NATIONAL EDUCATION POLICY-2020

Bachelor of Science (Research)/ Master of Science (Geology)

Syllabus Industrial Training/ Survey/Research Project

DEPARTMENT OF GEOLOGY FACULTY OF SCIENCE

KUMAUN UNIVERSITY, NAINITAL

Curriculum Design Committee, Uttarakhand

S. No.	Name & Designation	
1.	Prof. N.K. Joshi Vice-Chancellor, Sridev Suman Uttarakhand University, New Tehri	Chairman
2.	Vice-Chancellor, Kumaun University, Nainital	Member
3.	Prof. Jagat Singh Bisht Vice-Chancellor, Soban Singh Jeena University Almora	Member
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6.	Prof. M.S.M. Rawat Advisor, Rashtriya Uchchatar Shiksha Abhiyan, Uttarakhand	Member
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Industrial Training/ Survey/Research Project				
Year	**Sem**	**Course Code**	**Paper Title**	**Credits**
Bachelor (Research) of Science (Geology)				
FIRST YEAR	**I**		Training on Geological Sampling	**4**
	II		Training on Geological Sample Preparation	**4**
Master of Science (Geology)				
SECOND YEAR	**I**		Training on Instrumentation in Geological Investigation	**4**
	II		Training on Geotechnical Investigations and Report Writing	**4**

FIRST YEAR
Semester I
Paper: Training on Geological Sampling

Course outcome: Geological investigations involve field observation and laboratory treatment. The geo-scientific hypothesis is primarily framed on the basis of field observations and tested further through laboratory investigation. Many data thus generated in the field and laboratories rely more on the nature and type of geological investigation, knowledge on the field area, use of appropriate technique and methods for data collection and sampling in the field for further laboratory treatment. This course will impart hands-on training on field data and sample collection for specific type of geological investigations.		
Course type, Paper & Credits	**Content**	**Training hours**
Field training Geological Sampling (4)	The paper will be based on geological field training, in which the students will be trained on the following aspects: 1. Site selection for sampling. 2. Sample collection for Thin Section Preparation. 3. Rock Powder Preparation, Groundwater analysis, different types of dating. 4. Archiving of collected samples **(Note:** Marks will be evaluated on the basis of student's field training report.)	120

Semester II

Paper: Training on Geological Sample Preparation

Course outcome: Geological investigations in laboratories involve use of appropriate technique and method of sample preparation with a specific objective. This course will therefore impart hands-on training on the preparation of samples for a specific type of laboratory investigation.		
Course type, Paper & Credits	**Content**	**Training hours**
Laboratory training Geological Sampling (04)	The paper will be based on laboratory training on sample preparation, in which the students will be trained on the following aspects: 1. Preparation of rock and mineral thin sections for petrographic, modal and micro-structural analyses. 2. Mineral separation techniques. 3. Powdering the samples for geochemical analysis. 4. Preparation of water samples for chemical analysis. 5. Archiving the prepared samples. **(Note:** Marks will be evaluated on the basis of student's laboratory training report.)	120

SECOND YEAR

Semester III

Paper: Training on Instrumentation in Geological Investigations

Course outcome: Many laboratory investigations in geology require the use of instruments, that are often quite expensive and sophisticated. Knowing the capability and sequence of procedures (SOP) of a particular instrument, safety measures and precautions in its operation, as well as knowing the maintenance aspects is imperative for the proper functioning and getting the reliable and accurate results. This course will impart hands-on training and safe operation of the common instruments used for analyzing the geological samples.

Course type, Paper & Credits	Content	Training hours
Laboratory training Geological Sampling (4)	The paper will be based on laboratory training, in which the students will be trained on the following aspects: 1. Setting, handling, and making use of stereo zoom and petrological microscopes under transmitted and reflectedlights, and use of software for microphotography, scaling and image analysis. 2. Handling and operating the high-end equipments like SEM-CL-EDAX, and WD-XRF, AAS, etc. **(Note:** Marks will be evaluated on the basis of student's laboratory training report.)	120

Semester IV

Paper: Training on Geotechnical Investigations and Report Writing

Course outcome: Irrespective of specialization, a professional geologist is required to conduct geotechnical investigations at different sites where civil engineering projects are present/planned to come-up, or where the society is being/has potential to be affected by high-energy dynamic geological processes like landslides, floods, glacial avalanches, earthquakes, volcanism etc. A geologist's report in all such situations provides the important base-line geo-scientific and geo-technical information, based on which appropriate structural and civil measures for the safety and security of the society are taken-up. This course will impart basic training on this aspect of the geological investigations.

Course type, Paper & Credits	Content	Training hours
Field training Geological Sampling (4)	The paper will be based on field and laboratory training, in which the students will be trained on the following aspects: 1. Conducting geotechnical investigations in specific field site under stress of geological processes, or of proposed social and civil engineering projects. 2. Writing the report easily understandable to the geology and non-geology experts. **(Note:** Marks will be evaluated on the basis of student's Field training report.)	120