KANNUR UNIVERSITY
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(Abstract)

FYUG B.Sc. Geoinformatics and Remote Sensing Programme in Affiliated Colleges under Kannur University - Scheme and Syllabi (First & Second Semester only) - Approved and Implemented- with effect from 2025 Admission- Orders issued

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ACADEMIC C SECTION

ACAD C/ACAD C1/14772/2024 Dated: 05.01.2026

Read:-1. U O No Acad/A3/10916/25 dated 21.06.2025

2. E-mail from Chairperson, Board of Studies Geography (Cd), dated 19.08.2025

3. E-mail from the Dean, Faculty of Science , dated 31.10.2025

4 Orders of the Vice Chancellor dtd 12.11.2025

5. The minutes of the Meeting of the Academic Council, held on 05.12.2025.

6.The orders of the Vice Chancellor, dtd 01/01/2026

ORDER

1. Provisional Affiliation was granted to five UG Programmes at the Government Model Degree College-RUSA, Thrissilery, Mananthavady, Wayanad , during the Academic Year 2025-26, including three new programmes B Sc Geo-Informatics and Remote Sensing, BSc Psychology and Neuro Sciences and B Com Finance with Forensic Accounting ,as per the paper read (1) above.
2. Meanwhile, the Chairperson, Board of Studies in Geography (Cd),vide paper read (2) above, submitted the Scheme and Syllabus of the I & II Semesters of the FYUG B Sc Geo-Informatics and Remote Sensing Programme to be implemented in affiliated colleges under Kannur University, w.e.f. 2025 admission.
3. Subsequently, the Scheme and Syllabus were forwarded to the Dean, Faculty of Science for verification and the Dean, Faculty of Science vide paper read (3), recommended to approve the same .
4. Considering the above , the Vice Chancellor ordered to place the Scheme and Syllabus (First & Second Semester only) of B.Sc. Geoinformatics and Remote Sensing Programme in affiliated colleges under Kannur University, w.e.f. 2025 admission, before the Standing Committee of the Academic Council for consideration.
5. The Standing Committee of the Academic Council, vide the paper read as 5 above, recommended to approve the Scheme and Syllabi (First & Second Semester only) of the FYUG B.Sc. Geoinformatics and Remote Sensing Programme in affiliated colleges under Kannur University, w.e.f. 2025 admission.
6. The Vice Chancellor, after considering the recommendations of the Standing Committee of the Academic Council and in exercise of the powers of the Academic Council, conferred under Section 11(1) Chapter III of Kannur University Act, 1996 and all other enabling provisions read together with, has approved the first and second semester Scheme and Syllabi of the FYUG BSc Geo Informatics and Remote Sensing Programme w.e.f.2025 admission, subject to reporting the same to the Academic Council.
7. The Scheme and Syllabi (First & Second Semester only) of B.Sc. Geoinformatics and Remote Sensing Programme in Affiliated Colleges under Kannur University - with effect from 2025 Admission is appended with this UO & uploaded in the University website.

Orders are issued accordingly.

Sd/-
Jisha K P
Assistant Registrar II
For REGISTRAR

To: The Principals of Affiliated Colleges

Copy To: 1. The Examination Branch (through PA to CE)
2. JR (Exam)/ AR VII (Exam)
3. The Chairperson, BoS in Geograpgy (UG)
4. PS to VC/PA to R
5. DR/AR (Academic)
6.IT Cell (For uploading in the website)
7. SF/DF/FC

Forwarded / By Order

SECTION OFFICER

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

KANNUR UNIVERSITY

Geoinformatics and Remote Sensing

SYLLABUS

Four Year Under Graduate Programme
FYUGP 2025

Graduate Attributes/Programme Outcomes (PO)

Graduate attribute	*Academic Level*	*Personal Level*	*Professional Level*
General	Critical thinking Scientific thinking Intellectual rigour Research-related skills Creativity and innovation	Cultural competency Gender sensitivity	Life-long learning Ethical awareness Team work
Work ready	Problem-Solving Knowledgeable information Digital Literacy	Multicultural Competence Social intelligence Communication skills	Leadership qualities Geo spatial modelling Cooperativeness Team readiness
Successful	Autonomous Innovative Insightful Reflective thinking	Analytical reasoning Self-directed learning	Synergetic action

Programme Specific Outcomes (PSO)

At the end of the B.Sc Geoinformatics and Remote Sensing program at Kannur University, a student would:

PSO1	Gain comprehensive knowledge of geospatial sciences by understanding the principles, processes, and mechanisms of the earth's bio-physical systems and human-environment interactions.
PSO2	Demonstrate critical thinking skills through the application of spatial concepts such as scale, space, place, and environment in analyzing real-world problems with the help of advances in geo-information technology.
PSO3	Acquire proficiency in geospatial technologies, including Remote Sensing, GIS, GPS, and spatial data science, to address challenges of the Anthropocene at global, regional, and local scales.
PSO4	Apply practical geoinformatics tools for spatial decision-making in areas such as disaster management, natural resource management, urban and regional planning, sustainability, and social justice.
PSO5	Develop competence in data acquisition, processing, interpretation, modeling, and visualization to represent complex geographic realities effectively.
PSO6	Develop proficiency in effective communication of conceptual and practical geographical knowledge in geoinformatics to both scientific and public audiences.
PSO7	Engage in interdisciplinary and multicultural contexts by integrating geoinformatics knowledge with natural and social sciences, forging partnerships with academia, industry, and local communities to generate innovative, enduring solutions for human and ecological well-being.

KANNUR UNIVERSITY

FOUR YEAR UNDER GRADUATE PROGRAMME

Course Structure: Geoinformatics and Remote Sensing

Semester – 1

Type	Course	Code	Credit	Level
DSC	Basics of Earth System and Geoinformatics (A-1)	KU1DSCGRS101	4	100
DSC	Introduction to Natural Hazards and Disasters (B-1)	KU1DSCGRS102	4	
DSC	Kerala – Physical Setting and Environment (C-1)	KU1DSCGRS103	4	
AEC	Language (AEC-1)		3	
AEC	Language (AEC-2)		3	
MDC	Western Ghat – Culture and Ecology (MDC-1)	KU1MDCGRS101	3	
Minimum Credit Requirement for Semester 1: 21				

Semester – 2

Type	Course	Code	Credit	Level
DSC	Population Dynamics and Application of GIS (A-2)	KU2DSCGRS101	4	100
DSC	Fundamentals of Cartography (A-3)	KU2DSCGRS102	4	
DSC	Disaster Management and Mitigation (B-2)	KU2DSCGRS103	4	
AEC	Language (AEC-3)		3	
AEC	Language (AEC-4)		3	
MDC	Introduction to Climate Change (MDC-2)	KU2MDCGRS101	3	
Minimum Credit Requirement for Semester 2: 21				

DISCIPLINE SPECIFIC MAJOR PATHWAY

KU1DSC GRS101: Basics of Earth System and Geoinformatics

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
I	DSC	100-199	KU1DSCGRS101	4	60

Learning Approach (Hours/Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	0	0	30	70	100	2

Course Description:

This course provides a crucial foundational understanding of the dynamic and interconnected nature of the Earth's systems. It examines the complex interactions among the atmosphere, lithosphere, hydrosphere, and biosphere, enabling a holistic view of natural processes. Complementing this, Geoinformatics provides the technological framework for collecting, analysing, and interpreting spatial data related to these processes. This course enables the student to build scientific understanding, apply modern tools, solve environmental problems, and make informed decisions for a sustainable future. As environmental challenges and climate-related issues become increasingly frequent, understanding the basics of Earth systems combined with geospatial technologies is critical for informed decision-making and scientific advancement.

Course Pre requisite : NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Understand the fundamental components and processes of the Earth system, and their interrelationships.	U
2	Develop knowledge on the significance of Earth system science in addressing environmental and climatic issues.	A
3	Apply the basic principles of geoinformatics to collect, visualize, and interpret geospatial data.	A

RememberI, Understand(U), Apply(A), Analyse(An), EvaluateI, Create (C)

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2				✓			
CO 3				✓			

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Earth and its Lithosphere**	15
	1	Earth as a system and its components; Origin and evolution of earth as a planet	
	2	Earth's interior and Isostasy	
	3	Origin of Continents and Oceans: Continental Drift and Plate Tectonics	
	4	Landforms- plains, plateaus and mountains- types	
2		**Atmosphere**	15
	1	Composition and Structure; Weather and Climate- Elements and Controls	
	2	Energy: Insolation and Temperature	
	3	Pressure Systems and wind circulation	
	4	Precipitation	
3		**Hydrosphere**	15
	1	Hydrological cycle	
	2	Ocean Salinity and Temperature	
	3	Ocean Water Movements: Waves, Tides and Currents	
	4	Oceanic deposits	
		Earth Observation System	
	1	History of Earth Observation; Various Platforms- land based, air-based	

4		and space born platforms	10
	2	Types of Satellites; Landsat Satellite and India's Satellite Programme	
	3	Satellite sensors: Orbits and Platforms for Earth observation, sensors and scanners, active and passive sensors. Electromagnetic spectrum	
	4	EMR, Spectral signatures, Concept of resolution and its types	

5	**Teacher Specific Module**	
	Directions	
	Project work to conceptualize the interactions in various spheres of the earth system.	5

Essential Readings:

1. The Earth System, Kump, L.R., Kasting, J.F., & Crane, R.G., Pearson.
2. The Blue Planet: An Introduction to Earth System Science, Skinner, B.J., Murck, B.W. Wiley.
3. Earth as an Evolving Planetary System, Condie, K. C., Academic Press.
4. Environmental Geology. Montgomery, C. W., McGraw Hill.
5. Geodynamics. Turcotte, D. & Schubert, G., Cambridge University Press.
6. Aerial Photography and Image Interpretation, Paine, D.P. & Kiser, J.D., John Wiley & Sons
7. Remote Sensing and Image Interpretation, Lillesand, T.M., Kiefer, R.W., & Chipman, J.W., John Wiley & Sons.
8. Global Geomorphology. Summerfield, M. A., Longman Scientific & Technical.
9. Fundamentals of Geomorphology, Huggett, R. J., Routledge
10. Thornbury, W. D. Principles of Geomorphology, Wiley Eastern.
11. Geomorphology, Savindra Singh, Pravalika Publications
12. Atmosphere, Weather and Climate, Barry, R. G., & Chorley, R. J., Routledge.
13. General Climatology, Critchfield, H. J., Prentice-Hall.
14. Climatology: An Atmospheric Science, Oliver, J. E., & Hidore, J. J., Pearson Education.
15. Physical Geography: Science and Systems of the Human Environment, Strahler, A. H., & Strahler, A. N, Wiley.
16. Climatology. Savindra Singh, Prayag Pustak Bhawan, Allahabad.
17. Fundamentals of Geomorphology, Huggett, R. J. Routledge.
18. Introduction to Geomorphology. Kale, V. S., & Gupta, A, Orient Longman.
19. Regional Oceanography: An Introduction, Tomczak, M., & Godfrey, J. S., Daya Publishing House
20. Climate Change 2021: The Physical Science Basis. IPCC (Intergovernmental Panel on Climate Change) Cambridge University Press.

Suggested Readings:

1. Introduction to Modern Climate Change, Dessler, A. E. Cambridge University Press.
2. The Earth System, Kump, L. R., Kasting, J. F., & Crane, R. G, Pearson Education.
3. Climate Change and India: Vulnerability Assessment and Adaptation, Shukla, P. R., & Ramana, P. V, Universities Press.
4. Principles of Geographical Information Systems, Burrough, P. A., & McDonnell, R. A, Oxford University Press.
5. Geographic Information Science and Systems, Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W, Wiley.
6. Remote Sensing of the Environment: An Earth Resource Perspective, Jensen, J. R., Pearson Prentice Hall.
7. Global Positioning System: Principles and Applications, Gopi, S, Tata McGraw-Hill.
8. Geoinformatics: Fundamentals and Applications, Nag, P, Concept Publishing, New Delhi.
9. Fundamentals of geographic information systems, Michael N. DeMers, Teri Publication
10. Introduction to Geographic Information Systems, Kang – Tsung Chang, Mc Graw hill Education.

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper - 1	10
b)	Test Paper - 2	
c)	Practical File	
d)	Seminar/Assignment	10
e)	Book/Article Review	
f)	Viva-Voce	10
g)	Field Report	
Total		**100**

KU1DSCGRS102 INTRODUCTION TO NATURAL HAZARDS AND DISASTERS

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
1	DSC	100-199	KU1DSCGRS102	4	60

Learning Approach (Hours/Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	0	1	30	70	100	2

Course Description:

This course introduces the scientific basis, spatial dimensions, and socio-economic implications of natural hazards and disasters. It develops an understanding of the nature, causes, distribution, and impacts of major natural hazards and builds a conceptual foundation for disaster studies.

Course Prerequisite : NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	To familiarize students with the concepts of hazards, disasters, risks, and vulnerability.	R
2	To understand the natural processes behind major hazards.	U
3	To analyze the geographical distribution of natural hazards at global, national, and regional scales.	A
4	To build awareness of disaster-prone areas of India.	E

Remember(R), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create (C)

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1		✓					
CO 2	✓						
CO 3	✓						
CO 4			✓				

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Conceptual Basis**	10
	1	Disasters, Hazards, Risk, Vulnerability- Definition and Classification	
	2	History of Disaster Management	
	3	Classification of hazards: natural, anthropogenic, and hybrid	
	4	Disaster–development interface	
2		**Geological Hazards**	15
	1	Earthquake- causes, effects, distribution (world and India)	
	2	Volcanoes- types, distribution, impacts	
	3	Tsunami- causes, effects	
	4	Landslides: causes, types, case studies from India	
		Hydro-Meteorological Hazards	
3	1	Cyclones: processes, spatial pattern, effects	15
	2	Floods: causes, types, case studies	
	3	Droughts: causes, types, case studies	
	4	Cloudbursts, hailstorms and lightning	
4		**Disaster Profile of India and Kerala**	15
	1	Disaster-prone regions of India	
	2	Measuring vulnerability to disasters	
	3	Case study of Kerala Flood	
	4	Landslides susceptibility in Kerala	

5	**Teacher Specific Module**	
	Directions	
	Field-based case study: Conduct a field survey in a locality recently affected by any of the hazards covered in the syllabus.	5

Essential Readings:

1. Bryant , E.(2004). Natural Hazards. Cambridge University Press, India
2. Wisner, B., Blaikie P et al. (2004). At Risk: Natural Hazards, People's Vulnerability and Disasters. Routledge Taylor and Francis Group , NY.
3. Coppola, D. (2006). Introduction to international disaster management. Elsevier.
4. Savindra, S. and Jeetendra, S. (2013): Disaster Management. Allahabad, India: Pravalika Publications.
5. Smith, Keith (2013). Environmental Hazards: Assessing risk and reducing disasters
6. Government of India. (2011). Disaster Management in India. Delhi, India: Ministry of Home Affairs.
7. Government of India. (2008). Vulnerability Atlas of India. New Delhi, India: Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India

Suggested Readings:

1. Modh, S. (2010). Managing Natural Disaster: Hydrological, Marine and Geological Disasters. Delhi, India: Macmillan.
2. Ramkumar, M. (2009). Geological Hazards: Causes, Consequences and Methods of Containment. New Delhi, India: New India Publishing Agency.
3. Stoltman, J.P., et al. (2004). International Perspectives on Natural Disasters. Dordrecht, the Netherlands: Kluwer Academic Publications.

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper - 1	10
b)	Test Paper - 2	
c)	Assignment	10
d)	Seminar	
e)	Book/Article Review	
f)	Viva-Voce	
g)	Field Report	10
Total		**100**

KU1DSCGRS103 KERALA PHYSICAL SETTING AND ENVIRONMENT

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
1	DSC	100-199	KU1DSCGRS103	4	60

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE(Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	0	0	30	70	100	2

Course Description:

This course provides an introductory overview of Kerala's physical and environmental settings, covering its topography, climate, hydrology, and environment. By studying the unique physiography, soil types, and topographic features, students will gain insights into the underlying causes of natural hazard risks related to the region's terrain. The sections on climatic settings will provide a broader understanding of the state's climate and seasonal patterns, variations, the development of agro-climatic zones, and the risks associated with climate change. Additionally, students will explore the potential of water resources, along with the challenges and management issues, helping them to identify possible solutions. The environmental sections will enhance students' knowledge, enabling them to tackle various environmental issues facing the state.

Course: Pre requisite NIL

Course Outcomes:

CO No	Expected Outcome	Learning Domains
1	Understand the topographical Settings of Kerala	U
2	Analytically learn the climate and the issues related to climate change in Kerala	An
3	Evaluation of water resources potentials and challenges in Kerala	E
4	Analytically learn the environmental settings, challenges, and strategies to overcome	An

****Remember(R), Understand (U), Apply(A), Analyse(An), Evaluate(E), Create(C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2		✓					
CO 3			✓				
CO 4						✓	

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Physical Settings**	15
	1	Kerala: Location, boundaries, extent, and uniqueness	
	2	Physiographic divisions: Highland - Midland - Lowland and their characteristics	
	3	Major Soil Types: Distribution - characteristics	
	4	Topographic Hazards: Landslides - Soil Piping - Soil & Coastal Erosion	
2		**Climatic Settings**	15
	1	Climatic conditions - Major Seasons and their characteristics - Features and effects of monsoon	
	2	Agro-Climatic Zones of Kerala and their characteristics	
	3	Climate change and its impacts in Kerala	
	4	Strategies to address Climate change	
		Hydrological Settings	
3	1	Rivers – characteristics, potentials, and challenges	15
	2	Lakes & Backwaters – Ecological importance and management	
	3	Groundwater – potentials – challenges & management strategies	
	4	Water Resource Management in Kerala	
4		**Environmental Settings**	10
	1	Forest: Types - distribution - characteristics	
	2	Wildlife: Wildlife Sanctuaries - National Parks-Community Reserves, Biosphere Reserves	
	3	Major Environmental Challenges: deforestation – pollution – land degradation	
	4	Ecological Restoration Initiatives in Kerala – Haritha Kerala Mission	
	Teacher Specific Module		
	Directions		

5	Practical exercise: Visit an environmentally degraded area in your locality and prepare a field report. Each student will submit the field report for evaluation	5

Essential Readings:

1. Srikumar Chattopadhyay, 2021: Geography of Kerala. Concept
2. Prasanna Kumar, Geomorphology of Kerala
3. Srikumar Chattopadhyay, and Richard W. Franke, 2006: Striving for Sustainability, Environmental Stress and Democratic Initiatives in Kerala. Concept Publishing Company, New Delhi.
4. Aiden Feynman, 2025: Kerala Wonders . Publifye AS.
5. Government of Kerala, 2022: State Action Plan on Climate Change 2023-2030, Directorate of Environment and Climate Change, Kerala

Suggested Readings:

1. Government of Kerala (1986) Kerala State Gazetteer, Volume 1
2. Government of Kerala: Kerala Forest Statistics, Kerala Forest Department
3. Government of Kerala, 2007: State of the Environment Report (SoE) 2007, Kerala State Council for Science, Technology & Environment
4. Reports published by Kerala State Disaster Management Authority (KSDMA).

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper - 1	10
b)	Test Paper - 2	
c)	Assignment	10
d)	Seminar	
e)	Book/Article Review	
f)	Viva-Voce	
g)	Field Report	10
Total		**100**

KU2DSCGRS101 Population Dynamics and Application of GIS

Semester	Course Type	Course Level	Course Code		Credits	Total Hours
II	DSC	100-199	KU2DSCGRS101		4	60
Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE(Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	0	0	30	70	100	2

Course Description:

This course introduces students to the scope, concepts, and methods of Population Geography. It examines population distribution, structure, dynamics, and theories while situating them in both historical and contemporary contexts. Special attention is given to India's demographic data sources and to the use of GIS in population studies.

Course Pre-requisite: Nil

Course Outcomes:

CO No	Expected Outcome	Learning Domains
1	The students would get an understanding of the distribution and trends of population growth in the developed and less developed countries, along with population theories.	U
2	The students would get an understanding of the dynamics of the population.	An
3	An Understanding of the implications of population composition in different regions of the world.	E
4	Learn the basic mapping techniques to deal with Distribution, Density and Concentration of Population data.	An

****Remember(R), Understand (U), Apply(A), Analyse(An), Evaluate(E), Create(C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2		✓					
CO 3			✓				
CO 4						✓	

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Introduction**	10
	1	Nature and Scope of Population Geography	
	2	History of Population Geography	
	3	Recent Trends in Population Geography	
	4	Sources of Population Data with special References to India: Census, Vital Statistics and Sample Survey	
2		**Population Dynamics**	15
	1	World population: growth and spatial pattern	
	2	Attributes of population- age-sex composition	
	3	Determinants of fertility and mortality	
	4	Migration – Types and Determinants	
		Population Theories	
3	1	Malthusian Theory	15
	2	Concept of Optimal Population	
	3	Demographic Transition Theory	
	4	Neo-Malthusianism	
4		**Contemporary Population Issues and Applications of GIS in Population Geography**	15
	1	Demographic Dividends- Opportunities and Challenges	
	2	Ageing of Population	
	3	Global Refugee Crisis	
	4	Applications of GIS in Population Studies	
5		**Teacher Specific Module**	
		Directions	
		Discussion on Spatial Analysis of Population Attributes. Demonstrate thematic layering for population data using GIS Software. Students create thematic maps from India Census data.	5

Essential Readings:

6. Bhende A. and Kanitkar T. (2019). Principles of Population Studies. Himalaya Publishing House, New Delhi, India.
7. Chandna, R.C. (2017). Geography of Population. Kalyani Publishers, Ludhiana, India.
8. Clarks, John, I. (1972). Population Geography. Pergamon Press, New York.

9. Hassan M.I. (2020). Population Geography, A Systematic Exposition. Routledge Taylor and Francis Group, New York.
10. Lutz, W., Warren, C. S. and Scherbov, S. (2004). The End of the World Population Growth in the 21st Century. UK: Earthscan.

Suggested Readings:

5. Majumdar, P.K. (2010). Fundamentals of Demography. Rawat publications, Jaipur.
6. Newbold, K. B. (2017). Population Geography: Tools and Issues. Rowman and Littlefield Publishers,NY, USA.
7. Week, John R. (2020) Population: An Introduction to Concepts and Issues. Cengage Learning, Boston.

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper - 1	10
b)	Test Paper - 2	
c)	Assignment	10
d)	Seminar	10
e)	Book/Article Review	
f)	Viva-Voce	
g)	Field Report	
Total		**100**

KU2DSCGRS102 Fundamentals of Cartography

Semester	Course Type	Course Level	Course Code		Credits	Total Hours
II	DSC	100-199	KU2DSCGRS102		4	60
Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE(Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	0	0	30	70	100	2

Course Description:

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

Course Pre-requisite: Nil

Course Outcomes:

CO No	Expected Outcome	Learning Domains
1	Understand the types of maps and importance of maps	U
2	Learn about the history of map making	R
3	Understand the different methods to represent earth-map relations	A
4	Understand the methods of representation of geographical data	A

****Remember(R), Understand (U), Apply(A), Analyse(An), Evaluate(E), Create(C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2		✓					
CO 3			✓				
CO 4						✓	

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Nature and Scope of cartography**	13
	1	Definition and Approaches in cartography	
	2	History of Cartography: Ancient Period	
	3	History of Cartography: Medieval Period	
	4	Modern Cartography- Recent Trends and Techniques	
2		**Maps**	12
	1	Definition of a Map	
	2	Essentials of a Good Map	
	3	Classification of maps	
	4	Importance of Maps	
		Earth-Map relations	
3	1	Geographical Co-ordinates and Direction	15
	2	Scale	
	3	Map Projections	
	4	Surveying and Remote Sensing Techniques	
4		**Representation of features on a map**	15
	1	Methods of mapping and representation of terrain on a map	
	2	Mapping the weather and climatic data	
	3	Thematic and complex mapping	
	4	Map reproduction	
5		**Teacher Specific Module**	
		Directions	
		Drawing exercises • Scales- Plain, Comparative and Diagonal • Map Projection- Polar Zenithal Stereographic, Conical with One Standard Parallel, Simple Cylindrical Projection	5

Essential Readings:

1. Ashish Sarkar : Practical Geography-A systematic approach, Orient Blackswan Pvt. Ltd

2. Bangulia A.M : Practical Geography, Anmol Publishers Pvt. Ltd
3. Gopal Singh : Map work and Practical Geography, Vikas Publishing Pvt. Ltd
4. Monkhouse and Wilkinson : Maps and Diagrams, Metheun and Company
5. Saha P and Basu P : A Practical Geography, Books and Allied Ltd. Kolkata
6. Singh R L and Rana P B Singh, Elements of Practical Geography, Kalyani Publishers
7. Siya Ram Sharma : Practical Geography, Murali Lal & Sons Pvt. Ltd.
8. Zulfequar Ahmad Khan M D Text book of Practical Geography, Concept Publishing Company

Suggested Readings:

1. Gupta K K and Tyagi V C : Working with Map, Survey of India, DST, New Delhi
2. Mishra R P and Ramesh A, : Fundamentals of Cartography, Concept Pub. New Delhi
3. Robinson A H, Elements of Cartography, John Wiley and Sons, New York
4. Sarkar A : Practical Geography: A systematic Approach, Orient Black Swan Pvt. Ltd, New Delhi

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper - 1	10
b)	Test Paper - 2	
c)	Assignment	10
d)	Seminar	
e)	Book/Article Review	
f)	Viva-Voce	10
g)	Field Report	
Total		**100**

KU2DSCGRS103 Disaster Management and Mitigation

Semester	Course Type	Course Level	Course Code		Credits	Total Hours
II	DSC	100-199	KU2DSCGRS103		4	60
Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE(Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
4	0	0	30	70	100	2

Course Description:

This course focuses on approaches, strategies, and practices of disaster management and mitigation. It emphasizes preparedness, response, and recovery phases, as well as the institutional framework and community participation in disaster risk reduction.

Course Prerequisite: NIL

Course Outcomes:

CO No	Expected Outcome	Learning Domains
1	To provide knowledge of disaster management principles, policies, and practices.	U
2	To analyze the strategies of disaster preparedness, mitigation, and response.	An
3	To understand institutional mechanisms at global, national, and local levels.	E
4	To encourage community-based disaster risk reduction approaches.	C

****Remember(R), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						

CO 2		✓	✓				
CO 3		✓			✓		
CO 4			✓				✓

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Fundamentals of Disaster Management**	15
	1	Disaster management cycle: mitigation, preparedness, response, recovery	
	2	Approaches: structural and non-structural measures	
	3	Disaster risk reduction (DRR) framework	
	4	Role of local community in DRR and community resilience	
2		**Mitigation, Preparedness and Responses**	15
	1	Early warning systems	
	2	Land use planning and building codes	
	3	Emergency response, relief, and rehabilitation	
	4	Post-disaster reconstruction and development	
3		**Strategies for Disaster Risk Reduction**	10
	1	Sendai Framework for Disaster Risk Reduction 2015-2030	
	2	Disaster Management Act 2005	
	3	NDMA and Prime Minister's Ten Point Agenda on DRR	
	4	Kerala State Disaster Management Plan	
4		**Case Studies and Models of Disaster Mitigation**	
	1	Tsunami Ready Village- Odisha	12
	2	Heat Action Plan- Ahmedabad	
	3	Rebuild Kerala Development Programme	
	4	Role of GIS and Remote sensing in Disaster Mitigation	
		Teacher Specific Module	
		Directions	

5	Field-based case study: Conduct a field survey to a locality recently affected by any of the hazards covered in the syllabus. Map disaster risk and local communities mitigation measures.	8

Essential Readings:

1. Coppola, D. P. (2006). Introduction to international disaster management. Elsevier.
2. Fuchs, S., & Thaler, T. (Eds.). (2018). Vulnerability and Resilience to Natural Hazards. Cambridge University Press.
3. Kapur ,Anu(2010). Vulnerable India: A Geographical Study Of Disasters. Sage Publications.
4. Singh, J. (2007). Disaster Management: Future Challenges and Opportunities. IK International Pvt. Ltd, New Delhi.
5. Smith, Keith (2013). Environmental Hazards: Assessing risk and reducing disasters
6. Wisner, B., Blaikie P et al. (2004). At Risk: Natural Hazards, People's Vulnerability and Disasters. Routledge Taylor and Francis Group.

Suggested Readings:

1. Government of India. (2011). Disaster Management in India. Delhi, India: Ministry of Home Affairs.
1. Government of India. (2008). Vulnerability Atlas of India. New Delhi, India: Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India
2. Modh, S. (2010). Managing Natural Disaster: Hydrological, Marine and Geological Disasters. Delhi, India: Macmillan.
3. Ramkumar, M. (2009). Geological Hazards: Causes, Consequences and Methods of Containment. New Delhi, India: New India Publishing Agency.
4. Stoltman, J.P., et al. (2004). International Perspectives on Natural Disasters. Dordrecht, the Netherlands: Kluwer Academic Publications.

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**70**
Continuous Evaluation		**30**
a)	Test Paper - 1	10
b)	Test Paper - 2	
c)	Assignment	10
d)	Seminar	
e)	Book/Article Review	
f)	Viva-Voce	
g)	Field Report	10
Total		**100**

GENERAL FOUNDATION COURSES

MULTI DISCIPLINARY COURSES (MDC)

KU1MDCGRS101 Western Ghat– Culture and Ecology

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
I	MDC	100-199	KU1MDCGRS101	3	45

Learning Approach (Hours/Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	0	0	25	50	75	1 Hr 30 mnts

Course Description:
The "Western Ghats: Ecology and Culture" course offers a unique exploration of one of India's most biodiverse and culturally rich regions. Situated along the western coast of India, the Western Ghats are renowned for their stunning landscapes, rich biodiversity, and vibrant cultural heritage. This course delves into the intricate connections between the ecology and culture of the Western Ghats, offering students a holistic understanding of this remarkable biodiversity hotspot.
Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Understanding the Biodiversity of the Western Ghats.	U
2	Analyzing Ecological Systems and Conservation Efforts.	An
3	Exploring Cultural and Historical Significance.	An
4	Investigating Human Impact and Sustainable Practices	E

****Remember(R), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create (C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7

CO 1	✓	✓					
CO 2		✓				✓	
CO 3		✓					✓
CO 4			✓			✓	

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Physical Settings**	15
	1	Western Ghats – location, physiography and origin	
	2	Natural vegetation and biodiversity, National parks and wildlife sanctuaries.	
	3	Western Ghats as a water tower - drainage system, lakes, waterfalls	
	4	Significance of Western Ghats in regional climate	
2		**People and Economy**	10
	1	Demography – distribution, density and growth of population, migration streams.	
	2	Indigenous communities, life style and culture, displacement and marginalization	
	3	Economy – Pattern and prospects of agriculture, tourism, mining and power projects	
	4	Urbanization and transportation – development and related issues	
3		**Development and Sustainability**	15
	1	Development and sustainability – Debates on human nature interaction, human and wildlife conflicts	
	2	Resource management and utilization	
	3	Conservation strategies- Expert Committees on Western Ghats.	
	4	Community based conservation – Laws and legislation	
4		**Teacher Specific Module**	
		Directions	
		Conduct a field survey in one of the vulnerable localities in the Western Ghat to map the biological diversity and human environment interaction in the locality.	5

Essential Readings:

1. The Ministry of Environment and Forest, (MoEF) Government of India (2010) The report of Western Ghats ecology expert panel. http://www.moef.nic.in/downloads/public-information/wg-23052012.pdf.
2. Pascal, J. P. (1940). Bioclimate maps of the Western Ghats (Vol. 829). French Institute of Pondichery: Pondichery. Tropical Conservation Science| ISSN.
3. Kadur, S., & Bawa, K. S. (2005). Sahyadris, India's Western Ghats, a Vanishing Heritage. Atree.
4. Johnsingh, A. J. T. (2015). Walking the Western Ghats. Bombay Natural History Society and Oxford University Press.
5. Kapadia, H. (2004). Trek the Sahyadris. Indus Publishing.
6. Sundararaju, V. (2020). Ecological Harmony. Notion Press.
7. Kasthurirangan K (2013): "Report of the High-Level Working Group on Western Ghats", Ministry of Environment and Forest, Government of India.
8. Preetha N, Oommen V Ommen (2016): "Public Participation in Land-Use Planning of Western Ghats", Kerala land use board, Thiruananthapuram.

Suggested Readings:

1. Viju, B. (2019). Flood and fury: ecological devastation in the Western Ghats. Penguin Random House India Private Limited.
2. D'Souza, R. V. (2020). India's Emerging Ecological Public and the Western Ghats: The Gadgil Committee Report and the Responses of Contiguous States. In Universities and Sustainable Communities: Meeting the Goals of the Agenda 2030 (pp. 417-430). Springer International Publishing.
3. Chattopadhyay, S. 2017. Geomorphological Field Guide Book on Laterites and Backwaters of Kerala (Edited by AmalKar). Indian Institute of Geomorphologists, Allahabad.
4. Chandran, M. S. (1997). On the ecological history of the Western Ghats. Current science, 146-155.
5. Gadgil, M. (1996). Western Ghats: a lifescape. Journal of the Indian Institute of Science, 76(3), 495-504.

Assessment Rubrics:

Evaluation Type		**Marks**
End Semester Evaluation		**50**
Continuous Evaluation		**25**
a)	Test Paper-1	10
b)	Test Paper-2	
c)	Assignment	
d)	Seminar	
e)	Book/Article Review	
f)	Viva-Voce	
g)	Field Report	15
Total		**75**

KU2MDCGRS101 Introduction to Climate Change

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
II	MDC	100-199	KU2MDCGRS101	3	45

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE(Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	0	0	25	50	75	1 Hr 30 mnts

Course Description:

This course offers an in-depth examination of climate change from both scientific and societal perspectives. Students will explore the fundamental scientific principles underlying climate change, including the greenhouse effect, carbon cycling, and the impacts of human activities on the climate system. The course will delve into the complexities of climate change science, addressing topics such as climate modeling, paleo climate evidence, and the role of feedback mechanisms. From a societal standpoint, the course will analyze the social, economic, and political dimensions of climate change. The course will also explore the intersection of climate change with issues of environmental justice, equity, and human rights and students will be encouraged to think critically and creatively about potential solutions to the climate crisis.

Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Understand the scientific basis of modern climate change.	U
2	To analyze the social, economic, and political dimensions of climate change.	An
3	Evaluate mitigation and adaptation strategies for addressing climate change at various scales.	E

****Remember(R), Understand (U), Apply(A), Analyse(An), Evaluate(E), Create(C)***

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	✓						
CO 2		✓					

CO 3	✓		✓				

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**Climate Change**	15
	1	Earth's Climate System; Understanding Climate Change- past and present	
	2	Green House Gases and Global Warming; Feedback mechanism	
	3	Causes of Climate Change	
	4	Global Climatic Assessment- IPCC	
2		**Vulnerability and Impact**	15
	1	Climate Change Vulnerability- Theoretical Basis	
	2	Physical, Social and Economic Vulnerability- with case studies	
	3	Climate Change Impact on Natural System (sea level rise, melting glacier, extreme weather events, biodiversity)	
	4	Climate Change Impact on Human System (Agriculture, Water Resources and Human Health)	
3		**Adaptation and Mitigation**	10
	1	Adaptation- Concepts, Need and Strategies (Incremental and Transformational); Risks of maladaptation	
	2	Mitigation- Concepts, Strategies and Pathways	
	3	Global Initiatives for adaptation and mitigation	
	4	South Asia- Climate vulnerability and adaptation and mitigation measures	
4		**Teacher Specific Module**	
		Directions	
		Discussion/Seminar on Climate Change Policy Framework with special reference to: Global Initiatives: UNFCCC and COPs Kyoto Protocol Paris Agreement and Nationally Determined Contributions (NDCs) India: National Action Plan on Climatic Change	**5**

Essential Readings:

1. Dessler,A.E.,and Parson,E.A.(2009):The Science and Politics of Global Climate Change – A Guide to the Debate, Cambridge University Press, Cambridge, 190pp.
2. IPCC 5th Assessment report on Climate Change :http://www.ipcc.ch/report/ar5/11.
3. IPCC 6th Assessment report on Climate Change :https://www.ipcc.ch/assessment-report/ar6/
4. Khan,M.Z.A.,and Gangawala,S.(2011): Global Climate Change– Causes and Consequences, Rawat Publications, Jaipur, 298pp
5. Ruddiman,W.F.(2008):Earth's Climate–Pasta nd Future,W.H.Freeman,NewYork, 388pp.
6. Adger,W.N.2006.Vulnerability,Global Environmental Change, 16(3),268-281
7. Barros, Vicente R. (eds.), 2014. Climate Change 2014. Impacts, Adaptation and Vulnerability: Global and Sectoral Aspects. Fifth Assessment Report of the Intergovernmental Panel on Climate Change (PartB;Regional Aspect),Cambridge University Press, New York.
8. Barry,R.G.and Chorley, R.J.2003.Atmosphere,Weather and Climate,Routledge, London
9. Brewster,E.N.2010. Climate Change Adaptation: Steps for a Vulnerable Planet, New York, Nova Science
10. Critchfield,H.J. 1983.General Climatology. Prentice Hall India Ltd(2010 Reprint)
11. IPCC, 2013. Climate Change 2013: The Physical Science Basis, the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)].Cambridge University Press, Cambridge,United Kingdom and New York, NY, USA,

Suggested Readings:

1. OECD. (2008). Climate Change Mitigation: What do we do? (Organization and Economic Co-operation and Development).
2. UNEP. (2007). Global Environment Outlook: GEO4: Environment for Development. Nairobi, Kenya: United Nations Environment Programme.
3. Reddy M.A, Vijay Lakshmi T "Climate Change:Vulnerability and Adaptation"
4. Trevor. M. Letcher(edited) 2009: Climate Change: Observed impacts on Planet Earth
5. Narain.S 2021: Climate Change Science and Politics. Centre for Science and Environment
6. Sarah L. Burch and Sara E. Harris: Understanding Climate Change: Science, Policy and Practice
7. Sen, Roy, S., and Singh, R.B., (2002). Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions. Delhi, India: Oxford & IBH Pub.
8. Pachori RK 2015:Dealing with Climate Change: Setting a Global agenda for Mitigation and Adaptation

Assessment Rubrics:

Evaluation Type		Marks
End Semester Evaluation		**50**
Continuous Evaluation		**25**
a)	Test Paper-1	10

b)	Test Paper-2	
c)	Assignment	
d)	Seminar	15
e)	Book/Article Review	
f)	Viva-Voce	
g)	Field Report	
Total		**75**