

Syllabus for Post Graduate Course

Postgraduate Course in Geography
(Masters of Arts)

Under

Choice Based Credit System

With Course Rationale and Learning Based Outcomes



2020 – 2022

**School of Geography
Gangadhar Meher University
Sambalpur-768004**



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School of Geography

Gangadhar Meher University
Amruta Vihar, Sambalpur -768004

Preamble

Gangadhar Meher University (GMU), Sambalpur was established on 30th May 2015, which has already been a sought-after higher education institution (Gangadhar Meher College, established 1944) in the Western Odisha. The university has seen – *‘several generations of men and women of all hues, all the children of the eternal mother [...] not just the nascent decades of post independent India but the eager and aspirational youth of the new millennial Odisha’*¹. It excels in the region in educating in all regular scientific streams such as Science, Commerce and Arts as well as professional courses such as business administration. The university approved by University Grant Commission (UGC) and has been accredited as ‘A’ by National Assessment and Accreditation Council (NAAC). The institutes provides Undergraduate (UG), Postgraduate (PG), Masters of Philosophy (M.Phil. until 2021) and Doctor of Philosophy (Ph.D.) programme in various disciplines covering Science, Arts, Commerce, Information Science and Management.

Among many disciplines being taught in the GM University, Geography is one core subject that is being offered under both Science and Arts Streams by the university.

Geography in GM University

Introduction

Geography is the study of Earth and Man and their interrelationships covering both natural and human environments. It studies places and people and their relationships within and between. Geographers investigate both the physical characteristics of Earth's surface and the human societies spread across the globe (National Geographic Society, 2023). Students, by opting for the geography as major during the undergraduate programme, discover about the features and process on Earth surface as well as their interaction with humans exploring – how these interactions impact their environments and shapes the humanity.

The university has Postgraduate department of Geography that operates under Faculty of Earth and Environmental Sciences. The institute provides Bachelors of Arts/Science (B.A./B.Sc.) in Geography [Honours], Bachelors of Education in Geography [Honours], Masters of Arts/Science (M.A./M.Sc.) in Geography and Doctor of Philosophy (Ph.D.) in Geography.

The School of Geography

School of Geography (the then department of Geography), established in 1964, has been an essential department of the institution and conducted UG and PG courses since then providing Bachelors of Arts (B.A) and Master of Arts (M.A.) in Geography. After the establishment of GM University in 2015, M. Phil. and Ph.D. programmes were introduced in

¹ Prof. N Nagaraju, Hon'ble Vice-Chancellor, GM University (2020-).

the department from 2018. The M. Phil. Programme continued until 2021 and was stopped being offered as UGC discontinued the degree in 2021. During this period, ten scholars have been awarded M.Phil. Degree in Geography. Under the Doctor of Philosophy (Ph.D.) programme in Geography, 2 scholars have been awarded PhD while 13 scholars are continuing their doctoral research in various stages covering both physical and social dimensions of Geography. Since 2021, the department is offering B.Sc. in Geography [Honours] while M.Sc. in Geography is being offered since 2022.

Thereby, at present, the School of Geography is offering both B.A. and B.Sc. in Geography [Honours] and Integrated B.Ed. in Geography under its undergraduate programme; M.A. and M.Sc. in Geography under its postgraduate programme; and, Ph.D. in Geography under its research programme.

The School of Geography at GMU put its efforts to educate students in academic and professional skills and aids them in growing as capable and thoughtful geographers. We prepare our students to contribute well in nurturing the discipline as well as people around them and world at large. Students of our department have achieved various milestones and are placed in various institutions in Odisha and beyond.

Vision and Mission of the School of Geography

With the intention to keep the traditional and noble roots intact, the school offers has following vision and missions:

Vision

The School of Geography envisions becoming a leading centre of teaching and research in spatial sciences in India by preparing its students as productive citizens through relevant education and harnessing the integrative nature of geography as a discipline to promote sustainable development through research.

Missions

School of Geography, GMU is committed to achieve its vision through measurable actions in the form of following mission:

1. To produce and disseminate new geographical knowledge and insights on key environmental, socio-cultural and economic issues.
2. To undertake cutting-edge geographical research applying relevant tools and techniques including Remote sensing (RS) and Geographic Information (GIS) to answer fundamental questions of local, national and global importance.
3. To provide students with effective and relevant theoretical and practical knowledge necessary for professional development.
4. To orient students to think critically and to celebrate diversity as global citizens by realizing their own place, values and responsibilities to other people, to the environment and to earth's sustainability.

Resources in the School of Geography

Faculties and Support Staffs

At present, the department has eight permanent faculties: 1 Professor, 2 Associate Professor and 5 Assistant Professor (all PhD holders from reputed institutions in India and Abroad). They have sizable experiences in wide-ranging and evolving geographical field covering natural as

well as social sciences (particularly Geo-informatics, Natural resource management, Disaster management, Hydrology, Development studies, Socio-cultural geography, Population studies and Public health).

Furthermore, the department is supported by 1 lab-assistant and 1 lab-associate and guest faculties as and when required. Research Scholars in the department also contribute in the department wherever opportunity arises for them.

Practical Facilities

The department has two practical labs (1 for PG and 1 for UG), which are also used for classes. There are various instruments specific for the practical classes of Geography such as Geography Practical Tables, Light Tables and Geometric instruments (various sizes), Specific Pens (e.g. Rottering Pen), Scales and Stereoscopes. The department has range of Toposheet, Aerial Images and Satellite images. The department is also supported by a Departmental Library, Store Room and a Research Scholars' room.

Postgraduate (PG) in Geography – Specification

Introduction – MA/MSc in Geography

Our PG curriculum built on our UG curriculum and deals with man and earth covering different associated phenomena and features on advance level. These UG programs are structured to provide dedicated training in many geography centric areas covering training in both descriptive and analytical skills while our PG curriculum takes the learning to next level by training students in advanced and applied side of Geography. Our cutting-edge postgraduate program (M.A. and M.Sc. in Geography) is suitable for students, who are enthusiastic about pursuing further understanding of man's role (economic, social, and political) in the world using modern methods, tools and approaches. The PG Syllabus is more focused on the applied side of the sub-braches (e.g. Geomorphology, Cartography, Climate, Oceans, Population, Society, Culture, Economic, Resource, Environment, Settlement, Regional Studies etc.) of the subject 'Geography'.

The students could opt for electives from Science or Arts Stream as per their inclination towards the Physical or Human Geography. Further, due to the evolving world affairs, Geography has been rapidly evolving significantly in current interdisciplinary era and encompasses newer fields such as Climate Change, Global Health and Sustainable Resource Management. Our PG syllabus extensively covers these contemporary topics and assist student in envisioning what lies ahead for them.

Aims and Objectives of PG programme in Geography

Aim

The postgraduate program in Geography at GMU aims to educate Geography to postgraduate students following a standard and concrete educational framework [Outcome Based Learning (OBL) Framework, as required by UGC and NAAC], around which, the subject of Geography is well spaced and paced – assisting students to conveniently further their UG-level learnings in Geography to next advanced level with focus on employability, entrepreneurship and skill development of the students.

Objectives

To fulfil its aim, the postgraduate curriculum of Geography intends to –

1. Educate students in advance conceptual frameworks with in the different facets of geography covering both physical and human side of the discipline.
2. Acquaint the students in identification and analysis of various geographic specialities covering range of features and processes involved.
3. Encourage students to acquire advance level understandings and abilities, on individual as well as team levels, to carry out geographic field work.
4. To assist students to learn the science and art of collecting, processing and interpreting the geographic data.
5. To facilitate modern and contemporary cartographic skills to the students.
6. Guide students to visualise geographic space as well as the geographic concepts at different scales including space, time and mind.
7. Make students acquaint with latest spatial tools and techniques (such as Spatial Statistics, Remote Sensing and Geographic Information System).
8. Assist students in translating their learning in academia to something practically useful to the real world they are about to enter.

Outcome – Based Learning (OBL) Approach in PG curriculum for Geography

OBL Structure

GM University follows OBL approach as its educational framework, which uses goals (outcomes) that need to be achieved by each student by the end of their programme after following the curriculum². The approach intends for the holistic development of the students through opportunities to explore the real world using various ways such as field work and extension outreach activities. It facilitates a format of courses designed to develop strong subject knowledge to keep the students aware of different sides of the subject. Subsequently, the OBL based syllabus focuses on skill development and employability of the students. It promotes structural uniformity within the curriculum of different disciplines as well as with the curriculums of same subject across universities of the country.

The OBL based curriculum delineates Programme Outcomes (POs) at the University Level, Programme Specific Outcomes (PSOs) and Course Outcomes (COs) for each courses run in the department at the Department level. These POs, PSOs and COs of the curriculum should be connected and could be mapped in the students' performance in their assessments (e.g. examination, assignments etc.).

OBL in PG Geography at GMU

Geography is scientific-based and society-oriented that focuses on spatio-temporal analyses. OBL based curriculum for the UG programme of Geography allows UG students to:

- understand the developmental journey of Geography as subject;
- explore and excel in various concepts, theories and frameworks associated with the different aspects of this discipline through range of papers covering both physical and human side of Geography; and,
- learn effortlessly and deal with the contemporary issues of the world.

² NAAC Institutional Accreditation Manual for Self-study Report, 2020

Thus, our OBL based PG curriculum focuses in helping the students to recognize the latest spatial tools and techniques, which would be helpful for the formation of their geographical understanding of this world. It assists the students to perceive, create and evaluate sound geographical constructs and concepts.

Our PG curriculum is designed to focus on local concerns and has been cultivated in light of addressing the needs and expectations of the local and regional students from wide range of academic as well as personal backgrounds. It is designed as student centric and our teaching and learning process is strengthened by covering global to local issues and examples. The curriculum covers essential concepts of both physical and human domains of Geography along with suitable tools and techniques.

Thereby, in our school of Geography, our proposed PSOs and COs for each course in PG Programme for Geography have been adapted and reframed as per our aim and objectives of the programme and within the scope of resources available to the school.

Choice Based Credit System (CBCS): Curriculum for PG Geography in GMU

Syllabus aligned with UGC

MA/MSc in Geography is a two-year postgraduate course under the *Choice Based Credit System (CBCS)* organised as –

1. Main Courses,
2. Practical Courses,
3. Elective - Discipline Specific (DSE) courses and
4. Inter Disciplinary Specific (IDSE) Courses.

Main courses span over critical field within Geography that needs to be studied for core geographical knowledge. This syllabus is aligned with the graduate attribute outlined by UGC (University Grant Commission, India) in Geography that covers:

- A. Theory – covers theoretical and conceptual fundamentals of geography.
- B. Practical – spans over spatial Statistical Techniques, RS, GIS, Research Methods and Geographical Fieldwork
- C. Regional coverage – covers World Geography, Geography of India, Geography of different states
- D. Application Oriented – includes application-based courses such as disaster management and Environmental Geography etc.

Each Course has one aim, minimum four COs, four units and reading list including books on regional languages wherever possible.

Pedagogy

Our pedagogy for PG process includes:

- Lectures and tutorials
- Practical classes
- Assignments (individual and group)
- Extension Activities (to benefit society)
- Case studies
- Field work
- Team work

- Presentation of learning through various means (report to power points to any other creative methods such as posters and flyers)
- Scientific reading and writing as well as scientific communication
- Academic and practical world interface

Evaluation

Our teaching and evaluation framework intend to:

1. Periodic review of course, teaching resources and methods as well as the performance of students;
2. Encourage students for critical and creative thinking;
3. Realisation of learning outcomes all courses in Geography;
4. Maintain the teaching standards to its best; and,
5. Confirmation of students' Geography specific as well as overall alumna attributes.

Learning Outcomes

Our programme focuses on following distinct and major learning outcomes:

- Realise the significance of geographical information overall as well as its implications in day to day lives.
- Able to communicate geographic information.
- Could critique geographical theories and studies.
- Could use geographical research tools such as cartography, spatial statistics, RS and GIS efficiently and effectively.
- Should be able to understand the contemporary spatial issues pertaining to all scale ranging from local to global levels and figure out apt and sensible solutions.
- Evaluate and resolve geographical problems in effective manner.

Graduate Attributes of Aspired Advanced Geographers

We, at GMU, aspire students to cultivate specific graduate attributes suitable to Geographers through the Programme Specific Outcomes (PSOs) of our UG programme in Geography. These PSOs map to the Programme out for UG in GMU. They are discussed below:

Programme Specific Outcomes (PSOs) of PG in Geography in GMU

PSOs delineated by the department at undergraduate level are carried forward to postgraduate level. They are-

PSO 1. Core Competency – Geography undergraduates will appreciate the interactions among man and environment using various quantitative and qualitative methods at local, regional and global scales.

The students of BA Geography will have special understanding of the fundamental spatial concepts associated the man and the earth and the exchanges between them that shapes our Earth and Society. They would explore the realm of social sciences while navigating through Geography.

The students of BSc Geography will have technical perspectives associated the man and the earth and the exchanges between them that shapes our Earth and Society. They would explore the realm of core sciences while navigating through Geography.

PSO 2. Scientific and Spatial Thinking – Students will be able to observe, analyse, interpret and draw conclusion based on qualitative and quantitative geographical evidences

and methods. Being spatial science, scientific thinking in Geography will equip students with spatial thinking. Spatial thinking will encourage the students to think spatially while resolving their personal and professional issues, making more informed decisions.

- PSO 3. Analytical thinking** – The students will analyse spatial– and temporal– patterns and trends of geographical information in order to utilise the outcome for personal and professional use. They will be able to outline the role of spatial knowledge in resolving the problem.
- PSO 4. Critical Thinking** – Geography undergraduates will be able to think critically, derive conceptual frameworks as and when required, contemplate on scientific methodology, and construct convincing scientific opinions. They will critically be able to evaluate data, methods and outcomes. They shall also be aware of the various biases and logical errors in this process.
- PSO 5. Problem solving** – Geography graduates will be armed with range of geographical approaches required to understand and resolve any problem faced by mankind within the subject’s ambit, be it at local, regional or global scales.
- PSO 6. Research skills** – Geographers will become attentive towards the patterns and trends across space and time, which could enable them to foresee problems and opportunities at all scales on the Earth. Their geographical understanding of past to present happenings on earth could be highly useful to resolve contemporary and future concerns on this planet.
- PSO 7. Teamwork** – Geographers will be able to work individually as well as in team. As the subject is interdisciplinary, it encourages students for team work.
- PSO 8. Communication Skills** – Geography undergraduates will specialize in graduate level communication particularly in spatial communication (mapping). They shall be able to read and comprehend the academic literature available in Geography, perform in-depth assessment (including spatial analysis) and derive logical explanations based on geographical approaches. They shall be able to communicate their idea or findings in coherent manner to broader audiences.
- PSO 9. Digital Literacy** – Students will use multi-facet technologies such as Geographical Information Systems and spatial modelling to assess and solve their concerns. They will also enrich themselves through the learning available in form of e-courses and MOOCs on various government platforms.
- PSO 10. Sustainable development** – Geography undergraduates will obtain fundamental geographical proficiencies to understand and work for the environments surrounding them, be it natural or human. They will be able to take evidence based decisions for sustainable planning and management of their personal and professional resources.
- PSO 11. Ethical Awareness** – Geography undergraduates will become aware of ethics and values required in the discipline, in the academia and in the world at large. They shall also beware of plagiarism and scientific misconduct.
- PSO 12. Leadership** – Geography undergraduates will become acquainted of spatial decision-making process and they will be able to use this understanding to take lead, as and when required.
- PSO 13. Multi-cultural competence** – The students will explore multi-cultural aspects through the humane side of Geography, which will assist them in gaining better understanding of the society and becoming more useful to it.

PSO 14. Psychosocial competence – The students will have ability to deal with the weights and challenges of everyday life effectively. S/He will maintain a state of mental well-being and demonstrate it through her/his adaptive and positive behaviour, while interacting with others and their culture and environment. This would allow him to keep a check on any kind of biasness that could be introduced in his work as Geographer.

Using these PSOs, the School of Geography expects its post-graduate students to be skilled at advanced level in the geographical theories, methodologies, tools and techniques. After completion of the PG in Geography from the department, the students shall be able to:

- Demonstrate the knowledge on philosophies, concepts, theories, and methods as well tools and techniques used in geography.
- Acquire, interpret, evaluate, analyse and critique geographic data needed for geographic problem solving.
- Apply the geographic concepts, methods, tools and techniques to answer questions of local, regional and global importance;
- Compare and contrast the geographical theories, concepts and methods; integrate themes pertaining to spatial and temporal patterns; evaluate the human-environment interrelationship across range of people and places; as well as infer the interactions between nature and society.
- Communicate geographic data, concepts, theories and research findings in oral, written, and visual forms, valuing ethics along with having respect for cultural, social and economic diversity;
- Maintain a state of mental well-being and demonstrate it through her/his behaviour, while interacting with others culture and environment, which will facilitate a control on any kind of biasness that could be introduced in his work as Geographer.

Table 1 - The Courses under Post-graduate Programmes, taught in the School of Geography, GMU together with their associated PSOs

Semester	GMU Students	Paper Code	Postgraduate Courses run in the Department	PSO-01	PSO-02	PSO-03	PSO-04	PSO-05	PSO-06	PSO-07	PSO-08	PSO-09	PSO-10	PSO-11	PSO-12	PSO-13	PSO-14	
			<i>Programme Specific Outcomes (PSOs) →</i>	<i>Core Competency</i>	<i>Analytical thinking</i>	<i>Scientific Thinking</i>	<i>Critical Thinking</i>	<i>Problem solving</i>	<i>Research skills</i>	<i>Teamwork</i>	<i>Communication Skills</i>	<i>Digital Literacy</i>	<i>Sustainable Development</i>	<i>Ethical Awareness</i>	<i>Leadership</i>	<i>Multicultural competence</i>	<i>Psychosocial competence</i>	
I	Geographers	101	Geographical Thought	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	
		102	Advanced Geomorphology	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	-	-
		103	Geography of India	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y
		104	Climatology	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	-	Y
		105	Map Making and Map Projection	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
II	Geographers	201	Oceanography	Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	-	Y	-	
		202	Economic Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		203	Population Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		204	Bio-geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y
		205	Field survey Methods	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y
		206 A	Geography of Tourism	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		206 B	Geography of Odisha	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		206 C	Remote Sensing Basic	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	Y
III	Geographers	301	Resource Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		302	Settlement Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		303	Cartography & Statistical Methods	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		304	Political Geography	Y	Y	Y	Y	Y	Y	Y	-	Y	-	Y	Y	Y	Y	Y
		305	Statistical Method Use in Geography	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	-	-	Y
	Non-Geographers	306 A	Introduction to Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		306 B	Human Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		306 C	Economic Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
IV	Geographers	401	Socio- Cultural Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		402	Environmental Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		403	Regional Development & Planning	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y
		404	Urban Geography	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		405	Project work report and VIVA VOCE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
			Note:	Core courses		Practical courses		Discipline Specific Elective			Inter Discipline Specific Elective							

Note: The colours of paper code are based on types of courses as per the CBCS. See page v for details.

Semester	GMU Students	Paper Code	Postgraduate Courses run in the Department	Course Outcome (CO)	PSO-01	PSO-02	PSO-03	PSO-04	PSO-05	PSO-06	PSO-07	PSO-08	PSO-09	PSO-10	PSO-11	PSO-12	PSO-13	PSO-14	
			<i>Programme Specific Outcomes (PSOs) →</i>		<i>Core Competency</i>	<i>Analytical thinking</i>	<i>Scientific Thinking</i>	<i>Critical Thinking</i>	<i>Problem solving</i>	<i>Research skills</i>	<i>Teamwork</i>	<i>Communication Skills</i>	<i>Digital Literacy</i>	<i>Sustainable Development</i>	<i>Ethical Awareness</i>	<i>Leadership</i>	<i>Mult-cultural competence</i>	<i>Psychosocial competence</i>	
<i>1 - Slightly Related; 2 - Moderately Related; 3 - Strongly Related</i>																			
				Note:	Core courses	Practical courses	Discipline Specific Elective				Inter Discipline Specific Elective								
I	Geographers	101	Geographical Thought		Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	
				CO-01	3	2	1			1		2		1	3		2	1	
				CO-02	3	2	1	1	1	1		2			3		1	1	
				CO-03	3	3	3	3	3	2	1	3		1	3	2	2	2	
				CO-04	3	3	3	3	3	3	2	3		2	3	3	2	3	
		102	Advanced Geomorphology		Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	-	-
				CO-01	3	2	3	2	3						2				
				CO-02	3	2	3	2	3		2				2				
				CO-03	3	3	3	3	3	1				3	2	1			
				CO-04	3	2	3	3	3		3		3	3	2	2			
		103	Geography of India		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y
				CO-01	3	3	3	1	1	1		1	1		2		1		
				CO-02	3	3	3	2	2	1		1	1		3		1		
				CO-03	3	3	3	3	3	2	2	2	2	2	3	1	2	1	
				CO-04	3	3	3	3	3	3	3	3	3	2	3	3	2	2	
		104	Climatology		Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	-	Y
				CO-01	3	3	3	3	3					1	1	2		1	
				CO-02	3	3	3	3	3	1					1	3		2	
				CO-03	3	3	3	3	3	2	1				2	3	1		
				CO-04	3	3	3	3	3	3	2		2	3	3	2			
105	Map Making and Map Projection		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
		CO-01	3	3	3	3	3	1		3	1	1	3						
		CO-02	3	3	3	3	3	1	2	3	2		3			2			
		CO-03	3	3	3	3	3	3	3	3	3	3	2	3	2	1	3		
		CO-04	3	3	3	3	3	2	3	3	3	3	3	3	3	2			

Figure 1 - The Courses under Post-graduate Programmes, taught in the School of Geography, GMU together with their associated PSOs during Semester I

Semester	GMU Students	Paper Code	Postgraduate Courses run in the Department	Course Outcome (CO)	PSO-01	PSO-02	PSO-03	PSO-04	PSO-05	PSO-06	PSO-07	PSO-08	PSO-09	PSO-10	PSO-11	PSO-12	PSO-13	PSO-14			
			<i>Programme Specific Outcomes (PSOs) →</i>		<i>Core Competency</i>	<i>Analytical thinking</i>	<i>Scientific Thinking</i>	<i>Critical Thinking</i>	<i>Problem solving</i>	<i>Research skills</i>	<i>Teamwork</i>	<i>Communication Skills</i>	<i>Digital Literacy</i>	<i>Sustainable Development</i>	<i>Ethical Awareness</i>	<i>Leadership</i>	<i>Multicultural competence</i>	<i>Psychosocial competence</i>			
<i>1 - Slightly Related; 2 - Moderately Related; 3 - Strongly Related</i>																					
Note:					Core courses		Practical courses		Discipline Specific Elective				Inter Discipline Specific Elective								
					Y	Y	Y	Y	Y	Y	-	-	Y	Y	Y	-	Y	-			
II	Geographers	201	Oceanography	CO-01	3	3	3	1	2	1			2	1	2		1				
				CO-02	3	3	3	1	2					2	2						
				CO-03	3	3	3	3	3	2				2	3	3				1	
				CO-04	3	3	3	2	3	3					3	3				1	
		202	Economic Geography		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
				CO-01	2	2	2	2	1						1	2			1		
				CO-02	3	3	3	3	3	2					1	2	2	1			
				CO-03	3	3	3	3	3	3	2			1	2	2	3	2	1	1	
		203	Population Geography	CO-04	3	3	3	3	3	3	3	3	3	2	2	3	3	2	1	2	
					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
				CO-01	2	2	2	3	3							1	2		1		
				CO-02	3	3	3	2	2	2	1				1	1	3		2	1	
		204	Bio-Geography	CO-03	3	3	3	3	3	3	2			1	2	2	3	2	2	2	
				CO-04	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	
					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y
				CO-01	3	2	3	2	2							1	1	2			
		205	Field survey Methods	CO-02	3	3	3	3	3						2	2	2			1	
				CO-03	3	3	3	3	3	2	1			2	2	2	3	2	2	2	
				CO-04	3	3	3	3	3	3	3	3	3	2	3	2	3	2	3	3	
					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		206 A	Geography of Tourism	CO-01	2	1	1	1	1	1	1					1	2		2		
				CO-02	2	1	1	1	2	1						1	2		2	3	
				CO-03	3	2	2	2	2	1	2	2			2	1	2		3	3	
				CO-04	3	3	2	3	3	2	2	3	3	3	2	2	3				
		206 B	Geography of Odisha		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
				CO-01	3	3	1	1	2							1	2		1		
				CO-02	3	3	2	2	3	1						1	2		2	2	
				CO-03	3	3	3	3	3	2	1				1	2	2	1			
206 C	Remote Sensing Basic	CO-04	3	3	3	3	3	3	2	2	2	2	1	1	2	2		2			
			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	Y			
		CO-01	3	3	3	3	3						3	1	2						
		CO-02	3	3	3	3	3							3	2	2					
CO-03	3	3	3	3	3	2	1				2	3	2	2			2				
CO-04	3	3	3	3	3	3	2	2	3	3	3	3	3	2			3				

Figure 2 - The Courses under Post-graduate Programmes, taught in the School of Geography, GMU together with their associated PSOs during Semester II

Semester	GMU Students	Paper Code	Postgraduate Courses run in the Department	Course Outcome (CO)	PSO-01	PSO-02	PSO-03	PSO-04	PSO-05	PSO-06	PSO-07	PSO-08	PSO-09	PSO-10	PSO-11	PSO-12	PSO-13	PSO-14			
			Programme Specific Outcomes (PSOs) →		Core Competency	Analytical thinking	Scientific Thinking	Critical Thinking	Problem solving	Research skills	Teamwork	Communication Skills	Digital Literacy	Sustainable Development	Ethical Awareness	Leadership	Mult-cultural competence	Psychosocial competence			
1 - Slightly Related; 2 - Moderately Related; 3 - Strongly Related																					
Note:					Core courses		Practical courses		Discipline Specific Elective				Inter Discipline Specific Elective								
					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
III	Geographers	301	Resource Geography	CO-01	3	3	3	3	3	2				1	2		1				
				CO-02	3	3	3	3	3	2			1	2	3	1		1			
				CO-03	3	3	3	3	3	3	2	1	2	2	3	2	1	2			
				CO-04	3	3	3	3	3	3	3	2	2	3	3	2	2	3			
			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
		302	Settlement Geography	CO-01	3	2	2	2								2			1		
				CO-02	3	3	2	3		1					1	3		2			
				CO-03	3	3	3	3	3	2	1	2	1	2	3	2	2	2	2		
				CO-04	3	3	3	3	3	3	1	2	1	3	3	2	2	3			
			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
		303	Cartography and Statistical Methods	CO-01	3	3	3	3	3	3	3					2	3			1	
				CO-02	3	3	3	3	3	3	1			1	2	3			1	2	
				CO-03	3	3	3	3	3	3	2	1			2	3	2	2	2		
				CO-04	3	3	3	3	3	3	2	1	2	2	3	2	2	3			
			Y	Y	Y	Y	Y	Y	Y	-	Y	-	Y	Y	Y	Y	Y	Y	Y		
		304	Political Geography	CO-01	3	1		1									1				
				CO-02	3	1	1	2	1				1		1	2			2		
				CO-03	3	2	1	2	2	1			2		2	3	1	2	1		
				CO-04	3	1	1	2	2	2			2		2	2	2	2	2	2	
			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	Y			
305	Statistical Method Use in Geography	CO-01	3	3	3	1	3	1					2		3			1			
		CO-02	3	3	3	2	3	2				2	1	3				1			
		CO-03	3	3	3	3	3	3	1			2	2	3	2			2			
		CO-04	3	3	3	3	3	3	1	2	3	2	3	2	3	2		1			
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				
Non-Geographers	306 A	Introduction to Geography	CO-01	2	2	1	1								1				1		
			CO-02	2	2	2	2	1						1	2						
			CO-03	2	2	2	2	1	1					1	2						
			CO-04	3	3	3	3	2	2	1	1	1	2	3	1	2	2				
		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
	306 B	Human Geography	CO-01	3	2	2	2							1	2			2			
			CO-02	3	3	3	3	3	1	3			3	1	2	1	3				
			CO-03	3	3	3	3	3	2	3	1				2		3				
			CO-04	3	3	3	3	3	2	3	2			3	3	2	3	2			
		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
	306 C	Economic Geography	CO-01	3	2	2	2	1						1	2			1			
			CO-02	3	3	3	3	3	2				1	1	2				1		
CO-03			3	2	2	2	2						1	2	1	2	1				
CO-04			3	3	3	3	3	2	2	1	1	1	2	2	2	2	2				
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				

Figure 3 - The Courses under Post-graduate Programmes, taught in the School of Geography, GMU together with their associated PSOs during Semester III

Semester	GMU Students	Paper Code	Postgraduate Courses run in the Department	Course Outcome (CO)	PSO-01	PSO-02	PSO-03	PSO-04	PSO-05	PSO-06	PSO-07	PSO-08	PSO-09	PSO-10	PSO-11	PSO-12	PSO-13	PSO-14		
			<i>Programme Specific Outcomes (PSOs) →</i>		<i>Core Competency</i>	<i>Analytical thinking</i>	<i>Scientific Thinking</i>	<i>Critical Thinking</i>	<i>Problem solving</i>	<i>Research skills</i>	<i>Teamwork</i>	<i>Communication Skills</i>	<i>Digital Literacy</i>	<i>Sustainable Development</i>	<i>Ethical Awareness</i>	<i>Leadership</i>	<i>Multicultural competence</i>	<i>Psychosocial competence</i>		
<i>1 - Slightly Related; 2- Moderately Related; 3 - Strongly Related</i>																				
				Note:	Core courses	Practical courses	Discipline Specific Elective	Inter Discipline Specific Elective												
IV	Geographers	401	Socio- Cultural Geography		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
				CO-01	3	1	1													
				CO-02	3	1	1	1	2	1					2	3			1	2
				CO-03	3	3	2	2	3	2	1	2	1	2	3	3	1	2		
			CO-04	3	3	3	3	2	3	2	2	2	2	3	3	2			2	
		402	Environmental Geography		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
				CO-01	3	3	3	3	3	1		1		1	2			1	2	
				CO-02	3	3	3	3	3					2	2	2				1
				CO-03	3	3	3	3	3	2	1	1	2	2	2	2	1			
			CO-04	3	3	3	3	3	2	2	2			3	2	2	2	1	1	
		403	Regional Development & Planning		Y	Y	Y	Y	Y	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y
				CO-01	3	3	2	3	2						1	1	2		2	1
				CO-02	3	3	3	3	3							2	2			2
				CO-03	3	3	3	3	3	2	1			1	2	2	1			2
			CO-04	3	3	3	3	3	2	2					3	2	2	1	2	
		404	Urban Geography		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
				CO-01	3	3	3	3	3						1	1	2		2	
				CO-02	3	3	3	3	3	1					1	1	2		2	
				CO-03	3	3	3	3	3	2	1			2	2	2	2	2	2	
			CO-04	3	3	3	3	3	2	2	1			2	2	2	2	2		
405	Project work report and VIVA VOCE		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
		CO-01	3	3	3	3	3	3				1	1	2	3	2	1	2		
		CO-02	3	3	3	3	3	3	2				1	2	3	2	2	2		
		CO-03	3	3	3	3	3	3	2	2	2	2	3	3	2	2	2			
	CO-04	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3		

Figure 4 - The Courses under Post-graduate Programmes, taught in the School of Geography, GMU together with their associated PSOs during Semester IV

PSOs mapping to POs of GMU

Following table map the PSOs delineated in the department to PO of PG Programme in the GMU –

Table 2 - Mapping of PSOs in School of Geography to POs in GMU

		PO-01	PO-02	PO-03	PO-04	PO-05	PO-06	PO-07
		Critical Thinking	Effective Communication	Social Interaction	Effective Citizenship	Values and Ethics	Environment and Sustainability	Self-directed and Life-long Learning
PSO-01	Core Competency	√	√	√			√	√
PSO-02	Analytical thinking	√			√		√	√
PSO-03	Scientific Thinking	√					√	√
PSO-04	Critical Thinking	√			√		√	√
PSO-05	Problems solving	√			√		√	√
PSO-06	Research skills	√		√	√		√	√
PSO-07	Teamwork		√	√	√	√	√	√
PSO-08	Communication Skills		√	√	√	√	√	√
PSO-09	Digital Literacy			√			√	√
PSO-10	Sustainable Development	√	√	√		√	√	√
PSO-11	Ethical Awareness		√	√	√	√	√	√
PSO-12	Leadership	√	√	√	√	√	√	√
PSO-13	Multicultural competence	√		√	√		√	√
PSO-14	Psychosocial competence	√	√	√	√	√		

Qualification Descriptors (QD) for M.A./M.Sc. Programme

The QD for the M.A./M.Sc. programme in Geography shall cover the geographical learning attributes such as core geographical knowledge, field knowledge and use of advance spatial and allied tools and techniques for better comprehension of space and society etc. It shall also involve awareness among the students about the socio-cultural aspects as well as concerns from varied regions.

The main QD for the students of M.A./M.Sc. in Geography is their substantial ability to understand the geographical information at both level – overall and relative to each other. They are also capable to do critical evaluation at significant level. Each Geography Postgraduate student shall be able to –

- 1) Exhibit geographical knowledge scientifically whether it is theoretical or practical
- 2) Critique the geographical aspects whether spatial or temporal scales
- 3) Identify nominal to critical concerns and propose solutions to the problems geographically
- 4) Demonstrate the significance of geography in reducing regional inequalities and aid to the regional development.
- 5) Validate the ability to use the geographical knowledge acquired in the class in real world.
- 6) Comprehend the possibility of geography towards the career opportunities, employment and life-long engagement.
- 7) Utilise the learnings to contribute towards the sustainable development of oneself and everyone else around.

Through the theoretical and practical means of geography, the students will also develop the ability to realise the Sustainable Development Goals (SDG) altogether by indirect or direct participations.

Postgraduate (PG) in Geography – Syllabus in detail

The following section contain detailed syllabus followed in the School of Geography at GM University, Sambalpur with following components based on CBCS as discussed above:

1. Core and Practical Courses
2. Discipline Specific Elective (DSE)
3. Inter-Discipline Specific Elective (IDSE) offered by the department
4. Dissertation

Outcome Based Education

SYLLABUS

for

Master of Arts

in

GEOGRAPHY

UNDER

CHOICE BASED CREDIT SYSTEM



SESSION – 2020 - 22

**SCHOOL OF GEOGRAPHY
GANGADHAR MEHER UNIVERSITY
AMRUTA VIHAR, SAMBALPUR -768004**

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Post Graduate Programme Structure

The Master's programme is a two-year course divided into four semesters each of six-month duration. A student is required to complete 88 credits for the completion of course and the award of degree.

year	semesters	
First year	Semester I	Semester II
Second year	Semester III	Semester IV

The information about the title of courses, credit hours, division of marks etc. of all semester is given below.

Part-1: Semester-I

Papers		Marks		Total Marks	Duration (Hrs)	Credit Hours
Paper No	Title	Mid Term	End Term			
101	Geographical Thought	20	80	100	3	4
102	Advanced Geomorphology	20	80	100	3	4
103	Geography of India	20	80	100	3	4
104	Climatology	20	80	100	3	4
105	Map Making and Map Projection (Practical)			100	3	4
Total				500		20

Part-I: Semester-II

Papers		Marks		Total Marks	Duration (Hrs)	Credit Hours
Paper No	Title	Mid Term	End Term			
201	Oceanography	20	80	100	3	4
202	Economic Geography	20	80	100	3	4
203	Population Geography	20	80	100	3	4
204	Bio-geography	20	80	100	3	4
205	Field survey Methods (Practical)			100	3	4
DSE Papers*						
206 A	Geography of Tourism	20	80	100	3	4
206 B	Geography of Odisha	20	80	100	3	4
206 C	Remote Sensing Basics	20	80	100	3	4
Total				600		24

*Discipline Specific Elective Paper. Any one paper can be opted by Masters students of School of Geography. Minimum student strength to run the course in each elective paper should be 8.

Part-II: Semester-III

Papers		Marks		Total Marks	Duration (Hrs)	Credit Hours
Paper No	Title	Mid Term	End Term			
301	Resource Geography	20	80	100	3	4
302	Settlement Geography	20	80	100	3	4
303	Cartography & Statistical Methods	20	80	100	3	4
304	Political Geography	20	80	100	3	4
305	Statistical Methods Use in Geography (Practical)			100	3	4
IDSE Papers**						
306 A	Introduction to Geography	20	80	100	3	4
306 B	Human Geography	20	80	100	3	4
306 C	Economic Geography	20	80	100	3	4
Total				600		24

**Inter discipline specific elective paper. Any one paper can be opted by students of other Schools of G. M. University.

Part-II: Semester-IV

Papers		Marks		Total Marks	Duration (Hrs)	Credit Hours
Paper No	Title	Mid Term	End Term			
401	Socio-Cultural Geography	20	80	100	3	4
402	Environmental Geography	20	80	100	3	4
403	Regional Development & Planning	20	80	100	3	4
404	Urban Geography	20	80	100	3	4
405	Project work report and VIVA VOCE (practical papers)		50+50	100	3	4
Total				500		20
22 papers	Grand Total			2200		88

Semester	Core Courses			Discipline Specific Elective			Inter Discipline Specific Elective			Total No. of Papers	Credits (Per Paper)	Grand Total Credits
	No. of Papers	Credits (Per Paper)	Total Credits	No. of Papers	Credits (Per Paper)	Total Credits	No. of Papers	Credits (Per Paper)	Total Credits			
I	5	4	20	Nil	NA	NA	Nil	NA	NA	5	4	20
II	5	4	20	1	4	4	Nil	NA	NA	6	4	24
III	5	4	20	Nil	NA	NA	1	4	4	6	4	24
IV	5	4	20	Nil	NA	NA	Nil	NA	NA	5	4	20
Total	20	4	80	1	4	4	1	4	4	22	4	88

SEMESTER - 1

GEO – 101: Geographical Thought

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic understanding of Geographic concepts.

Aim of the Course:

To provide basic conceptual understanding of evolution of geographical concepts and approaches.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Analyze and evaluate the historical development of geographical thought from ancient to contemporary perspectives.
 - II. Examine the contributions of prominent geographers and thinkers to the evolution of geographical thought and Synthesize and compare diverse geographical perspectives
 - III. Identify and critically assess key theoretical frameworks and paradigms in geography.
 - IV. Apply geographical theories and concepts to analyse and interpret real-world phenomena, and Engage in critical reflection on the social, political, and cultural contexts that shape geographical knowledge production and dissemination and communicate effectively.
-

Course Contents:

Unit 1:

Meaning, Philosophy & Purpose of Geography; Place of Geography in classification of science; Changing paradigm – Environmental determinism, Possibilism, Aerial differentiation, Spatial Organisation; Dualism- Systematic vs Regional, Physical vs Human

Unit 2:

Human-Environment Interaction; Geographic knowledge in ancient & medieval period; Contribution of German, French, British and American School.

Unit 3:

Contemporary Trends: Quantitative & Qualitative Assessment; Behaviouralism; Radicalism; Humanism; Post Structuralism; Postmodernism.

Unit 4:

Future of Geography: Changing nature, concepts, approaches & methodologies of geography in globalizing world. Progress & Contribution of Indian Geographies.

Reading list

1. Arentsen M., Stam R. and Thuijjs R., 2000: Post-modern Approaches to Space, ebook.

2. Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
 3. Bonnett A., 2008: What is Geography? Sage.
 4. Clifford, N.J (2002) – The Future of Geography, GEOFORUM, Vol.33, pp 431-436
 5. Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
 6. Hartshone R., 1959: Perspectives of Nature of Geography, Rand MacNally and Co.
 7. Holt-Jensen A., 2011: Geography: History and Its Concepts: A Students Guide, SAGE.
 8. Johnston R. J., (Ed.): Dictionary of Human Geography, Routledge.
 9. Johnston R. J., 1997: Geography and Geographers, Anglo-American Human Geography since 1945, Arnold, London.
 10. Kapur A., 2001: Indian Geography Voice of Concern, Concept Publications.
 11. Martin Geoffrey J., 2005: All Possible Worlds: A History of Geographical Ideas, Oxford.
 12. Soja, Edward 1989. Post-modern Geographies, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.
-

GEO – 102: Advanced Geomorphology

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of Geomorphology

Aim of the Course:

is to train students in relevant topics of Advance Geomorphology covering its theoretical and practical aspects in order to use the understanding developed in spatial planning and management activities.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Analyze complex geomorphic processes and landforms at an advanced level, including their formation, evolution, and interrelationships. Evaluate and apply advanced quantitative methods wherever required.
 - II. Critically assess the role of tectonics, climate, and human activities in shaping landscapes over various spatial and temporal scales.
 - III. Synthesize interdisciplinary knowledge to understand the holistic functioning of geomorphic systems and communicate effectively the outcomes.
 - IV. Apply principles of geomorphology to address real-world problems related to environmental management, land use planning, hazard mitigation, and natural resource conservation.
-

Course Contents:

Unit 1:

Fundamental Concepts; Exogenetic & Endogenetic forces; Geographical cycle of erosion of Davis, Penck's model of cycle of erosion; Interruption in cycle of erosion; Rejuvenation.

Unit 2:

Continental Drift Theory of A.Wegner; Platetectonic; Meaning and types of Geosyncline; Geosyncline orogeny theory of Kober; Slope forms.

Unit 3:

Major drainage Systems – Sequent Drainage, Insequent Drainage; Morphometric Laws of drainage basin- Stream order, Stream length, Drainage density; Drainage Pattern.

Unit 4:

Landforms associated with fluvial, glacial, arid and karst cycle; Pseudovolcanic features; Applied Geomorphology.

Reading List

1. Bloom A. L., 2003: *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice-Hall of India, New Delhi.
 2. Bridges E. M., 1990: *World Geomorphology*, Cambridge University Press, Cambridge.
 3. Christopherson, Robert W., (2011), *Geosystems: An Introduction to Physical Geography*, 8 Ed., Macmillan Publishing Company
 4. Kale V. S. and Gupta A., 2001: *Introduction to Geomorphology*, Orient Longman, Hyderabad.
 5. Knighton A. D., 1984: *Fluvial Forms and Processes*, Edward Arnold Publishers, London.
 6. Richards K. S., 1982: *Rivers: Form and Processes in Alluvial Channels*, Methuen, London.
 7. Selby, M.J., (2005), *Earth's Changing Surface*, Indian Edition, OUP
 8. Skinner, Brian J. and Stephen C. Porter (2000), *The Dynamic Earth: An Introduction to physical Geology*, 4th Edition, John Wiley and Sons
 9. Thornbury W. D., 1968: *Principles of Geomorphology*, Wiley.
 10. Gautam, A (2010): *Bhautik Bhugol*, Rastogi Publications, Meerut
 11. Tikkaa, R N (1989): *Bhautik Bhugol ka Swaroop*, Kedarnath Ram Nath, Meerut
 12. Singh, S (2009): *Bhautik Bhugol ka Swaroop*, Prayag Pustak, Allahabad
 13. Singh, S (2009): *Physical Geography*, Prayag Pustak, Allahabad
 14. Starhler & Strahler: *Advanced Physical Geography*. John.Wiley, N.York
 15. Wooldridge & Morgan(1968) – *Principle of Geomorphology*.
-

GEO – 103: Geography of India

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic understanding about India would be helpful.

Aim of the Course:

is to provide essential and advanced understanding of Geography of India that could be used in analyses during simultaneous modules.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Gain comprehensive understanding of the physical geographical features of India including physiography and climate.
 - II. Evaluate human geographical features of India including demographic characteristics, population distribution, rural and urbanization trends, and socio-cultural diversity of India.
 - III. Investigate the economic activities, resource base, industries, agriculture, trade networks, and development challenges in different regions of India.
 - IV. Discuss the role spatial planning, urban growth, infrastructure development, and regional disparities in India.
-

Course Contents:

Unit 1:

Physiographic division; Soil distribution; Vegetation types and region; Climate in India.

Unit 2:

Population; Distribution; Growth; Religion; Language; Tribe; Caste in India, Rural Settlement Pattern.

Unit 3:

Distribution and Utilisation of Coal, Iron ore, Bauxite, Petroleum, Natural Gas, Water Resources.

Unit 4:

Production and Distribution of Rice, Wheat, Cotton; Agroclimatic region; Major Industries – Iron and Steel, Aluminium Industry, Automobile, Cotton Industry.

Reading List -

1. Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
2. Johnson, B. L. C., ed. 2001. Geographical Dictionary of India. Vision Books, New Delhi.

3. Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
 4. Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
 5. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
 6. Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
 7. Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
 8. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
 9. Tirtha, Ranjit 2002: Geography of India, Rawat Publs., Jaipur & New Delhi.
 10. Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
 11. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
 12. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur
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GEO – 104: Climatology

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of high school physics and math

Aim of the Course:

It aims to provide students with an integrated knowledge on the Earth's climate, understanding of physical climate processes and principles and laws that govern climate.

Course Outcomes:

After completion of this course, the students will able to:

- I. List the composition and structure of atmosphere; describe insolation and heat budget; explain the greenhouse effect, relate insolation and heat budget of an area.
 - II. Tell reasons of spatial variation in temperature on earth surface, explain the reason of thermal inversion, apply the concept of thermal inversion for solving air pollution; apply the concept of insolation to temperature variations and analyze its impact on atmospheric variables like pressure and wind at different spatial scale.
 - III. Relate heat and water content through atmospheric process of evaporation, condensation, cloud formation; apply the concept of saturation and dew point in in humidity, compare the different types of humidity, classify and distinguish rain causing clouds and precipitation and rainfall.
 - IV. Outline the different types of airmass; understand and compare the development and effect of extreme weather condition like cyclone, front; Appraise the use of different climate classification system
-

Course Contents:

Unit 1:

Composition of Atmosphere; Structure of Atmosphere; Chemical Composition of Atmosphere- Homosphere & Heterosphere; Factors affecting distribution of insolation; Heat Budget of Earth.

Unit 2:

Factors controlling distribution of temperature; Horizontal & Vertical Distribution of temperature; Temperature Inversion; Horizontal distribution of pressure & pressure belt; Effect of Coriolis force on wind; Planetary Wind, Jet stream, Monsoon.

Unit 3:

Water Vapour and Evaporation; Condensation; Absolute Humidity, relative Humidity, Specific Humidity; Classification of Cloud; Types of Rainfall.

Unit 4:

Meaning properties and source of Airmass; Fronts and Classification; Tropical and Extra Tropical Cyclone; Koeppen's and Thornthwaite's Classification of Climate.

Reading List

1. Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
3. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-Hill.
7. Gupta L S(2000): Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
8. Lal, D S (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad
9. Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad
10. Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

GEO – 105: Map Making and Map Projection (Practical)

Credit = 4

F.M. = 100 [20 (Project Work) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic understanding of mapping would be helpful.

Aim of the Course:

is to provide essential cartographic skills to the students and educate them in effective map-making as per the requirement.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Understand the fundamental principles of Cartography and Map Design and Layout to create aesthetically pleasing and effective maps.
 - II. Expert in managing geographic data and cartographic process to create different types of maps using different geographic data using various techniques.
 - III. Enhance Visualisation as well as Spatial Thinking skills to visualize and analyse spatial relationships and patterns using maps and spatial data.
 - IV. Develop the ability to effectively communicate through maps and interpret maps critically.
-

Course Contents:

Unit 1:

Visual variables & Symbols – Use of point, line area symbols in map, Map design.

Unit 2:

Isopleth, Choropleth maps – Distribution map of population using single dot, multiple dots, Traffic flow cartogram, Isotherm map.

Unit 3:

Drawing of Lorenz curve; Climography, Hydrography, Ergography.

Unit 4:

Classification and properties of Map Projection; Construction of Conical projection with one standard & two standard parallel, Gromonic projection, Stereographic projection, Universal Transverse Mercator's projection (UTM).

Record & Viva would carry 20 % of marks of Total

Reading List

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
 2. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
 3. Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
 4. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
 5. Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
 6. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
 7. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
 8. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
 9. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
 10. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
 11. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
 12. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
 13. Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
 14. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
 15. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
 16. Singh, L R & Singh R (1977): Manchitra or Prayogatamek Bhugol , Central Book, Depot, Allahabad
 17. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
 18. Bhopal Singh R L and Duttta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad
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SEMESTER - II

GEO – 201: Oceanography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of Oceanography

Aim of the Course:

is to train students in relevant topics of Oceanography covering its theoretical and practical aspects in order to understand different process in ocean water and its related studies.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Review, interpret and describe different perspectives of relief features of ocean basins.
 - II. Review, interpret, discuss, relate and critic different fundamental concepts of ocean temperature and salinity and its processes
 - III. Identify the concept of understanding in oceanographic studies developed in Unit 2, 3 and 4
 - IV. Review, interpret, discuss, relate and critic different fundamental concepts and perspectives of Oceanography as well as Oceanic environment
-

Course Contents:

Unit 1:

Relief of Ocean Basin- Shelf, Slope, Deep Sea Plain, Submarine Canyons; Bottom Relief of Atlantic, Pacific, Indian Ocean.

Unit 2:

Factors affecting horizontal distribution of temperature water; Controlling factors of density of sea water; Factors Controlling Variation of Salinity; Horizontal & Vertical distribution of Salinity.

Unit 3:

Types of tide; progressive Wave Theory & Equilibrium theory on tide; Factors related to ocean current; Currents of Atlantic, Pacific and Indian Ocean.

Unit 4:

Types of Coral reef & condition for growth of reef; Subsidence theory of Darwin, Standstill theory of Murray; Coral Bleaching; Marine resource and its types

Reading List

1. Sharma & Val: Oceanography for Geographer, Chaintanya Publ. House.
 2. Las, D.S -Oceanography, Chaintany Publ. House.
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GEO – 202: Economic Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of economic development and natural resources

Aim of the Course:

at understanding, analysing, and interpreting the spatial dimensions of economic activities and their interactions with the physical and human environments.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Gain comprehensive understanding of the fundamentals of Economic Geography and debate surrounding it.
 - II. Investigate spatial patterns of Economic activities by examining the factors affecting them and the theories associated with their growth and localisation.
 - III. Evaluate different geographic models and appraise, relate, compare, and differentiate them particularly the models related to natural resources
 - IV. Appraise and Interpret different economic activities in terms of their conservation and management and summarise their challenges and sustainability
-

Course Contents:

Unit 1:

Nature & Scope; Sectors of economy – primary, Secondary, Tertiary and Quaternary; Natural Resource – Renewable, Non-Renewable resources; Factors Affecting location of Economic activities.

Unit 2:

Geographical factors influencing agriculture; World agricultural types; Delimitation of Agricultural regions; Crop combinations and diversification; Von-Thunen Model.

Unit 3:

Factors affecting location of industries; Classification of Industries, Weber's and Losch's approach Smith; Resource base and foot loose industries.

Unit 4:

Models of transportation; Accessibility and connectivity- Inter regional & Intra regional; Factors affecting international trade; Govt. Policies & trading restrictions; Rail transport- America, Europe, In former USSR; Inland waterways- Suez, Panama Canal, Great Lakes.

Reading List

1. Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
 2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell.
 3. Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis.
 4. Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
 5. Wheeler J. O., 1998: Economic Geography, Wiley..
 6. Durand L., 1961: Economic Geography, Crowell.
 7. Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future, Taylor and Francis.
 8. Willington D. E., 2008: Economic Geography, Husband Press.
 9. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford
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GEO – 203: Population Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

To provide basic conceptual understanding of demographic concepts, population theories and policies.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Explore the nature, scope and evolution of population geography and the patterns, processes, and factors influencing the distribution, composition, and change of human populations over time and space.
 - II. Investigate the temporal trend and spatial distribution of population at various scales, from global to local, and examine the reasons behind them such exploring the complex relation between population and environment.
 - III. Learn demographic skills to analyse population data, including various related measures.
 - IV. Critique the role of government policies, both historical and contemporary, in shaping population dynamics, and evaluate their effectiveness in addressing demographic challenges.
-

Course Contents:

Unit 1:

Nature and scope of population geography; Sources of population data in India- Censuses, NPR (National Population Register), National Sample Survey; UID; Limitation of censuses; Population data from UN publication.

Unit 2:

Factors affecting population distribution, world distribution of population; World population growth and density; Demographic transition theory; Concept of optimum population.

Unit 3:

Population dynamism: Determinants and measures of fertility, mortality and migration.

Unit 4:

Population composition (age, sex & occupation); Population problems of third world countries; Aging population problems; Population policies of more developed countries and less developed countries.

Reading list

1. Barrett H. R., 1995: Population Geography, Oliver and Boyd.
 2. Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
 3. Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography, Kalyani Publishers.
 4. Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
 5. Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
 6. Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan
 7. Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
 8. Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.
 9. Wilson M. G. A., 1968: Population Geography, Nelson.
 10. Panda B P (1988): Janasankya Bhugol, M P Hindi Granth Academy, Bhopal
 11. Maurya S D (2009) Jansankya Bhugol, Sharda Putak Bhawan, Allahabad
 12. Chandna, R C (2006), Jansankhya Bhugol, Kalyani Publishers, Delhi
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GEO – 204: Bio-geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

To understand the distribution of species and ecosystems across space and time in order to integrate knowledge from these different fields to understand the distribution of life on Earth.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Recognize, discuss and distinguish basic components of Bio-geography
 - II. Gain comprehensive understanding of the distribution patterns of species and ecosystems.
 - III. Investigate different biogeographic regions of the world, their unique characteristics, and the processes that have shaped their biodiversity.
 - IV. Evaluate real-world problems related to environment and their solutions from different organisation.
-

Course Contents:

Unit 1:

Meaning and Concept of Bio-geography; Components of Biosphere; Meaning & concept of ecosystem; Types of ecosystem; Functioning of ecosystem.

Unit 2:

Trophic level; Food chain; Food web; Energy flow; Geo-biochemical cycle; Hydrological cycle; Carbon cycle; Nitrogen cycle.

Unit 3:

Physical factors influencing world distribution of plant; Distribution of terrestrial plants; Distribution of land animals; Forest Biomes: Tropical Evergreen, Monsoon, Savanna Biome, Marine Biome.

Unit 4:

Types of Environmental Hazards and disaster; Depletion of Bio-diversity through natural and man induced causes; Types of environmental degradation; Biosphere reserve programme of UNESCO#

Reading list

1. Singh, S (2009) – Physical Geography; Prayag Pustak; N.Delhi.
 2. Singh, S (1997) – Environmental Geography; Prayag Pustak, N.Delhi.
 3. Odum, E.P (2005) - Fundamental of Ecology; Lineage l2earning Indian
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GEO – 205: Field Survey Methods

(Practical)

Credit = 4

F.M. = 100

Prerequisite Course / Knowledge (If any): Basic understanding of surveying and field requirements would be preferable.

Aim of the Course:

is to provide essential field related skills to the students in order to take cutting-edge research of any problem in real world (preferably local at this education stage).

Course Outcomes:

After completion of this course, the students will be able to:

- I. Understand basics of field work and identify field techniques to be used.
 - II. Compare, differentiate and evaluate the data to be collect from field and their method of collection.
 - III. Demonstrate proficiency in field-based techniques for geomorphic mapping, data collection, and analysis, incorporating GPS/GIS technologies.
 - IV. Assess and synthesize the information collected during field work and summarise the outcome leading to design and develop field reports
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Course Contents:

Unit 1:

Survey: - Plane Table Survey; Radiation and Intersection; Prismatic Compass Survey; Use of Theodolite.

Unit 2:

Morphometric analysis: Stream Order, Stream Length, Drainage Density.

Unit 3:

Drawing of Choropleth & Isopleth map, Population Interaction model; Transport network analysis; Alpha, Beta and Gamma indices.

Unit 4:

Seminar (20 marks)

Record and viva carry 20% of total marks

Reading List

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association:

- BasicCartographic Vol. Pregmen Press.
2. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
 3. Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
 4. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
 5. Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
 6. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
 7. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
 8. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
 9. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
 10. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
 11. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
 12. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization
1. (3rd Edition), Prentice Hall.
 13. Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
 14. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
 15. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
 16. Singh, L R & Singh R (1977): Manchitra or Prayogamek Bhugol , Central Book, Depot, Allahabad
 17. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
 18. Bhopal Singh R L and Dutttta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad
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DISCIPLINE SPECIFIC ELECTIVE (DSE)

GEO (DSE) – 206 [A]: Geography of Tourism

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Familiarity with Tourism.

Aim of the Course:

to examine geographies of tourism on different scales (global, national and local) along with their impacts (economic, social, cultural, political, and environmental).

Course Outcomes:

After completion of this course, the students will be able to:

- I. Define, describe and relate the basic characteristics and trends of tourism covering India and world
 - II. Review, classify and distinguish classification and characteristics of tourism
 - III. Relate and Analyze spatial variation in tourism
 - IV. Evaluate opportunities, impact and management of tourism
-

Course Contents:

_ Unit 1:

Meaning and nature of tourism; Basic element & component of tourism, Growth of travel in ancient period: Accounts of favorite travelers, Pleasure travel, Religion as motivator; Industrial revolution and development of travel; Causes of rapid growth of tourism in post world war period; Factors influencing growth of tourism.

Unit 2:

Types of tourism- Cultural, Adventure, National and international; The National Tourist Organization and its function; Infrastructure and support system; Tourist accommodation; role of Travel Agencies.

Unit 3:

Tourism marketing concept, Special features of tourist marketing; Information technology in tourism, Computer reservation system in ticket booking in railways, airways, hotels; Recent trend of tourism.

Unit 4:

Impact of tourism in economy, environment, society; Tourism industry; Tourist destination in India and Odisha: Major religious places, Hill station in India, Coastal beach, Places of ecotourism in India; Role of ITDC & World Tourism Organization.

Reading List -

1. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
 2. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London.
 3. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune.
 4. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth-Heinemann-USA. Chapter 2.
 5. Raj, R. and Nigel, D. (2007) Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org.
 6. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow
 7. Singh Jagbir (2014) "Eco-Tourism" Published by - I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).
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GEO (DSE) – 206 [B]: Geography of Odisha

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of Geography of Odisha

Aim of the Course:

is to train students in relevant topics of Geography of Odisha covering theoretical aspects in order to use the understanding of basic knowledge about Geography of Odisha and its Natural Resource Management.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Review the basic knowledge about Odisha Geography such as Physiography, Climate, Soil, Vegetation, Drainage System, Natural Hazards, Coastal Erosion
 - II. Explore the types of crops and its production, agricultural problems of Odisha
 - III. Evaluate the study of demography, Transportation and Tourism of Odisha
 - IV. Discuss spatial planning principles, land use policies, infrastructure development, and urban growth management strategies in Odisha
-

Course Contents:

Unit 1:

Location; Physiography of Odisha, Drainage.

Unit 2:

Climate, Soil, Natural Vegetation

Unit 3:

Production and distribution of rice, pulses, oilseed; Agricultural problems in Odisha.

Unit 4:

Population distribution, growth; Development of Roadways; Major Religious cultural and natural tourist spots in Odisha: Puri, Konark, Similipal, Huma

Reading List

1. Roy, G.C.- Geography of Orissa, Kalyani Publication
 2. Sinha, B. N.- Geography of Orissa, NBT Publication.
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GEO (DSE) – 206 [C]: Remote Sensing Basic

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Acquaintance with Remote sensing would be beneficial.

Aim of the Course:

is to train students in relevant topics of Remote Sensing and GIS covering its theoretical and practical aspects in order to use the understanding to resolve real world problems.

Course Outcomes:

After completion of this course, the students will be able to:

- I. To learn the basic concepts of remote sensing, understand the fundamental concepts of satellites, platforms, resolution, sensors and its processes
 - II. To learn the concept of visual image interpretation and digital image processing
 - III. To understand the application of remote sensing and GIS in natural resource management
 - IV. Explore a range of spatial analysis techniques and tools available in GIS and Remote sensing integrated in GIS to solve real-world spatial problems and support decision-making processes
-

Course Contents:

Unit 1:

Defining remote sensing; Advantages, limitation and principles of remote sensing; wave model in Electromagnetic Radiation; Remote sensing and Electromagnetic Spectrum.

Unit 2:

Remote sensing sensors: satellites and sensors on ground, in air, in space; remote sensing system- and scanning system.

Unit 3:

Aerial photography: meaning, elements of air photo-(A) basic-1st order: location, resolution
(B) 2nd order; geometric (spatial) arrangement
(C) 3rd order: Locational or positional elements

Unit 4:

Remote sensing application: multiple sources of information; application-land cover and land use; Agriculture; Crop monitoring and damage assessment; Forestry; Hydrological phenomena; Ocean and Coastal monitoring.

Reading List

1. Campbell, J.B (1987)-Introduction to Remote Sensing, the Guilford Press, New York.

2. Fazal.S (2012)-Remote Sensing Basic, Kalyani Publisher, New Delhi.
 3. Hord, R.M (1986)-Remote Sensing: Methods and Application, Wiley New York.
 4. Lillesand, T.M & R.Keira (1994)-Remote Sensing and Image Interpretation, John Wiley and Sons, Inc Toronto.
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SEMESTER - III

GEO – 301: Resource Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

to provide students with a comprehensive understanding of the distribution, utilization, management, and sustainability of natural resources.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Gain a comprehensive understanding of the fundamentals of Resource Geography
 - II. Evaluate the factors and pattern affecting different natural resources.
 - III. Show critical understanding of the importance of sustainable resource management practices and conservation strategies to ensure the long-term availability of natural resources for future generations.
 - IV. Critically analyse and evaluate contemporary problems related to resource management, and master planning and policies to address them.
-

Course Contents:

Unit 1:

Meaning & Concept of resource; Classification of resource; Resource aspect- Natural, Human and Cultural dynamism of Resource base; Role of technology in resource development, Resource appraisal.

Unit 2:

Soil Resource: Factors affecting soil formation, soil profile, soil classification; Water resource: surface water resource- inland and oceanwater resource and utilization; Forest Resource: Factors of vegetation growth; Types of natural vegetation- Forest, grassland, desert vegetation- Forestry and lumbering; Energy Resource: Distribution of coal, petroleum & natural gas in world; Mineral Resource: Distribution of Iron ore, Bauxite in world.

Unit 3:

Concept of resource conservation; Soil erosion and conservation, conservation of forest, conservation of water resource, conservation of mineral resources, concept of sustainable development, resource scarcity hypothesis

Unit 4:

Resource region of the world, Natural hazards and impact of resource, concept and approach to natural resource management.

Reading List

1. Cutter S. N., Renwick H. L. and Renwick W., 1991: *Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use*, John Wiley and Sons, New York.
 2. Gadgil M. and Guha R., 2005: *The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity*, Oxford University Press. USA.
 3. Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: *Natural Resources: Ecology, Economics and Policy*, Prentice Hall, New Jersey.
 4. Jones G. and Hollier G., 1997: *Resources, Society and Environmental Management*, Paul Chapman, London.
 5. Klee G., 1991: *Conservation of Natural Resources*, Prentice Hall, Englewood.
 6. Mather A. S. and Chapman K., 1995: *Environmental Resources*, John Wiley and Sons, New York.
 7. Mitchell B., 1997: *Resource and Environmental Management*, Longman Harlow, England.
 8. Owen S. and Owen P. L., 1991: *Environment, Resources and Conservation*, Cambridge University Press, New York.
 9. Rees J., 1990: *Natural Resources: Allocation, Economics and Policy*, Routledge. London
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GEO – 302: Settlement Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

is to provide a thorough understanding of settlements across the globe including their importance, trends and growth.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Examine basic concepts of Settlement Geography and Explore the historical development of settlements from ancient to modern times
 - II. Understand, discuss and describe fundamentals of Rural and Urban Settlement
 - III. Examining contemporary challenges and issues facing human settlements
 - IV. Encouraging students to critically analyse and evaluate settlement patterns and processes, policies and to develop solutions to real-world settlement-related problems.
-

Course Contents:

Unit 1:

Definition, scope & approach in settlement geography; Settlement size, site & situation; Evolution of settlement; Human settlement system; Settlement studies in India; Significance of settlement studies.

Unit 2:

Rural settlement: Origin, site, situation and size of rural settlement; Types & pattern: Factors responsible for dispersion of settlement.

Unit 3:

Urban settlement: Origin and growth of urbanization; Classification of town by Houston; Sjoberg & Mumford; Urban Functions, Functional classification of town; Metropolis, Megalopolis, Conurbation, Concept of Smart City & just cities, Urban Administration.

Unit 4:

Models of city structure- Concentric zone, sector model & Multinuclei Theory; Christaller central place theory; Rank-size rule Rur-Urban fringe; Primate city, Urnland.

Reading List

1. Fyfe N. R. and Kenny J. T., 2005: *The Urban Geography Reader*, Routledge.
 2. Graham S. and Marvin S., 2001: *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*, Routledge.
 3. Hall T., 2006: *Urban Geography*, Taylor and Francis.
 4. Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: *Urban Geography*, John Wiley.
 5. Knox P. L. and McCarthy L., 2005: *Urbanization: An Introduction to Urban Geography*, Pearson Prentice Hall New York.
 6. Knox P. L. and Pinch S., 2006: *Urban Social Geography: An Introduction*, Prentice-Hall.
 7. Pacione M., 2009: *Urban Geography: A Global Perspective*, Taylor and Francis.
 8. Sassen S., 2001: *The Global City: New York, London and Tokyo*, Princeton University Press.
 9. Ramachandran R (1989): *Urbanisation and Urban Systems of India*, Oxford University Press, New Delhi
 10. Ramachandran, R., 1992: *The Study of Urbanisation*, Oxford University Press, Delhi
 11. Singh, R.B. (Eds.) (2001) *Urban Sustainability in the Context of Global Change*, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
 12. Singh, R.B. (Ed.) (2015) *Urban development, challenges, risks and resilience in Asian megacities*. *Advances in Geographical and Environmental Studies*, Springer
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GEO – 303: Cartography and Statistical Methods

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of statistics

Aim of the Course:

to provide students with the knowledge, skills, and tools necessary to effectively analyse, visualize, and communicate geographic information using cartographic and statistical techniques.

Course Outcomes:

After the completion of the course, student will be able to

- I. Describe and interpret geographical data by applying basic cartographic and statistical skills.
 - II. Gain an understanding of spatial patterns and relationships in geographic data, including spatial autocorrelation, spatial heterogeneity, and spatial dependence.
 - III. Interpret and communicate geographic information effectively through cartographic and statistical outputs.
 - IV. Think spatially and critically about geographic phenomena and evaluate geographic data, choose appropriate statistical methods, and effectively communicate results.
-

Course Contents:

Unit 1:

Map as a tool in geographical study; Map classification; Techniques for study of spatial pattern of distribution; Single purpose & composite maps.

Unit 2:

Choropleth, Isopleth, Chorochromatic maps- Bar & Pie diagram- Accessibility and Flow maps- Remote sensing, meaning, Digital mapping- GIS- Thematic map.

Unit 3:

Measures of central tendency; Measures of dispersion, Selection of class interval for mapping, Standard deviation, Lorenz Curve, Simple Correlation, Regression.

Unit 4:

Nearest-neighbour analysis; Sampling techniques for geographical analysis; Scaling techniques-rank score; Weighted score.

Reading List

1. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books

2. Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
 3. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
 4. Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
 5. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.
 6. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
 7. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
 8. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
 9. Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
 10. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
 11. Singh, L R & Singh R (1977): Manchitra or Prayogamek Bhugol , Central Book, Depot, Allahabad
 12. 12. Bhopal Singh R L and Dutta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad
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GEO – 304: Political Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

is to provide a thorough understanding of role of geography in the political evolution of the world.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Recognize and state basic concepts of Political Geography
 - II. Understand, discuss and describe fundamental concepts involved in Political Geography
 - III. Review, understand, discuss and analyse global strategies and implications
 - IV. Review, understand, discuss and describe political geography of India
-

Course Contents:

Unit 1

Nature & Scope; Scientific determinism and social determinism of post-Riterran geography; Ratzel's contribution to scientific political geography and laws of spatial growth of state; German Geopolitik.

Unit 2:

Concept of nation and nation building; concept of state as political and territorial phenomena' Boundaries classification; Distinction between frontiers and boundaries.

Unit 3:

Geostrategic ideas of Mohan; Hartland theory of Mckinder; Rimland of Spykeman; Contemporary relevance of Heartland.

Unit 4:

Geography of federalism, Geographers and federalism; Nature of administrative area; Geography of public policy and finance; Politics of world resource. Boundary disputes at International & National level.

Reading list

1. Agnew J., 2002: Making Political Geography, Arnold.
2. Agnew J., Mitchell K. and Toal G., 2003: A Companion to Political Geography, Blackwell.
3. Cox K. R., Low M. and Robinson J., 2008: The Sage Handbook of Political Geography, Sage Publications.
4. Cox K., 2002: Political Geography: Territory, State and Society, Wiley-Blackwell

5. Gallaher C., et al, 2009: Key Concepts in Political Geography, Sage Publications.
 6. Glassner M., 1993: Political Geography, Wiley.
 7. Jones M., 2004: An Introduction to Political Geography: Space, Place and Politics, Routledge .
 8. Mathur H M and M M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
 9. Painter J. and Jeffrey A., 2009: Political Geography, Sage Publications.
 10. Taylor P. and Flint C., 2000: Political Geography, Pearson Education.
 11. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
 12. Hodder Dick, Sarah J Lloyd and Keith S McLachlan (1998), Land Locked States of Africa and Asia (vo.2), Frank Cass
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GEO – 305: Statistical Method Use in Geography

(Practical)

Credit = 4

F.M. = 100

Prerequisite Course / Knowledge (If any): Basic knowledge of Statistics.

Aim of the Course:

is to provide an understanding on the statistical interpretation of geographical data to unfurl geographical patterns and relationships and enable students to derive a meaningful inference from the different dimensions of geographical studies.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Show proficiency in describing and interpreting geographical data and apply basic statistical skills to sort data and Compare different statistical methods and select the apt tool based on the nature of data and purpose of study.
 - II. Explain basic descriptive statistics to calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data in geographical problems.
 - III. Compute and interpret the results of Bivariate and Multivariate Regression and Correlation Analysis, for forecasting; Examine Test of Hypothesis for a population parameter; Demonstrate the practice of statistical thinking by taking a real-life problem; evaluate whether the procedure can be safely applied, explain the implications of statistical outcomes on the geographical study at-hand
 - IV. Demonstrate ability to write reports of the results of statistical analyses (both descriptive and inferential) of geographic questions/problems/issues; Develop statistical software skills to solve geographical issues.
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Course Contents:

Unit 1:

Drawing of histogram, Frequency curve, Frequency polygon, Bar diagram, Ogive.

Unit 2:

Measurement of Mean, Median and mode, Quartile.

Unit 3:

Standard Deviation, Mean Deviation, Coefficient of Variation

Unit 4:

Rank correlation, Product moment correlation.

Reading list

1. Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
 2. Ebdon D., 1977: Statistics in Geography: A Practical Approach.
 3. Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
 4. King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
 5. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
 6. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
 7. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
 8. Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
 9. Spiegel M. R.: Statistics, Schaum's Outline Series.
 10. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
 11. Sinha, Indira (2007) Sankhyiki bhugol. Discovery Publishing House, New Delhi
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GEO (IDSE) – 306 [A]: Introduction to Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

is to provide a thorough understanding of Geography to the students from different background.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Recognize and state basic concepts of Geography
 - II. Understand, discuss and describe fundamental concepts of Geography
 - III. Understand, discuss and describe fundamental concepts associated with climate
 - IV. Analyses the environmental challenges and disasters occurring on the global
-

Course Contents:

Unit 1:

Internal structure of Earth- Crust, Mantle, Core; Rotation & Revolution of Earth; Origin of planets of solar system: Big Bang Theory, Tidal Theory.

Unit 2:

Composition and structure of atmosphere, Factors influencing temperature of Earth, Isotherm, Pressure Belt of earth, Planetary Wind, Local Wind.

Unit 3:

India: Location, Physical Division, Soil Natural Vegetation, Monsoon; Rice and wheat producing area.

Unit 4:

Odisha: Location; Physical Division, Soil, Natural Vegetation, Rice Cultivation & Production.

Reading List

1. Deshpande, C.D (1992) India: A Regional Interpretation, ICSSR, N.Delhi.
 2. Singh, Savinder (2009) – Physical Geography, Prayag Pustak, N.Delhi.
 3. Sinha, B.N – Geography of Orissa; NBT Pub. Thornbury, W. D. (2004). Principles of Geomorphology. New Delhi: CBS.
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GEO (IDSE) – 306 [B]: Human Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

is to provide a thorough understanding of distribution and compositions of humans.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Recognize and state basic concepts of Human Geography
 - II. Review, understand and summarise population dynamics
 - III. Review and analyse demographic characteristics
 - IV. Examine social composites
-

Course Contents:

Unit 1:

Nature & Scope of Human Geography, Meaning of Culture, Cultural Element, Cultural Region.

Unit 2:

Race , Religion, Language of World.

Unit 3:

Religion, Language of India, Types and pattern of rural settlement.

Unit 4:

Population Dynamism: Measures of fertility, mortality and migration.

Reading List –

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
 2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
 3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
 4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
 5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
 6. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
 7. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
 8. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur
-

GEO (IDSE) – 306 [C]: Economic Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

to provide a balanced understanding of economic geography to students of different disciplinary background.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Explore and critique nature, scope and concept of Economic Geography
 - II. Gain foundational understanding of Economic Geography, including its key concepts, theories, methods of analysis, activities and regions
 - III. Interpret, compare and examine different factors of economic activities and relate them with location and development of the economic activities, particularly in India.
 - IV. Assess the regional disparity of economic development particularly in case of India keeping the history of Indian economic development in context.
-

Course Contents:

Unit 1:

Meaning and scope; Classification of economic activities.

Unit 2:

Primary activities: Types of Agriculture, Types of Forest of World, Commercial fishing in the bank and open sea fisheries of world.

Unit 3:

Importance and factors for location of iron and steel industries, cotton industries; Distribution of Automobile industry in USA and Europe.

Unit 4:

Classification of resource; Composition of soil, soil classification, utilization of inland water resource by man.

Reading List

1. Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.

2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
 3. Hodder B. W. and Lee Roger, 1974: *Economic Geography*, Taylor and Francis.
 4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
 5. Wheeler J. O., 1998: *Economic Geography*, Wiley.
 6. Durand L., 1961: *Economic Geography*, Crowell.
 7. Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
 8. Willington D. E., 2008: *Economic Geography*, Husband Press.
 9. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: *The Oxford*
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SEMESTER - IV

GEO – 401: Socio - Cultural Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

is to provide essential understanding of the social and cultural side of Geography with emphasis on India.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Recognise, define and describe the evolution and relevance of Social Geography
 - II. Identify, summarise and compute elements of Social Geography, particularly for India
 - III. Recognise, define and describe the evolution and relevance of Cultural Geography
 - IV. Identify, summarise and compute elements of Cultural Geography with particular emphasis on India
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Course Contents:

Unit 1:

Nature & scope of Social Geography; Social structure; Social processes; Social Geography in the realm of Social sciences; Nature of Social Geography- The Anglo American School

Unit 2:

Races of Mankind; Tribes and caste in India, Race in India, Language and religion in World and in India.

Unit 3:

Meaning and characteristics of society: Tribal society, Agrarian society, Industrial society; Community and its characteristics; Concept of Social wellbeing; Social problem of India- Poverty, Dowry system, Child labour.

Unit 4:

Nature & scope of cultural geography; Culture defined; Component and function of culture; Culture and Civilization; Factors contributing cultural diffusion; Major cultural regions of World.

Reading List

1. Ahmed A., 1999: Social Geography, Rawat Publications.
2. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.

3. Cater J. and Jones T., 2000: *Social Geography: An Introduction to Contemporary Issues*, Hodder Arnold.
 4. Holt L., 2011: *Geographies of Children, Youth and Families: An International Perspective*, Taylor & Francis.
 5. Panelli R., 2004: *Social Geographies: From Difference to Action*, Sage.
 6. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: *Introducing Social Geographies*, Oxford University Press.
 7. Smith D. M., 1977: *Human geography: A Welfare Approach*, Edward Arnold, London.
 8. Smith D. M., 1994: *Geography and Social Justice*, Blackwell, Oxford.
 9. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: *The SAGE Handbook of Social Geographies*, Sage Publications.
 10. Sopher, David (1980): *An Exploration of India*, Cornell University Press, Ithaca
 11. Valentine G., 2001: *Social Geographies: Space and Society*, Prentice Hall.
-

GEO – 402: Environmental Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Basic knowledge of Environmental studies

Aim of the Course:

is to train students on fundamental issues that raised due to the intersection of geography and environmental science, with a precise focus on different geographical approaches, humans' impact on physical environment and initiatives to control modification of environment.

Course Outcome:

On completion of the course, student will able to

- I. Tell the components of environment with their geographical aspect; interpret the historical geographical perspective on man-environment interaction, choose and compare the different geographical approach for complex environmental problems.
 - II. Classify the source of major environmental pollutions, identify their effect; compare different pollution control measurements and decide the right way to control the pollution in a geographical set up.
 - III. Recognize the role of global warming for climate change; show how these global environmental phenomena pose threat to sustainability; outline the actionable measurement that can be taken at local to global scale to combat the problem of climate change and global warming; Explain the cause and effect of natural hazards and its interlinkage with global environmental problem; Prepare an action plan for reducing the effect of natural disaster in different geographical set up.
 - IV. Outline the various global initiatives towards making earth a sustainable planet by measurable actions of member nations; outline the various national laws for safeguards natural environment; Formulate the scope and procedures for assessing the environmental effect of any developmental project across its life cycle
-

Course Contents:

Unit 1:

Fundamentals of environment; components of environment, Environmental Geography- Concept, Significance, objective and scope; Man-environment relationship on historic perspective; Environmental deterministic approach; Possibilistic approach.

Unit 2:

Environment pollution; Sources of Water Pollution. Water Conservation Strategies; Air pollution and impact on health; Sources of Noise Pollution; Measure to control air pollution, soil waste pollution.

Unit 3:

Environmental Challenges: Climatic Change; Global Warming; Natural hazards- Flood, Earthquake, Tsunami.

Unit 4:

Environment and Legislation: Earth Summit 1992; Wild life protection act of India 1972, The environment protection act of 1986, national Environmental tribunal act of India 1995, Environment Impact Assessment (EIA).

Reading List

1. Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
 2. Cunningham W. P. and Cunningham M. A., 2004: Principles of Environmental Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
 3. Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
 4. Mal, Suraj., and Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
 5. Miller G. T., 2004: Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
 6. MoEF, 2006: National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
 7. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
 8. Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.
 9. Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan. Allahabad.
 10. UNEP, 2007: Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme.
 11. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
 12. Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New Delhi, Oxford & IBH Pub..
 13. Singh, Savindra 2001. Paryavaran Bhugol, Prayag Pustak Bhawan, Allahabad. (in Hindi)
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GEO – 403: Regional Development and Planning

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): None.

Aim of the Course:

is to provide essential understanding of the social and cultural side of Geography with emphasis on India.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Recognise, define and describe the basic elements of Regional development and planning
 - II. Outline, distinguish and relate theories, models and indicators of Regional Planning
 - III. Examine planning regions with particular emphasis on India
 - IV. Examine, compare and explain different concepts and contemporary issues with particular emphasis on India
-

Course Contents:

Unit 1:

Region Concept in Geography; Types region and method delineation of region; Concept of development; Indicators of development; Types of regional planning; Regional planning and its rationale, Principle & Objectives; Approaches on regional planning.

Unit 2:

Regional growth theories: Economic base theory; Input and Output model; Friedman's core-periphery theory; Polarisation and Trickle-down theory of Hirschman; Spread and Backwash theory of Myrdal, Growth pole theory of Perrany.

Unit 3:

Concept of development and underdevelopment; Need of Planning region; Characteristics of planning region; Hill region, tribal region; Multi level planning; City region concept.

Unit 4:

Regional planning in India: Regional imbalances/disparities; National capital region; planning policies for regional development.

Reading list

1. Blij H. J. De, 1971: Geography: Regions and Concepts, John Wiley and Sons.

2. Claval P.I, 1998: An Introduction to Regional Geography, Blackwell Publishers, Oxford and Massachusetts.
 3. Friedmann J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.
 4. Gore C. G., 1984: Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.
 5. Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention, Metropolis- Verlag, Marburg.
 6. Haynes J., 2008: Development Studies, Polity Short Introduction Series.
 7. Johnson E. A. J., 1970: The Organization of Space in Developing Countries, MIT Press, Massachusetts.
 8. Peet R., 1999: Theories of Development, The Guilford Press, New York.
 9. UNDP 2001-04: Human Development Report, Oxford University Press.
 1. 10. World Bank 2001-05: World Development Report, Oxford University Press, New
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GEO – 404: Urban Geography

Credit = 4

F.M. = 100 [20 (Mid Term) + 80 (End Term Exam)]

Prerequisite Course / Knowledge (If any): Familiarity with concepts of urbanization.

Aim of the Course:

To acquaint students with the concepts of urbanization, its theories, processes and measurements; concepts of internal and international migration their types, streams, patterns, theories and measurement and implications of migration trends on urbanization.

Course Outcomes:

After completion of this course, the students will be able to:

- I. Gain comprehensive understanding of the processes and patterns of urbanization, including its historical evolution, causes, and consequences as well as patterns at national and global scale.
 - II. Acquire broad understanding of the migrants their national and international patterns, cause and consequences along with various theories associated with it
 - III. Explore the structure, organization and growth of urban systems in terms of associated contexts, types, concepts and theories.
 - IV. Evaluate the problems and prospects of urbanization and migration and discuss their various policy dynamics
-

Course Contents:

Unit 1:

Meaning, concept, scope; History of Urbanisation, Origin and evolution of towns (factors & stages of evolution) in India and World.

Unit 2:

Trends and pattern of urbanization in developed and developing countries, Urban economy, Types of urban morphology, Theories of urban morphological growth- Garrison Model, Colin Clark Model, Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory.

Unit 3:

Functional classification of cities: Quantitative and Qualitative methods; Land use with reference to Delhi, Mumbai, Chandigarh.

Unit 4:

Urban poverty, social & physical infrastructure, Urban environment, Problems of housing, slum, civic amenities, pollution.

Readings List

1. Fyfe N. R. and Kenny J. T., 2005: *The Urban Geography Reader*, Routledge.
 2. Graham S. and Marvin S., 2001: *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*, Routledge.
 3. Hall T., 2006: *Urban Geography*, Taylor and Francis.
 4. Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: *Urban Geography*, John Wiley.
 5. Knox P. L. and McCarthy L., 2005: *Urbanization: An Introduction to Urban Geography*, Pearson Prentice Hall New York.
 6. Knox P. L. and Pinch S., 2006: *Urban Social Geography: An Introduction*, Prentice-Hall.
 7. Pacione M., 2009: *Urban Geography: A Global Perspective*, Taylor and Francis.
 8. Sassen S., 2001: *The Global City: New York, London and Tokyo*, Princeton University Press.
 9. Ramachandran R (1989): *Urbanisation and Urban Systems of India*, Oxford University Press, New Delhi
 10. Ramachandran, R., 1992: *The Study of Urbanisation*, Oxford University Press, Delhi
 11. Singh, R.B. (Eds.) (2001) *Urban Sustainability in the Context of Global Change*, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
 12. Singh, R.B. (Ed.) (2015) *Urban development, challenges, risks and resilience in Asian megacities. Advances in Geographical and Environmental Studies*, Springer
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GEO – 405: Project Work Report and Viva-voce (Practical papers)

Credit = 4

F.M. = 50+50

Prerequisite Course / Knowledge (If any): Basic idea of research methods.

Aim of the Course:

is to provide essential research skills to the students in order to take cutting-edge research of any problem in real world (up to regional scale at this education stage).

Course Outcomes:

After completion of this course, the students will be able to:

- I. Design a research project for any topic of choice
 - II. Manage data and perform analyses under designed research
 - III. Write report on the outcome and explain the limitations and future prospect of the research carried out and Summarise and represent the research outcomes to audiences (OBE level to be achieved – Create).
 - IV. Communicate effectively about advanced Geographic concepts and research findings through written reports, oral presentations, and visual media.
-

The student will do research on a given topic of his/her choice. S/he will research on it for 16-20 under the supervision of prescribed guide and will provide a report on it at the end of semester.

Following is the general guidelines for report preparations:

→ The final report should cover the following structure:

- i. Cover page
- ii. Declaration
- iii. Certificate
- iv. Acknowledgement
- v. Abstract
- vi. Introduction to the problem with Aim and objectives of the study
- vii. Literature review (aim and objective of study could also come here if not in previous section)
- viii. Material and Methods
- ix. Results
- x. Discussion
- xi. Conclusions
- xii. References/Bibliography

→ Report should be typed with 1.5 Line Spacing, Arial/ Times New Roman/ Calibri Font, and 12 Font Size (Table and Figure captions 11 Font Size).

→ The list of references should be given at the end in the API or Harvard format.

→ Every table, figure, photograph should have a caption and source (if any).

→ The total word should not exceed 10,000 in number (maximum 50 including text, figures, tables, photographs, references and appendices).

The final report should be computer typed and should be approved by supervisor in due time. The two copies of report should be printed and, duly signed by the candidate and supervisor, submitted to the department along with its soft copy.

The student will also present the work during seminar to experts and fellow students. The ppt should contain all major sections of report including – problem statement, aim and objectives, and results. It shall not exceed 10 slides.
