

ADIKAVI NANNAYA UNIVERSITY:: RAJAHMUNDRY
DEPARTMENT OF GEOLOGY
Pre-PhD course work syllabus::2019

Paper-I: Recent Advances in Geological sciences and Research Methodology

Unit 1: Types of research- Process of Research-Formulation of objectives. Hypothesis to theory – geological example: Continental drift hypothesis to plate tectonics theory.

Dos and Don'ts for selecting a research problem. Importance of problem in National and International scenario, how to conduct research survey (books, journals, electronic search engines like Google, SCOPUS, Wikipedia Research-gate, IGCP Project Data Base, etc.). Research plan and its components

Unit 2: Methods of research (Survey, observation, case studies, experimental, historical and comparative methods) Methods of Literature collection, Experimental design, planning and execution of investigation. Methods of sampling, and analytical techniques: Collection of air, water, soil and rock samples.

Preparation of samples for microscopic examination and chemical analysis, Analytical Techniques viz. AAS, XRF, SEM, ICP, EPMA, Mass Spectrometry and Portable analytical techniques.

Unit 3: Analysis of numerical data – Central tendencies, dispersion, testing significance of variations, analyzing correlation of variables. Regression analysis, Principal Component Analysis, Factor Analysis, and Cluster Analysis and its use in geological research.

Application of Remote sensing & GIS in Geosciences.

Unit 4: Writing of Research proposal, Report and Research paper, Meaning and types – stages in preparation-characteristics-structure-documentation, foot notes and bibliography - Editing the final draft-Evaluating the final draft-checklist for a good proposal/reporter/research paper.

Unit 5: Research ethics – ethical issues, ethical committees; Publication Ethics, Scholarly publishing – IMRAD concept and design of research paper, citation and acknowledgement, plagiarism, reproducibility and accountability.

Text books

1. Research Methodology_ Methods and Techniques-New Age Publications (Academic)- C.R. Kothari - (1985)
2. Statistics and Data Analysis in Geology (3rd edition)-Wiley - John C. Davis - (2002)
3. Research Methodology in Geology by Arnold Luwang Usham
4. Research Methodology, Pearson edition, New Delhi - Rajit Kumar, (2005)
5. Higher Education Research Methodology A Step-by-Step Guide to the Research Process (1st Ed), Ben Kei Daniel and Tony Harland, Routledge publishers, 2018.
6. Manual for Research and Publication Ethics in Science and Engineering, Eun Seong Hwang, Eun Hee Cho, Young-Mog Kim, Kibeom Park, Wha-Chul Son, Tae-Woong Yoon, Jeong Mook Lim, Korean Federation of Science and Technology Societies publication, 2016
7. How to get a Ph D, UBS publishers & Distributors, New Delhi - Philips E M & Pugh D.S., (1998)
8. Marketing Research, Text and Cases, Mc Graw Hill, Rajendra Naragundkar (2008)

Model Question Paper

ADIKAVI NANNAYA UNIVERSITY:: RAJAHMUNDRY
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Pre-PhD Examination::2019

Paper-I: Recent Advances in Geological sciences and Research Methodology

Time: 3Hrs

Max. Marks: 100

Answer all the questions

1. Discuss in detail note on conducting research Survey ?

OR

2. Write about types of research, research process and formulation of objectives ?

3. Give in detail on methods of research and literature collection ?

OR

4. Describe the microscopic examination and chemical analysis of rock samples ?

5. Write about the Principal component analysis ?

OR

6. Give a detail note on application of remote sensing and GIS in mineral exploration ?

7. How do you write a research proposal and research paper ?

OR

8. Describe the methods used in correcting and editing of the report/proposal in finalization ?

9. Discuss the research ethical issues and publication Ethics ?

OR

10. Give a detail note on importance of plagiarism in research ?