



**National Institute of Technology Meghalaya**  
An Institute of National Importance

**CURRICULUM**

|            |  |                    |             |
|------------|--|--------------------|-------------|
| Programme  | <b>Bachelor of Technology (All Branches)</b> | Year of Regulation | <b>2018</b> |
| Department | <b>Chemistry</b>                             | Semester           | <b>I/II</b> |

| Course Code       | Course Name   | Pre-Requisite   | Credit Structure |   |          |          | Marks Distribution    |           |            |
|-------------------|---|-----------------|------------------|---|----------|----------|-----------------------|-----------|------------|
|                   |   |                 | L                | T   | P        | C        | Continuous Evaluation |           | Total      |
| <b>CY 151</b>     | <b>Chemistry Laboratory</b>   | <b>NA</b>       | <b>0</b>         | <b>0</b>  | <b>2</b> | <b>1</b> | <b>01 Experiment</b>  | <b>10</b> | <b>100</b> |
| Course Objectives | To provide the students with knowledge on various techniques for chemical analysis              | Course Outcomes | CO1              | Able to acquire knowledge about various techniques for quantitative analysis and their applications for estimation of metal ions and anions   |          |          |                       |           |            |
|                   | To provide the students with knowledge on various techniques for chemical analysis              |                 | CO2              | Able to acquire knowledge about spectrophotometry and its application in chemical analysis; kinetics of chemical reactions  |          |          |                       |           |            |
|                   | To develop the student's ability to use of different instrumental methods for chemical analysis |                 | CO3              | Able to understand the resources and impacts of various types of pollutions on environment, further to achieve the ideas of probable solutions based on current sciences and technologies methods |          |          |                       |           |            |

| No. | COs | Mapping with Program Outcomes (POs) |     |     |     |     |     |     |     |     |      |      |      | Mapping with PSOs |      |      |
|-----|-----|-------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------------------|------|------|
|     |     | PO1                                 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1              | PSO2 | PSO3 |
| 1   | CO1 | 2                                   | 2   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |                   |      |      |
| 2   | CO2 | 1                                   | 2   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |                   |      |      |
| 3   | CO3 | 2                                   | 2   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0    | 0    | 0    |                   |      |      |

**SYLLABUS**

| No.         | Content  | Hours     | COs        |
|-------------|--|-----------|------------|
| 1           | To determine the alkalinity of given water sample  | 2         | <b>CO1</b> |
| 2           | Estimation of Fe(II) in Mohr's salt solution using standard $KMnO_4$ solution via Redox titration    | 2         | <b>CO1</b> |
| 3           | Conductometric titration of an unknown acid solution using a standard base solution                  | 2         | <b>CO3</b> |
| 4           | pH-metric titration of an unknown acid solution using a standard base solution                       | 2         | <b>CO3</b> |
| 5           | Complexometric determination of hardness of water  | 2         | <b>CO3</b> |
| 6           | Iodometric determination of copper in brass alloy  | 2         | <b>CO1</b> |
| 7           | Spectrophotometry on copper sulphate solution  | 2         | <b>CO2</b> |
| 8           | Determination of partition coefficient of acetic acid between <i>n</i> -butanol and water            | 4         | <b>CO1</b> |
| 9           | Determination of percentage composition of sugar solution from viscosity                             | 4         | <b>CO1</b> |
| 10          | Estimation of Fe(II) in a solution using standard $K_2Cr_2O_7$ solution via potentiometric titration | 2         | <b>CO1</b> |
| Total Hours |  | <b>24</b> |            |

**References**

1. J. Mendham, R. Denny, J. Barnes, M. Thomas, 'Vogel's Quantitative Chemical Analysis', Prentice Hall
2. V. D. Athawale, P. Mathur, 'Experimental Physical Chemistry', New Age International (P) Limited Publishers
3. Departmental laboratory manual