

11. Study of seaweeds.
12. Identification of bryophytes, ferns and higher plants.

ESP417 ENVIRONMENTAL GEOLOGY LAB.

Course Outcomes:

- CO1 Exercise and compute water budget.*
- CO2 Observe hand specimens to identify and classify different types of rocks.*
- CO3 Estimate ground water quality.*
- CO4 Understand environmental data interpretation.*
- CO5 Understand techniques of environmental geology which help in employability.*

1. Identification of Minerals and Rocks.
2. Physical properties and chemical composition of various rock forming minerals.
3. Hand specimen study of Igneous, sedimentary and metamorphic rocks.
4. Classification of soils, sediment, their texture, mineralogy.
5. Interpretation of Toposheets.
6. Study of littoral drift in the field and laboratory using dye and tracer techniques.
7. Drainage Basin Analysis and drainage frequency maps.
8. Exercises related to water budget.
9. Exercises related to Potential Evapotranspiration.
10. Compute monthly water budget from the given data.
11. Ground water quality – Impact and Testing.
12. Interpretation of waves, climate, tides and currents for the given data.

ESP418 ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY LAB.

Course Outcomes:

- CO1 Isolate and identify microorganisms in air/soil/water samples.*
- CO2 Understand the techniques and instrumentations in environmental microbiology.*
- CO3 Learn the techniques of coliform analysis.*
- CO4 Exposed to biotechnology experiments which are used for environmental management.*
- CO5 Learn extraction methods of DNA and RNA from different sources.*
- CO6 Understand vermicompost preparation and analysis.*
- CO7 Study on microbiology and biotechnological aspects of environmental samples which help in entrepreneurship.*

1. Methods of collection and preservation of microorganisms.
2. Gram staining techniques.
3. Study of microorganisms in air.
4. Isolation, enumeration and identification of microorganisms in soil samples.
5. MPN techniques for coliform analysis.
6. Microbiological assays.
7. Study of biomass in polluted soil and water.
8. Determination of catalase activity in a water sample.
9. Study of cellulolytic degradation of organic waste.
10. Extraction of DNA from a tissue (mammalian liver/fish liver).
11. Extraction of RNA from plant/animal sources.
12. Production of compost and its analysis.

ESP419 ENVIRONMENTAL STATISTICS LAB.

Course Outcomes:

CO1 Learn the use of statistics in the interpretation of environmental data.

CO2 Gain the knowledge of application of statistics in environmental science.

CO3 Understand statistical hypothesis testing for environmental data.

CO4 Learn the applications of matrices in Environmental Impact assessment.

Practicals based on the theory units.

ESP420 ENVIRONMENTAL LAWS AND POLICIES LAB.

Course Outcomes:

CO1 Learn the procedure of implementation of various environmental laws.

CO2 Gain the knowledge of policies for environmental protection.

CO3 Study the role of pollution control boards in environmental protection.

CO4 Learn the role of government in environmental pollution control.

Practicals based on the theory units.