

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE-2 Surveying Techniques (L3, P1)	4	3	0	1	Class 12 th with Science	Studied Earth System Science and Structural Geology (or equivalent)

Learning Objectives

The course “Surveying Techniques” is intended to teach the students basic techniques to operate modern surveying instruments and develop skill to carry out topographic mapping.

Learning outcomes

After going through this course students will have sound idea about the Surveying Method and various types mapping skills. For examples: (i) Principles of surveying techniques, (ii) Operate modern surveying instruments, (iii) Prepare maps

SYLLABUS OF DSE-11

UNIT – I (9 Hours)

Basics of Surveying: Fundamental concepts and principles; Types of surveys; Classes of surveys; Surveying Instrumentation; Units of measurement; Locating position; Errors.

UNIT – II (12 Hours)

Levelling – Theory and Methods: Coordinate system; Geoid; Datum; Curvature and refraction; Categories of levels; Traversing; Differential levelling; sources of error in levelling; Distance measurement; Angles, azimuth and bearings.

UNIT – III (12 Hours)

Surveying Techniques: Principles and use of – Chain survey, Plane Table survey, Compass survey, Dumpy level survey, Theodolite survey, Total Station survey, Global Positioning System (GPS)

UNIT – IV (12 Hours)

Map Preparation: Introduction to QGIS; Map design; Map layout; Basic map plotting procedures; Plotting contours; Lettering; Cartographic map elements; Sources of error in mapping.

Practical Component- (30 Hours)

Chain survey
Plane Table survey
Total Station survey
Survey using GPS
Survey using Drone (if drone is available)
Map making

Essential/recommended readings

Surveying – Vol – I – By S.K.Duggal, Tata McGraw Hill Book Co.
Surveying – Vol – II – By S.K. Duggal, Tata McGraw Hill Book Co

Suggestive readings

Surveying – Vol – I – By S.K.Duggal, Tata McGraw Hill Book Co.
Surveying – Vol – II – By S.K. Duggal, Tata McGraw Hill Book Co

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

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GE-3 Fossils and Applications (L3, P1)	4	3	0	1	12 th Pass (with science stream)	Nil

Learning Objectives

To provide some basic knowledge on fossils, their preservation in rocks and different groups of invertebrate, vertebrate and plant fossils. To impart knowledge on the utility of some of these fossils in determining the relative age of sedimentary rocks and implication in palaeoecological, palaeoenvironmental, palaeobiogeographical reconstruction. To equip the student with basic understanding of the role of fossils in hydrocarbon exploration.

Learning outcomes

Student will learn about different types of life forms that existed in the geological past. Students will learn about the evolutionary rates of certain important fossil groups and their role in dividing the rocks into distinctive units based on their stratigraphic ranges. Learn how fossils can be used in understanding the past environments, ecosystems, climate and distribution of land and sea. Student will also learn about the role of fossils in the exploration of fossil fuels.