems" by Asha Bhende and Ravindra K. Sinha
"Rural-Urban Migration in India: Theory and Evidence" by Dilip Ratha and William Shaw
"Urbanization and Migration: Processes and Policies in a Globalized World" by C. S. Yadav
"Population Health: Concepts and Methods" by T. Kue Young
"The Health Gap: The Challenge of an Unequal World" by Michael Marmot
"Global Health: An Introduction to Current and Future Trends" by Kevin McCracken and David R. Phillips
"Healthcare and Public Health in India" by K. R. Nayar
"India's Health Care Industry: Innovation in Delivery, Financing, and Manufacturing" by Lawton R. Burns and V. R. Muraleedharan
"Population Health and Development in India" by U. K. Mishra
"The End of Plenty: The Race to Feed a Crowded World" by Joel K. Bourne Jr.
"Resource Rebels: Native Challenges to Mining and Oil Corporations" by Al Gedicks
"Environment and Society: A Critical Introduction" by Paul Robbins, John Hintz, and Sarah A. Moore
"Environmental Science: Human Population and the Environment" by Anil Kumar De and P. K. Gupta
"Land Resource Management in India: An Overview" by A. Senthil Kumar and K. Palanisami
"Conservation and Livelihoods in India: Wildlife and Human Interfaces" by Mahesh Rangarajan and Ghazala Shahabuddin

Journal Article:

- *Indian Journal of Human Development (journal)*
- *Journal of Health & Development (journal)*
- *Economic and Political Weekly (EPW) (journal) - Features articles on population-related topics*
- *Population and Development Review (journal)*
- *Population Studies (journal)*
- *Journal of Population Economics (journal)*

- *Migration and Development (journal)*
- *Economic and Political Weekly (EPW) (journal) - Often covers migration-related research in the Indian context*
- *Journal of Regional Development and Planning (journal)*
- *Current Science (journal)*
- *Environmental Monitoring and Assessment (journal)*

E-source:

- *United Nations Population Division (https://population.un.org/)*
- *World Bank - Population and Demographics Data (https://data.worldbank.org/indicator/SP.POP.TOTL)*
- *Population Reference Bureau (https://www.prb.org/)*
- *Census of India (https://www.censusindia.gov.in/)*
- *Ministry of Health and Family Welfare, Government of India (https://www.mohfw.gov.in/)*
- *National Institute of Health and Family Welfare (NIHFW) (https://www.nihfw.org/)*
- *International Organization for Migration (IOM) - Migration Data Portal (https://migrationdataportal.org/)*
- *Pew Research Center - Global Migration and Demography (https://www.pewresearch.org/topics/global-migration-and-demography/)*
- *Migration Policy Institute (https://www.migrationpolicy.org/)*
- *Ministry of External Affairs, Government of India - Emigration (https://mea.gov.in/emigration.htm)*
- *International Labour Organization (ILO) - India Country Office (https://www.ilo.org/newdelhi/lang--en/index.htm)*
- *International Organization for Migration (IOM) - India (https://www.iom.int/countries/india)*
- *World Health Organization (WHO) - Global Health Observatory (GHO) (https://www.who.int/data/gho)*
- *Centers for Disease Control and Prevention (CDC) - Global Health (https://www.cdc.gov/globalhealth/index.html)*
- *Lancet Global Health (journal website) (https://www.thelancet.com/journals/langlo/)*
- *Ministry of Health and Family Welfare, Government of India - National Health Mission (https://nhm.gov.in/)*
- *World Health Organization (WHO) - India Country Office (https://www.who.int/india/en/)*
- *National Health Portal of India (https://www.nhp.gov.in/)*
- *United Nations Environment Programme (UNEP) (https://www.unep.org/)*
- *Intergovernmental Panel on Climate Change (IPCC) (https://www.ipcc.ch/)*
- *World Resources Institute (WRI) - Resource Watch (https://resourcewatch.org/)*
- *Ministry of Environment, Forest and Climate Change, Government of India (https://www.moef.gov.in/)*
- *Indian Council of Agricultural Research (ICAR) - National Institute of Agricultural Economics and Policy Research (NIAP) (https://www.niap.org.in/)*
- *Center for Environment and Development (CED) - India (http://www.cedindia.org/)*

Core Suggested Readings (*Books, Journals, E-sources Websites/ weblinks)*

Book:

"Population Geography" by R. J. Johnston and Michael J. Watts

"Population and Development: A Critical Introduction" by Tim Dyson
"Geographies of Health: An Introduction" by Anthony C. Gatrell and Susan J. Elliott
"Population Geography: A Concise Introduction" by R. C. Chandna
"India's Human Geography: Socio-Economic, Gender and Health Issues" by Gopal Krishan and Nita D. Shah
"Population, Environment, and Development: A Geographical Perspective" by M. R. Bhagat and T. P. Singh
"The Age of Migration: International Population Movements in the Modern World" by Stephen Castles and Mark J. Miller
"International Migration: A Very Short Introduction" by Khalid Koser
"Theories of Migration" by Robin Cohen
"Healthcare and Public Health in India" by K. R. Nayar
"India's Health Care Industry: Innovation in Delivery, Financing, and Manufacturing" by Lawton R. Burns and V. R. Muraleedharan
"Population Health and Development in India" by U. K. Mishra
"Population Health: Concepts and Methods" by T. Kue Young
"The Health Gap: The Challenge of an Unequal World" by Michael Marmot
"Global Health: An Introduction to Current and Future Trends" by Kevin McCracken and David R. Phillips
"Healthcare and Public Health in India" by K. R. Nayar
"India's Health Care Industry: Innovation in Delivery, Financing, and Manufacturing" by Lawton R. Burns and V. R. Muraleedharan
"Population Health and Development in India" by U. K. Mishra
"The End of Plenty: The Race to Feed a Crowded World" by Joel K. Bourne Jr.
"Resource Rebels: Native Challenges to Mining and Oil Corporations" by Al Gedicks
"Environment and Society: A Critical Introduction" by Paul Robbins, John Hintz, and Sarah A. Moore
"Environmental Science: Human Population and the Environment" by Anil Kumar De and P. K. Gupta
"Land Resource Management in India: An Overview" by A. Senthil Kumar and K. Palanisami
"Conservation and Livelihoods in India: Wildlife and Human Interfaces" by Mahesh Rangarajan and Ghazala Shahabuddin

Journal Article:
Indian Journal of Human Development (journal)
Journal of Health & Development (journal)
Economic and Political Weekly (EPW) (journal) - Features articles on population-related topics
Population and Development Review (journal)
Population Studies (journal)
Journal of Population Economics (journal)
Migration and Development (journal)
Economic and Political Weekly (EPW) (journal) - Often covers migration-related research in the Indian context
Journal of Regional Development and Planning (journal)
Current Science (journal)
Environmental Monitoring and Assessment (journal)

E-source:

United Nations Population Division (https://population.un.org/)
World Bank - Population and Demographics Data (https://data.worldbank.org/indicator/SP.POP.TOTL)
Population Reference Bureau (https://www.prb.org/)
Census of India (https://www.censusindia.gov.in/)
Ministry of Health and Family Welfare, Government of India (https://www.mohfw.gov.in/)
National Institute of Health and Family Welfare (NIHFW) (https://www.nihfw.org/)
International Organization for Migration (IOM) - Migration Data Portal (https://migrationdataportal.org/)
Pew Research Center - Global Migration and Demography (https://www.pewresearch.org/topics/global-migration-and-demography/)
Migration Policy Institute (https://www.migrationpolicy.org/)
Ministry of External Affairs, Government of India - Emigration (https://mea.gov.in/emigration.htm)
International Labour Organization (ILO) - India Country Office (https://www.ilo.org/newdelhi/lang--en/index.htm)
International Organization for Migration (IOM) - India (https://www.iom.int/countries/india)
World Health Organization (WHO) - Global Health Observatory (GHO) (https://www.who.int/data/gho)
Centers for Disease Control and Prevention (CDC) - Global Health (https://www.cdc.gov/globalhealth/index.html)
Lancet Global Health (journal website) (https://www.thelancet.com/journals/langlo/)
Ministry of Health and Family Welfare, Government of India - National Health Mission (https://nhm.gov.in/)
World Health Organization (WHO) - India Country Office (https://www.who.int/india/en/)
National Health Portal of India (https://www.nhp.gov.in/)
United Nations Environment Programme (UNEP) (https://www.unep.org/)
Intergovernmental Panel on Climate Change (IPCC) (https://www.ipcc.ch/)
World Resources Institute (WRI) - Resource Watch (https://resourcewatch.org/)
Ministry of Environment, Forest and Climate Change, Government of India (https://www.moef.gov.in/)
Indian Council of Agricultural Research (ICAR) - National Institute of Agricultural Economics and Policy Research (NIAP) (https://www.niap.org.in/)
Center for Environment and Development (CED) - India (http://www.cedindia.org/)

SEMESTER IV

ELECTIVE COURSE

COURSE NAME: NATURAL RESOURCE MANAGEMENT AND SUSTAINABLE DEVELOPMENT

Course Code: MSGGY04DSE08

Description of the course :

This course provides a holistic understanding of the principles, practices, and challenges associated with Natural Resource Management (NRM) and Sustainable Development (SD). It explores the complex interactions between human societies and the environment, focusing on effective strategies to ensure the responsible use of natural resources while promoting long-term ecological integrity and social well-being. It provides an introduction to the concepts of natural resource management and sustainable development. Students will explore the basic principles of ecology, the interconnectedness of various ecosystems, and the significance of biodiversity.

Course Objectives

- Define and explain the key concepts of natural resource management (NRM) and sustainable development (SD).
- Comprehend the interactions between ecological systems, human societies, and economic activities.
- Understand the social, economic, and cultural dimensions of sustainable development.
- Learn methods to assess and monitor natural resources, including water, soil, forests, and minerals.
- Explore technological advancements such as GIS, remote sensing, and data analytics in NRM and SD.

Credit			**Teaching Hours**			**Assessment**		
L/T	P/I	Total	L/T	P/I	Total	CE	ESE	Total
3	**--**	**3**	**3**	**--**	**3**	**60**	**40**	**100**

Lecture/Tutorials, P/I=Practical/Internship, CE =Continuous Evaluation, ESE =End Semester Evaluation

COURSE OUTCOMES

Course Learning Outcomes: At the end of the Course, the Student will be able to -

C01	Apply appropriate techniques to evaluate the quality and availability of resources.
C02	Analyze real-world case studies to identify practical challenges and solutions in NRM and SD.
C03	Utilize interdisciplinary approaches to problem - solving, considering ecological, social, and economic aspects.
C04	Formulate effective techniques to mitigate environmental degradation and habitat loss.
C05	Examine the significance of ecosystem services and the role of natural capital in sustainable development using Geospatial Technology

*Course outcomes based on revised blooms taxonomy

COURSE CONTENTS

Module 1 : Foundations of NRM and SD

1.1 Introduction to ecosystems, biodiversity, and ecosystem services.
1.2 Historical evolution of sustainable development concepts and global frameworks (e.g., Agenda 21, SDGs).
1.3 Ethics and values in resource management, including indigenous perspectives.
1.4 Interdisciplinary nature of NRM., Integrating ecological, social, and economic factors.

Suggested readings specific to the module.

Berkes, F. (ed.), 1989. Common Property Resources: Ecology and Community Based Sustainable Development, Belhaven Press London.
Chopra, K., K.G. Kadekodi, and M.N. Murthy. (1990) Participatory Development: People and Common Property Resource. Sage Publications.
Francois Ramade (1984) Ecology of Natural Resources, John Wiley & Sons Ltd.
Knight, Richard L., editor, et al. (1995) A New Century for Natural Resources Management, Island Press.
Mather, A.S. and Chapman, K. 1995. Environmental Resources, Longman, Harlow, England.
Mc Clay, K.R. 1995. Resource Management Information System: Process & Practice, Taylor Francis, London.
Pandey, B. W. (ed.) 2000. Natural Resource Management, Mittal Publication, New Delhi.

Module 2 : Resource Assessment and Conservation

2.1 Methods for assessing natural resources: water, soil, forests, minerals, and wildlife.
2.2 Quantitative and qualitative data collection techniques for resource evaluation.
2.3 Importance of baseline studies and monitoring in sustainable resource Management, Strategies for conservation: protected areas, habitat restoration, and species conservation.
2. Issues and challenges related to resource conservation and management in Kerala.

Suggested readings specific to the module.

Mitchell, B. 1997. Resource and Environmental Management, Longman, Harlow, England.
Newson, M.D. 1991. Land, Water and Development: River Basin Systems and Management, Routledge,London.
Odum, E.P. (1971) Fundamentals of Ecology, W.B. Saunders Co. USA
Owen, S. and Owens, P.L. 1991. Environment, Resources and Conservation, Cambridge University Press, New York.
Pandey, B. W. (ed.) 2000. Natural Resource Management, Mittal Publication, New Delhi.
Rees, J. 1990. Natural Resources: Allocation, Economics and Policy, Routledge, London.
Rogers, Peter P., Kazi F. Jalal, and John A. Boyd (2007) An Introduction to Sustainable Development, Earthscan Services. Island Press.

Module 3 : Ecosystem Management and Restoration

3.1 Principles of ecosystem management: resilience, adaptive management, and ecosystem services valuation.
3.2 Case studies of successful ecosystem restoration projects.
3.3 Urban ecology and green infrastructure: integrating nature into urban planning.
3.4 Rural ecology and sustainable development: rural development planning, Role of community involvement and traditional ecological knowledge in restoration efforts.

.**Suggested readings specific to the module.**

Alexander, Mike. 2008. Management planning for nature conservation: A theoretical basis & practical guide, Springer.
Bhaskar C B (2006) Environmental Geography, GNOSIS Publishers, Delhi.
Balakrishnan, M., 1998 : Environmental Problems and Prospects in India, Oxford & IBH Pub., New Delhi.
Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, Academic Press. London.
Gole, P., 2001. Nature Conservation and Sustainable Development in India, Rawat Pub., Jaipur.
Mohan Singh (2011) Environmental Geography, A B D Publishers, New Delhi.
Odum E P (1959) Fundamentals of Ecology, Saunders
Munn R E (1979) Environmental Impact Assessment: Principles and Procedures, John Wiley & Sons
Nobel & Wright (1996): Environmental Science, Prentice Hall, New York
Savindra Singh (2008) Environmental Geography, Prayag Pusthak Bhavan, Allahabad.
Saxena H M (2004) Environmental Geography, Rawat Publication, New Delhi.
Singh, R.B. (ed.) (1989): Environmental Geography, Heritage, New Delhi
Viswambhar P S (2012) An Introduction to Environment, Rawat Publication, New Delhi.

Module 4 : Sustainable Development Policy and Governance

4.1 Role of policies, regulations, and international agreements in promoting sustainable development.
4.2 Environmental impact assessment and sustainable development planning.
4.3 Social dimensions of sustainability: environmental justice, equity, and human Rights, Role of businesses, NGOs, and government in achieving sustainable development Goals,
4.5 Emerging Trends and Technologies related to NRM and SD implementation and assessment.

Suggested readings specific to the module.

Alexander, Mike. 2008. Management planning for nature conservation: A theoretical basis & practical guide, Springer.
Bhaskar C B (2006) Environmental Geography, GNOSIS Publishers, Delhi.
Balakrishnan, M., 1998 : Environmental Problems and Prospects in India, Oxford & IBH Pub., New Delhi.
Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution,

Disturbance, and Other Stresses, Academic Press. London.
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Core Compulsory Readings (Books, Journals, E-sources Websites/ weblinks)
Book:

"Environmental Studies: From Crisis to Cure" by R. Rajagopalan.
"Sustainable Development: A Policy Perspective" by Uma Lele.
"Resource Management for Sustainable Development in the Himalayas" by Aurobindo Ghose.
"Biodiversity Conservation and Utilization in a Diverse World" by Parvathi S. Kumaraswami and K. R. Shivanna.
"Ecosystems and Human Well-Being: A Framework for Assessment" by Millennium Ecosystem Assessment.
"Ecosystem Services: A Concept, Methods and Case Studies" edited by Pushpam Kumar.
"Environmental Economics for Non-Economists" by Biswajit Dhar.
"Environmental Laws in India: Challenges and Solutions" by Shyam Divan and Armin Rosencranz.
"Environmental Science: Toward a Sustainable Future" by Richard T. Wright and Dorothy F. Boorse.
"Sustainable Development: Principles, Frameworks, and Case Studies" by Okechukwu Ukaga and Idowu Ajibade.
"Environmental Impact Assessment: Theory and Practice" by Peter Wathern.
"Conservation Science: Balancing the Needs of People and Nature" by Peter Kareiva, Michelle Marvier, and Brian Silliman.
"Ecosystem Management: Adaptive, Community-Based Conservation" by Gary Meffe, Larry Nielsen, and Richard L. Knight.
"Ecological Restoration: Principles, Values, and Structure of an Emerging Profession" by Andre F. Clewell and James Aronson.
"The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations" by Pushpam Kumar.
"Environmental Policy and Politics" by Michael E. Kraft and Norman J. Vig..

Journal Article:

Srivastava, A., & Kumar, R. (2013). "Environmental sustainability in India: Issues and challenges." International Journal of Environmental Studies, 70(3), 385-398.
Prasad, S. N., & Kant, S. (2013). "Ecosystem services and their valuation: A case from rural India." Ecosystem Services, 3, 40 - 47.
Kumar, M., & Kumar, P. (2015). "Sustainable natural resource management in India: A case study of forest management."
Lele, S. (1991). "Sustainable development: A critical review." World Development, 19(6),

607-621.
Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S., Lambin, E. F., ... & Nykvist, B. (2009). "A Safe Operating Space for Humanity."
Kareiva, P., Watts, S., McDonald, R., & Boucher, T. (2007). "Domesticated Nature: Shaping Landscapes and Ecosystems for Human Welfare."
Suding, K. N., Gross, K. L., & Houseman, G. R. (2004). "Alternative states and positive feedbacks in restoration ecology."
Le Prestre, P. G. (2008). "Sustainable Development: Definitions, Principles, Policies."

E-source:

United Nations Sustainable Development Goals: https://sdgs.un.org/goals
Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES): https://www.ipbes.net/
World Resources Institute (WRI): https://www.wri.org/
The Nature Conservancy: https://www.nature.org/
Ministry of Environment, Forest and Climate Change, Government of India: https://www.moef.gov.in/
Indian Institute of Forest Management (IIFM): https://www.iifm.ac.in/
Centre for Science and Environment (CSE): https://www.cseindia.org/
Indian Council of Forestry Research and Education (ICFRE): http://www.icfre.gov.in/

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Suding, K. N., Gross, K. L., & Houseman, G. R. (2004). "Alternative states and positive feedbacks in restoration ecology."

Le Prestre, P. G. (2008). "Sustainable Development: Definitions, Principles, Policies."

E-source:

United Nations Sustainable Development Goals: https://sdgs.un.org/goals

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES): https://www.ipbes.net/

World Resources Institute (WRI): https://www.wri.org/

The Nature Conservancy: https://www.nature.org/

Ministry of Environment, Forest and Climate Change, Government of India: https://www.moef.gov.in/

Indian Institute of Forest Management (IIFM): https://www.iifm.ac.in/

Centre for Science and Environment (CSE): https://www.cseindia.org/

Indian Council of Forestry Research and Education (ICFRE): http://www.icfre.gov.in/

Indian Council of Agricultural Research (ICAR) - National Institute of Agricultural Economics and Policy Research (NIAP) https://www.niap.org.in/

Center for Environment and Development (CED) – India (http://www.cedindia.org/