Shri Shivaji Education Society's,
MAHASATEE ARTS, COMMERCE & SCIENCE COLLEGE,
Ulga, Karwar, UttarKannada, Karnataka-581328

Phone No.:08382–257033
Mobile No.:7975117573/9483645037
E-mail:sesmahasateeuk@gmail.com
Website:www.sesmacsc.co.in

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Programme Outcomes for Add-On Course: Advanced Chromatographic Techniques

1. **Comprehensive Knowledge of Chromatography**
   - Understand the principles, classifications, and significance of chromatography in analytical science.
2. **Mastery of Advanced Techniques**
   - Gain expertise in advanced chromatographic methods such as High-Performance Liquid Chromatography (HPLC), Gas Chromatography (GC), and Thin-Layer Chromatography (TLC).
3. **Instrumentation Proficiency**
   - Learn the operational principles, components, and maintenance of chromatographic instruments like detectors, pumps, and columns.
4. **Sample Preparation Skills**
   - Develop proficiency in sample preparation techniques, including extraction, filtration, and concentration for chromatographic analysis.
5. **Quantitative and Qualitative Analysis**
   - Perform qualitative and quantitative analysis of complex mixtures with high precision and accuracy using chromatographic techniques.
6. **Method Development and Validation**
   - Understand the process of developing, optimizing, and validating chromatographic methods for various applications.
7. **Separation and Purification Techniques**
   - Acquire skills for separating and purifying compounds from mixtures, essential in industries like pharmaceuticals and biotechnology.
8. **Application in Multidisciplinary Fields**
   - Explore the applications of chromatography in pharmaceuticals, environmental analysis, food safety, and forensic science.
9. **Troubleshooting and Problem-Solving**

- Develop the ability to identify and resolve technical issues in chromatographic systems and methods.

10. **Data Analysis and Interpretation**
    - Gain expertise in interpreting chromatograms, understanding retention times, and analyzing peak integration.
11. **Understanding Regulatory Standards**
    - Learn about Good Laboratory Practices (GLP), International Conference on Harmonisation (ICH) guidelines, and FDA standards related to chromatographic methods.
12. **Advanced Detection Techniques**
    - Familiarize with advanced detection systems like Mass Spectrometry (MS) coupled with chromatography (e.g., GC-MS, LC-MS).
13. **Research and Innovation**
    - Enhance the ability to conduct research using chromatographic techniques for discovering new materials and compounds.
14. **Environmentally Friendly Practices**
    - Adopt green chromatography approaches to minimize waste and reduce the environmental impact of analytical processes.
15. **Professional and Ethical Practices**
    - Learn ethical practices in data reporting, instrument handling, and maintaining accuracy in analytical results.
16. **Career and Academic Growth**
    - Prepare for advanced roles in industries such as pharmaceuticals, food analysis, and environmental monitoring or pursue further research in analytical chemistry.

IQAC Coordinator
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& Science College
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