
Institute of Hydrocarbon, Energy and Geo-Resources, ONGC Centre of Advanced Studies, University of Lucknow, is running a M.Sc. Course in Applied Geology (with specialization in Petroleum Geosciences) and a Post-Graduate Diploma in Exploration, Resources and Mining Technology. It is also planning to start a Ph. D. Course, Diploma Modules in different branches of earth science, training and expert guidance to Governmental and Non-Governmental Organisations. The details of the Post-Graduate Diploma in Exploration, Resources and Mining Technology Course from the Session 2019-20 are as follows:

PG DIPLOMA IN EXPLORATION, RESOURCES AND MINING TECHNOLOGY

Syllabus: The revised syllabus for Post-Graduate Diploma in Exploration, Resources and Mining Technology will be applicable for the students enrolled in July 2019 and onwards.

Eligibility of Candidates for admission to P.G. Diploma in Exploration, Resources and Mining Technology:

Candidates who have passed the M.Sc. in Geology examination of the University of Lucknow or any other equivalent examination of other universities (considered as equivalent by the University of Lucknow) with an aggregate of at least **45 % marks** or equivalent CGPA will be considered eligible for admission.

Admission to the Two Semester P.G. Diploma in Exploration, Resources and Mining Technology programme for the eligible candidates, will be based on their past academic record and performance in the Interview. The P.G. Diploma in Exploration, Resources and Mining Technology programme shall be imparted to the selected students for one academic session consisting of two semesters.

Candidates will be examined through Continuous Internal Assessment and evaluated at the end of each semester in the different courses of Theory, Practical, and Project work/ Field Work, etc. **The papers will be set in English, and the students will be required to answer the questions in English only**. **Students are required to have a minimum of 75% attendance to be eligible to appear in the examination.** The attendance in the Industrial Visit/ Industrial Training/ Fieldwork will also be compulsory for all the students, after which the students will be required to submit a detailed report to the concerned teacher(s) for evaluation. This is a **Self-Financing Course** with an intake of **10 seats** per annum. The fee structure will be **Rs. 25,000 per Semester**.

The different courses, as detailed below, shall be taught in the Two Semesters, and there shall be Written Papers, a Practical Examination, Project work/ Fieldwork/ Industrial Study/ Industrial Training. Viva-Voce examination will be held along with the Practical Examinations and presentation of Project Reports/Field Reports, etc.

For the **Semester End Examination,** the question paper for each course will be of 100 marks and consist of TWO Units. Unit- I shall be COMPULSORY, of 25 marks, and have five short answer type questions. Unit- II will be of 75 marks and have five questions (descriptive type) out of which the candidates will be required to attempt any three questions. The duration of the examination shall be of three hours. Non-programmable scientific calculators or simple calculators will be allowed in the Semester examinations.

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Course – wise details of the Two Semesters:

COURSES		**Total**	
		Credits	**Marks**
SEMESTER- I			
PGD-11	Mining Operation	**4**	**100**
PGD-12	Exploration Technology	**4**	**100**
PGD-13	Exploratory Data Assessment	**4**	**100**
PGD-14	Introduction to Mineral Resource Estimation	**4**	**100**
PGD-15	**Practical:**	**4**	**100**
SEMESTER- II			
PGD-21	Mining Methods	**4**	**100**
PGD-22	Introduction to Mine Planning and Financial Modelling	**4**	**100**
PGD-23	International Standards and Compliance	**4**	**100**
PGD-24	Mining Studies	**4**	**100**
PGD-25	**Practical/ Dissertation Report**	**4**	**100**

*****The Courses may be revised if required.

PG DIPLOMA IN EXPLORATION, RESOURCES AND MINING TECHNOLOGY

SYLLABUS (Session 2019-20 onwards)

FIRST SEMESTER

PGD- 11	**Mining Operation**	Life Cycle of a Mine: An Overview; Role of the Geologist in Mining; Role of the Geologist in Resource Estimation; Safety – Mines; Environment Management - Mines; Role of the Geologist in Geotechnical Requirement in Mines; Role of the Geologist in Hydro-geological Requirement in Mines
PGD- 12	**Exploration Technology**	**History of Exploration Techniques - Surface:** Planning of Exploration; Management of Exploration Program; Application of Remote Sensing Technique and a case study; Application of Geophysical Technique and a case study; Application of Geo-Chemical Technique and a case study **History of Exploration Technique - Subsurface Exploration:** Conventional Diamond Core Drilling; Advanced Diamond Core Drilling; Reverse Circulation Drilling **Exploration Data:** Geological Logging and sampling; Format of Geochemical and Drill hole Data capture
PGD- 13	**Exploratory Data Assessment**	**Statistical and Spatial Interpretation:** Univariate, Bi-Variate, Multivariate statistics; Classical Statistical analysis; Interpretation of Statistical Parameters; Graphical presentation and interpretation **Quality Assurance and Quality Control (QA/QC):** Accuracy, Precision, Bias, contamination detection in analytical lab; QA chart preparation and interpretation
PGD- 14	**Introduction to Mineral Resource Estimation**	**Interpretation of data:** 2D Interpretation; 3D Interpretation; Block Modelling **Geostatistical Techniques:** Estimation Methods; Variography; Mineral Resource Estimation Process, Validation and Reporting
PGD- 15	**PRACTICAL**	Exploration Database Creation and Management; Introduction to Geographical Information System (GIS) and its Application; Datamine software & its Application in Exploration; Mineral Resource and Mine Design.

SECOND SEMESTER

PGD- 21	**Mining Methods**	**Surface Mining Methods:** Applicability and its limitation; Drilling & Blasting; Stripping ratios and their significance; Objectives, types of box cut; Parameters for production benches **Underground Mining Methods:** Modes of entry, Mine development -drifting, raising and winzing; Classification of underground metal mining methods; Operations involved in underground mining operations; Different methods of stoping **Impact of Mining on Environment:** An overview of impact of Open cast and underground mining methods on environment; An overview of mitigation methods in Open cast and underground mining methods on environment
PGD- 22	**Introduction to Mine Planning and Financial Modelling**	**Concepts of Mine Planning:** The need and necessity for mine planning **Open Cast Mine Planning:** Elements of Mine Planning; Significance of Short term /Medium term/Long term planning **Mineral Project Economics:** Capex, Opex, financial modelling concept for project evaluation; Cut-off grade estimation
PGD- 23	**International Standards and Compliance**	**Public reporting of mineral resource/reserves:** Introduction to JORC and its significance in classification of Resource and Reserves; Introduction to NI 43-101 and its significance in classification of Resource and Reserves; UNFC classification-Indian regulatory requirement
PGD- 24	**Mining Studies**	**Role of Mining Studies:** Preliminary economic assessment studies and its limitation; Pre-feasibility studies and its limitation; Feasibility studies; Importance and preparation of bulk samples in testwork/beneficiation tests; Introduction to mineral beneficiation study
PGD- 25	**Practical/ Dissertation Report**	Live project and preparation of technical report based on mineral resource, mine design, reserve on sample data set in Datamine

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