



Value added course (in blended mode)

On

BIOANALYTICAL TECHNIQUES FOR INTERDISCIPLINARY RESEARCH

15th -27th December, 2021

Course Description:

This course is introduced to enhance the competence of Master students (Life Sciences / Physical Sciences / Chemical Sciences) for cross disciplinary research. It is designed with a view on basic bioanalytical tools and techniques and their important applications in various fields of research, including Industrial applications.

Course objectives:

1. The primary objectives of this course are to develop the skills and competence and to understand the principles and applications of bioanalytical techniques.
2. Students will be exposed to various bioanalytical techniques and their applications in identification, isolation and characterization of different biomolecules and biomaterials.
3. To provide scientific understanding of analytical techniques and detail interpretation of results.

Learning Outcomes:

On successful completion of this value added course a student will be able to:

- Know the principle and application of various bioanalytical equipments.
- Acquire knowledge for designing a project for research and to execute it.

Broad outline of the course:

Module-I: Spectroscopic methods

Module-II: Microscopic Techniques and biomaterial characterization

Module-III: Electrophoresis and Chromatography Techniques

Module-IV: Genomic, proteomics and Bioinformatics

Module-V: Isolation, Purification and characterization of Biological Macromolecules

Organized by:

Department of Biotechnology, Utkal University, Bhubaneswar, India-751004

Duration: 15th-27th December, 2021

Time: 4.00PM -7.00PM

Offline registration mandatory

Nominal Registration Fees Rs.100/- (Rupees One hundred only per students)

For registration and information please contact:

Dr. Jyotsnarani Pradhan, Assistant Professor, Department of Biotechnology, Utkal University, Bhubaneswar-751004, Phone. No. 9853411916

Dr. Sanatan Majhi, Assistant Professor, Department of Biotechnology, Utkal University, Bhubaneswar-751004, Phone No.9337940244

Resource Person/ Subject Expert

| Sl No | Date | Time | Topic | Person |
|--------------|-------------|-------------|--|--|
| 1 | 15.12.2021 | 6-7pm | SEM, TEM and AFM | Dr. Sangram Keshari Samal, Ramalingan fellow RMRC |
| 2 | 16.12.2021 | 5-7PM | Confocal Microscopy | Dr. Ranjith Mathew, Reader-F, School of Biological Science, NISER |
| 3 | 17.12.21 | 5-7PM | MASS spectrometry | Dr. Sumit Saha, Senior Scientist, IMMT |
| 4 | 18.12.2021 | 6-7PM | Synthetic Biology in designing molecular machines for analysis | Dr. Sonal Ayakar, Assistant Professor, ICT-IOCL, Bhubaneswar |
| 5 | 19.12.2021 | 5-7PM | Flow Cytometry | Dr. Satish Devadas, Scientist-F, Institute of Life Science, Bhubaneswar |
| 6 | 20.12.2021 | 5-7 PM | NMR | Dr. Bama Prasad Bag, Pr. Scientist, IMMT, Bhubaneswar |
| 7 | 21.12.2021 | 5-7 PM | X-Ray Crystallography | Dr. Dileep Vasudevan, Scientist- D, Institute of Life Science, Bhubaneswar |
| 8 | 22.12.2021 | 5-7 PM | FTIR and Raman Spectroscopy | Dr. Kamali Kesavan, Scientist, IMMT, Bhubaneswar |
| 9 | 23.12.2021 | 6-7PM | Bioinformatics | Dr. Sunil Kumar, MOU |
| 10 | 24.12.2021 | 5-7PM | Electron Microscopy | Dr. Ashutosh Rath, Sr. Scientist, IMMT, Bhubaneswar |
| 11 | 27.12.2021 | 5-7 PM | Nanotechnology and Biosensor | Dr. Sachin Sarangi, Scientis, Institute of Physics, Bhubaneswar |

On Bench training:

| Module | Topics | Date/ Time | Contents | Resource Persons |
|---------------|---|---|---|---|
| I | Isolation, Purification and characterization of Biological Macromolecules | 25.12.2021 Time: 10.00am- 2.00pm | DNA Isolation RNA Isolation Protein Isolation and Purification | Prof. J Dandapat Dr. Jyotsnarani Pradhan |
| II | Spectroscopic methods | 17.12.2021 Time:4pm- 6pm | UV-Visible Spectroscopy Fluorescence Spectroscopy | Prof. J Dandapat Dr. Jyotsnarani Pradhan |
| III | Microscopic Techniques | 15.12.2021 Time:4pm- 6pm | Phase contrast Microscopy Fluorescence Microscopy Inverted Microscopy | Dr. Sanatan Majhi Dr. J. Pradhan |
| IV | Electrophoretic Techniques and Centrifugation techniques | 23.12.2021 Time:4pm- 6pm | Vertical and horizontal electrophoresis | Prof. J. Dandapat Dr. Jyotsnarani Pradhan |
| V | Bioinformatics | 26.12.2021 10.00am- 2.00pm | Homology Modeling Docking Drug designing | Mr. Atal Bihari Jena, Research Scholar, Department of Biotechnology, Utkal University |