

**MINUTES OF THE MEETING OF BOARD OF STUDIES IN GEOGRAPHY HELD
ON 24th APRIL 2016 AT 10.30 A.M. IN THE CONFERENCE ROOM, BHOO
MANDIR, BANASTHALI VIDYAPITH, RAJASTHAN**

PRESENT

1. Dr. Rashmi Sharma	-	Convener
2. Prof. H.S.Sharma,	-	External Member
3. Prof. S.K. Shukla	-	External Member
4. Dr. M.G. Thakkar	-	External Member
4. Dr. Ashutosh	-	Internal Member
5. Dr. Vipin Kumar	-	Internal Member
6. Dr. Kh. Moirangleima	-	Internal Member
7. Dr. Salahuddin Mohd.	-	Internal Member
8. Dr. Dipjyoti Chakraborty	-	Invitee
9. Dr. Sudesh Kumar	-	Invitee
10. Dr. Saral Kumar Gupta	-	Invitee
11. Mr.Ashutosh Kumar Srivastava	-	Invitee
12. Dr. K.F. Rahman	-	Invitee

Note: Dr. M.G. Thakkar (External Member), Dr. Ashutosh and Mr. Ashutosh Kumar Srivastava (Internal members) could not attend the meeting.

1. The Board **confirmed the minutes** of its last meeting held on 11th March' 2012.
2. The Board scrutinized the existing **panel of examiners** in the subject of Geography and Environmental Science with the Bye –laws of the University and **updated**. The panel of examiners was submitted in a sealed envelope to the secrecy section in hard and soft copy both.
3. The Board considered the courses of study and scheme of examination for the following examinations.
 - I. **B.A./B.Sc. Geography Examination:**
 - i. First Semester Examination, December, 2016
 - ii. Second Semester Examination, April/May, 2017
 - iii. Third Semester Examination, December, 2017
 - iv. Fourth Semester Examination, April/May, 2018
 - v. Fifth Semester Examination, December, 2018
 - vi. Sixth Semester Examination, April/May, 2019

Resolved to recommend that the existing course of study be continued **with some modifications and updations in all the papers (Enclosure 1 pp. 1- 36).**

2 M.A./M.Sc. Geography Examination:

- i. First Semester Examination, December, 2016
- ii. Second Semester Examination, April/May, 2017
- iii. Third Semester Examination, December, 2017
- iv. Fourth Semester Examination, April/May, 2018

Resolved to recommend that the existing course of study be continued with modification and updation in all papers of all the semesters and is given in **(Enclosure 2 pp. 1-79)**. The changes will be effective from the **upcoming new batches**.

3 M. Phil. (Geography) Examination

- (i) First Semester Examination, December, 2016
- (ii) Second Semester Examination, April/May, 2017
- (iii) Third Semester Examination, December, 2017

The Board **accepted** the course structure, scheme and syllabi of the new course M. Phil (Geography) after incorporating the suggestions which is going to be introduced from the coming session 2016-17 (**Enclosure 3, pp. 1-23**).

4 M.Sc. (Environmental Sciences) Examination:

- i. First Semester Examination, December, 2016
- ii. Second Semester Examination, April/May, 2017
- iii. Third Semester Examination, December, 2017
- iv. Fourth Semester Examination, April/May, 2018

The Board **accepted** the course structure, scheme and syllabi of the new course M. Sc. (Environmental Sciences) after incorporating the suggestions which is going to be introduced from the coming session 2016-17 (**Enclosure 4, pp. 1-26**).

5. **No new courses** will be proposed as M. Sc. Environmental Science is being introduced from the coming session.

6. The Board considered the **reports of the examiners** in the subject of Geography of various examinations 2013-2014 and 2014-2015.

It was noted that the examiners have generally reported 'to the point' answers and have found expression/method of representation satisfactory/good. Few examiners suggested to give more emphasis on maps & charts to support their answers.

7. The **Board** has thoroughly analyzed the quality of **question papers** of final university examination conducted during the academic year 2013-14 and 2014-15 for UG and PG examination.

The **Board** concluded that the quality of question papers is good but sometimes the **some questions are out of syllabus**, so, the board recommended for moderations of the question papers immediately started in order to overcome the prevailing discrepancies in the question.

8. (i) The Board Co - opt **external members** of the Board of Studies (**Geography**) for a fresh term of three years commencing from 1st January, 2017 under bye-law 9.2.03.

The following shall be the members of the Board of Studies:-

(a) Prof. H.S. Sharma

A 3 Shanti Niketan colony
Kisan Marg Tonk Road, Jaipur
Mobile: 9983349022
Email: pachhora1@yahoo.com

(b) Prof. Santosh Kumar Shukla

29, Shanti Residency, Neha Nagar, Makronia, Sagar (MP) – 470004
Mobile: 9425495826
Email: sshukla.sgr@gmail.com

- (ii) The Board Co - opt **external members** of the Board of Studies (**Environmental Science**) for a fresh term of three years commencing from 1st January, 2017 under bye-law 9.2.03.

The following shall be the members of the Board of Studies:-

- (a) Prof. H.S. Sharma
A 3 Shanti Niketan colony
Kisan Marg Tonk Road, Jaipur
Mobile: 9983349022
Email:pachhora1@yahoo.com
- (b) Dr. M. G. Thakkar
(Head)
Department of Earth and Environmental Science
K.S.K.V. Kachchh University,
Bhuj Kachchh-370001

BANASTHALI VIDYAPITH

***SCHEME OF EXAMINATION
AND
COURSES OF STUDY***



**M. Phil. Examination, 2016
Geography**

**BANASTHALI VIDYAPITH
P.O. BANASTHALI VIDYAPITH
(Rajasthan)-304022**

**No. F. 9-6/81-U.3
Government of India
Ministry of Education and Culture
(Department of Education)**

New Delhi, the 25th October, 1983

NOTIFICATION

In exercise of the powers conferred by Section 3 of the University Grants Commission Act, 1956 (3 of 1956) the Central Government, on the advice of the Commission, hereby declare that Banasthali Vidyapith, P. O. Banasthali Vidyapith, (Rajasthan) shall be deemed to be a University for the purpose of the aforesaid Act.

Sd/-

(M. R. Kolhatkar)

Joint Secretary of the Government of India

NOTICE

Changes in Bye-laws/Syllabi and Books may from time to time be made by amendment or remaking, and a Candidate shall, except in so far as the Vidyapith determines otherwise, comply with any change that applies to years she has not completed at the time of change.

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M.Phil. in Geography

Scheme of Examination

1. The course of study for M.Phil. Examination shall extend over a period of one and half year divided into three Semesters with an examination at the end of each Semester.
2. The Examination shall be conducted by means of Continuous assessment/ Written Papers/ Practical/ Dissertation/ Project Report.

The following shall be the Scheme of Examination:

I SEMESTER

Course	Contact		Cont. Ass.		Ann. Ass.		Total		Min.	
	Hours/week		Marks		Marks		Marks		Pass Marks	
	T	P	T	P	T	P	T	P	T	P
1. Research Methodology & Statistical Analysis in Geography	4	0	20	0	40	0	60	0	22	0
2. Teacher Teaching and Higher Education	4	0	20	0	40	0	60	0	22	0
3. Sessional & Practical Work (Practice Teaching)*	0	0	20	0	40	0	60	0	22	0
Total	8	0	60	0	120	0	180	0	66	0

II SEMESTER

Course	Contact		Cont. Ass.		Ann. Ass.		Total		Min.	
	Hours/week		Marks		Marks		Marks		Pass Marks	
	T	P	T	P	T	P	T	P	T	P
1. Digital Cartography and Geoinformatics (Theory + Lab)	2	4(2)	10	10	20	20	30	30	11	11
2. Elective	4	0	20	0	40	0	60	0	22	0
3. Reading Elective**	2	0	20	0	40	0	60	0	22	0
Total	8	4(2)	50	10	100	20	150	30	55	11

III SEMESTER

Course	Contact		Cont. Ass.		Ann. Ass.		Total		Min.	
	Hours/week		Marks		Marks		Marks		Pass Marks	
	T	P	T	P	T	P	T	P	T	P
1. Seminar	0	0	0	0	30	0	30	0	11	0
2. Comprehensive Viva-Voce	0	0	0	0	30	0	30	0	11	0
3. Dessertation	0	0	0	0	180	0	180	0	99	0
Total	0	0	0	0	240	0	240	0	121	0

Grand**Total =180 + 180 + 240 = 600***** 5 Hrs. During the Semester****** Contact Hrs. only for guidance of students not for formal teaching.**

Elective must be relevant to the Area of Dissertation, Student can select any one elective and one reading elective out of the following:

LIST OF READING ELECTIVES**LIST OF ELECTIVES**

E I : Advanced Economic Geography

RE I: Study of Geosphere

E II: Rurban Geography

RE II: Advance Geography of India

E III: Social Geography

E IV: Geography of Environmental Management

E V: Population Studies

E VI: Advanced Geomorphology

M.Phil. Programme in Geography

Eligibility: M.A. /M.Sc. in Geography from any recognized university with atleast an aggregate 55% marks.

Admission: Based on entrance examination.

Course structure:

A three-semester course, with two core courses and one elective in first semester and two core courses and one reading elective in second semester. Student must carry out a dissertation (submitted in the end of third semester) under the supervision of faculty. Each semester includes work of dissertation in the following manner.

Dissertation Phase - I: (05 Marks)

In this phase students are required to select a topic of study and study area for their dissertation work. The aim of the work must be clear. In the last week of October the selected topic need to be defended before the faculty members. The students will present a report which includes study area and review of literature review.

Dissertation Phase - II: (10 Marks)

In the first week of March semester, the student must submit a synopsis of her dissertation and the internal examiners committee is to be appointed. The synopsis must also bear the certificate by the supervisor/guide. Student will defend the synopsis in front of internal examiners committee.

Dissertation Phase - III: (15 Marks)

At the mid of the third semester, a report of research work done, is to be submitted and defended in front of internal examiners committee.

Dissertation Phase - IV: (60 Marks)

At the end of the third semester, final report is to be submitted with a presentation and viva-voce will be held.

Dissertation Phase - V: (90 Marks)

Dissertation will be sent for external evaluation. The list of three external examiners will be prepared by the supervisor in consent with the head of department.

Financial Assistance:

M.Phil. students are eligible for financial assistance as follows:

TA/RA ship:

Candidates admitted to the M.Phil. Programme will be offered the Teaching Assistantship (TA) or Research Assistantship provided they have secured at least 60 percent mark (55 percent for SC/ST candidates) in their qualifying degree examination and provided they are willing to assist in the teaching of undergraduate courses. A teaching assistant can be asked to conduct labs and can also be asked to teach tutorial sessions to the undergraduate students.

A Research Assistant (RA) can be asked to support the department in various academic activities. It could be providing help in maintaining and upgrading department laboratories, downloading, installing software, etc. A RA can also be assigned to faculty members to help them in their research effort.

SEMESTER I

1. RESEARCH METHODOLOGY AND STATISTICAL ANALYSIS IN GEOGRAPHY

1. Research: Meaning and types of Research; Literature Review, Research Methodology
2. Hypothesis: Meaning and Basic concept of hypothesis testing
3. Research Design: Meaning, need and Importance
4. Data Collection : Types and sources of data, Methods of Data collection, classification of data; designing of a Questionnaire; Data Interpretation Analysis
5. Sampling: Meaning and Types of Sampling
6. Chapter scheme, Review of literature
7. Concept of Plagiarism
8. Multi-variate Analysis
9. Statistical Applications Adopting
 - I. Multiple correlation & Regression Analysis
 - II. Composite Indices
 - III. Basics of Principal Component Analysis
 - IV. Time Series Analysis (Temporal Analysis)
10. Preparation and Writing of abstract, Articles, report format and thesis

Books Recommended:

1. Ahuja, R., (2009), Research Methods, Rawat Publications, Jaipur.
2. Cole, John P. and Cuchlaine a. M. King (1968) Quantitative Geography, Techniques and Theories in Geography, John Wiley and Sons Ltd., London.
3. Elhance, D.N. (1972): Fundamentals of Statistics, Kitab Mahal, Allahabad.
4. Frank Harry and Steven C. Althoen (1994): Statistics Concepts and Applications, Cambridge University Press.
5. Gupta, S.P., (1979) and revised edition, Statistical Methods, Sultan Chand and sons, New Delhi.
6. Gupta, S.P., (1979) and revised edition, Statistical Methods, Sultan Chand and sons, New Delhi.
7. Guthrie, G., (2010), Basic Research Methods – An entry to Social Science Research, Sage Publications, New Delhi.
8. Hammond, R. and Patrik McCullagh (1974): Quantitative Methods in Geography, Clarendon Press, Oxford.
9. Kothari, C.R., (1990), Research Methodology Methods and Techniques, Wishwa Prakashan, New Delhi.

10. Mahmood, A., (1998), Statistical Methods in Geographical studies, Rajesh Publications, New Delhi.
11. Mishra, H.N. and Singh, V.P, (1998), Research Methodology, Rawat Publications, Jaipur.
12. Mishra, R.P., (1989), Research Methodology, Concept Publishing Company, New Delhi.
13. Prasad, H., (1992), Research Methods and Techniques in Geography, Rawat Publications, Jaipur.
14. Sarkar, A, (2013), Quantitative Geography; Techniques and Presentations, Orient Blackswan, Pvt. Ltd., New Delhi.
15. Smith, David M. (1975): Patterns in Human Geogr aphy, An introduction to Numerical Methods, Crane Russak & Company, Inc New York.
16. Taylor G., Peter J. (1977): Quantitative Methods in Geography, An Introduction to Spatial Analysis. Hougton Mifflin Company, Boston, USA.

COURSE 2: TEACHER, TEACHING AND HIGHER EDUCATION

Objectives: The objective of this course is to acquaint the students with the scenario of higher education in India and expected teacher's role in higher education. It enables students to identify and use different teaching competencies, methods and media required for effective teaching. It enhances the ability to instruct and evaluate, as a teacher in higher education. It also attempts to develop sensitivity towards major issues related to different dimensions of higher education.

Course Outline:

- 1. Overview of Higher Education in India:** Purpose and Functions of Higher Education. Functions of Regulatory Bodies - UGC, AICTE, NCTE, DEC, NAAC.
- 2. Role of Teacher in Higher Education:** Teacher's Role - Curriculum development, Instructional, Institutional, Research related and Social. Professional Development of Teachers - Role of ASC.
- 3. Pre-requisites of Teacher in Higher Education:** Teaching Competencies - Introduction, Questioning, Board Work, Explanation, Use of Support Material, Stimulus Variation, Probing and Closure. Methods for teaching - Lecture, Discussion, Project, Workshop and Seminar. Media for effective teaching.
- 4. Designing of Instruction and Evaluation:** Instructional Planning. Modes of Evaluation in Higher Education.
- 5. Major issues in Higher Education:** Government and Private Participation, Women Participation, Globalization of Higher Education, Quality Issues.

References:

1. Aggarwal, J.C., (2012), "Principles, Methods & Techniques of Teaching," Vikas Publishing House Pvt. Ltd., New Delhi.
2. Association of Indian Universities, (2003), "Globalization of Indian Higher Education", New Delhi.
3. Bawa, M.S., Nagpal, B.M., (2011), "Developing Teaching Competencies," Viva Books, New Delhi.
4. Dhar, B.B., (2009), "Higher Education System," A.P.H. Publishing Corporation, New Delhi.
5. Dhir, R.N., (2006), "Higher Education", Abhishek Publications, Chandigarh.
6. Kamalkar, G., (2014), "Higher Education in Indian-Emerging Challenges", Commonwealth Publishers Pvt. Ltd., New Delhi.
7. Kidwani, A.R., (2011), "Higher Education- Issues and Challenges", Viva Books, New Delhi.

8. Kidwani, A.R., (2014), "New Directions in Higher Education", Viva Books, New Delhi.
9. Mangal, S.K., Manga. U., (2014), "Essentials of Educational Technology", PHI Learning Private Limited, Delhi.
10. Manoharan, P.K., (2009), "Higher Education," A.P.H. Publishing Corporation, New Delhi.
11. Panchmukhi, P.R. Debi,S. (2008), "Educational Data Bank for Higher Education", Serials Publications, New Delhi.
12. Patnaik, J. (2001), "Higher Education in Information Age", Authors Press, New Delhi.
13. Sen, R., (2009), "Women and Higher Education System," Crescent Publishing Corporation, New Delhi.
14. Shafi, Z.S. (2008), " Reforms and Innovations in Higher Education", Association of Indian Universities, New Delhi.
15. Sharma, S.R., (2000), "Effective Classroom Teaching-Modern Methods, Tools & Techniques," Mangal Deep Publications, Jaipur.
16. Thamarasseri, I., (2012), "Essentials of Educational Evaluation," Kanishka Publishers, New Delhi.

3. SESSIONAL & PRACTICAL WORK (PRACTICE TEACHING)

60 Periods

- | | |
|-------------------------------|---------|
| 1. Practice in Simulation | 15 Pds. |
| 2. Methods based planning | 10 Pds. |
| 3. Practice in real classroom | 20 Pds. |
| Seminar | 15 Pds. |

SEMESTER – II

1. DIGITAL CARTOGRAPHY AND GEOINFORMATICS

Introduction to Cartography

A. Digital Cartography (Lab.)

1. Introduction of digital cartography
2. Graphical Presentation of Data: Line diagram, Bar diagram, Pie diagram, Pyramid diagram
3. Map Generalization: Map layout

B. Remote Sensing (Theory)

1. Remote Sensing : Functioning and Platforms
2. Properties of EMR and Electromagnetic Spectrum, Interaction of EMR with earth's surface and atmosphere,
3. Spectral Signatures
4. Basic principle of Thermal and Microwave Remote Sensing
5. Applications of Remote Sensing in Agriculture, Forestry, Urban Studies and Water Resource.

C. GIS and GPS: (Lab.)

1. Components of GIS
2. Data Base Management system
3. Drafting materials: Base map, Completion for thematic mapping, Preparation of thematic maps.
4. Introduction to GPS and its Applications

Books Recommended:

1. C.P. Lo and Alber t K.W. Yeung (2002): Concepts and Techniques of Geographic Information System, Pr entice-Hall of India Private Limited, New Delhi.
2. Dent Borden D. (1990): Cartography, Thematic Map Design, Wim.C. Brown Publishers.
3. Ian-Haybood et.al. (2002): An Introduction to Geographical Information System.
4. Kang-tsung Chang (2002): Geographic Information System, Tata-McGr aw Hill, New Delhi.
5. Keats, J.S. (1973): Cartographic Design and production Longman, London
6. Keith C. Clarke (1997): Getting Started with Geographic Information Systems, Prentice Hall, New Jersey.

7. Kr aak, M.J. and Fer jan Ormeling (2003): Car tography, Visualization of Geospatial Data, Pear son Education Limited, Patparganj, Delhi, India.
8. Michael N. Demer s (2000): Fundamentals of Geographic information Systems, John Wiley and Sons, Inc, New York.
9. Misra R.P. and A. Ramesh (1989): Fundamentals of Cartography, Concept Publishing Company New Delhi.
10. Monkhouse, F.J. and H.R. Wilkinson (1967) Maps and Diagr ams, B.T. Publicati ons Pvt. Ltd., Delhi 1989.
11. Paul, A. Longley et.al. (2011): Geographic Information Systems and Science, John Wiley and Sons Ltd. New York.
12. Peter A. Burrough and Rachael A. McDonnell (1998): Principles of Geographic Information Systems, Oxford Univer sity Press.
13. Raisz Erwin (1962): Principles of Cartogr aphy, McGr aw Hill, New York.
14. Robinson, Arthur and et.al.(2005): Elements of Cartography, John Wiley and Sons, New York.
15. Singh L.R. and R.N. Singh (1975): Map work and Practical Geography, Central Book Depot, Allahabad.
16. Singh R.L. (1979): Elements of Practical Geogr aphy, Kalyani Publishers, New Delhi.

2. E I: ADVANCED ECONOMIC GEOGRAPHY

1. Concept of Economic Geography, nature and pattern of economic activities: primary, secondary and tertiary activities.
2. Recent themes and concepts in Economic Geography,
3. Concept of economic resource, Resource evaluation, Resource planning and management
4. Economic Development: Theories and Measures of economic development.
5. Theories of Industrial Location and Localization(Weber, Hoover, Losch, Pred), Industrial Regions of the World and India,
6. World Trade Organization, Globalization and its impact on World Economy.
7. Agricultural land use and cropping pattern, measures of Agricultural efficiency, crop combination regions (J. C. Weaver and K. K. Doi).
8. Concept of location of Agricultural activities, Agricultural typology, changing cropping pattern.
9. Modern concepts in Agriculture Geography: sustainable development, agribusiness, contract farming, dry land farming, cropping systems.

Books Recommended:

1. Clark, G. L., Feldman, M.P. and Gertler, M.S. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, Oxford and New York.
2. Conking, E. C. and Yeates, M. (1996) "Man's Economic Environment" McGraw – Hill Book Company.
3. Freeman, T. W. (1972): Geography and Planning. Freeman and Company, New York.
4. Friedman, J. and Alonso, W. (1964) Regional Development and Planning: A Reader, The M. I. T.
5. Gautam, Alka, (2010), Advanced Economic Geography, Sharda Pustak Bhawan, Allahabad
6. Guha, J.L. and P.R.Chatturaj (1994) Economic geography- A Study of Resources, The World Press Pvt. Ltd. Calcutta
7. Gupta, P and Sadasyuk, G. (1968): Economic Regionalization of India: Problems and Prospects. Census of India, New Delhi
8. Hanif M. (2005): Encyclopedia of Agriculture Geography, Anmol Publications PVT Ltd.
9. Hartshorn, T. A. and Alexander, J. W. (1988) 'Economic Geography', Prentice Hall, New Delhi.

10. Leong, Gon Cheng & Morgan, Gilliam C.: (1973) Human and Economic Geography, Oxford University Press.
11. Ramesh, A. (ed.) (1984): Resource Geography. Heritage Publishers, New Delhi.
12. Shafi Mohammed (2000): Agricultural Geography of South Asia., MacMillan Publishers India
13. Siddharth, K. (2006) Economic Geography, Kisalaya Publications, New Delhi. Singh & Dhillon (2004): Agriculture Geography (3rd Edition), Tata McGraw – Hill.
14. Singh, R.L. (Ed.): (1966) Applied Geography, BHU press, Varanasi.
15. Wheeler J. O. Mullar, O. M. Thrall, G. I. and Timothy, J. F. (1988) “Economic Geography”, John Wiley and Sons Inc. New York.
16. कुमार, प्रमीला एवं शर्मा, श्री कमल (2008) कृषि भूगोल, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल।
17. जाट, बी. सी. (2006) आर्थिक भूगोल, पंचशील प्रकाशन, जयपुर।
18. हुसैन, माजिद (2000) कृषि भूगोल, रावत पब्लिकेशन, जयपुर।
19. मामोरिया, चतुर्भुज (2008) आर्थिक भूगोल, साहित्य भवन पब्लिकेशन, आगरा।
20. एस. डी. कौशिक एवंम डॉ. अल्का गोतम (2011) संसाधन भूगोल, रस्तोगी एण्ड रस्तोगी पब्लिकेशन।
21. शर्मा, हरिशचंद्र, (1983) भारत का आर्थिक भूगोल तथा भारतीय अर्थशास्त्र, रमेश बुक डिपो, जयपुर।
22. सिंह जे. (2009) संसाधन भूगोल, राधा पब्लिकेशन, नई दिल्ली।
23. सिंह के. एन., और सिंह जे. (2003) आर्थिक भूगोल के मूल तत्व, ज्ञानोदय प्रकाशन, गोरखपुर।
24. सिंह, काशीनाथ (2009) आर्थिक भूगोल के मूल तत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकास का अध्ययन, ज्ञानोदय प्रकाशन।
25. सिंह, काशीनाथ (2009) आर्थिक भूगोल के मूल तत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकास का अध्ययन, ज्ञानोदय प्रकाशन, गोरखपुर।

E II: RURBAN GEOGRAPHY

1. Geographical dimensions of settlements, techniques and tools of settlement geography,
2. Settlements: origin and evolution, classification and dispersion of settlements,
3. Rural settlements: Pattern and morphological components of rural settlements,
4. Process of development of rural morphology, morphology of an Indian village and rural dwelling, rural service centres and their identification,
5. Rural Problems, schemes and developmental programmes,
6. Origin and evolution of towns, stages of evolution of cities,
7. Urbanization, urban morphology, stages of development of urban morphology, theories of urban morphology (Concentric Zone theory, Sector theory and Mutliple Nuclei theory)
8. Urban land use, morphology of an Indian city (Jaipur)
9. Urban system analysis : Rank size rule, the Law of Primate city
10. Rural urban fringe, suburb, satellite town, conurbation, umland
11. Urban problems, Urban planning and Master plan, Sustainable urban planning, National Urbanization policy.

Books Recommended:

1. Bansal, Suresh Chandra, (2010), Urban geography, Meenakshi Prakashan, Meerut
2. Mandal, R.B., (2010), Urban Geography: a text-book, Concept Publications, New Delhi,
3. Pacione, Michael, (2009), Urban geography: a global Perspective, Routledge, London.
4. Singh, R.Y. (2005): Geography of Settlements. Rawat Publications, Jaipur and New Delhi.
5. Singh, S.B. (1977): Rural Settlement Geography. U.B.B.P., Publications, Gorakhpur.
6. Tiwari, R. C. (2000): Settlement Geography; Prayag Pustak Bhawan Allahabad.
7. Taylor, Griffith, (1958), Urban geography, Methuen, London
8. Verma, L.N., (2008), Urban geography, Rawat Publications, Jaipur.
9. मौर्य एस.डी.(2009) : अधिवास भूगोल, शाखा पुस्तक भवन, इलाहाबाद।
10. बंसल सुरेश चन्द्र (2009) : ग्रामीण बस्ती भूगोल, मिनाक्षी प्रकाशन, मेरठ।
11. तिवारी आर. सी. (2006) : अधिवास भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद।
12. सिंह रामयज्ञ (2005) : अधिवास भूगोल, रावत पब्लिकेशन, जयपुर एव नई दिल्ली।
13. सिंह इन्दिरा (2008) : अधिवास भूगोल, यूनिवर्सिटी पब्लिकेशन, नई दिल्ली।

E III: SOCIAL GEOGRAPHY

Section – A

- a) Nature & Approaches to the study of Social Geography
- b) Definition, origin and types of society
- c) Social process – social interaction
- d) Social stratification
- e) Caste – Origin and its theories, Recent changes in caste system

Section – B

- a) Social organization & Groups
- b) Social well being
- c) Human Development – Parameter and Index. Recent Trends in Human Development
- d) Population growth, Distribution & Problems
- e) Human Races : Origin, Evolution and classification of Human Races According to G. Taylor
- f) Quality of Socially Environment : Globalization and social transformation

Section – C

- a) Indian Society in Historical Perspective
- b) Social changes in India
- c) Human Development in India
- d) Gender issues and status of woman in India
- e) Social Planning in India

Books Recommended:

1. Ahmad Aijazuddin, (1999) Social Geography. Rawat Publications, Jaipur.
2. Ballabh Anand, (2005) A Handbook of Social Geography, Akansha Publishing House, New Delhi
3. Hamnett Chris, (1996) Social Geography, A Reader, Arnold, Co-published in The US, New York.
4. Jr. Del Casino & J. Vincent, (2009) Social Geography, A Critical Introduction. Wiley-Blackwell, A John Wiley & Sons, Ltd. Publication, United Kingdom
5. Kumar Ashok, (2004) Social Geography of India, Anmol Publication Pvt. Ltd., New Delhi.
6. Mehtani Subhah & Sinha, (2010) Social Geography. Commonwealth Publishers Pvt. Ltd., New Delhi.

7. Mohanthy G.S., (2005) Social & Cultural Geography, Isha Books, Delhi
8. Pandit Apoorva, (2010) Watershed Development Inputs & Social Change, Understanding the Changing Culture of Child Nutrition. Rawat Publications, Jaipur.
9. Peet Richard, (2003) Radical Geography, Alternative Viewpoints on Contemporary Social Issues, Rawat Publications, Jaipur.
10. मोर्य एस. डी. (2010) सामाजिक भूगोल, शारदा पुस्तक भवन, इलाहबाद।

E IV: GEOGRAPHY OF ENVIRONMENTAL MANAGEMENT

1. Environment: Fundamentals of Environment
2. Biodiversity: meaning, importance and types; Biodiversity hot spots; Loss of Biodiversity and its conservation
3. Environmental Degradation: Meaning and types of degradation; Quality Assessment of Soil and Water.
4. Environmental Impact Assessment and Strategies; Case Studies: Tehri Dam, Sardar Sarovar Project
5. Concept of Sustainable Development
6. Concept of Eco-feminism and Eco-socialism
7. Environmental Challenges and Management in India: Desertification, Mining, Deforestation, Waste Disposal and Big Dam Controversy – Issues related with high dams (Narmada Sagar Project, Silent Valley); Eutrophication of Wetlands
8. Environmental Movements in India: Chipko Movement and Narmada Bachao Andolan
9. Case studies Associated with Environmental Degradation: Famines in Tribal belt of Rajasthan; Jhum Cultivation in Meghalaya
10. Disaster: A case study of Uttarakhand disaster (Kedarnath disaster, 2013).

Books Recommended:

1. Bhattacharya, N.N. (2011), Biogeography, Rajesh Publications, New Delhi.
2. Chandna R.C., (2010), Environmental Geography, Kalyani publishers, New Delhi.
3. Gautam A., (2010), Environmental Geography, Sharda Pustak Bhavan, Allahabad.
4. Jadhav, S.B., (2012), Environmental Geography, Chandralok Prakashan, Kanpur.
5. Moirangleima, Kh. (2010), Sustainable Management of Wetlands Central Valley of Manipur, B.R. Publishers, New Delhi.
6. Nag, P., et.al, (1997), Geography and Environment, (ed.) Concept Publishing Company, New Delhi.
7. Raghavan, K. M., (2014), Environmental Geography and Disaster Management, Navyug Books International, Delhi.
8. Salahuddin, M., (2011), Waste Management in an Urban Area, B.R. Publishers, New Delhi.
9. Saxena H.M., (2011), Environmental Geography, Rawat Publications, Jaipur.
10. Singh Onkar, et.al. 1993, Frontiers in Environmental Geography, (ed.) Concept Publishing Company, New Delhi.
11. Singh Savindra, (2010), Environmental Geography, Prayag Pustak Bhavan, Allahabad.

E V: POPULATION STUDIES

1. Population Geography: Nature, Approaches (Behavioural and System)
2. Methodological Problems in data collection
3. Basic Source of Data with special reference to India, Problems of handling population data. Mapping and presentation of population data.
4. Population Change and its Measures: Crude Birth Rate, Fertility Rate, Age Specific Birth Rate, Total Fertility Rate, Crude Death Rate, Infant Mortality Rate, Maternal Mortality Rate
5. Determinants of Fertility and Mortality
6. Migration- Type, Determinants and Consequences, Models (W.J. Reilly, George K.Zipf, S.A. Stouffer, Ravenstein, and Lee)
7. Population factors in development planning
8. Population Growth and Distribution in India
9. Fertility and Mortality in India
10. Urbanization in India
11. Population compositions in India: Literacy rate, Sex ratio and Work force
12. Child marriage and Female foeticide in India
13. Poverty alleviation and employment generation in India,
14. National Population policy of India 2000.

Books Recommended:

1. Chandna, R.C, (2009) A Geography of Population, 8th edition, Kalyani Publishers, New Delhi.
2. Hassan, M.I (2009) Population Geography, Rawat Publication, Jaipur
3. Jhingan, M.L., Bhatt. B.K., Desai, J.N: (2005) Demography, Vriada Publication
4. M. Raza and Y.P. Aggrwal (1984),” Inequalities in the levels of Literacy in India: The regional Dimension,” in Shafi and Raza (eds.), Spectrum of Modern Geography, Concept: New Delhi.
5. NewBold Bruce ,K.: (2012) Population geography, Rawat Publication, Jaipur
6. Ranade, P.S: (1990) Population Dynamics in India, Ashish Publishing House, Delhi
7. Sharma R.K: (2007) Demography and Popultion Problems, Atlantic Publishers, Delhi
8. Tripathi R.K: (2008) Population Geography, Commounwealth Publication, Delhi

E VI: ADVANCED GEOMORPHOLOGY

1. Scope of Geomorphology, methods and approaches to the study of landforms.
2. Fundamentals concepts of Geomorphology
3. Evolution of landforms according to Davis, Penck and King.
4. Geomorphic processes and their classification.
5. Endogenetic Forces: Secular and Sudden forces; Earthquakes and Volcanic activities.
6. Exogenitic Forces: Weathering and mass wasting. Erosional processes: river, glacial, coastal, Karst and wind.
7. Slopes forms and processes: Models of slope development, views of Davis, Penck, Wood and King.
8. Erosion Surface; Techniques of identification and correlation.
9. Introduction to Geomorphological mapping methods and application of GIS in geomorphology (Concept of DEM & DTM)
10. Regional geomorphology – Case study of Kumaun Himalay, Chotanagpur region and Lower Chamble Valley.
11. Application of Geomorphology in Agriculture, Urbanization, Hydrology and Hazard management.

Books Recommended:

1. Ahmed, E. (1985): Geomorphology. Kalyani Publishers, New Delhi.
2. Bloom.A. L. (1998/ 2001): Geomorphology. 3rd edition. Prentice Hall of India, New Delhi.
3. Chorley, R.J., Schumm S A and Sugden D E. (1984): Geomorphology. Methuen and Company Ltd., London.
4. Dayal, P. (1994): A Text Book of Geomorphology. Kalyani Publishers, New Delhi.
5. Fairbridge, R.W. (ed.) (1968): Encyclopaedia of Geomorphology, Reinhold Book Corporation., New York
6. Gregory, K.J. and Walling, D.E. (1973): Drainage Basin Form and Process. Edward Arnold, London.
7. Jog, S. R. (ed.) (1995): Indian Geomorphology (2 vols.). Rawat Publications, Jaipur
8. Kale, V. and Gupta, A. (2001): Introduction to Geomorphology. Orient Longman, Hyderabad.

9. King, C.A.M. (1966): Techniques in Geomorphology. Edward Arnold, London.
10. Pethick, J. (2000): An Introduction to Coastal Geomorphology. Arnold, London.
11. Sharma, H. S., (1980): Perspective of Geomorphology (4 Volumes), Concept Publications, New Delhi
12. Sharma, H. S., (1987): Tropical Geomorphology – Study of Morphogenetic Regionalization of Rajasthan, Concept Publications, New Delhi
13. Sharma, P. R. (ed.), (1993): Applied Geomorphology in Tropics. Rishi Publications, Varanasi.
14. Singh, S. (2004): Geomorphology. Prayag Pustak Bhawan, Allahabad.
15. Sparks, B.W. (1986): Geomorphology. Longmans, London.
16. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.
17. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology. Longman, London.

3. RE I: STUDY OF GEOSPHERE

1. General introduction of solar system and its origin by inter-Stellar Dust Hypothesis of Otto Schmid.
2. Study of Geological Time scale.
3. Interior of the Earth according to Seismology.
4. Plate tectonic theory and its applications.
5. Normal Cycle of Erosion and interruptions in Erosion cycle.
6. Introduction of general features of ocean floor and origin of continental Shelf, continental slope, Abyssal plain and Oceanic Deeps.
7. Introduction of ocean deposits and their classification on the basis of sources and depth.
8. Causes of origin of currents and currents of the Atlantic, Pacific and Indian Ocean.
9. Types and Origin of Tides (Equilibrium and Stationary wave theories)
10. Type of coral reefs and their origin (Daly's Glacial control theory)
11. Factors controlling solar insolation, heating and cooling of atmosphere, regional distribution of Temperature.
12. Introduction of pressure and wind belts, shifting of pressure belts,
13. Introduction of cyclone and anticyclone and origin of temperate cyclone.
14. Causes and effects of global environmental Problems; Ozone depletion, Green House effect, Global warming
15. Climate change; Evidences and Consequences

Books Recommended:

1. Alka, G., (2011), Bhoutik Bhoogol, Rastogi Publications, Meerut.
2. Critchfield, H., (1975) General Climatology, Prentice-Hall, New York.
3. Dayal, P., (1996) A Text book of Geomorphology, Shukla Book Depot, Patna,
4. Khullar, D.R., (2012), Physical Geography, Kalyani Publishers, New Delhi.
5. King, C. A. M., (1975) Oceanography for Geographers, E. Arnold, London.
6. Sharma, H.S., (2012) Bhoutik Bhoogol, Panchshil Publications, Jaipur
7. Singh, S., (2009), Bhoutik Bhoogol, Vasundhara Prakashan, Gorakhpur.
8. Singh, S., (2009), Physical Geography, Prayag Pustak Bhawan, Allahabad.
9. Strahler A.N. and Strahler, A.H. (1984): Elements of Physical geography, John Wiley & Sons. New York
10. Strahler, A. N. and A. H. Strahler, (1992) Modern Physical Geography, John Wiley & Sons.
11. Strahler, A. N., (1973) Environmental Geo-Science, Hamilton Publishing, Santa Barbara,

RE II: ADVANCE GEOGRAPHY OF INDIA

1. India as a geographical unit and geopolitics of the Indian Ocean
2. Physiographic divisions and Geology of India
3. Climate of India: Diversity in the unity of Indian Monsoon
4. Forest Resource: Forest conservation and Social forestry
5. General demographic status with special reference to sex ratio and literacy
6. Trends of urbanization in India.
7. Human development index of India
8. Multipurpose projects with special reference to Tehri and Chambal Project
9. Land utilization
10. Agricultural Regions of India according to ICAR
11. Mineral Resource of India and Problems of mining activities
12. Historical perspective of Indian Industries
13. Trends and pattern of foreign trade of India
14. Emerging tourism industry of India
15. Management of Urban solid waste

Books Recommended:

1. Khullar D.R. (2014) India : a Comprehensive Geography, Kalyani Publication, Ludhiana
2. Krishnan, M.S., (2012) Geology of India and Burma, CBS Publication, New Delhi.
3. Mishra, V.C. (1967) Geography of Rajasthan, National Book Trust, New Delhi.
4. Puri, G. S. (1960) Indian forest Ecology, Oxford Book and Stationary, New Delhi.
5. Raychaudhary. S.P. (1966) Land and Soil, National Book Trust, New Delhi.
6. Singh Gopal, (2010) Geography of India, Atma Ram Publication, Delhi
7. Spate, O. H. K., & Learmonth, A.T.A., India & Pakistan, London.
8. Wadia, D. N., (1957) Geology of India, Macmillan, London.
9. हुसैन माज़िद, सिंह रमेश (2015) भारत का भूगोल, टाटा मैकग्राहिल प्रकाशन, नई दिल्ली।
10. मामोरिया चतुर्भुज (2009) भारत का वृहत भूगोल, साहित्य भवन आगरा।
11. बंसल सुरेश चन्द्र (2011) भारत का भूगोल, मीनाक्षी प्रकाशन, मेरठ।
12. सिंह गोपाल (2006) भारत का भूगोल, आत्माराम, दिल्ली।
13. सक्सैना हरिमोहन (2014) राजस्थान का भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी प्रकाशन।
14. शर्मा राजकुमार (2010) राजस्थान का भूगोल, हिमाशुं पब्लिकेशन, उदयपुर।
15. शर्मा एच. एस. एवं शर्मा एम.एल. (2015) राजस्थान का भूगोल, पंचशील प्रकाशन, जयपुर

Verified



Offg. Secretary
Banasthali Vidyapith
P.O. Banasthali Vidyapith
Distt. Tonk (Raj.)-304022

MINUTES OF THE MEETING OF BOARD OF STUDIES IN SCHOOL OF EARTH SCIENCES HELD ON 29th DECEMBER, 2018 AT 3.00 P.M. IN THE CONFERENCE ROOM, BHU MANDIR, BANASTHALI VIDYAPITH, RAJASTHAN.

PRESENT

1. Mr. Amit Kumar Mishra	-	Internal Member
2. Dr. Anju Patel	-	Internal Member
3. Mrs. ArpanaChaudhary	-	Internal Member
4. Ms. ArushiRana	-	Internal Member
5. Dr. Ashima Sharma	-	Internal Member
6. Dr. Ashutosh	-	Internal Member
7. Dr. Ashutosh Kumar Pandey	-	Internal Member
8. Ms. ChetnaSoni	-	Internal Member
9. Dr. Chilka Sharma	-	Internal Member
10. Dr. Kartar Singh	-	Internal Member
11. Dr. Kh. Moirangleima	-	Internal Member
12. Dr. MamtaChauhan	-	Internal Member
13. Dr. Ng. Mamata Devi	-	Internal Member
14. Mrs. PradeepikaKaushik	-	Internal Member
15. Dr. Rashmi Sharma	-	Convener
16. Dr. Resmi M.R.	-	Internal Member
17. Dr. SalahuddinMohd.	-	Internal Member
18. Dr. Sarika Singh	-	Internal Member
19. Dr. Subhashree Mishra	-	Internal Member
20. Dr. Vipin Kumar	-	Internal Member
21. Mr. Vivek Deep	-	Internal Member
22. Ms. NishaChoudhary	-	Special Invitee
23. Ms. Rinku Singh	-	Special Invitee
24. Prof. H.S.Sharma	-	External Member
25. Prof. M.G. Thakkar	-	External Member
26. Prof.P.K. Joshi	-	External Member

Note: Prof. H.S.Sharma, Prof. P.K. Joshi, Prof. M.G. Thakkar, Dr. Ng. Mamata Devi and Mrs. PradeepikaKaushik could not attend the meeting.

The meeting started with a welcome of the members by the convener of Board of Studies for School of Earth Sciences, Dr. Rashmi Sharma, Dean, School of Earth Sciences, Banasthali Vidyapith, Rajasthan.

1. The board took up the minutes of its last meeting held on April, 24, 2016.

The Board resolved that the minutes to be confirmed.

2. The board reviewed the existing panel of examiners and suggested to update the address and phone numbers of the existing examiners for each examination of Geography, Geology, Remote Sensing, Environmental Science and Environment Studies of UG, PG,

and M.Phil. examination keeping in view the by-law 15.03.02 of the Vidyapith. Updated panel is sent to the examination and secrecy section.

3. The board reviewed the Study/Curricula, scheme of examination and proposed revisions in various courses of study as follows:

B.A./B.Sc.

i.	First Semester	Minor change ^a
ii.	Second Semester	Minor change ^b
iii.	Third Semester	Minor change ^c
iv.	Fourth Semester	Minor change ^d
v.	Fifth Semester	Major change ^e
vi.	Sixth Semester	Major change ^f

The Board reviewed the objectives, syllabi, learning outcomes of the B.A./B.Sc. (Geography).

(a) In B.A./B.Sc. (Geography) I Semester, revision in the syllabus of *Fundamentals of Cartography Lab* (Course Code: GEOG 101L) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabus of *Fundamentals of Cartography lab* Semester Examination, December, 2019.

(b) In B.A./B.Sc. (Geography) II Semester, revision in the syllabus of *Statistical Techniques and Data Representation lab* (Course Code: GEOG 104L) & *Human Geography* (Course Code: GEOG 102) were proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabi of *Statistical Techniques and Data Representation lab, Human Geography* Semester Examination, April/May, 2020.

(c) In B.A./B.Sc. (Geography) III Semester, revision in the syllabus of *Introduction to Geography of India* (Course Code: GEOG 202) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabus of *Introduction to Geography of India* Semester Examination, December, 2020.

(d) In B.A./B.Sc. (Geography) IV Semester, revision in the syllabus of *Relief Representation and Topographical Maps lab* (Course Code: GEOG 204L) & *Economic Geography* (Course Code: GEOG 201) were proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabi of *Relief Representation and Topographical Maps lab, Economic Geography* Semester Examination, April/May, 2021.

(e) In B.A./B.Sc. (Geography) V Semester, revision in the syllabus of *Map Projection lab* (Course Code: 5.2) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabus of *Map Projection lab* Semester Examination, December, 2021. The Board proposed introduction of pool of Discipline Elective courses and agreed upon it. The courses *Geographical Thought* (Course Code: GEOG 302) and *World Regional Geography* (Course Code: GEOG 304) has been shifted in the pool as courses *Geographical Thought* (Course Code: GEOG_to be generated) and *World Regional Geography* (Course Code: GEOG_to be generated) of Discipline electives and another two new courses has also been added.

(f) In B.A./B.Sc. (Geography) VI Semester, revision in the syllabus of *Geographical Thought* (Course Code: GEOG 6.1) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus.

The Board proposed introduction of pool of Discipline Electives in Semester V and VI also and agreed upon it.

List of Discipline Electives:

Environment and Disaster Management (Course Code: GEOG_to be generated)

Geographical Thought (Course Code: GEOG_to be generated)

Settlement Geography (Course Code: GEOG_to be generated)

World Regional Geography (Course Code: GEOG_to be generated)

Board proposed to introduce Open (Generic) audit/credit Elective and agreed to implement as per Vidyapith policy.

Board also recommended implementing the proposed changes in syllabus from Semester Examination, April/May, 2022.

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the B.A./B.Sc. (Geography) programme is attached and marked as **Annexure –1 (PP. 1-4)**.

The revised syllabus, learning outcomes, list of recommended books and e-learning materials of the B.A./B.Sc. (Geography) programme is attached and marked as **Annexure –2 (PP. 1-37)**.

I. B.Sc. (Geology):

i.	First Semester	Major change ^a
ii.	Second Semester	Major change ^b
iii.	Third Semester	Major change ^c

iv.	Fourth Semester	Major change ^d
v.	Fifth Semester	Major change ^e
vi.	Sixth Semester	Major change ^f

The Board reviewed the objectives, syllabi, learning outcomes of the **B.Sc. (Geology)**.

- a) In B.Sc. Geology I Semester, the courses *Physical Geology and Plate Tectonics* (Course Code: GEOL 102) & *Physical Geology and Plate Tectonics Lab* (Course Code: GEOL 102 L) have been proposed to be replaced by new course *Physical Geology* (Course Code: *to be generated*) containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new course in Semester Examination, December, 2019.
- b) In B.Sc. Geology II Semester, the courses *Mineralogy, Crystallography and Economic Geology* (Course Code: GEOL 101) & *Mineralogy, Crystallography and Economic Geology Lab* (Course Code: GEOL 101L) have been proposed to be replaced by new course *Structural Geology and Plate Tectonics* (Course Code: *to be generated*) containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2020.
- c) In B.Sc. Geology III Semester, the courses *Petrology and Structural Geology* (Course Code: GEOL 202) & *Petrology and Structural Geology Lab* (Course Code: GEOL 202L) have been proposed to be replaced by new course *Mineralogy, Crystallography and Geochemistry* (Course Code: *to be generated*) containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, December, 2020.
- d) In B.Sc. Geology IV Semester, the courses *Palaeontology and Stratigraphy* (Course Code: GEOL 201) & *Palaeontology and Stratigraphy Lab* (Course Code: GEOL 201L) have been proposed to be replaced by new course *Petrology and Economic Geology* (Course Code: *to be generated*) containing both theory and practical. Board discussed the proposed changes and shifting of the courses and agreed upon suggested changes. Board also recommended implementing the proposed changes in the syllabus of new courses in Semester Examination, April/May, 2021.
- e) In B.Sc. Geology V Semester, the courses *Geochemistry, Geomorphology, Photogeology and Remote Sensing* (Course Code: 5.1) & *Geochemistry, Geomorphology, Photogeology and Remote Sensing Lab* (Course Code: 5.2) have been proposed to be replaced by newly introduced pool of Discipline Electives containing both theory and practical. Board discussed the changes proposed and agreed upon the suggested changes. Board also

recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, December, 2021.

- f) In B.Sc. Geology VI Semester, the courses *Hydrogeology, Environmental and Engineering Geology* (Course Code: 6.1) & *Hydrogeology, Environmental and Engineering Geology Lab* (Course Code: 6.2) have been replaced by newly introduced pool of Discipline Electives containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2022.

The Board proposed introduction of pool of Discipline Electives containing both theory and respective practicals and agreed upon it.

List of Discipline Electives:

Applied Geology (Course Code: GEOL_to be generated)

Field Geology: Tools and Techniques (Course Code: GEOL_to be generated)

Geology of Rajasthan (Course Code: GEOL_to be generated)

Palaeontology and Stratigraphy (Course Code: GEOL_to be generated)

Board proposed to introduce Open (Generic) audit/credit Elective and agreed to implement as per Vidyapith policy.

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the B.Sc. (Geology) programme is attached and marked as **Annexure –3 (PP. 1-5)**.

The revised syllabus, learning outcomes, list of recommended books and e-learning materials of the B.Sc. (Geology) programme is attached and marked as **Annexure -4 (PP. 1-55)**.

III. M.A./M.Sc. (Geography):

i.	First Semester	Minor Change ^a
ii.	Second Semester	Minor Change ^b
iii.	Third Semester	Major Change ^c
iv.	Fourth Semester	Major Change ^d

The Board reviewed the objectives, syllabi, learning outcomes of the M.A./M.Sc. (Geography).

The Board discussed the recent trends in Geography at postgraduate level and found that the knowledge of computational software is the necessity of today's research environment. In addition to this, board suggested to give more weightage to self-learning and independent research activities.

(a) In M.A./M.Sc. (Geography) I Semester, the board reviewed the syllabi of *Cartographic Techniques Lab* (Course Code: GEOG 402L). It was found that students had already studied the diagrammatic representation of data manually in their graduation. It was suggested to introduce advanced techniques of this diagrammatic representation using Microsoft Excel at post graduate level. Board also recommended implementing the proposed revision in syllabus of *Cartographic Techniques Lab* Semester Examination, December, 2019.

(b) In M.A./M.Sc. (Geography) II Semester, the board reviewed the syllabi of *Geography of India* (Course Code: GEOG 406) & *Oceanography* (Course Code: GEOG 409) and recommended to add some topics for enrichment and specification. Board also recommended implementing the proposed revision in syllabi of *Geography of India* and *Oceanography* Semester Examination, April/May, 2020.

(c) In M.A./M.Sc. (Geography) III Semester, the board reviewed the syllabi of *Political Geography* (Course Code: GEOG 504), *Research Methodology and Quantitative Techniques* (Course Code: GEOG 507), *Systematic Agricultural Geography* (Course Code: GEOG 510) and *Surveying Lab* (Course Code: GEOG 509L) and recommended to add some topics for enrichment and specification. Board also recommended implementing the proposed revision in syllabi of *Political Geography*, *Research Methodology and Quantitative Techniques*, *Systematic Agricultural Geography* and *Surveying Lab* Semester Examination, December, 2020.

The Board proposed introduction of pool of Discipline Electives and courses of Elective I *Population Geography* (Course Code: GEOG 505) and *Social Geography* (Course Code: GEOG 508) to be shifted in pool of Discipline Electives and agreed upon it.

Board recommended the introduction of Reading Elective I which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board also recommended implementing the Reading Elective by III Semester Examination, December, 2020.

(d) In M.A./M.Sc. (Geography) IV Semester, the board reviewed the syllabi of *Environmental Geography* (Course Code: GEOG 501), *Remote Sensing and GIS* (Course Code: GEOG 506), *Remote Sensing and GIS Lab* (Course Code: GEOG 506 L), *Geography of Rural Settlements* (Course Code: GEOG 502) and *Urban Geography* (Course Code: GEOG 512) and recommended to add some topics for enrichment and specification. Board also recommended implementing the proposed revision in syllabi of *Environmental Geography*, *Remote Sensing and GIS*, *Remote Sensing and GIS Lab*, *Geography of Rural Settlements* and *Urban Geography* Semester Examination, April/May, 2021.

The Board proposed introduction of pool of Discipline Electives and courses of Elective II *Geography of Rural Settlements*(Course Code: GEOG 502)and *Tourism Geography*(Course Code: GEOG 511) and courses of Elective III *Medical Geography*(Course Code: GEOG 503) and *Urban Geography*(Course Code: GEOG 512) to be shifted in pool of Discipline Electives and agreed upon it.

List of Discipline Electives:

- *Geography of Rural Settlements* (Course Code: GEOG 502)
- *Medical Geography* (Course Code: GEOG 503)
- *Population Geography* (Course Code: GEOG 505)
- *Social Geography* (Course Code: GEOG 508)
- *Tourism Geography* (Course Code: GEOG 511)
- *Urban Geography* (Course Code: GEOG 512)

Board recommended the introduction of Reading Elective II which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board has proposed the following List of Reading Electives in the curricula:

- *Agroforestry* (Course Code :ENVS_R to be generated)
- *Energy Resources and Conservation* (Course Code: ENVS_R to be generated)
- *Man and Environment* (Course Code :ENVS_R to be generated)
- *Water and Sustainable Development* (Course Code : ENVS_R to be generated)
- *Environmental Challenges and Disaster Management* (Course Code :GEOG_R to be generated)
- *India: Socio-Political and Environmental Scenario* (Course Code: GEOG_R to be generated)
- *Rajasthan: Challenges and Prospects*(Course Code :GEOG_R to be generated)
- *Transforming India* (Course Code: GEOG_R to be generated)
- *Geo Tourism* (Course Code: GEOL_R to be generated)
- *Indian Mineral Deposits, Economics and Mining Ethics* (Course Code: GEOL_R to be generated)
- *Innovation and Entrepreneurship in Earth Sciences* (Course Code: GEOL_R to be generated)
- *Natural Hazards and Disasters* (Course Code: GEOL_R to be generated)

Board proposed to introduce open elective course in Semester IV.

Board recommended implementation of reviewed recommended books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the M.A./M.Sc. (Geography) programme is attached and marked as **Annexure –5 (PP. 1-6)**.

The revised syllabus, learning outcomes, list of recommended books and suggested e-learning materials of the M.A./M.Sc. (Geography) programme is attached and marked as **Annexure -6 (PP. 1-80)**.

IV. M.Sc. (Geology):

i.	First Semester	Major change ^a
ii.	Second Semester	Major change ^b
iii.	Third Semester	Major change ^c
iv.	Fourth Semester	Major change ^d

The Board reviewed the objectives, syllabi, learning outcomes of the **M.Sc. (Geology)**.

The course scheme has been changed as earlier there were five credits for lectures and in proposed the credits are four. The credits for Lab are remaining same.

- a) In M.Sc. Geology I Semester, the course *Fuel Geology* (Course Code: GEOL 401) has been proposed to shift to semester III as a pool of discipline elective course and is replaced by modified course *Geochemistry and Isotope Geology* (Course Code: GEOL__ to be generated) from semester III.

Geomorphology (Course Code: GEOL__ to be generated) is suggested to introduce in place of *Ore Genesis and Economic Geology* (Course Code: GEOL 409). Earlier it was present in semester IV.

The courses *Geotectonics and Structural Geology* (Course Code: GEOL 405) & *Mineralogy and Analytical Techniques* (Course Code: GEOL 408) were proposed to be retained with modifications in the same semester as *Geotectonics and Structural Geology* (Course Code: GEOL__ to be generated) & *Mineralogy and Analytical Techniques* (Course Code: GEOL__ to be generated) respectively under revised scheme.

The course *Sedimentary Petrology* (Course Code: GEOL__ to be generated) is proposed to introduce as a modified course under revised scheme. Earlier it was in Semester II as *Sedimentary Petrology* (Course Code: GEOL 410).

The course *Geology Lab-I* (Course Code: GEOL 402L) has been suggested to be replaced with the updated course *Geology Lab-I with Field work* (Course Code: GEOL__L to be generated). Board discussed all the changes proposed in the new syllabus and agreed with the suggested changes. Board also recommended implementing the proposed changes in the syllabus of new courses in Semester Examination, December, 2019.

b) In M.Sc. Geology II Semester, the courses *Geophysics and Exploration Method* (Course Code: GEOL 404), *Igneous Petrology* (Course Code: GEOL 406) & *Metamorphic Petrology* (Course Code: GEOL 407) are proposed to retain in the same semester with minor modifications under revised scheme as *Geophysics and Exploration Method* (Course Code: GEOL__ to be generated), *Igneous Petrology* (Course Code:GEOL__ to be generated) & *Metamorphic Petrology*(Course Code:GEOL__ to be generated). *Sedimentary Petrology* (Course Code: GEOL 410) has been proposed to replace by *Ore Genesis and Economic Geology* (Course Code:GEOL__ to be generated), earlier was in semester I.

The course *Stratigraphy*(Course Code:GEOL 510) was earlier in semester III, suggested to shift to semester II with minor modifications under revised course scheme as *Stratigraphy*(Course Code:GEOL__ to be generated).

The course *Geology Lab-II with Field work* (Course Code: GEOL 403L) has been proposed to replace by new course *Geology Lab-II* (Course Code: GEOL__L to be generated).

Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2020.

c) In M.Sc. Geology III Semester, the course *Geochemistry and Isotope Geology* (Course Code: GEOL 504) have been shifted to semester I and replaced by new course *Hydrogeology*(Course Code: GEOL__to be generated).

Mining and Engineering Geology(Course Code: GEOL 508) has been shifted to pool of discipline electives under new course scheme with minor modifications as *Mining and Engineering Geology*(Course Code: GEOL__to be generated).

Palaeontology (Course Code: GEOL 509) is retained in the same semester under new course scheme with minor modifications *Palaeontology*(Course Code: GEOL__to be generated).

Stratigraphy(Course Code: GEOL 510) is replaced by new course *Remote Sensing and GIS in Geology* (Course Code: GEOL__ to be generated).

Geology Lab-III with Field work(Course Code: GEOL 505L) is retained as *Geology Lab-III with Field work*(Course Code: GEOL__L to be generated) in the same semester with significant modifications.

Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, December, 2020.

Board discussed and recommended to introduce pool of discipline electives in III semester

The complete list of pool of discipline electives is as follows:

- *Environmental Geology* (Course Code: GEOL_ to be generated)
- *Fuel Geology* (Course Code: GEOL_ to be generated)
- *Marine Geology* (Course Code: GEOL_ to be generated)
- *Mining and Engineering Geology* (Course Code: GEOL_ to be generated)

Board recommended the introduction of Reading Elective I which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board also recommended implementing the Reading Elective by III Semester Examination, December, 2020.

Board proposed to introduce open elective course in Semester III.

- d) In M.Sc. Geology IV Semester, the courses *Concepts of Remote sensing and GIS* (Course Code: GEOL 501) & *Environmental Geology and Hydrogeology* (Course Code: GEOL 503) have been removed and *Geomorphology* (Course Code: GEOL 507) has been shifted to Semester I under revised course scheme.

Geology Lab-IV (Course Code: GEOL 506L) has been removed from the semester. *Dissertation* (Course Code: GEOL 502 D) has been retained as Dissertation (Course Code: GEOL_D to be generated) and now being introduced for the **entire semester** under revised scheme.

Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2021.

Board recommended the introduction of Reading Elective II which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board has proposed the following Reading Electives in the curricula:

- *Agroforestry* (Course Code :ENVS_R to be generated)
- *Energy Resources and Conservation* (Course Code: ENVS_R to be generated)
- *Man and Environment* (Course Code :ENVS_R to be generated)
- *Water and Sustainable Development* (Course Code : ENVS_R to be generated)
- *Environmental Challenges and Disaster Management* (Course Code :GEOG_R to be generated)
- *India: Socio-Political and Environmental Scenario* (Course Code: GEOG_R to be generated)
- *Rajasthan: Challenges and Prospects*(Course Code :GEOG_R to be generated)
- *Transforming India* (Course Code: GEOG_R to be generated)
- *Geo Tourism* (Course Code: GEOL_R to be generated)
- *Indian Mineral Deposits, Economics and Mining Ethics* (Course Code: GEOL_R to be generated)
- *Innovation and Entrepreneurship in Earth Sciences* (Course Code: GEOL_R to be generated)
- *Natural Hazards and Disasters* (Course Code: GEOL_R to be generated)

Board recommended implementation of reviewed recommended books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the M.Sc. (Geology) programme is attached and marked as **Annexure –7 (PP. 1-8)**.

The revised syllabus, learning outcomes, list of recommended books and suggested e-learning materials of the M.Sc. (Geology) programme is attached and marked as **Annexure - 8 (PP. 1-67)**.

Board reviewed the process of Dissertation and recommended formal guidelines for it. The proposed guidelines with evaluation scheme are attached and marked as **Annexure-9 (PP.1)**. Board also recommended implementing the proposed guidelines by IV Semester Examination, April/May, 2021.

IV. M.Sc. (Environmental Science)

i.	First Semester	Major Change ^a
ii.	Second Semester	Major Change ^b
iii.	Third Semester	Major Change ^c
iv.	Fourth Semester	Major Change ^d

The Board reviewed the objectives, syllabi, learning outcomes of the M.Sc. (Environmental Science).

The Board discussed the recent trends in Environmental Science at postgraduate level and found that the knowledge of computational software is the necessity of today's research environment. In addition to this, board suggested to give more weightage to self-learning and independent research activities.

(a) In M.Sc. (Environmental Science I Semester), revision in the syllabi of *Ecology and Environment* (Course Code: ENVS 402), *Environmental Chemistry* (Course Code: ENVS 405) and *Environment Lab - I* (Course Code: ENVS 403 L) were proposed. Board discussed the revision proposed and agreed upon the suggested syllabi. Board recommended implementing the proposed revision in the syllabi of *Ecology and Environment*, *Environmental Chemistry* and *Environment Lab - I* by I Semester Examination, December, 2019.

Board agreed to replace the course *Geography of Environment* (Course Code: ENVS 410) by *Climate Change and Environment* (Course Code: ENVS_to be generated). Board found that proposed syllabus is more elaborated and well arranged. Board recommended implementing the proposed revision in the syllabus of *Climate change and Environment* by I Semester Examination, December, 2019.

(b) In M.Sc. (Environmental Science II Semester), Board reviewed the syllabi of *Biostatistics and Research Methodology* (Course Code: BIO 406) and *Environmental Biology and Toxicology* (Course Code: BIO 408), discussed and agreed that these course should be

replaced by new courses *Environmental Statistics and Research Methodology* (Course Code:ENVS_to be generated) & *Environmental Toxicology* (Course Code:ENVS_to be generated) respectively. Board recommended implementing the proposed changes by II Semester Examination, April, 2020.

Board reviewed the revision in the syllabi of *Environmental Legislation* (Course Code: ENVS 406) & *Environment Lab - II* (Course Code: ENVS 404 L) and agreed upon the suggested syllabi. Board recommended implementing the proposed revision in the syllabi of *Environmental Legislation* along with *Environment Lab - II* respectively by II Semester Examination, April, 2020.

Board suggested replacement of *Environmental Physics* (Course Code: ENVS 407) by *Biodiversity & conservation* (Course Code: ENVS 502), which was an elective course of III semester as *Biodiversity & conservation* (Course Code: ENVS_to be generated) and Board recommended *Environmental Physics* (Course Code: ENVS_to be generated) to be placed in discipline elective pool of III semester. Board discussed the change and agreed upon the suggested syllabus. Board recommended implementing the proposed changes by II Semester Examination, April, 2020.

(c) In M.Sc. (Environmental Science III Semester), Board reviewed the course of *Disaster Management and Mitigation Strategies*(Course Code: ENVS 504) and *Energy Auditing and Conservation*(Course Code: ENVS 505) and suggested that these courses have been replaced by *Air Pollution Monitoring, Control Technology and Management* (Course Code: ENVS 501) & *Water Pollution Monitoring, Control Technology and Management* (Course Code: ENVS 511) as *Air Pollution Monitoring, Control Technology and Management* (Course Code: ENVS_to be generated) & *Water Pollution Monitoring, Control Technology and Management* (Course Code: ENVS_to be generated), which was part of an elective in III semester. Board suggested inclusion of air and water courses should be part of core subjects of Environmental Science. Board recommended *Disaster Management and Mitigation Strategies* (Course Code: ENVS_to be generated) and *Energy Auditing and Conservation* (Course Code: ENVS_to be generated) to be placed in discipline elective pool of III semester.

Board reviewed the revision in the syllabi of *Environment Lab -III* (Course Code: ENVS 506L) agreed upon the suggested syllabi.

Board suggested to shift *Biodiversity and Conservation* (Course Code: ENVS 502) from the pool of Elective to core course in Semester II. *Environmental Impact Assessment and Management* (Course Code: ENVS 508) to be shifted as *Environmental Impact Assessment and Management* (Course Code: ENVS_to be generated) in the Pool of Discipline Elective Semester III from core course of same semester.

Board recommended implementing the proposed changes by III Semester Examination, December, 2020.

Board discussed and recommended to introduce pool of discipline electives in III semester

The complete list of Discipline Electives is as follows:

- *Biotechnology Application to Environmental Science* (Course Code: ENVS to be generated)
- *Disaster Management and Mitigation Strategies* (Course Code: ENVS to be generated)
- *Energy Auditing and Conservation* (Course Code: ENVS to be generated)
- *Environmental Health Management* (Course Code: ENVS to be generated)
- *Environmental Impact Assessment and Management* (Course Code: ENVS to be generated)
- *Environmental Physics* (Course Code: ENVS to be generated)

Board recommended the introduction of Reading Elective I which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

Board proposed to introduce open elective course in Semester III.

(d) In M.Sc. (Environmental Science IV Semester), Board discussed and agreed modification in credits of *Project* (Course Code: ENVS 509P) and proposed implementation as *Project* (Course Code: ENVS_P to be generated), also proposed the Reading Elective-II in IV semester.

Board recommended the introduction of Reading Elective II which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board has proposed the following Reading Electives in the curricula:

- *Agroforestry* (Course Code :ENVS_R to be generated)
- *Energy Resources and Conservation* (Course Code: ENVS_R to be generated)
- *Man and Environment* (Course Code : ENVS_R to be generated)
- *Water and Sustainable Development* (Course Code : ENVS_R to be generated)
- *Environmental Challenges and Disaster Management* (Course Code :GEOG_R to be generated)
- *India: Socio-Political and Environmental Scenario* (Course Code: GEOG_R to be generated)
- *Rajasthan: Challenges and Prospects*(Course Code : GEOG_R to be generated)
- *Transforming India* (Course Code: GEOG_R to be generated)
- *Geo Tourism* (Course Code: GEOL_R to be generated)
- *Indian Mineral Deposits, Economics and Mining Ethics* (Course Code: GEOL_R to be generated)
- *Innovation and Entrepreneurship in Earth Sciences* (Course Code: GEOL_R to be generated)

- *Natural Hazards and Disasters* (Course Code: GEOL_R to be generated)

Board recommended implementing the proposed revision in the scheme of *Project* by IV Semester Examination, April, 2021.

Programme educational objectives, outcomes and the list of courses of the M.Sc. (Environmental Science) programme is attached and marked as **Annexure –10 (PP. 1-6)**.

Board recommended implementation of reviewed recommended books and e-learning materials from session 2019-20 in all semesters respectively.

The revised syllabus, learning outcomes, list of recommended books and suggested e-learning materials of the M.Sc. (Environmental Science) programme is attached and marked as **Annexure -11 (PP. 1-88)**.

Board reviewed the process of *Project* and recommended formal guidelines for it. The proposed guidelines with evaluation scheme is attached and marked as **Annexure-12 (PP. 1)**.

Board also recommended implementing the proposed guidelines by IV Semester Examination, April/May, 2021.

V. M. Phil. (Geography):

Board discussed the curriculum structure of M.Phil. (Geography) and proposed further discussion in Faculty meeting. (Annexure I)

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

VI. M.Tech. (Remote Sensing):

i.	First Semester	Major Change ^a
ii.	Second Semester	Major Change ^b
iii.	Third Semester	Major Change ^c
iv.	Fourth Semester	Major Change ^d

Board reviewed the scheme of M.Tech. and recommended to introduce discipline electives and Term paper/Minor project/Seminar in semester I & II with modified credit. Board also recommended introduction of open elective in semester II. Board suggested to replace existing lab with restructured labs.

- (a) In M.Tech. (Remote Sensing) I Semester, Board reviewed the syllabi of *Fundamentals of Geographic Information Sciences and Digital Cartography*(Course Code: RS 504), *GIS Programming and Scripting* (Course Code: RS 505), *Microwave, Thermal and Hyperspectral Remote Sensing* (Course Code: RS 506), *Principles of Remote Sensing* (Course Code: RS 508), *Fundamentals of Geographic Information Sciences and Digital Cartography Lab* (Course Code: RS 504L), *GIS Programming and Scripting Lab* (Course Code: RS 505L), and *Microwave, Thermal and Hyperspectral Remote Sensing Lab* (Course Code: RS 506L) and found that few topics need to be reordered, modified and detailed for adequate and systematic approach. It was suggested to introduce recent technologies and essential application following the modified national security policies and advanced data, tools and techniques for underpinning the essential component for further research. It was suggested to introduce discipline elective I and discipline elective II and shift courses *GIS Programming and Scripting* (Course Code: RS__to be generated), *Microwave, Thermal and Hyperspectral Remote Sensing*(Course Code: RS__to be generated), *Applied Statistics and Research Methodology* (Course Code: RS__to be generated) to pool of discipline electives. Introduction of Term paper-I /Minor project-I/Seminar-I was suggested. *Fundamentals of Geographic Information Sciences and Digital Cartography Lab* (Course Code: RS 504L) and *GIS Programming and Scripting Lab* (Course Code: RS 505L) was combined as new Remote Sensing Lab-II (Course Code: RS_L to be generated) and *Microwave, Thermal and Hyperspectral Remote Sensing Lab* (Course Code: RS506L) and *Principles of Remote Sensing Lab* (Course Code: RS 508L) was combined as new Remote Sensing Lab-I (Course Code: RS_L to be generated). *Applied Statistics and Research Methodology Lab* (Course Code: RS 502L) was proposed to remove. Board proposed and agreed to implement the revision in syllabi and introduction of new components of above mentioned courses by I Semester Examination, December, 2019.
- (b) In M.Tech. (Remote Sensing)II Semester,Board reviewed the syllabi of *Applications of Remote Sensing*(Course Code: RS 501), *Digital Image Processing* (Course Code: RS 503), *Photogrammetry, Global Positioning Systems and Mobile Mapping* (Course Code: RS 507), *Spatial Database Systems, Analysis and Modeling* (Course Code: RS 509), *Spatial Decision Supports Systems* (Course Code: RS 510), *Applications of Remote Sensing Lab* (Course Code: RS 501L), *Digital Image Processing Lab* (Course Code: RS 503L) and *Photogrammetry, Global Positioning Systems and Mobile Mapping Lab* (Course Code: RS 507L) and found that few topics need to be reordered, modified and detailed for adequate and systematic approach. It was suggested to introduce recent technologies and essential application following the modified national security policies and advanced data, tools and techniques for underpinning the essential component for further research. It was suggested to introduce discipline elective III and open elective and shift courses *Applications of Remote Sensing* (Course Code: RS__to be generated), *Spatial Database Systems, Analysis and Modeling* (Course Code: RS__to be generated), *Spatial Decision Supports Systems* (Course Code: RS__to be generated) to pool of discipline electives. Introduction of Term paper-II /Minor project-II/Seminar-II was suggested. *Digital Image Processing Lab* (Course Code: RS 503L) and *Applications of Remote Sensing Lab* (Course Code: RS 501L) was combined as new Remote Sensing Lab-III (Course Code: RS_L to be generated) and *Photogrammetry, Global Positioning Systems and Mobile Mapping* (Course Code: RS 507) and *Spatial Database Systems, Analysis and Modeling Lab* (Course Code: RS 509L), was combined as new Remote Sensing Lab-IV (Course Code: RS_L to be generated). Board proposed and agreed to implement the revision in syllabi and introduction of new components of above mentioned courses by II Semester Examination, April/May, 2020.

List of Discipline Electives:

Applications of Remote Sensing(Course Code: RS_to be generated)

Applied Statistics and Research Methodology(Course Code: RS_to be generated)

Geospatial Entrepreneurship (Course Code: RS_to be generated)

Geospatial Intelligence(Course Code: RS_to be generated)

GIS Programming and Scripting(Course Code: RS_to be generated)

Microwave, Thermal and Hyperspectral Remote Sensing(Course Code: RS_to be generated)

Spatial Database Systems, Analysis and Modeling(Course Code: RS_to be generated)

Spatial Decision Supports Systems(Course Code: RS_to be generated)

(c) In M.Tech. (Remote Sensing) III Semester, Board reviewed the list of reading electives and found that the course *Geoinformatics in Human Settlement Analysis*(Course Code: RS 601R) should be replaced by *Spatial Planning and Urban Development* (Course Code: RS _ R to be generated), the course *Pattern Recognition and Processing* (Course Code: RS 602R) should be replaced by *Geospatial BigData: Challenges and Opportunities* (Course Code: RS _ R to be generated) and the course *Remote Sensing in Environment Studies* (Course Code: RS 605R) should be replaced by *Environmental Remote Sensing and Modeling* (Course Code: RS _ R to be generated) and shifted to the pool of reading electives. Board also suggested that some more emerging technologies and national programmes should be added. Board proposed and agreed to implement the syllabus by III Semester Examination, December, 2020.

(d) In M.Tech. (Remote Sensing) IV Semester, Board reviewed the list of reading electives and found that the course *Remote Sensing in hydrology and water resources*(Course Code: RS _R to be generated), should be modified, as there are significant changes in syllabi and few topics need to be reordered and detailed for adequate and systematic approach. The board also found that the course *Remote Sensing in Resource Management* (Course Code: RS 607R) should be replaced by *Geo-informatics for Resource Management* (Course Code: RS _ R to be generated) and the course *Spatial Modeling and Resource Model* (Course Code: RS 608R) should be replaced by *Open Source Software, Services and Utility Application* (Course Code: RS _ R to be generated) and shifted to the pool of reading electives. Board also suggested that some more emerging technologies and national programmes should be added. Board proposed and agreed to implement the syllabus by IV Semester Examination, April/May, 2021.

The Board also recommended implementing the reading electives by Session 2020-2021.

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, Programme specific outcomes and the list of courses of the M.Tech. (Remote Sensing) programme is attached and marked as **Annexure –13 (PP. 1-5)**.

The revised syllabus, learning outcomes, list of recommended books and e-learning materials of the M.Tech. (Remote Sensing) programme is attached and marked as **Annexure -14 (PP. 1-74)**.

In M.Tech. (Remote Sensing) III Semester, Board reviewed the process of *Project (Part I)* (Course Code: RS 603P) and recommended formal guidelines for it. The proposed guidelines with evaluation scheme is attached and marked as **Annexure-15 (PP. 1)**. Board also recommended implementing the proposed guidelines by III Semester Examination, December, 2020.

In M.Tech. (Remote Sensing) IV Semester, Board suggested that similar guidelines **Annexure-15(PP. 1)**.as suggested for *Project (Part I)* (Course Code: RS 603P), should be followed for *Project (Part II)* (Course Code: RS 604P). Board also recommended implementing the proposed guidelines by IV Semester Examination, April/May, 2021.

4. Board reviewed the curriculum for the courses running in the other programs of the Vidyapith. Following suggestions were given

Bachelor of Arts and Bachelor of Education		
GEOG 101L	Fundamentals of Cartography lab	Minor Change
GEOG 102	Human Geography	Minor Change
GEOG 103	Physical Geography	No change
GEOG 104L	Statistical Techniques and Data Representation lab	Minor Change
GEOG 201	Economic Geography	Minor Change
GEOG 202	Introduction to Geography of India	Minor Change
GEOG 203L	Mapping and Prismatic Compass Survey lab	No change
GEOG 204L	Relief Representation and Topographical Maps lab	Minor Change
GEOG 301L	Fundamentals of Geoinformatics lab	No change
GEOG 302	Geographical Thought	Major Change
GEOG 303L	Map Projection lab	Minor Change
GEOG 304	World Regional Geography	Major change

The Board proposed introduction of pool of Discipline Elective courses and agreed upon it. The courses *Geographical Thought* (Course Code: GEOG 302) and *World Regional Geography* (Course Code: GEOG 304) has been shifted in the pool as courses *Geographical Thought* (Course Code: GEOG_ to be generated) and *World Regional Geography* (Course Code: GEOG_ to be generated) of Discipline electives and another two new courses has also been added.

The board reviewed the courses of Bachelor of Arts and Bachelor of Education and recommended to implement as per **Annexure 1 (PP. 1-4) & Annexure 2(PP. 1-38)** .

Bachelor of Science and Bachelor of Education		
GEOG 101L	Fundamentals of Cartography lab	Minor Change
GEOG 102	Human Geography	Minor Change
GEOG 103	Physical Geography	No change
GEOG 104L	Statistical Techniques and Data Representation lab	Minor Change
GEOG 201	Economic Geography	Minor Change
GEOG 202	Introduction to Geography of India	Minor Change
GEOG 203L	Mapping and Prismatic Compass Survey lab	No change
GEOG 204L	Relief Representation and Topographical Maps lab	Minor Change
GEOG 301L	Fundamentals of Geoinformatics lab	No change
GEOG302	Geographical Thought	Major Change
GEOG 303L	Map Projection lab	Minor Change
GEOG 304	World Regional Geography	Major change
GEOL 101	Mineralogy, Crystallography and Economic Geology	Major Change
GEOL 101L	Mineralogy, Crystallography and Economic Geology Lab	Major Change
GEOL 102	Physical Geology and Plate Tectonics	Major Change
GEOL 102L	Physical Geology and Plate Tectonics Lab	Major Change
GEOL 201	Palaeontology and Stratigraphy	Major Change
GEOL 201L	Palaeontology and Stratigraphy Lab	Major Change
GEOL 202	Petrology and Structural Geology	Major Change
GEOL 202L	Petrology and Structural Geology Lab	Major Change
GEOL 301	Hydrology, Environmental and Engineering Geology	Major Change
GEOL 301L	Hydrology, Environmental and Engineering Geology Lab	Major Change
GEOL 303	Geochemistry, Geomorphology, Photogeology and Remote Sensing	Major Change
GEOL 303L	Geochemistry, Geomorphology, Photogeology and Remote Sensing Lab	Major Change

In B.Sc. Geology I Semester, the courses *Physical Geology and Plate Tectonics* (Course Code: GEOL 102) & *Physical Geology and Plate Tectonics Lab* (Course Code: GEOL 102

L) have been proposed to be replaced by new course *Physical Geology* (Course Code: *to be generated*) containing both theory and practical. In B.Sc. Geology II Semester, the courses *Mineralogy, Crystallography and Economic Geology* (Course Code: GEOL 101) & *Mineralogy, Crystallography and Economic Geology Lab* (Course Code: GEOL 101L) have been proposed to be replaced by new course *Structural Geology and Plate Tectonics* (Course Code: *to be generated*) containing both theory and practical. In B.Sc. Geology III Semester, the courses *Petrology and Structural Geology* (Course Code: GEOL 202) & *Petrology and Structural Geology Lab* (Course Code: GEOL 202L) have been proposed to be replaced by new course *Mineralogy, Crystallography and Geochemistry* (Course Code: *to be generated*) containing both theory and practical. In B.Sc. Geology IV Semester, the courses *Palaeontology and Stratigraphy* (Course Code: GEOL 201) & *Palaeontology and Stratigraphy Lab* (Course Code: GEOL 201L) have been proposed to be replaced by new course *Petrology and Economic Geology* (Course Code: *to be generated*) containing both theory and practical. In B.Sc. Geology V Semester, the courses *Geochemistry, Geomorphology, Photogeology and Remote Sensing* (Course Code: 5.1) & *Geochemistry, Geomorphology, Photogeology and Remote Sensing Lab* (Course Code: 5.2) have been proposed to be replaced by newly introduced pool of Discipline Electives containing both theory and practical. In B.Sc. Geology VI Semester, the courses *Hydrogeology, Environmental and Engineering Geology* (Course Code: 6.1) & *Hydrogeology, Environmental and Engineering Geology Lab* (Course Code: 6.2) have been replaced by newly introduced pool of Discipline Electives containing both theory and practical.

The board reviewed the courses of Bachelor of Science and Bachelor of Education and recommended to implement as per **Annexure 1 (PP. 1-4) & Annexure 2 (PP. 1-37) and Annexure 3 (PP. 1-5) & Annexure 4 (PP. 1-55).**

Master of Arts (Textile Designing - Printing)		
ENVS 408	Environmental Studies	Deal by Design Department
Master of Arts (Textile Designing - Weaving)		
ENVS 408	Environmental Studies	Deal by Design Department

It will be submitted by Design Department.

Bachelor of Technology (Computer Science and Engineering)		
RS 401	Geoinformatics	No change
Bachelor of Technology (Electronics and Communication Engineering)		
RS 401	Geoinformatics	No change
Bachelor of Technology (Information Technology)		
RS 401	Geoinformatics	No change

Bachelor of Technology (Electronics and Electricals)		
RS 401	Geoinformatics	No change
Bachelor of Technology (Electronics and Instrumentation)		
RS 401	Geoinformatics	No change
Bachelor of Technology (Biotechnology)		
RS 401	Geoinformatics	No change

The Board also recommended to introduce RS 401 Geoinformatics in Chemical Engineering Fourth Year.

The course scheme, learning outcomes, list of recommended books and e-learning materials of the (RS 401 Geoinformatics) programme is attached and marked as **Annexure- 16 (PP.1) and 17 (PP. 1-2)**.

5. Board reviewed the reports received from the examiners of different examinations of 2017 and 2018. All the reports were found to be satisfactory. It was noted that the examiners have generally reported ‘to the point’ answers and have found expression/method of representation satisfactory/good. Few examiners suggested to give more emphasis on maps & charts, graphical representation and labeled diagrams to support their answers.

6. The board evaluated the semester examination papers and found that most of them were descriptive and few analytic & application based depending on the nature of course. The Board concluded that the quality of question papers is good but sometimes some questions are out of syllabus, format is not clear, so, the board recommended for consideration of the syllabi while setting question papers.

The analysis of question papers is enclosed in **Annexure–18 (PP. 1-9)**.

7. a).

Foundation Course (Environment Studies)		
BVF 002	Environment Studies	No change

Board reviewed the learning outcomes and syllabus and agreed to continue with the existing syllabus of *Environment Studies*(Course Code:BVF 002).

The course scheme, learning outcomes, list of suggested books and e-resources of the Foundation Course (Environment Studies)programme is attached and marked as **Annexure-19(PP. 1) and Annexure - 20 (PP. 1)**.

b). Online courses

The Board suggested to introduce online courses as a substitute of Reading Electives in PG Programmes in III & IV Semester, respectively of School of Earth Sciences.

List of Alternate online courses (to be given in BOS minutes)

S No	Agency/ Portal	Name of course	Duration	(Core/ Elective/ Reading Elective)	Credit point(s)	URL
In M.Sc.(Environmental Science/Geology/ Geography) and M.A. (Geography) III & IV Semester Reading Electives						
1	Indian Institute of Technology Roorkee, NPTEL	Mineral Resources: Geology, Exploration, Economics and Environment	Self paced 48h (Registration at any time)	Reading Elective I	2	https://onlinecourses.nptel.ac.in/noc18_ge13/preview
2	Indian Institute of Technology Kanpur, NPTEL	Natural Hazards Part 1	Self paced 48h (Registration at any time)	Reading Elective I	2	https://onlinecourses.nptel.ac.in/noc19_
3	Indian Institute of Technology Madras, NPTEL	Non-Conventional Energy Resources	Self paced 48h (Registration at any time)	Reading Elective II	2	https://onlinecourses.nptel.ac.in/noc18_ge09/preview

The alternate online course name, duration, credits and URL is attached and marked as **Annexure -21(PP. 1)**.

**BANASTHALI VIDYAPITH
SCHOOL OF EARTH SCIENCES**

Name of the Programme: M. Phil. (Geography)

Programme Educational Objectives:

Banasthali Vidyapith is an epitome of tradition and modernity. Vidyapith aims to preserve and inculcate the essential values and ideals of Indian culture. It believes in simple living and high thinking. Our educational ideology is based on the concept of fivefold education focusing on physical, practical, aesthetic, moral and intellectual aspects in order to develop a balanced personality.

Geography is concerned with human and physical environmental systems and their interaction, mapping and measuring natural and man-made resources, designing ways of using them, analyzing the distribution of welfare, recognizing and averting hazards and reviewing social institutions. Man's lifestyle is influenced by physical aspects in its immediate surroundings and Geography act as a bridge between man and its environment. Geography is also related to human dimension wherein man using the resources and creates its economic dimension. Various arenas of human aspects such as business, trade, commerce, agriculture, industry, navigation, military operations, spacecraft and administration needs Geography as a foundation.

Students will gain profound knowledge of current research problems, approaches, and insights regarding the interactions between the environment and society in the context of global change. Students learn to integrate scientific theories, findings, and procedures in order to analyze and model human-environmental systems.

The main objectives of the Master of Philosophy Geography programme are:

- To develop skills of assessing contrasting theories, explanations and policies; collecting, critically judging, evaluating and interpreting varied forms of evidence; preparing maps and diagrams; employing various methods of collecting and analyzing spatial and environmental information; combining and interpreting different types of evidence to tackle specific problems; and recognizing the ethical and moral dimensions of study.
- To develop oral presentation and report writing skills; and, make meaningful contributions to improving legal/administrative structures and procedures relevant to the environment and sustainable development.
- To conduct independent research of a professional quality and describe specific research techniques and explain the literature and concepts in the conduction of original research.
- To communicate the results of research in both oral and written forms; Entails demonstrating skills in oral presentation and the writing of formal papers during coursework, and ultimately, a dissertation.

- The opportunity to develop large-scale research management skills by completing a research thesis under academic supervision and guidance.
- To raise sensitivity for ethical codes of conduct, social values with help of eco-feminism, gender equality, social balance and respect for each strata of the society.

Programme Outcomes:

- **PO1: Geography Knowledge:** The outcomes of the course are achieved both through focused study of selected specialized aspects of geographical research and through development of more general research skills and methods. Develop in-depth knowledge of some substantive area(s) of geography and geographical research; develop their capacity to frame research questions, to derive appropriate research designs, and develop awareness of alternative approaches.
- **PO2: Planning abilities:** A comprehensive understanding of techniques and a thorough knowledge of the literature, applicable to their own research; demonstrated some self-direction and originality in tackling and solving problems, and acted autonomously in the planning and implementation of research.
- **PO3: Design/development of solution for problems:** The research skills strengthen them to formulate hypothesis about any form of social, economic and environmental problems and collect facts to prove it.
- **PO4: Problem analysis:** analyses the research problems occurring in our social and physical environment and develop methodology to depict and solve them. Demonstrate originality in the application of knowledge, together with a practical understanding of how research and enquiry are used to create and interpret knowledge in their field; shown abilities in the critical evaluation of current research problems and research techniques and methodologies.
- **PO5: Modern tool usage:** Use remote sensing and GIS techniques in medical, urban & rural settlements, environment, agriculture, resource, tourism and several other aspects from a geographical perspective. The applications can further enhance research in the discipline and contribute towards a better living environment. Acquired the skills to use library and internet resources independently and become critical and skilled readers of geographical and other research publications.
- **PO6: Leadership skills:** : develop a capability to manage research, including data management, conducting and disseminating research, working in a team, and understanding codes of research practice and research ethics.
- **PO7: Professional Identity:** understand, analyze and contribute towards the discipline adopting professions as an educator, researcher and specialist in different arenas of geography; Develop their capacity to frame research questions, to derive appropriate research designs, and develop awareness of alternative approaches; develop a competence and confidence in using a range of quantitative methods of gathering, analyzing and interpreting evidence.
- **PO8: Geographical Ethics:** Apply ethical principles in personal, professional and social levels. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- **PO9: Communication:** Communicate effectively with the Earth Science community and with society at large, by discussing their research at several levels in the form of conferences, seminars and symposium. They are able to comprehend and write effective presentations, documentation, research publications and with writing communicate their ideas at regional, national and international levels.

- **PO10: The Geographer and society:**Students contribute as a researcher by identifying socio-economic and environment problems and suggest measures, solutions to overcome the problems. Nevertheless, geographical specialists play an important role in the national development. With the help of most talented geographers, geographical theories are as much as the solution of the great problems of the society and economy, for which they requires a synthetic geographical approach.
- **PO11: Environment and sustainability:** employing various methods of collecting and analyzing spatial and environmental information; combining and interpreting different types of evidence to tackle environmental problems; and recognizing the ethical and moral responsibility towards sustainability.
- **PO12: Life- long learning:** students develop lifelong learning towards major issues and develop an attitude to depict them through their publications and presentation. They also become critical and skilled readers of geographical and other research publications. The research provides them an essential strength to describe or solve problem associated to different zones of the discipline. Students are familiar with an appropriate range of intellectual and methodological traditions within geographical research and the social sciences.

FIRST SEMESTER

Existing Scheme					
Course Code	Course Name	L	T	P	C
EDU 617L	Sessional and Lab work (Teaching Practice)	0	0	4	2
EDU 619	Teacher, Teaching and Higher education	4	0	0	4
GEOG 607	Research Methodology and Statistical analysis in Geography	4	0	0	4
Semester wise Total		8	0	4	10

Proposed Scheme					
Course Code	Course Name	L	T	P	C
GEOG 607	Research Methodology and Statistical analysis in Geography	4	0	0	4
GEOG__L	Digital Cartography and Geoinformatics Lab	0	0	8	4
GEOG__	Pedagogy in Geography	4	0	0	4
GEOG__	Term Paper	0	0	24	12
GEOG__R	Reading Elective I	0	0	0	2
	Total	8	0	32	26

Reading Elective

Course Code	Course Name	L	T	P	C
GEOG 602R	Advanced Geography of India	2	2	0	4
GEOG 610R	Study of Geosphere	2	2	0	4

~~THIRD SEMESTER~~

Course Code	Course Name	L	T	P	C
GEOG 701D	Dissertation	0	0	24	12
GEOG 702S	Seminar	0	0	8	4
Semester Wise Total		0	0	32	16

Note: Duration of M.Phil. Programme has been changed into 2 semesters instead of 3 semesters.

Course Details:

FIRST SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	EDU617L: SESSIONAL & LAB WORK (TEACHING PRACTICE)—	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> ● acquaint the students with the scenario of higher education in India and expected teacher's role in higher education. ● enable students to identify and use different teaching competencies, methods and media required for effective teaching. ● enhance the 	<ol style="list-style-type: none"> 1. Practice in Simulation— —15 Pds. 2. Methods based planning —10 Pds. 3. Practice in real classroom—20 Pds. Seminar— —15 Pds. 		Replaced by New Course

		<p>ability to instruct and evaluate, as a teacher in higher education.</p> <ul style="list-style-type: none"> develop sensitivity towards major issues related to different dimensions of higher education. 			
2.	Teacher, Teaching and Higher education	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> acquaint the students with the scenario of higher education in India and expected teacher's role in higher education. enable students to identify and use different 	<p>Course Outline:</p> <p>1. Overview of Higher Education in India: Purpose and Functions of Higher Education. Functions of Regulatory Bodies—UGC, AICTE, NCTE, DEC, NAAC.</p> <p>2. Role of Teacher in Higher Education: Teacher's Role—Curriculum development, Instructional, Institutional, Research related and Social. Professional Development of Teachers—Role of ASC.</p> <p>3. Pre-requisites of Teacher in Higher Education: Teaching Competencies—</p>		

		<p>teaching competencies, methods—and media—required for—effective teaching.</p> <ul style="list-style-type: none"> ●—enhance—the ability—to instruct—and evaluate, as a teacher—in higher education. ●—develop sensitivity towards—major issues related to different dimensions—of higher education. 	<p>Introduction, Questioning, Board Work, Explanation, Use of Support Material, Stimulus Variation, Probing and Closure. Methods for teaching—Lecture, Discussion, Project, Workshop and Seminar. Media for effective teaching.</p> <p>4.—Designing of Instruction and Evaluation: Instructional Planning. Modes of Evaluation in Higher Education.</p> <p>5.—Major issues in Higher Education: Government and Private Participation, Women Participation, Globalization of Higher Education, Quality Issues.</p> <p>References:</p> <p>1.—Aggarwal, J.C., (2012), “Principles, Methods & Techniques of Teaching,” Vikas Publishing House Pvt. Ltd., New Delhi.</p> <p>2.—Association of Indian Universities, (2003), “Globalization of Indian Higher Education”, New Delhi.</p> <p>3.—Bawa, M.S., Nagpal, B.M., (2011), “Developing Teaching Competencies,” Viva Books, New Delhi.</p>		
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			<p>Information Age”, Authors Press, New Delhi.</p> <p>13. — Sen, R., (2009), “Women and Higher Education System,” Crescent Publishing Corporation, New Delhi.</p> <p>14. — Shafi, Z.S. (2008), “Reforms and Innovations in Higher Education”, Association of Indian Universities, New Delhi.</p> <p>15. — Sharma, S.R., (2000), “Effective Classroom Teaching Modern Methods, Tools & Techniques,” Mangal Deep Publications, Jaipur.</p> <p>16. — Thamarasseri, I., (2012), “Essentials of Educational Evaluation,” Kanishka Publishers, New Delhi.</p>		
3.	GEOG 607 Research Methodology and Statistical Analysis in Geography	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • formulate research proposals, hypothesis, data analysis and referencing. • Develop skill in data collection and sampling 	<ol style="list-style-type: none"> 1. Research: Meaning and types of Research; Literature Review, Research Methodology 2. Hypothesis: Meaning and Basic concept of hypothesis testing 3. Research Design: Meaning, need and Importance 4. Data Collection : Types and sources of data, Methods of Data collection, classification of 	<p>Research: Meaning and types of Research; Literature Review, Research Methodology; Hypothesis: Meaning and Basic concept of hypothesis testing; Research Design: Meaning, need and Importance; Data Collection : Types and sources of data, Methods of Data collection, classification of data; designing of a Questionnaire; Data Interpretation Analysis; Sampling: Meaning and Types of Sampling; Chapter scheme, References and bibliography</p> <p>Multi-variate Analysis: Multiple correlation; Regression Analysis; Composite Indices; Principal Component Analysis; Time Series Analysis (Temporal Analysis); Writing of Abstract, Articles, Report, Thesis and Plagiarism</p> <p>Recommended Books :</p> <ol style="list-style-type: none"> 1. Ahuja, R. (2014). <i>Research Methods</i>. Jaipur, India: Rawat. 2. Alvi, Z. (2005). <i>Statistical Geography Methods and Applications</i>. Jaipur 	Added content for enrichment

		<p>techniques.</p> <ul style="list-style-type: none"> develop skill in multi-variate analysis for the applications of statistical methods in research. able to write abstract, report, articles and thesis. 	<p>data; designing of a Questionnaire; Data Interpretation Analysis</p> <ol style="list-style-type: none"> 5. Sampling: Meaning and Types of Sampling 6. Chapter scheme, Review of literature 7. Concept of Plagiarism 8. Multi-variate Analysis 9. Statistical Applications <p>Adopting</p> <ol style="list-style-type: none"> I. Multiple correlation & Regression Analysis II. Composite Indices III. Basics of Principal Component Analysis IV. Time Series Analysis (Temporal Analysis) V. Preparation and Writing of abstract, Articles, report-format and thesis <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. Ahuja, R., (2009), Research Methods, Rawat Publications, Jaipur. 2. Cole, John P. and Cuchlaine a. M. King (1968) Quantitative Geography, Techniques and Theories in Geography, John Wiley and Sons Ltd., London. 3. Elhance, D.N. (1972): Fundamentals of 	<p>and New Delhi, India: Rawat.</p> <ol style="list-style-type: none"> 3. Dabson, S. J. (2017). <i>Statistical Analysis of Geographical Data An Introduction</i>. U.K.: John Wiley and Sons. 4. Gupta, S.P.(2012).<i>Statistical methods</i>. New Delhi, India:Sultan Chand and sons. 5. Jackson, L.S. (2009). <i>Research Methods and Statistics</i>. New Delhi, India: Cengage Learning. 6. Kothari, C. R., &Garg, G. (2014). <i>Research Methodology Methods and Techniques</i> (3rded.). New Delhi, India: New age International. 7. Kumar, R. (2016). <i>Research Methods A step-by-step Guide for Beginners</i> (Rev. ed.). Australia: Pearson Education and Dorling Kindersley. 8. Mahmood, A. (2017). <i>Statistical Methods in Geographical studies</i>(6thed.). New Delhi, India: Rajesh. 9. Mishra, H. N., &Singh,V.P. (Eds.). (1998).<i>Research Methodology : Social, spatial and policy dimensions</i>. Jaipur, India: Rawat. 10. Rao, G.N. (2012). <i>Research Methodology and quantitative Methods</i>. Hyderabad, India: B.S. 11. Sarkar, A. (2013). <i>Quantitative Geography- Techniques and Presentations</i>. New Delhi: OrientBlackswan. 12. नागर, के. एन. (2018). <i>सांख्यिकीय के मूलतत्व</i>. मेरठ,भारत: मीनाक्षी. <p>Suggested E-resources:</p> <ol style="list-style-type: none"> 1. Research Design http://libguides.usc.edu/writingguide/researchdesigns 2. Chi-square test and its application in hypothesis testing http://www.j-pcs.org/article.asp?issn=2395-5414;year=2015;volume=1;issue=1;spage=69;epage=71;aulast=Rana 	
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			<p>Statistics, KitabMahal, Allahabad.</p> <p>4. Frank Harry and Steven C. Althoen (1994): Statistics Concepts and Applications, Cambridge University Press.</p> <p>5. Gupta, S.P., (1979) and revised edition, Statistical Methods, Sultan Chand and sons, New Delhi.</p> <p>6. Guthrie, G., (2010), Basic Research Methods – An entry to Social Science Research, Sage Publications, New Delhi.</p> <p>7. Hammond, R. and PatrikMcCullagh (1974): Quantitative Methods in Geography, Clarendon Press, Oxford.</p> <p>8. Kothari, C.R., (1990), Research Methodology Methods and Techniques, WishwaPrakashan, New Delhi.</p> <p>9. Mahmood, A., (1998), Statistical Methods in Geographical studies, Rajesh Publications, New Delhi.</p> <p>10. Mishra, H.N. and Singh, V.P, (1998), Research Methodology, Rawat Publications, Jaipur.</p>	
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			<p>11. Mishra, R.P., (1989), Research Methodology, Concept Publishing Company, New Delhi.</p> <p>12. Prasad, H., (1992), Research Methods and Techniques in Geography, Rawat Publications, Jaipur.</p> <p>13. Sarkar, A, (2013), Quantitative Geography; Techniques and Presentations, Orient Blackswan, Pvt. Ltd., New Delhi.</p> <p>14. Smith, David M. (1975): Patterns in Human Geography, An introduction to Numerical Methods, Crane Russak & Company, Inc New York.</p> <p>15. Taylor G., Peter J. (1977): Quantitative Methods in Geography, An Introduction to Spatial Analysis. Houghton Mifflin Company, Boston, USA.</p>		
3.	GEOG ___L Digital Cartography and GeoinformaticsLab	After the completion of this course, students will be able to:		Digital Cartography - Meaning, Scope and Significance; Impact of geo-information technology on cartography; Comparison between digital and manual cartography; Cartographic methods and techniques: Graphs and Diagrams - Line diagram, Bar diagram, Pie diagram, Pyramid diagram;	New Course Introduced

		<ul style="list-style-type: none"> • develop skill related to digital cartography – diagrammatic representation of data • develop skills in data generation, mapping for the implementation in planning. • develop skill of surveying using Global Positioning System. • enrich students about applications of geospatial technologies in various fields. 		<p>Mapping techniques - Dot, Choropleth, Isopleth; Thematic mapping – types and methods, Map Compilation: base data, thematic data; Remote Sensing: Platforms and Sensors; Resolution of Remote Sensing data: spatial, spectral, radiometric and temporal; Procurement of Satellite Imagery; Geographic Information Systems (GIS): Definition and Components, Spatial data in GIS- Raster and Vector; Image Classification – Supervised and Unsupervised, accuracy assessment; GPS- Introduction and Basic Components; Applications of Geospatial Technology in Agriculture mapping, Landuse/Landcover analysis, Urban change and Watershed management; Surveying with Global Positioning System(GPS)- Rapid static positioning technique and Stop & Go technique.</p> <p>Recommended Books :</p> <ol style="list-style-type: none"> 1. Bhatta, B. (2011). <i>Remote Sensing and GIS (2nd ed.)</i>. New Delhi, India: Oxford University Press. 2. Campbell, J. B., & Wynne, R. H. (2011). <i>Introduction to Remote Sensing (5th ed.)</i>. New York, NY: Guilford 3. Cracknell, A. P., & Hayer, L. (2009). <i>Introduction to Remote Sensing</i>. New York, NY: Taylor and Francis. 4. Cromley, G. R. (1992). <i>Digital Cartography</i>. New Jersey, NJ: Prentice Hall. 5. Ganesh, A., & Narayanakumar, R. (2006). <i>GPS Principles and Applications</i>. Delhi, India: Satish Serial. 6. George, J., & Jeganathan (2018). <i>Fundamentals of Remote Sensing (3rd ed.)</i>. Hyderabad, India: Universities Press. 7. Gopi, S. (2013). <i>Global Positioning System- Principles and Applications</i>. New Delhi, India: McGraw Hill. 8. Kumar, S. (2014). <i>Basics of Remote Sensing and GIS</i>, New Delhi, India: University Science Press Laxmi. 9. Lillesand T. M., Kiefer, R. W., & Chipman, J. W. (2008). <i>Remote Sensing and Image Interpretation (6th ed.)</i>. New York, NY: Wiley and 	
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				<p>Sons.</p> <p>10. Lo, C. P., & Albert, K. W. Y. (2002). <i>Concepts and Techniques of Geographic Information System</i> (2nd ed.). New Delhi, India: Prentice-Hall.</p> <p>11. Michael, N. D. (2000). <i>Fundamentals of Geographic Information Systems</i>. New York, NY: John Wiley & Sons.</p> <p>12. Nag, P., & Kudrat, M. (1998). <i>Digital Remote Sensing</i>. New Delhi, India: Concept</p> <p>13. Paine, D. P., & Kisher, J. D. (2012). <i>Aerial Photography and Image Interpretation</i> (3rd ed.). Australia: John Wiley & Sons.</p> <p>14. Palet, A. N. (1992). <i>Remote Sensing Principles & Application</i>. Jodhpur, India: Scientific.</p> <p>15. चौनियाल, डी. डी. (2010). <i>सुदूरसर्वेदन एवं भौगोलिक सूचना प्रणाली</i>. इलाहाबाद, भारत: शास्त्रदा पुस्तक भवन.</p> <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> <u>Principles and applications of GIS</u> <u>https://www.environmentalscience.org/principles-applications-gis</u> <u>GPS and Applications</u> <u>https://www.cfa.harvard.edu/space_geodesy/ATLAS/applications.html</u> 	
4.	GEOG Pedagogy in Geography	After the completion of this course, students will be able		Overview of Higher Education in India: Purpose and Functions of Higher Education. Functions of Regulatory Bodies - UGC, AISHE, NCTE, NAAC; Role of Teacher in Higher Education: Teacher's Role - Curriculum	New Course Introduced

		<p>to:</p> <ul style="list-style-type: none"> • Describe higher education, its function and purpose. • Learn about the different functions of regulatory bodies • Elucidate the prerequisites and methods of teaching • Learn about the evaluation process in teaching 		<p>development, Instructional, Institutional, Research related and Social; Professional Development of Teachers - Role of Academic Staff College; Prerequisites of Teacher in Higher Education: Teaching Competencies - Introduction, Questioning, Board Work, Explanation, Use of Supporting Materials, Methods for teaching - Lecture, Discussion, Laboratory work, Field Survey, Project, Workshop and Seminar; Media for effective teaching; Designing of Instructions and Evaluation: Instructional Planning; Modes of Evaluation in Higher Education.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. Aggarwal, J. C. (2012). <i>Principles, Methods & Techniques of Teaching</i>. (2nd Rev.ed.). New Delhi, India: Vikas. 2. Bawa, M.S., & Nagpal, B. M., (Ed.).(2011). <i>Developing Teaching Competencies</i>. New Delhi, India: Viva Books. 3. Dhar, B. B. (2009). <i>Higher Education System</i>. New Delhi, India: A.P.H. 4. Kamalkar, G. (2014). <i>Higher Education in Indian-Emerging Challenges</i>. New Delhi, India: Commonwealth. 5. Kidwani, A. R. (Ed.). (2014). <i>New Directions in Higher Education</i>. New Delhi, India: Viva. 6. Mangal, S. K., & Manga. U., (2014). <i>Essentials of Educational Technology</i>. New Delhi, India: P.H.I. 7. Manoharan, P. K. (2009). <i>Higher Education</i>. New Delhi, India: A.P.H. 8. Patnaik, J. (2001). <i>Higher Education in Information Age</i>. New Delhi, India: Authors Press 9. Shafi, Z. S. (2008). <i>Reforms and Innovations in Higher Education</i>. New Delhi, India: Association of Indian Universities. 10. Sharma, S. R., (2000). <i>Effective Classroom Teaching-Modern Methods, Tools & Techniques</i>. Jaipur, India: Mangal Deep. 11. Thamarasseri, I. (2012). <i>Essentials of Educational Evaluation</i>. New Delhi, India: Kanishka. 12. गोयल, एम. (2007). <i>भूगोलशिक्षण</i>. नई दिल्ली, भारत : वन्दना 13. दुबे, एस. के. (2014). <i>भूगोलशिक्षणविधियाँ</i>. जयपुर, भारत: याकिंगबुक्स. 	
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				<p>14. प्रसाद, जी. (2007). भूगोलशिक्षण.नईदिल्ली, भारत : डिस्कवरी.</p> <p>Suggested e-Learning material: 1.Functions of Regulatory Bodies https://mhrd.gov.in/regulatory-bodies 2.Field survey- http://ncert.nic.in/textbook/pdf/legv305.pdf</p>	
5.	GEOG ___ Term Paper	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • Understand the aspects of research area and formulate research problem. • Develop analytical skill • analyze the data and write research articles • Develop presentation skill 			
6.	GEOG ___ R Reading Elective I				

SECOND SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	Elective				
2.	Reading Elective				
3.	GEOG-604 DIGITAL CARTOGRAPHY AND GEOINFORMATICS	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Explain functioning of remote sensing. • Describe different platforms, spectral signatures and properties of EMR. • Differentiate thermal and microwave Remote sensing. • Elucidate applications of remote sensing in agriculture, forestry, water resources and urban studies. 	<p>Remote Sensing</p> <ol style="list-style-type: none"> 1. Remote Sensing : Functioning and Platforms 2. Properties of EMR and Electromagnetic Spectrum, Interaction of EMR with earth's surface and atmosphere; 3. Spectral Signatures 4. Basic principle of Thermal and Microwave Remote Sensing 5. Applications of Remote Sensing in Agriculture, Forestry, Urban Studies and Water Resource. <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. C.P. Lo and Albert K.W. Yeung (2002): Concepts and Techniques of Geographic Information System, Prentice Hall of India Private Limited, New Delhi. 2. Dent Borden D. (1990): Cartography, Thematic Map Design, Wim.C. Brown Publishers. 3. Ian Haybood et.al. (2002): An Introduction to Geographical Information System. 4. Kang tsung Chang (2002): Geographic Information System, Tata McGraw Hill, New Delhi. 5. Keats, J.S. (1973): Cartographic Design and production Longman, London 6. Keith C. Clarke (1997): Getting Started with Geographic Information Systems, Prentice Hall, New Jersey. 7. Kr aak, M.J. and Ferjan Ormeling (2003): Car tography, Visualization of Geospatial Data, Pearson Education Limited, Patparganj, Delhi, India. 8. Michael N. Demer s (2000): Fundamentals of Geographic information Systems, John Wiley and Sons, Inc, New York. 9. Misra R.P. and A. Ramesh (1989): Fundamentals of Cartography, Concept Publishing Company New Delhi. 10. Monkhouse, F.J. and H.R. Wilkinson (1967) Maps and Diagrams, B.T. Publications Pvt. Ltd., Delhi 1989. 11. Paul, A. Longley et.al. (2011): Geographic Information Systems and Science, John Wiley and Sons Ltd. New York. 12. Peter A. Burrough and Rachael A. McDonnell (1998): Principles of Geographic Information Systems, Oxford University Press. 		Removed due to change in scheme

			<p>13. Raisz Erwin (1962): Principles of Cartography, McGraw Hill, New York.</p> <p>14. Robinson, Arthur and et.al.(2005): Elements of Cartography, John Wiley and Sons, New York.</p> <p>15. Singh L.R. and R.N. Singh (1975): Map work and Practical Geography, Central Book Depot, Allahabad.</p> <p>16. Singh R.L. (1979): Elements of Practical Geography, Kalyani Publishers, New Delhi.</p>		
4.	GEOG 604L Digital Cartography and Geoinformatics Lab	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • develop skill related to digital cartography—diagrammatic representation of data • develop skills in data generation, mapping for the implementation in planning. • develop skill of surveying using Global Positioning System. • enrich students about applications of geospatial technologies in various fields. 	<p>Introduction to Cartography</p> <p>A. Digital Cartography (Lab.)</p> <ol style="list-style-type: none"> 1. Introduction of digital cartography 2. Graphical Presentation of Data: Line diagram, Bar diagram, Pie diagram, Pyramid diagram 3. Map Generalization: Map layout <p>B. GIS and GPS: (Lab.)</p> <ol style="list-style-type: none"> 1. Components of GIS 2. Data Base Management system 3. Drafting materials: Base map, Completion for thematic mapping, Preparation of thematic maps. 4. Introduction to GPS and its Applications <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. C.P. Lo and Albert K.W. Yeung (2002): Concepts and Techniques of Geographic Information System, Prentice Hall of India Private Limited, New Delhi. 2. Dent Borden D. (1990): Cartography, Thematic Map Design, Wim.C. Brown Publishers. 3. Ian Haybood et.al. (2002): An Introduction to Geographical Information System. 4. Kang tsung Chang (2002): Geographic Information System, Tata McGraw Hill, New Delhi. 5. Keats, J.S. (1973): Cartographic Design and production Longman, London 6. Keith C. Clarke (1997): Getting Started with Geographic Information Systems, Prentice Hall, New Jersey. 7. Kraak, M.J. and Ferjan Ormeling (2003): Cartography, Visualization of Geospatial Data, Pearson Education Limited, Patparganj, Delhi, India. 8. Michael N. Demers (2000): Fundamentals of Geographic information Systems, John Wiley and Sons, Inc, New York. 9. Misra R.P. and A. Ramesh (1989): Fundamentals of Cartography, Concept Publishing Company New Delhi. 10. Monkhouse, F.J. and H.R. Wilkinson (1967) Maps and Diagrams, B.T. Publications Pvt. Ltd., Delhi 1989. 		Replaced by new course in Semester I

			<p>11. Paul, A. Longley et.al. (2011): Geographic Information Systems and Science, John Wiley and Sons Ltd. New York.</p> <p>12. Peter A. Burrough and Rachael A. McDonnell (1998): Principles of Geographic Information Systems, Oxford University Press.</p> <p>13. Raisz Erwin (1962): Principles of Cartography, McGraw Hill, New York.</p> <p>14. Robinson, Arthur and et.al.(2005): Elements of Cartography, John Wiley and Sons, New York.</p> <p>15. Singh L.R. and R.N. Singh (1975): Map work and Practical Geography, Central Book Depot, Allahabad.</p> <p>16. Singh R.L. (1979): Elements of Practical Geography, Kalyani Publishers, New Delhi.</p>		
5.	GEOG_D Dissertation	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • formulate research proposals, hypothesis, collection of data • develop skill in analysis of data and testing of hypothesis • extract results and conclusions. • provide suggestions for the development of research area. 			Introduced with new scheme
6.	GEOG_S Seminar	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • identify and formulate research problem • develop skills in data analysis • develop presentation skills 			Introduced with new scheme

		<ul style="list-style-type: none"> provide suggestions of related research problem 			
7.	GEOG ___ R Reading Elective II				Introduced with new scheme
8.	GEOG ___ R Reading Elective III				Introduced with new scheme

Elective

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG-601 ADVANCED ECONOMIC GEOGRAPHY	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> Explain concept of economic geography. Illustrate theories and measures of economic development. Calculate agricultural efficiency of an agricultural field. Analyze changing cropping patterns 	<ol style="list-style-type: none"> Concept of Economic Geography, nature and pattern of economic activities: primary, secondary and tertiary activities. Recent themes and concepts in Economic Geography, Concept of economic resource, Resource evaluation, Resource planning and management Economic Development: Theories and Measures of economic development. Theories of Industrial Location and Localization(Weber, Hoover, Losch, Pred); Industrial Regions of the World and India, World Trade Organization, Globalization and its impact on World Economy. Agricultural land use and cropping pattern, measures of Agricultural efficiency, crop combination regions (J. C. Weaver and K. K. Doi). Concept of location of Agricultural activities, Agricultural typology, changing cropping pattern. Modern concepts in Agriculture Geography: sustainable development, agribusiness, contract farming, dry land farming, cropping systems. <p>Books Recommended:</p> <ol style="list-style-type: none"> Clark, G. L., Feldman, M.P. and Gertler, M.S. (eds.) (2000): The Oxford 		Removed due to change in scheme

			<p>Handbook of Economic Geography. Oxford University Press, Oxford and New York.</p> <p>2. Conking, E. C. and Yeates, M. (1996) "Man's Economic Environment" McGraw-Hill Book Company.</p> <p>3. Freeman, T. W. (1972): Geography and Planning. Freeman and Company, New York.</p> <p>4. Friedman, J. and Alonso, W. (1964) Regional Development and Planning: A Reader, The M. I. T.</p> <p>5. Gautam, Alka, (2010), Advanced Economic Geography, ShardaPustakBhawan, Allahabad</p> <p>6. Guha, J.L. and P.R.Chatturaj (1994) Economic geography A Study of Resourees, The World PressPvt. Ltd. Calcutta</p> <p>7. Gupta, P and Sadasyuk, G. (1968): Economic Regionalization of India: Problems and Prospects. Census of India, New Delhi</p> <p>8. Hanif M. (2005): Encyclopedia of Agriculture Geography, Anmol Publications PVT Ltd.</p> <p>9. Hartshorn, T. A. and Alexander, J. W. (1988) 'Economic Geography', Prentice Hall, New Delhi.</p> <p>10. Leong, Gon Cheng & Morgan, Gilliam C.: (1973) Human and Economic Geography, Oxford University Press.</p> <p>11. Ramesh, A. (ed.) (1984): Resource Geography. Heritage Publishers, New Delhi.</p> <p>12. Shafi Mohammed (2000): Agricultural Geography of South Asia., MacMillan Publishers India</p> <p>13. Siddharth, K. (2006) Economic Geography, Kisalaya Publications, New Delhi. Singh&Dhillon (2004): Agriculture Geography (3rd Edition), Tata McGraw-Hill.</p> <p>14. Singh, R.L. (Ed.): (1966) Applied Geography, BHU press, Varanasi.</p> <p>15. Wheeler J. O. Mullar, O. M. Thrall, G. I. and Timothy, J. F. (1988) "Economic Geography", John Wiley and Sons Inc. New York.</p> <p>16. कुमार, प्रमीला एवं शर्मा, श्रीकमल (2008) कृषिभूगोल, मध्य प्रदेशहिन्दीग्रन्थअकादमी, भोपाल।</p> <p>17. जाट, बी. सी. (2006) आर्थिकभूगोल, पंचशीलप्रकाशन, जयपुर।</p>		
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2.	GEOG-603 ADVANCE D GEOMORPHOLOGY	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Explain scope, approaches and fundamental concepts of geomorphology • Identify erosion surface of an area and describe geomorphology of a region. • Explain origin and development of land forms. • Apply geomorphological knowledge in hazard management, hydrology, Urbanization and Agriculture 	<p>1. Scope of Geomorphology, methods and approaches to the study of landforms.</p> <p>2. Fundamentals concepts of Geomorphology</p> <p>3. Evolution of landforms according to Davis, Penck and King.</p> <p>4. Geomorphic processes and their classification.</p> <p>5. Endogenitic Forces: Secular and Sudden forces; Earthquakes and Volcanic activities.</p> <p>6. Exogenitic Forces: Weathering and mass wasting. Erosional processes: river, glacial, coastal, Karst and wind.</p> <p>7. Slopes forms and processes: Models of slope development, views of Davis, Penck, Wood and King.</p> <p>8. Erosion Surface; Techniques of identification and correlation.</p> <p>9. Introduction to Geomorphological mapping— methods and application of GIS in geomorphology (Concept of DEM & DTM)</p> <p>10. Regional geomorphology— Case study of KumaunHimalay, Chotanagpur region and Lower Chamble Valley.</p> <p>11. Application of Geomorphology in Agriculture, Urbanization, Hydrology and Hazard management.</p> <p>Books Recommended:</p> <p>1. Ahmed, E. (1985): Geomorphology. Kalyani Publishers, New Delhi.</p> <p>2. Bloom.A. L. (1998/ 2001): Geomorphology. 3rd edition. Prentice Hall of India, New Delhi.</p> <p>3. Chorley, R.J., Schumm S A and Sugden D E. (1984): Geomorphology. Methuen and Company Ltd., London.</p>		Removed due to change in scheme

			<p>4. Dayal, P. (1994): A Text Book of Geomorphology. Kalyani Publishers, New Delhi.</p> <p>5. Fairbridge, R.W. (ed.) (1968): Encyclopaedia of Geomorphology, Reinhold Book Corporation., New York</p> <p>6. Gregory, K.J. and Walling, D.E. (1973): Drainage Basin Form and Process. Edward Arnold, London.</p> <p>7. Jog, S. R. (ed.) (1995): Indian Geomorphology (2 vols.). Rawat Publications, Jaipur</p> <p>8. Kale, V. and Gupta, A. (2001): Introduction to Geomorphology. Orient Longman, Hyderabad.</p> <p>9. King, C.A.M. (1966): Techniques in Geomorphology. Edward Arnold, London.</p> <p>10. Pethick, J. (2000): An Introduction to Coastal Geomorphology. Arnold, London.</p> <p>11. Sharma, H. S., (1980): Perspective of Geomorphology (4 Volumes), Concept Publications, New Delhi</p> <p>12. Sharma, H. S., (1987): Tropical Geomorphology — Study of Morphogenetic Regionalization of Rajasthan, Concept Publications, New Delhi</p> <p>13. Sharma, P. R. (ed.), (1993): Applied Geomorphology in Tropics. Rishi Publications, Varanasi.</p> <p>14. Singh, S. (2004): Geomorphology. PrayagPustakBhawan, Allahabad.</p> <p>15. Sparks, B.W. (1986): Geomorphology. Longmans, London.</p> <p>16. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.</p> <p>17. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography—An Outline of Geomorphology. Longman, London.</p>		
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S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG-605 GEOGRAPHY OF ENVIRONMENTAL MANAGEMENT	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Explain conservation and importance of biodiversity. • Elucidate eco-feminism, eco-socialism and 	<p>1. Environment: Fundamentals of Environment</p> <p>2. Biodiversity: meaning, importance and types; Biodiversity hot spots; Loss of Biodiversity and its conservation</p> <p>3. Environmental Degradation: Meaning and types of degradation; Quality Assessment of Soil and Water.</p> <p>4. Environmental Impact Assessment and Strategies; Case Studies: Tehri Dam, Sardar Sarovar Project</p> <p>5. Concept of Sustainable Development</p> <p>6. Concept of Eco-feminism and Eco-socialism</p> <p>7. Environmental Challenges and Management in India: Desertification, Mining, Deforestation, Waste Disposal and Big Dam Controversy— Issues related with high dams (Narmada Sagar Project, Silent Valley); Eutrophication of Wetlands</p>		Removed due to change in scheme

		<p>environmental challenges.</p> <ul style="list-style-type: none"> Discuss environmental movements, degradations and disasters. Explain importance of environmental impact assessment. 	<p>8. Environmental Movements in India: Chipko Movement and Narmada Bachao Andolan 9. Case studies Associated with Environmental Degradation: Famines in Tribal belt of Rajasthan; Jhum Cultivation in Meghalaya 10. Disaster: A case study of Uttarakhand disaster (Kedarnath disaster, 2013).</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> Bhattacharya, N.N. (2011), Biogeography, Rajesh Publications, New Delhi. Chandna R.C., (2010), Environmental Geography, Kalyani publishers, New Delhi. Gautam A., (2010), Environmental Geography, Sharda Pustak Bhavan, Allahabad. Jadhav, S.B., (2012), Environmental Geography, Chandralok Prakashan, Kanpur. Moirangleima, Kh. (2010), Sustainable Management of Wetlands Central Valley of Manipur, B.R. Publishers, New Delhi. Nag, P., et.al, (1997), Geography and Environment, (ed.) Concept Publishing Company, New Delhi. Raghavan, .K. M., (2014), Environmental Geography and Disaster Management, Navyug Books International, Delhi. Salahuddin, M., (2011), Waste Management in an Urban Area, B.R. Publishers, New Delhi. Saxena H.M., (2011), Environmental Geography, Rawat Publications, Jaipur. Singh Onkar, et.al. 1993, Frontiers in Environmental Geography, (ed.) Concept Publishing Company, New Delhi. Singh Savindra, (2010), Environmental Geography, Prayag Pustak Bhavan, Allahabad. 		
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S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	GEOG-606 POPULATION STUDIES	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> Elucidate population changes and its measures. Discuss about poverty alleviation, 	<ol style="list-style-type: none"> Population Geography: Nature, Approaches (Behavioural and System) Methodological Problems in data collection Basic Source of Data with special reference to India, Problems of handling population data. Mapping and presentation of population data. Population Change and its Measures: Crude Birth Rate, Fertility Rate, Age Specific Birth Rate, Total Fertility Rate, Crude Death Rate, Infant Mortality Rate, Maternal Mortality Rate Determinants of Fertility and Mortality Migration Type, Determinants and Consequences, Models (W.J. Reilly, George K. Zipf, 		Removed due to change in scheme

		<p>employment generation and national population policy of India.</p> <ul style="list-style-type: none"> Generate maps of population data. Explain population growth, composition and distribution in India. 	<p>S.A. Stouffer, Ravenstein, and Lee)</p> <ol style="list-style-type: none"> Population factors in development planning Population Growth and Distribution in India Fertility and Mortality in India Urbanization in India Population compositions in India: Literacy rate, Sex ratio and Work force Child marriage and Female foeticide in India Poverty alleviation and employment generation in India, National Population policy of India 2000. <p>Books Recommended:</p> <ol style="list-style-type: none"> Chandna, R.C, (2009) A Geography of Population, 8th edition, Kalyani Publishers, New Delhi. Hassan, M.I (2009) Population Geography, Rawat Publication, Jaipur Jhingan, M.L., Bhatt. B.K., Desai, J.N: (2005) Demography, Vriada Publication M. Raza and Y.P. Aggrwal (1984), " Inequalities in the levels of Literacy in India: The regional Dimension," in Shafi and Raza (eds.), Spectrum of Modern Geography, Concept: New Delhi. Newbold Bruce ,K.: (2012) Population geography, Rawat Publication, Jaipur Ranade, P.S: (1990) Population Dynamics in India, Ashish Publishing House, Delhi Sharma R.K: (2007) Demography and Popultion Problems, Atlantic Publishers, Delhi Tripathi R.K: (2008) Population Geography, Commounwealth Publication, Delhi 		
S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
5.	GEOG-608 RURBAN GEOGRAPHY	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> Explain origin, evolution, classification and dispersion of settlements. 	<ol style="list-style-type: none"> Geographical dimensions of settlements, techniques and tools of settlement geography, Settlements: origin and evolution, classification and dispersion of settlements, Rural settlements: Pattern and morphological components of rural settlements, Process of development of rural morphology, morphology of an Indian village and rural dwelling, rural service centres and their identification, Rural Problems, schemes and developmental programmes, Origin and evolution of towns, stages of evolution of cities, Urbanization, urban morphology, stages of development of urban morphology, theories of urban 		Removed due to change in scheme

		<ul style="list-style-type: none"> Identify rural service centers of an area. Analyze rural and urban settlement system. Describe problems related to rural and urban settlements and discuss sustainable planning. 	<p>morphology (Concentric Zone theory, Sector theory and Multiple Nuclei theory)</p> <p>8. Urban land use, morphology of an Indian city (Jaipur)</p> <p>9. Urban system analysis : Rank size rule, the Law of Primate city</p> <p>10. Rural urban fringe, suburb, satellite town, conurbation, umland</p> <p>11. Urban problems, Urban planning and Master plan, Sustainable urban planning, National Urbanization policy.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> Bansal, Suresh Chandra, (2010), Urban geography, MeenakshiPrakashan, Meerut Mandal, R.B., (2010), Urban Geography: a text book, Concept Publications, New Delhi, Pacione, Michael, (2009), Urban geography: a global Perspective, Routledge, London. Singh, R.Y. (2005): Geography of Settlements. Rawat Publications, Jaipur and New Delhi. Singh, S.B. (1977): Rural Settlement Geography. U.B.B.P., Publications, Gorakhpur. Tiwari, R. C. (2000): Settlement Geography; PrayagPustakBhawan Allahabad. Taylor, Griffith, (1958), Urban geography, Methuen, London Verma, L.N., (2008), Urban geography, Rawat Publications, Jaipur. मौर्य एस.डी.(2009) : अधिवासभूगोल, शास्त्रपुरस्तकभवन, इलाहाबाद। बंसल सुरेशचन्द्र (2009) : ग्रामीणबस्तीभूगोल, मिनाक्षीप्रकाशन, मेरठ। तिवारीआर. सी. (2006) : अधिवासभूगोल, प्रयागपुरस्तकभवन, इलाहाबाद। सिंह समग्र (2005) : अधिवासभूगोल, सततपब्लिकेशन, जयपुर एवं नईदिल्ली सिंह इन्दिरा (2008) : अधिवासभूगोल, यूनिवर्सिटीपब्लिकेशन, नईदिल्ली। 		
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S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
6.	GEOG 609 SOCIAL GEOGRAPHY	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> Explain social interaction and stratification. 	<p>Section—A</p> <ol style="list-style-type: none"> Nature & Approaches to the study of Social Geography Definition, origin and types of society Social process—social interaction Social stratification Caste—Origin and its theories, Recent changes in caste system <p>Section—B</p> <ol style="list-style-type: none"> Social organization & Groups Social well being Human Development—Parameter and Index. Recent Trends in Human Development 		Removed due to change in scheme

	<ul style="list-style-type: none"> • Describe human races and cast system. • Elucidate social wellbeing, human development and social planning. • Discuss about gender issues and status of woman in India 	<p>d) Population growth, Distribution & Problems e) Human Races : Origin, Evolution and classification of Human Races According to G. Taylor f) Quality of Socially Environment : Globalization and social transformation</p> <p style="text-align: center;">Section—C</p> <p>a) Indian Society in Historical Perspective b) Social changes in India c) Human Development in India d) Gender issues and status of woman in India e) Social Planning in India</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. Ahmad Aijazuddin, (1999) Social Geography. Rawat Publications, Jaipur. 2. Ballabh Anand, (2005) A Handbook of Social Geography, Akansha Publishing House, New Delhi 3. Hamnett Chris, (1996) Social Geography, A Reader, Arnold, Co published in The US, New York. 4. Jr. Del Casino & J. Vincent, (2009) Social Geography, A Critical Introduction. Wiley Blackwell, A John Wiley & Sons, Ltd. Publication, United Kingdom 5. Kumar Ashok, (2004) Social Geography of India, Anmol Publication Pvt. Ltd., New Delhi. 6. Mehtani Subhah & Sinha, (2010) Social Geography. Commonwealth Publishers Pvt. Ltd., New Delhi. 7. Mohanthy G.S., (2005) Social & Cultural Geography, Isha Books, Delhi 8. Pandit Apoorva, (2010) Watershed Development Inputs & Social Change, Understanding the Changing Culture of Child Nutrition. Rawat Publications, Jaipur. 9. Peet Richard, (2003) Radical Geography, Alternative Viewpoints on Contemporary Social Issues, Rawat Publications, Jaipur. 10. गौरव एस. डी. (2010) सामाजिकभूगोल, शास्त्रदासुस्तकभवन, इलाहाबाद। 		
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Reading Elective

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG 602R ADVANCE GEOGRAPHY OF INDIA	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Explain geopolitics of the Indian ocean and describe Physiographic 	<ol style="list-style-type: none"> 1. India as a geographical unit and geopolitics of the Indian Ocean 2. Physiographic divisions and Geology of India 3. Climate of India: Diversity in the unity of Indian Monsoon 4. Forest Resource: Forest conservation and Social forestry 5. General demographic status with special reference to sex ratio and literacy 6. Trends of urbanization in India. 7. Human development index of India 		Removed due to change in scheme

		<p>divisions of India.</p> <ul style="list-style-type: none"> • Interpret land utilization and trends of urbanization in special context of India. • Elucidate forest conservation and social forestry in Indian context. • Describe agricultural regions and multipurpose projects of India 	<p>8. Multipurpose projects with special reference to Tehri and Chambal Project 9. Land utilization 10. Agricultural Regions of India according to ICAR 11. Mineral Resource of India and Problems of mining activities 12. Historical perspective of Indian Industries 13. Trends and pattern of foreign trade of India 14. Emerging tourism industry of India 15. Management of Urban solid waste Books Recommended: 1. Khullar D.R. (2014) India : a Comprehensive Geography, Kalyani Publication, Ludhiana 2. Krishnan, M.S., (2012) Geology of India and Burma, CBS Publication, New Delhi. 3. Mishra, V.C. (1967) Geography of Rajasthan, National Book Trust, New Delhi. 4. Puri, G. S. (1960) Indian forest Ecology, Oxford Book and Stationary, New Delhi. 5. Raychaudhary. S.P. (1966) Land and Soil, National Book Trust, New Delhi. 6. Singh Gopal, (2010) Geography of India, Atma Ram Publication, Delhi 7. Spate, O. H. K., & Learmonth, A.T.A., India & Pakistan, London. 8. Wadia, D. N., (1957) Geology of India, Macmillan, London. 9. हुसैनमाजिद, सिंह रमेश (2015) भारतका भूगोल, डाटा मैकग्राहिल प्रकाशन, नई दिल्ली। 10. मामोरिया चतुर्भुज (2009) भारतका वृहत्तम भूगोल, साहित्य भवन आगरा। 11. बंसल पुरेश चन्द्र (2011) भारतका भूगोल, भीमाक्षी प्रकाशन, मेरठ। 12. सिंह गोपाल (2006) भारतका भूगोल, आत्मा राम, दिल्ली। 13. सबसैनाहरिमोहन (2014) राजस्थानका भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी प्रकाशन। 14. शर्मा राज कुमार (2010) राजस्थानका भूगोल, हिमाशुंग बिल्डिंग कं. उदयपुर। 15. शर्मा एच. एस. एवं शर्मा एम.एस. (2015) राजस्थानका भूगोल, पंचशील प्रकाशन, जयपुर</p>		
S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG 610R STUDY OF GEOSPHERE	<p>After the completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • Explain origin of solar system and interior of 	<p>1. General introduction of solar system and its origin by inter Stellar Dust Hypothesis of Otto Schmid. 2. Study of Geological Time scale. 3. Interior of the Earth according to Seismology. 4. Plate tectonic theory and its applications. 5. Normal Cycle of Erosion and interruptions in Erosion cycle. 6. Introduction of general features of ocean floor and origin of continental Shelf, continental</p>		Removed due to change in scheme

		<p>the Earth.</p> <ul style="list-style-type: none"> • Describe relief of ocean and classify the different ocean deposits. • Interpret maps with ocean currents, pressure and wind belts. • Illustrate different terrestrial, atmospheric and oceanic phenomenon. 	<p>slope, Abyssal plain and Oceanic Deeps.</p> <ol style="list-style-type: none"> 7. Introduction of ocean deposits and their classification on the basis of sources and depth. 8. Causes of origin of currents and currents of the Atlantic, Pacific and Indian Ocean. 9. Types and Origin of Tides (Equilibrium and Stationary wave theories) 10. Type of coral reefs and their origin (Daly's Glacial control theory) 11. Factors controlling solar insolation, heating and cooling of atmosphere, regional distribution of Temperature. 12. Introduction of pressure and wind belts, shifting of pressure belts, 13. Introduction of cyclone and anticyclone and origin of temperate cyclone. 14. Causes and effects of global environmental Problems; Ozone depletion, Green House effect, Global warming 15. Climate change; Evidences and Consequences <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. Alka, G., (2011), BhoutikBhoogol, Rastogi Publications, Meerut. 2. Critchfield, H., (1975) General Climatology, Prentice Hall, New York. 3. Dayal, P., (1996) A Text book of Geomorphology, Shukla Book Depot, Patna, 4. Khullar, D.R., (2012), Physical Geography, Kalyani Publishers, New Delhi. 5. King, C. A. M., (1975) Oceanography for Geographers, E. Arnold, London. 6. Sharma, H.S., (2012) BhoutikBhoogol, Panchshil Publications, Jaipur 7. Singh, S., (2009), BhoutikBhoogol, VasundharaPrakashan, Gorakhpur. 8. Singh, S., (2009), Physical Geography, PrayagPustakBhawan, Allahabad. 9. Strahler A.N. and Strahlar, A.H. (1984): Elements of Physicalgeography, John Wiley& Sons. New York 10. Strahler, A. N. and A. H. Strahler, (1992) Modern Physical Geography, John Wiley & Sons. 11. Strahler, A. N., (1973) Environmental Geo-Science, Hamilton Publishing, Santa Barbara, 		
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THIRD SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG701D Dissertation	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • formulate research proposals, hypothesis, 			Introduced with new scheme in semester II

		<ul style="list-style-type: none"> • collection of data • develop skill in analysis of data and testing of hypothesis • extract results and conclusions. • provide suggestions for the development of research area. 			
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S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG702S Seminar	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • identify and formulate research problem • develop skills in data analysis • develop presentation skills • provide suggestions of related research problem 			Introduced with new scheme in semester II

Reading Electives

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG____ R Climate change and future crisis	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • Explain and analyze climate change. • Predict consequences of climate change over several sectors of economy. • Analyze effects of climate variability on domestic livestock. • Describe current and past climate change policies in India. 		<p>Climate Change; Global warming and regional effect; Projected impact of climatic change in Asia over fisheries, human settlement, food supply, farming systems, health; Climate change and diseases; Climate Change and El-Nino; Impact of climate change on agriculture, soil, desertification (special reference to Rajasthan); Effects of climate variability on domestic livestock; Economics of climate change; Climate change policies of India.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. Singh.A.(2015). <i>Climate Change and Agriculture</i>. Jaipur, India:Oxford Book Company. 2. Sharma, H.S.(2018). <i>Climate Change and Natural resource: A study of Indian Deserts</i>. New Delhi, India:Global. 3. Baros, V., & Field, C.B.(2014). <i>Climate Change, Impacts Adaptation and Vulnerability Part B Regional Aspect.</i>, New York, NY:Cambridge University Press. 4. Cowie, J.(2007). <i>Climate change and Biological Impacts</i>. Cambridge, UK:Cambridge University Press. 5. Agarwal, S.K.(2013). <i>Global Warming and Climate change</i>. New Delhi, India: A.P.H. 6. Romm, J.(2018). <i>Climate change what everyone needs to know</i>. New Delhi, India:Oxford University Press. <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> 1. El-Nino and climate Change https://blogs.ei.columbia.edu/2016/02/02/el-nino-and-global-warming-warming-whats-the-connection/ 3. Economics of climate change https://bfi.uchicago.edu/events/CC-climate 4. Climate change policies in India http://envfor.nic.in/division/india-taking-climate-change-24-recent-initiatives 	New Course has been introduced

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG ___ Contemporary Social Challenges in India	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> Analyze the socio cultural environment in India with respect to parameters like sex ratio, fertility and mortality. Understand about the causes and consequences of Gender discrimination in Indian society Status of women and domestic violence in Indian society and need of women empowerment Aware about the government policies concerning them. 		<p>Socio-cultural transformation and its relation with environment; Social diversity, Social well-being and Quality of life in India with reference to major religion; Gender inequality in sex ratio, fertility, mortality and child marriage in India; Causes and consequences of Gender discrimination in Indian society with special reference to Literacy and occupational structure; Status of women and domestic violence in Indian society and need of women empowerment in modern India; Government Laws. policies/schemes and International commitments to women empowerment.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> Ahmad, A. (2006). <i>Social Geography</i> (Reprint).Jaipur, India: Rawat. Chandana, R. C. (2014). <i>A Geography of population (11th ed.)</i>. New Delhi, India: Kalyani. Jetli, K. N. (2010). <i>Human and Natural Resource of India</i>. New Delhi India: New Century Khullar, D. R. (2014). <i>India, A Comprehensive Geography.(3rd ed.)</i>. Ludhiana, India: Kalyani. Mehtani, S.,&Sinha, A. (2010). <i>Social Geography</i>. New Delhi, India: Commonwealth Ranade, P. S. (1990). <i>Population Dynamics in India</i>. New Delhi, India: Ashish. Singh, G. (2010). <i>Geography of India</i>.(9th ed.). Delhi, India: Atma Ram Syed, M.H. (2010). <i>Social and Cultural Transformation in India</i>. New Delhi, India: Anmol <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> Women Empowerment https://www.indiacelebrating.com/social-issues/women-empowerment/ Socio-culture Transformation http://www.yourarticlelibrary.com/society/essay-on-socio-cultural-dynamics-in-indian-society/4022 Social Diversity http://egvankosh.ac.in/bitstream/123456789/8326/1/Unit-16.pdf Gender Inequality https://www.indiacelebrating.com/social-issues/gender-inequality-in-india/ Gender Discrimination http://www.dailyexcelsior.com/gender-discrimination-india/ Occupational Pattern https://www.ijmra.us/project%20doc/2018/IJRSS_JANUARY2018/IJMRA-13135.pdf Domestic Violence https://www.youthkiawaaz.com/2010/02/domestic-violence-in-india-causes-consequences-and-remedies-2/ 	New Course has been introduced

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG____ R Industrial ization and Regional Developm ent	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> describe and ascertain the concepts and theories to industrial location, industrial decentralization and agglomeration. To map and explain world industrial regions and associated factors of growth and problems. To assess the impact of growth of industries over environment and Suggests measures for the improvement. 		<p>Industries and their linkage, Aspects for the location of Industries and optimum industrial location, characteristics and problems of Industrial centralization, decentralization and agglomeration; World industrial problems with special reference to developed and developing countries. Regional imbalances in industrialization and role of Industrialization for the regional development with special reference to India and USA. Government policies and efforts for the development of industrialization with special reference to India. Impact of industrialization on environment; Industrial Hazards and Health.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> Gautam, A. (2010). <i>Advanced Economic Geography</i>. Allahabad, India: ShardaPustakBhawan. Guha, J.L., & Chatteraj, P.R. (2009). <i>Economic geography – A Study of Resources</i>. (9thed.). Kolkata, India: The World Press. Hartshorn, T. A., & Alexander, J. W. (2009). <i>Economic Geography</i>. (8thed.). New Delhi, India: Prentice Hall. Leong, G. C., & Morgan, G. C. (2010). <i>Human and Economic Geography</i>. (2nded.). New Delhi, India: Saurabh Sharma, T.C. (2013). <i>Economic Geography of India</i>. Jaipur, India: Rawat Siddharth, K. (2018). <i>Economic Geography</i>. (3rded.). Allahabad, India: KitabMahal. गौतम, ए. (2015). <i>आर्थिकभूगोल</i>. मेरठ, भारत: रस्तोगी. प्रताप, आर. (2006). <i>औद्योगिकभूगोल</i>. नई दिल्ली, भारत: यूनिवर्सिटी. मामोरिया, सी. (2012). <i>आर्थिकभूगोल (द्वितीय सं.)</i>. आगरा, भारत: साहित्य भवन. सिंह, के. एन., एवं सिंह, जे. (2010). <i>आर्थिकभूगोल के मूलतत्व (11 वीं सं.)</i>. गोरखपुर, भारत: ज्ञानोदय. सिंह, के. (2009). <i>आर्थिकभूगोल के मूलतत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकासका अध्ययन (11 वीं सं.)</i>. वाराणसी, भारत: ज्ञानोदय. लोढ़ आर. (2009). <i>औद्योगिकभूगोल (चतुर्थ सं.)</i>. जयपुर, भारत: हिन्दीग्रन्थअकादमी. <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> Industrial centralization and decentralization https://ebrary.net/7783/management/centralisation Regional imbalances in industrialization http://www.yourarticlelibrary.com/india-2/top-9-causes-responsible-for-regional-imbalances-in-india/63001 Industry and Environment https://postconflict.unep.ch/publications/sudan/07_industry.pdf Industrial Hazards 	New Course has been introduced

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	GEOG____ R Resource: Challenges and Management	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> Analyze the resources and their scarcity. Depict the problems arising from resource scarcity. Describe resource related problems. Suggest measures to conserve resources like water, forest, energy, biodiversity etc. 		<p>Resource and Technological Development Stages; Use and misuse of resources; Resource depletion and emerging issues: desertification, deforestation, Loss of Biodiversity, Energy crises, water scarcity and conflicts; Future prospects of energy resources with special reference to India; Resource disputes: river water sharing in India (Narmada, Krishna, Cauvery and Sutlej Yamuna Link-SYL); Conservation of resources (Water, Forest and Energy); Community participation and resource management; Watershed as a unit of resource management; Resource management in India with special reference to arid regions.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> Gautam, A. (2010). <i>Advanced Economic Geography</i>. Allahabad, India: ShardaPustakBhawan. Guha, J.L., & Chattoraj, P.R. (2009). <i>Economic geography – A Study of Resources</i>. (9th ed.). Kolkata, India: The World Press. Hartshorn, T. A., & Alexander, J. W. (2009). <i>Economic Geography</i>. (8th ed.). New Delhi, India: Prentice Hall. Jetli K Narindra (2010). <i>Human and Natural Resource of India</i>. New Delhi India: New Century Khullar, D. R. (2014). <i>India, A Comprehensive Geography</i>. (3rd ed.). Ludhiyana, India: Kalyani. Leong, G. C., & Morgan, G. C. (2010). <i>Human and Economic Geography</i>. (2nd ed.). New Delhi, India: Saurabh Pandey B.M (2005) (Ed.) (2005). <i>Natural Resource Management</i>. New Delhi, India: Mittal Qazi S.A. and Qazi N.S (2007). <i>Natural Resource Conservation</i>. New Delhi, India: APH Siddharth, K. (2018). <i>Economic Geography</i>. (3rd ed.). Allahabad, India: KitabMahal. Singh, Gopal. (2010). <i>Geography of India</i>. (9th ed.). Delhi, India: Atma Ram. Trivedi P.R. (2010). <i>Natural Resource Conservation</i>. New Delhi, India: APH बंसल, एस. सी. (2015). <i>भारतका भूगोल</i> (तृतीय संस्करण). मेरठ, भारत: मीनाक्षी. मामोरिया, सी. (2018). <i>भारतका वृहत भूगोल</i>. आगरा, भारत: साहित्य भवन. सिंह, के. (2009). <i>आर्थिक भूगोल के मूलतत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकासका अध्ययन (11 वॉ सं)</i>. वाराणसी, भारत: ज्ञानोदय. सिंह, जे. (2009). <i>संसाधन भूगोल</i>. नई दिल्ली, भारत: राधा. <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> Resource Scarcity https://www.ipinst.org/wp-content/uploads/2015/06/rscar0408.pdf 	New Course has been introduced

				<p>2. Resource Scarcity and adequacy http://www.yourarticlelibrary.com/economy/important-ideas-concepts-developed-in-economy/25276</p> <p>3. Use and misuse of natural resource https://www.ugc.ac.in/oldpdf/modelcurriculum/Chapter2.pdf</p> <p>4. Economic development and Resource https://helpsavenature.com/how-do-natural-resources-affect-economic-development/</p> <p>5. Watershed and resource management http://kiran.nic.in/pdf/publications/Watershed_Development.pdf</p>	
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S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
5.	GEOG ___ R Solid Waste Management for a Smart City in India	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • understand about the concept, characteristics, rules of solid waste management • learn about biochemical processes and energy recovery from municipal solid waste. • learn about the collection, 		<p>Course content: Municipal Solid Waste Management: Characteristics and Quantities, Collection, Transportation, Segregation, Processing and Disposal of Municipal Solid Waste, Landfill; Biochemical Processes and Composting; Energy Recovery from Municipal Solid Waste; Current Issues in Solid Waste Management; Construction and Demolition (C&D) Waste Management – Overview; C&D Waste – Regulation, Beneficial Reuse of C&D Waste Materials; MSW Rules 2016, Electronic Waste (E-Waste) Management – Issues and Status in India;, E-Waste Management Rules 2016 and Management Challenges, Swachh Bharat Mission so far.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> 1. Bhatia, S.C. (2007). <i>Solid & Hazardous Waste Management</i>. New Delhi, India: Atlantic. 2. Hosetti, B.B. (2016). <i>Prospects & Perspectives of Solid waste Management</i>. New Delhi, India: New Age International. 3. Singh, J. and Ramanathan, A.L. (Ed.), (2015). <i>Solid waste Management Present & Future Challenges</i>. New Delhi, India: I.K. International. 4. Yasmin, S. (2013). <i>Solid waste Management</i>. New Delhi, India: Global Research. 5. Mohd, S. (2011). <i>Waste Management in an Urban Area</i>. New Delhi, India: B. R. <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> 1. MSW Management Rules 2016, Govt. of India http://cpcb.nic.in/ 2. Electronic Waste Management Rules 2016, Govt. of India http://cpcb.nic.in/ 	New Course has been introduced

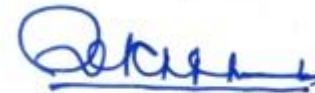
		<p>transportation, segregation, composting and disposal of Municipal solid Waste</p> <ul style="list-style-type: none"> assess the issues and challenges of Solid Waste Management faced in India 		<ol style="list-style-type: none"> Biochemical Processes and Composting http://ecochem.com/t_compost_faq2.html Energy Recovery from Municipal Solid Waste https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw 	
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S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
6.	GEOG__R Tourism and Heritage	<p>After the completion of this course, students will be able to:</p> <ul style="list-style-type: none"> describe tourism, its major concepts, development and trends associated with it. able to identify major 		<p>Geographical Basis of Tourism and Infrastructure for the development of Tourism; Types of tourism; Identification of tourism sites for regional development; Heritage sites and their significance in tourism; Impacts of Tourism: Physical, Economic & Socio- Cultural; New trends in Tourism: creation & development of tourists spots; Growth, Policies and challenges of Tourism in India and Rajasthan; Tourism organizations and their role for the development of Tourism and employment; Role of foreign capital and impact of Globalization on tourism; Physical and Social barriers of Tourism and solutions.</p> <p>Books Recommended:</p> <ol style="list-style-type: none"> Bhatia, A. K. (2002). <i>Tourism Development: Principles and Practices</i>. New Delhi, India: Sterling pub. Chen, A. (2015). <i>The Principles of Geotourism</i>. Beijing, China: Springer-Verlag. Cooper, C., & Cooper, R. (2012). <i>Worldwide Destinations: The Geography of Travel and Tourism</i>. New York, NY: Routledge. Dowling, R., & Newsome, D. (Eds.). (2005). <i>Geotourism</i>. Oxford, UK: Elsevier. Garg, D. (2009). <i>Geography of Tourism</i>. New Delhi, India: Mohit. 	New Course has been introduced

		<p>tourist sites, heritage sites</p> <ul style="list-style-type: none"> • understand policies and challenges of tourism in India and Rajasthan • explain the role of tourist organizations, foreign capital and globalization on tourism 		<p>6. Jayapalan, N. (2013). <i>An Introduction to Tourism</i>. New Delhi, India: Atlantic.</p> <p>7. Kamra, K. K. (2104). <i>Tourism An Overview</i>, New Delhi, India: Kanishka.</p> <p>8. Kaushal, P., & Sharma, S. P. (2011). <i>Ecological and Environmental Impact of Tourism</i>. New Delhi, India: Kanishka.</p> <p>9. Micheal, H. C., & Page, J. S. (2014). <i>Geography of Tourism and Receration</i>, New York, NY: Routledge.</p> <p>10. Nelson, V. (2013). <i>An Introduction to the Geography of Tourism</i>. Jaipur, India: Rawat.</p> <p>11. Pathania, K. S., & Kumar, A. (2008). <i>Tourism in India</i>, New Delhi, India: Regal.</p> <p>12. Sharma, S. P. (2011) :<i>Tourism Education Principales, Theories and Practices</i>. (2nded.). New Delhi, India: Kanishka.</p> <p>13. नेगी, जगमोहन. (2007). <i>पर्यटन एवं यात्रा के सिद्धान्त</i> ढईदिल्ली, भारत: तक्षशिला।</p> <p>14. शुक्ला, राजेश एवं शुक्ला, रश्मि (2009). <i>पर्यटन भूगोल</i> ढईदिल्ली, भारत: अर्जुन।</p> <p>15. सारण, बी. आर. (2008). <i>पर्यटन उत्पाद एवं प्रबन्ध</i> ढईदिल्ली, भारत: कनिष्क।</p> <p>Suggested e-learning materials:</p> <ol style="list-style-type: none"> 1. Concept of Tourism https://unstats.un.org/unsd/tradeserv/Workshops/Madrid/IWTS_Item09(Philippines).pdf 2. Concept and types of Tourism http://oer.nios.ac.in/wiki/index.php/Forms_of_Tourism 3. Impact of Tourism http://trcollege.edu.in/articles/74-development-and-impact-of-tourism-industry-in-india 4. Growth of Tourism in India http://www.yourarticlelibrary.com/tourism/growth-of-tourism-in-india-its-impact-on-employment-and-economic-development/14110 5. Impact of Globalization on tourism https://www.asianentrepreneur.org/globalization-tourism/ 	
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Note: Duration of M.Phil. programme has been changed into 2 semesters instead of 3 semesters with new course scheme.

Verified



Offg. Secretary
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