Parvatibai Chowgule College of Arts & Science
(Autonomous)
Margao – Goa

MINUTES OF MEETING OF THE BOARD OF STUDIES IN GEOGRAPHY HELD ON 15TH JANUARY 2022 AT 10.00AM.

Vide Chowgule College notice (F.133C/1329 dated 04/01/2022) a meeting of this BoS was convened on 15/01/2022 at 10.00 am in an online mode. Since the number of members present represented the Quorum, the BoS began its proceedings.

Minutes are presented in the format.

Members present:

1. Prof. Nandkumar Sawant - Chairman
2. Dr. Surendra Thakur Desai – Academic Council Nominee (online)
3. Dr. Abhay Patil – Academic Council Nominee (online)
4. Dr. F. M. Nadaf - Expert nominated by Vice-Chancellor of Goa University (online)
5. Ms. Merel D'silva – Alumnus (online)
6. Dr. Anagha C. Bicholcar– Member
7. Dr. Sanjay D. Gaikwad – Member
8. Mr. A. Ashish – Member Secretary
9. Dr. Anil Yedage – Member
10. Mr. Deepak Kumbhar – Member
11. Ms. Deeksha Naik Talaulikar - Member
12. Mrs. Aisha Shaik – Member
13. Ms. Audrey D'Costa – Member

Members Absent with Intimation

1. Mr. Kishor Ghatage – Industry Representative
2. Mr. Venkatesh Prabhu Gaonkar – Member

Proceedings

The Chairperson welcomed and introduced the members of the Board of Studies (BoS). Chairperson explained the agenda for the meeting and Board transacted the following business:

Agenda Items:

1. Revision of Syllabus of M.A. Geography Semester I.
2. CLO's of MA in Geography Semester I
3. A.O.B.

PART A: Resolutions

4. Revision of the syllabus of M.A. Geography Semester I was presented and discussed. The BoS unanimously approved the syllabus.

Table No. 1

Sr. No.	CORE COURSE	Nature of Course	PG Level at which offered
1	PGM-GEG.C1: Advanced Geomorphology	Compulsory	M.A. (Geography) Semester I
2	PGM-GEG.C2: Advanced Climatology	Compulsory	M.A. (Geography) Semester I
3	PGM-GEG.E1: Basics of Costal Geomorphology	Elective	M.A. (Geography) Semester I
4	PGM-GEG.E3: Techniques of Academic Report Writing	Elective	M.A. (Geography) Semester I
5	PGM-GEG.E11(New): Watershed Management	Elective	M.A. (Geography) Semester I

i. Any Other Business

PART B: Resolutions/ recommendations of BoS that require consideration / approval of Academic Council:

1. The syllabus of M.A. Geography have been approved by BoS as presented in **Annexure 1**
2. Course Learning Outcomes (CLO's) of MA in Geography Semester I
3. The syllabus of M.A. Geography as presented in the Table no. 1.

Table No. 1

Sr. No.	CORE COURSE	Nature of Course	PG Level at which offered
1	PGM-GEG.C1: Advanced Geomorphology	Compulsory	M.A. (Geography) Semester I
2	PGM-GEG.C2: Advanced Climatology	Compulsory	M.A. (Geography) Semester I
3	PGM-GEG.E1: Basics of Costal Geomorphology	Elective	M.A. (Geography) Semester I
4	PGM-GEG.E3: Techniques of Academic Report Writing	Elective	M.A. (Geography) Semester I

5	PGM-GEG.E11(New): Watershed Management	Elective	M.A. (Geography) Semester I

The foregoing minutes of the meeting were read out by the Chairperson at the meeting itself and they were unanimously approved by all the members present

Date:

Signature of the Chairman
Prof. Nandkumar Sawant

Signature Member Secretary
Ms. Deeksha Naik Talaulikar

1. Prof. Nandkumar Sawant - Chairman
2. Dr. Surendra Thakur Desai – Academic Council Nominee (online)
3. Dr. Abhay Patil – Academic Council Nominee (online)
4. Dr. F. M. Nadaf - Expert nominated by Vice-Chancellor of Goa University (online)
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6. Dr. Anagha C. Bicholcar– Member
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8. Mr. A. Ashish – Member Secretary
9. Dr. Anil Yedage – Member
10. Mr. Deepak Kumbhar – Member
11. Ms. Deeksha Naik Talaulikar - Member
12. Mrs. Aisha Shaik – Member
13. Ms. Audrey D'Costa – Member

PART C: The remarks of the Dean of the Faculty:-

a. The minutes are in order
b. The minutes may be placed before the Academic Council with remark, if any.
c. Important points of the minutes which need clear policy decision of the Academic Council to be recorded.

Date: 19th Jan 2022

Signature of the Dean: _____

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Programme Learning Outcome (PLO) and Course Learning Outcome (CLO)

Name of the Department:MASTER OF ARTS IN GEOGRAPHY

Programme Outcomes (PLO)	Short Title of the PLOs	Description of the Programme Learning Outcomes Graduates will be able to :
PLO-1	Problem Analysis and Solutions	Think critically, identify, analyze problems/ situations and further attempt to design/ develop solutions that meet the specified goals.
PLO-2	Use of Technology	Apply appropriate IT tools efficiently in their daily activities of communication and academics.
PLO-3	Environment and Sustainability	Analyze and attempt solutions to environmental issues and commit themselves to sustainable development in the local/ national and global context.
PLO-4	Ethics	Recognize and understand professional ethics /human values and be resPLOnsible for the same.
PLO-5	Individual and Team work	Function effectively at various levels, capacities and situations.
PLO-6	Communication	Communicate proficiently (oral and written) as a resPLOnsible member of society.
PLO-7	Research Aptitude	Understand general research methods and be able to analyse, interpret and derive rational conclusions.
PLO-8	Life Skills	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of domain specific change.

Program specific outcomes (PSO)

After successful completion of a Master's degree in Geography, the student will:

Program Specific Outcome(PSO)	Short Title of PSOs	Description of the program outcomes
PSO 1	Map Skills	Students will be able to read, interpret and generate maps and other cartographic representations from temPLOral and spatial perspectives.
PSO2	Fundamentals of Geography	Students will be able to understand fundamentals of geography (physical, human and regional) in general and apply in specialized domains of geography.
PSO3	Research Skills	Students will be able to present completed research including review of literature, methodology and discussion and utilize cartographic tools and other visual formats both orally and in written formats.
PSO4	Practical Skills	Students will be able to understand various theoretical and methodological approaches, including quantitative as well as qualitative data in physical and human geography through practical, fieldworks and presentations.

S.N.	Course Code	Course Title	Course Learning Outcomes
1	PGM-GEG.C1	Advanced Geomorphology	After successful completion of the course the students will be able to : CLO1: Understand different factors or phenomena shaping the landforms on the earth surface. CLO2: Differentiate various processes in landform formations which shape the earth. CLO3: Analyze the relationship between folding, faulting, volcanic activity, and plate tectonics. CLO4: Applying geomorphic skills in Disaster management and planning.
2	PGM-GEG.C2	Advanced Climatology	After successful completion of the course the students will be able to : CLO1: Develop in depth basic knowledge of atmospheric weather and climate and the structure of the atmosphere. CLO2: Understand and explain how temperature, pressure, humidity and wind motion vary in time and space and their effect on weather. CLO3: Understand & analyze the characteristics of climatic regions. CLO4: Analyze atmospheric phenomena & atmospheric disturbances.
3	PGM-GEG.E1	Basics of Costal Geomorphology	After successful completion of the course the students will be able to : CLO1: Develop understanding of different coastal processes. CLO2: Distinguish between different types of Coastal Process as Tides, Waves, reefs, etc. CLO3: Analyse the knowledge of different types of coastal environments and Processes. CLO4: Understand the Importance of Coastal Environmental Management.
4	PGM-GEG.E3	Techniques of Academic Report Writing	After successful completion of the course the students will be able to : CLO1: The students will understand the various components of academic writing and

			field report. CLO2: The students will be able to formulate effective statement of argument and validate the same CLO3: The students will be able to use and apply referencing style as per the requirement of the course. CLO4: Students will be able to write a proper review of literature by using this skills of academic writing
5	PGM-GEG.E11(New)	Watershed Management	After successful completion of the course the students will be able to : CLO1: Understand the importance of managing water as a resource. CLO2: Classify different techniques and methods used for management of water resources.

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DEPARTMENT OF GEOGRAPHY AND RESEARCH CENTER

SYLLABUS FOR M.A. DEGREE PROGRAMME IN GEOGRAPHY COURSE STRUCTURE

Sem	Code	Core Courses	Credits
I	PGM-GEG.C1	Advanced Geomorphology	4
	PGM-GEG.C2	Advanced Climatology	4
II	PGM-GEG.C3	Geography of Population	4
	PGM-GEG.C4	Advanced Economic Geography	4
III	PGM-GEG.C5	Statistical Techniques in Geography	4
	PGM-GEG.C6	Fundamentals of Remote Sensing	2
	PGM-GEG.C7	Practical's in Remote Sensing	2
IV	PGM-GEG.C8	Regional planning and development	4
	PGM-GEG.C9	Fundamentals of Geoinformatics System	2
	PGM-GEG.C10	Practical's in Geoinformatics System	2

ELECTIVES:

Code	Elective Courses	Credits
PGM-GEG.E1	Basics of Coastal Geomorphology	2
PGM-GEG.E2	Teaching Techniques in Geography	2
PGM-GEG.E3	Techniques of Academic Report Writing	2
PGM-GEG.E4	Geography of Environment	2
PGM-GEG.E5	Geography and Tourism	2
PGM-GEG.E6	Field Techniques	2
PGM-GEG.E7	Regional Geography of India	2
PGM-GEG.E8	soil geography	2
PGM-GEG.E11(New)	Watershed Management	2
PGM-GEG.E10	Geographical Thought	2
PGM-GEG.E11	Basics of Research Methodology	2
PGM-GEG.E12	Map Interpretation & Cartography	2
PGM-GEG.E13	Geography and Development Models	2
PGM-GEG.E14	Digital Image Processing	2
PGM-GEG.E15	Tourism Planning and Development	2
PGM-GEG.E16	Urban Settlements	2
PGM-GEG.E17	Advance Coastal Geomorphology	2
PGM-GEG.E18	Dissertation	4

- Students have to complete 36 credits of Core courses and 36 credits of Elective courses.
- To develop the research skill of students, dissertation (PGM-GEG.E18) is an Elective component and will be completed during semester III and IV.

SEMESTER I
CORE
Course Title: Advanced Geomorphology
Course Code: PGM-GEG.C1
Credits: 03
Marks: 75
Duration: 45 lectures of 1 hour each

Pre-requisite Courses:

- Basic knowledge about geomorphic concepts

Course Learning Objectives:

1. To understand various forces acting on landform transformation.
2. To distinguish between different types of landforms, its formation and process acting on it.
3. Application of Geomorphic Knowledge in Different Hazard Management Practices.
4. To develop skills in landform recognition and interpret geological features and Maps.

Course Learning Outcomes:

After successful completion of the course the students will be able to:

CLO1: Understand different factors or phenomena shaping the landforms on the earth surface.
CLO2: Differentiate various process in landform formations which shapes the earth.
CLO3: Analyze the relationship between folding, faulting, volcanic activity, and plate tectonics.
CLO4: Applying geomorphic skills in Disaster management and planning.

Unit	Topic	Subtopic	Marks	Lectures
1	Concept of geomorphology and Geo tectonic forces	Geological time scale and related topographic and structural evolution. Endogenic and Exogenic processes Isostasy, Continental Drift, Plate tectonics, Geosynclines and Orogeny, Earthquakes, Volcanism, Geo-magnetism. cycle of erosion by W.M. Davis, Views of W. Penk on normal cycle of erosion Case study of the Indian Subcontinent.	25	15
2	Geomorphological process	General degradational processes: Rock Cycle. Processes of rock weathering and their effects on landforms, Mass movement. Slope development and slope facets; Relationship between longitudinal and transverse slope recession. Erosional and depositional landforms produced by the process – Fluvial, Glacial & Periglacial, Aeolian, Karst and Coastal, Rejuvenated Landforms.	25	15
3	Applied Geomorphology	Role of Geomorphology in Hazard management and mitigation: Earthquakes,	25	15

		Volcanic eruptions, Landslides, Avalanches, Rockslides, Rock fall and Tsunamis. Application of geomorphology in planning and development		
		TOTAL	75	45

References:

Mandatory:

1. Kale, V. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Kolkata
2. Thornbury, W. D. (2013). Principles of Geomorphology. New Delhi: New Age International Limited Publishers.
3. Singh, S. (2006). Physical Geography. Allahabad: Prayag Pustak Bhavan.
4. Siddhartha, K. (2013). The Earth's Dynamic Surface. New Delhi: Kisalaya Publications Pvt. Limited.

Supplementary:

1. Chorley, R.J., Schumm, S. A. and Sugden, D.E. (1984) Geomorphology, Methuen, London
2. Cooke, R.U. and Warren, 1973: Geomorphology in Deserts, Batsford, London
3.Dayal, P. 1996: Textbook of Geomorphology, Shukla Book Depot, Patna.
4. McCullagh, P. 1978: Modern Concepts in Geomorphology, Oxford University, Press, Oxford.
5. Morisowa, M. 1968: Streams, their Dynamics and Morphology, McGraw Hill, New York.
6. Steers J. A: The Unstable Earth, Kalyani Publishers, New Delhi
8.Goudie Andrew (2014), Encyclopedia of Geomorphology, Volume I, Routledge Publication.

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1. https://www.nationalgeographic.org/encyclopedia/uniformitarianism/
2. http://studymaterial.unipune.ac.in:8080/jspui/bitstream/123456789/4495/1/Gg.111%20davis%20theory.pdf
3. https://study.com/academy/lesson/isostasy-definition-equation-examples.html
4. https://www.geographynotes.com/geomorphology/7-major-geomorphic-theories-of-landform-development/686
5. https://www.bbc.co.uk/bitesize/guides/z83nj6f/revision/2

Course Title: Practical in Geomorphology
Course Code: PGM-GEG.C1
Credits: 01
Marks: 25
Duration: 15 Practical's of 2hrs each

Unit	Topic	Subtopic	Marks	Practical's
1	Drainage basin and network morphometry	Morphometric analysis.	5	3
2	Geomorphic Mapping	Geomorphic Mapping in different sieves on probability graph. Calculation of mean, median sorting index, skewness & kurtosis. Geomorphic mapping in the field-process and materials mapping. Soil sampling and texture analysis	10	9
3	Field work	Identification of faults lineament and rocks. Measurement of channel cross-sections in the field, Geomorphic map of channel bed, Study of erosional and depositional features in the field. Slope Models and aspect maps &Hypsometric curve and integral.	05	3
4	Journal	Journal & Viva	5	-
		TOTAL	25	15

References:

Mandatory:

1. Kings, C.A.M.(1996): Techniques in Geomorphology, Edward Arnold Ltd. London
2. R. L. Singh & Rana P. B. Singh: Element of Practical Geography, Kalyani Pub. New Delhi
3. Singh, R. B. (ed.), (2006). Natural Hazards and Disaster Management: Vulnerability and Mitigatio. Delhi, India: Rawat Publications
4. Mukherjee, Neela.,(1993): Participatory Rural Appraisal: Methodology and
5. Application, Concept Publs. Co., New Delhi
6. Stoddard, R. H., (1982): Field Techniques and Research Methods in Geography, Kendall/Hunt.

Supplementary:

1. Lawrence, G. R. P.: Cartographic Methods, Mathur Co. London
2. Khullar.D.R.(2007) Essential of Practical geography, New Academic Publishing Co. Jalandhar
3. Monkhouse, F. J. R and: Maps and Diagrams, Wilkinson, H.R. Methuen and Co., London.
4. Strahler, A.N(1964): Quantitative Geomorphology of Drainage Basin and channel Networks, Mc- Graw- Hill, New York.

5. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black SwanPrivate Ltd., New Delhi.

Web References:

- https://www.hindawi.com/journals/geography/2014/927176/
- https://www.geomorphology.org.uk/sites/default/files/geom_tech_chapters/2.6_GeomMapping.pdf
- https://www.youtube.com/watch?v=BJR8drMF7yI
- https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2008JF001092#:~:text=The%20hypsometric%20curve%20represents%20the,Keller%20and%20Pinter%2C%202002%5D.
- https://www.youtube.com/watch?v=u6q7u2lIW_M

Course Title: Advanced Climatology
Course Code: PGM-GEG.C2
Credits: 03
Marks: 75
Duration: 45lectures of 1 hour each

Pre-requisite Courses: NIL

Course Objectives:

1. To develop knowledge of the structure of the atmosphere and atmospheric phenomena.
2. To understand the nature and scope of modern study of climate by imparting latest knowledge about the basic thermal and dynamical atmospheric processes operating at different spatial and temporal scales
3. To understand climatic variability and change to the issue of current and future global environmental change.
4. To explain weather generation systems of the atmosphere and how they influence Climate of the world and regions in the long term

Course Learning Outcomes:

After successful completion of the course the students will be able to:

CLO1: Develop in depth basic knowledge of atmospheric weather and climate and the structure of the atmosphere.

CLO2: Understand and explain how temperature, pressure, humidity and wind motion vary in time and space and their effect on weather.

CLO3: Understand & analyze the characteristics of climatic regions.

CLO4: Analyze atmospheric phenomena & atmospheric disturbances.

Unit	Topic	Subtopic	Marks	Lectures
1	Introduction	Weather & Climate, Subdivisions of Climatology, Earth's atmosphere: Physical properties, Chemical composition, Temperature changes, Vertical variations in the composition. Global & Local winds, Effects of wind on weather, Tri-cellular theory and Eddy theory. Jet streams, ENSO Events- El–Nino, La-Nina, Southern Oscillation	25	15
2	Insolation and Heat Balance, Temperature, pressure, Humidity and wind motion	Factors affecting Insolation, Latitudinal and Seasonal variation of Insolation, Albedo, Green House Effect, Heat Budget. Temperature, Pressure, Wind, Humidity Precipitation Theories: Ice-crystal theory, Collision-Coalescence Theory Theories of Monsoonal Circulation.	25	15

3	Impact of Climate change	Cyclones and anti-cyclones, Thunderstorms, Tornadoes, Hailstorms, Heat and Cold waves, Stable and Unstable Atmosphere Natural Vegetation, Agriculture, Human Life, Economy, Transport Global Warming (CFC's)	25	15
		TOTAL	75	45

References:

Mandatory:

1. Aguado, E. Burt, J.E. (2001): Understanding Weather and Climate, Prentice Hall of India Pvt. Ltd, New Delhi.
2. Lal, D. S. (2015). Climatology. Allahabad: Sharda Pustak Bhavan.
3. Roger G. Barry, Richard J Chorley. (2003). Atmosphere, Weather and Climate. Routledge: London.
4. Richard Huggett: Physical Geography: The Key Concepts, London and New York: Routlege Taylor & Francis Group

Supplementary:

1. Critchfield, H.J. (1983): General Climatology, Prentice Hall of India, New Delhi.
2. Syllabus for M.A./M.Sc. Degree Programme in Geography
3. Oliver John, E. and Hidore John, J. (2003): Climatology, Pearson Education.
4. A. Austin miller, M.Sc: Climatology, Methuen&co. Ltd. 36 essex street w.e. London
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

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1. https://tinyurl.com/yy4wpj7g
2. https://www.weather.gov/media/zhu/ZHU_Training_Page/clouds/stability_clouds/stability_clouds.pdf
3. https://www.earthonlinemedia.com/ebooks/tpe_3e/atmospheric_moisture/precipitation.html
4. http://www.coolgeography.co.uk/Alevel/AQA/Year%2013/Weather%20and%20climate/Structure/Tri-cellular%20Model.htm
5. https://vortex.plymouth.edu/dept/tutorials/precip/precip2aaa.html

Course Title: Practical in Climatology
Course Code: PGM-GEG.C2
Credits: 01
Marks: 25
Duration: 15 Practical's of 2hrs each

Unit	Topic	Subtopic	Marks	Practical's
1	Temperature and Rainfall Analysis	Collection and Processing of atmospheric data Analysis of atmospheric data – Tephigram (Temperature-Height diagram) Classification of Koppen and Thornthwaite's Climate. Discomfort index by Thom's (1959) method. Identification and categorization of heat and cold waves. Calculation of seasonal rainfall and annual variability of rainfall. Drought and Flood Analyses	15	9
2	Water Budget	Computation of water budget and water deficit amounts during crop growing season. Computation of Water Requirement Satisfaction index. Construction of crop-coefficient curve for any one crop.	10	6
		Journal & Viva		
		TOTAL	25	15

References:
Mandatory:
1.Mather J.R (1974) Climatology, Fundamentals and applications, McGraw Hill Book Co, New York.
2.R. L. Singh & Rana P. B. Singh: Element of Practical Geography, Kalyani Pub. New Delhi
3.Frere and Popov (1979)- Agro-Meteorological Crop monitoring and forecasting, FAO plant production Paper No. 17.
4.Mukherjee, Neela.,(1993): Participatory Rural Appraisal: Methodology and Application, Concept Publs. Co., New Delhi
5.Stoddard, R. H., (1982): Field Techniques and Research Methods in Geography, Kendall/Hunt.

Supplementary:
1.Doorenbos J.(1977) and Pruitt W.O. Crop water requirement, FAO irrigation and drainage.
2.John F. Mather (1974) - Climatology Fundamentals and Application Oxford University Press.
3.Lawrence, G. R. P.: Cartographic Methods, Mathur Co. London
4.Monkhouse, F. J. R and: Maps and Diagrams, Wilkinson, H.R. Methuen and Co., London.
5.Trewartha G.T: An Introduction to climate Mc-Graw- Hill Book Co. New York.

6.Andrew. D. ward, and Stanley, Trimble., (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.

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- https://pdfs.semanticscholar.org/c380/203ee5805fdb318fa52ea539538b48783f31.pdf
- http://www.met.reading.ac.uk/~sgs02rpa/TEACHING/Tephigram.pdf
- WSI_TECH_REP.pdf (europa.eu)
- https://www.youtube.com/watch?v=e7pckUDQ9oI

Course Title: Techniques of Academic Report Writing
Course Code: PGM-GEG.E3
Credits: 02
Marks: 50
Duration: 30hrs

Prerequisite Courses: Nil

Course Learning Objectives:

1. To provide students with a broad framework for understanding the various components of assignment writing and field report writing.
2. To equip students with the knowledge and skills necessary to write an assignment and field report.

Course Learning Outcomes: At the end of this course, students will be able to:
After successful completion of the course the students will be able to

CLO1: The students will understand the various components of academic writing and field report.
CLO2: The students will be able to formulate effective statement of argument and validate the same
CLO3: The students will be able to use and apply referencing style as per the requirement of the course.
CLO4: Students will be able to write a proper review of literature by using this skills of academic writing

Unit No.	Topic	Subtopic	Marks	lectures
1	Academic writing and composition	1. Introduction to the Writing Process 2. Introduction to the Conventions of Academic Writing 3. Writing in one's own words: Summarizing and Paraphrasing 4. Critical Thinking: Syntheses, Analyses, and Evaluation 5. Structuring an Argument: Introduction, Interjection, and Conclusion 6. Citing Resources; Editing, Book and Media Review	25	15
2	Geographical Report Writing	Stages of writing Geographical Report 1) Pre Report Data Collection 2) Use of MS Word, Excel, Mendeley 3) Literature Review 4) Information of area under study	25	15

		5) Introduction 6) Methods 7) Result 8) Discussion 9) Conclusion 10) Polishing the Report 11) Structuring the report 12) Citation of sources and include a bibliography 13) Proofread and edit carefully		
		Total	**50**	**30**

References:

A. Mandatory:

1. Liz Hamp-Lyons and Ben Heasley (2006), Study writing: A Course in Writing Skills forAcademic Purposes ,Cambridge: CUP, 2006).
2. RenuGupta(210), A Course in Academic Writing (New Delhi: Orient BlackSwan, 2010).

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1. Gerald Graff and Cathy Birkenstein(2009) They Say/I Say: The Moves That Matter inAcademic Writing ,New York: Norton
2. M.S Rao, Teaching of geography (2009), AnmolPublication .

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4 https://www.scribbr.com/category/academic-writing
5 https://gradebees.com/writing-geography-fieldwork-reports-projects/

Course Title: Watershed Management
Course Code: PGM-GEG.E11(New)
Credits: 02
Marks: 50 Duration : 30hrs

Prerequisite Courses: Nil

Course Objectives: To develop and understand the importance of water and watershed management. To analyze different practices involved in watershed management.

Course Outcomes: At the end of the course, students will be able to
CO1: Understand the importance of managing water as a resource.
CO2: Classify different techniques and methods used for management of water resources.

Unit	Topic	Subtopic	Marks	Lectures
1	Introduction to Watershed Management and Management Practices	Concept of watershed, properties of watershed, morphological and hydrological processes in watershed Methods of delineation, Problems associated with watershed, Erosion control measures: agricultural and non-agricultural lands, Contour and Staggered Trenching, Gully Control Structures, Sediment Retention Structures, Gully and Ravine Reclamation, Bunding, Check Dams, Loose boulder Dams	25	15
2	Issues related to Water conservation and harvesting	Methods, Potential Assessment. Treatment of Catchments, Small Storage Structures, Watershed Management Practices in Arid, Semiarid and humid Regions, Case studies, short term and long term strategic planning. (practices across India) Watershed Management policies and decision making (India) (Students should take mini projects as a mode of assessment.)	25	15

References:

Mandatory

1. Gleick, P.H. (ed.): Water in Crisis Oxford University Press, New York 1993.
2. Vir Singh, Raj, (2000) Watershed Planning and Management, Yash Publishing House, Bikaner.
3. Das Mohan Madan & Saikia M. D. (2013): Watershed Management, PHI Learning Private ltd., New Delhi.

Supplementary

1. Tideman E.M. (1996) – Watershed Management : Guidelines for Indian conditions, Omega,
   N. Delhi 1996.
2. Pereira H.C. (1973) – Land use and water Resources Cambridge University Press, Cambridge

Web references:

1. http://www.yourarticlelibrary.com/watershed -management/watershed - management- meaning-types-steps-and-programmes/77309
2. http://agritech.tnau.ac.in/agriculture/ agri_majorareas_watershed_watershedmgt.html
3. https://dep.wv.gov/WWE/watershed/Pages/watershed_management.aspx
4. https://www.rdrwa.ca/node/27
5. https:// www.teriin.org/ blog/watershed -management-and-developmen

ANNEXURE A

M.A. GEOGRAPHY

(Summary of changes incorporated in the syllabus)

Semester	Course Title	Existing (Indicate only the unit where the change is proposed)	Changes Proposed	Specify the reason for the change
I	**Watershed Management**	Unit I	properties of watershed, morphological and hydrological processes in watershed methods of delineation, Problems associated with watershed, agricultural	To introduce the basic concept of watershed management
		Unit II	Watershed Management Practices in Arid, Semiarid and humid Regions, Case studies, short term and long term strategic planning. (practices across India) Watershed Management policies and decision making (India) (Students should take mini projects as a mode of assessment.)	To understand the regional practices followed throughout the country
	Techniques of Academic Report Writing	Unit II	Stages of writing Geographical Report 1) Pre Report Data Collection 2) Use of MS Word, Excel, Mendeley 3) Literature Review 4) Information of area under study 5) Introduction 6) Methods 7) Result 8) Discussion 9) Conclusion 10) Polishing the Report 11) Structuring the report 12) Citation of sources and include a bibliography 13) Proofread and edit carefully	Recommended by the BOS members
	Basics of Coastal Geomorphology	All Units	Suggestion were proposed by the BOS	Recommended for discussion in next BOS