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| Semester | AUG 2022 |
| Open to semester | 7,21 |
| Course code | **EC4123/EC6364** |
| Course title | **Sedimentology and Paleobiology Lab** |
| Credits | 3 /4 |
| Course Coordinator & participating faculty (if any) | Alok Dave |
| Nature of Course | Lectures and Lab |
| Pre-requisites | Basic knowledge of Sedimentology and Paleobiology |
| Objectives (goals, type of students for whom useful, outcome etc) | The laboratory course on Sedimentology and Paleontology is the extension of the classroom teaching to the hands on training involving rocks and fossils in the laboratory.<br>The sedimentology part incorporates understanding various laboratory techniques in the study of sedimentary rocks, including identification of microfacies, sedimentary structures, texture etc. and their attributes in reservoir characterization and depositional modelling.<br>The Paleontology part involves study of various group of microfossils including foraminifera, ostracoda etc. The laboratory course incorporates processing of samples for extraction of microfossils, sorting, identification and interpretation. The course will also involve study of rock thin sections for microfossils, role of SEM in species identification and interpretation of age and environment<br><br>The course is open for the students who have opted for theoretical courses of Sedimentology and Paleontology. |
| Course contents (details of topics /sections with no. of lectures for each) | • Megascopic studies of rock specimens (Clastic and Carbonates) and their interpretations<br>• Microfacies studies (Petrography)<br>• Granulometry studies and interpretations<br>• Heavy mineral Analysis<br>• Scanning Electron Microscopy<br>• X-RD and X-RF studies and interpretations<br>• Cathodoluminescence studies and interpretations<br>• Clay minerology and its effects on rock porosity<br>• Carbonate megascopy in hand specimens |

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| | • Carbonate microfacies in thin sections<br>• Carbonate porosity and diagenesis interpretations from thin sections<br>• Hard rock in megascopy and petrography<br>• Fossils in hand specimens (Rock Samples)<br>• Techniques in Sample processing for extraction of microfossils<br>• Sorting and examination of microfossils<br>• Fossil identification and data entry<br>• Thin section examination<br>• Role of SEM in micropaleontology<br><br>Each topic will be preceded by classroom lecture.<br>1.Introduction to the course and basics of clastic megascopy<br>2-3. Megascopic examination of clastic rock specimens and their description<br>4. Lecture on Sandstone classification, microfacies and thin section studies<br>5-6. Microfacies studies in the laboratory (Thin section Petrography)<br>7. Assignment on Microfacies analysis of Sandstone<br>8. Lecture on granulometry and study of hand specimens / Thin sections for grain size<br>9. Lecture on Heavy minerals and thin section studies<br>10. Lecture on SEM, XRD, XRF and CL<br>11. Visit to SEM, XRF labs to understand the analytical processes<br>12. Lecture on clay minerals and their role in reservoir quality<br>13. Lecture on Carbonate and study of hand specimens of limestones<br>14.Lecture on carbonate microfacies and porosity<br>15-16. Carbonate microfacies studies in thin sections<br>17. Assignment on Microfacies analysis of Carbonates<br>18. Lecture on hard rocks and their microfacies<br>19. Thin section studies of Hard rocks<br>20. Lecture on micropaleontological techniques<br>21. Study of mega fossils and larger benthic foraminifera in hand specimens<br>22. Demonstration of sample processing an. sorting techniques for microfossils<br>23-24. Study of microfossils<br>25. Assignment |

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| | 26. SEM studies of microfossils |
| Evaluation /assessment | End-Sem Examination-35%<br>Mid-Sem Examination-35%<br>Others-30% |
| Suggested readings (with full list of authors, publisher, year, edn etc.) | Material will be provided by the instructor |