# MASTER OF SCIENCE IN CHEMISTRY

**SYLLABUS FOR THE CREDIT BASED CURRICULUM**

**Two-Year Four Semesters Course**

**From 2019 Onward**

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# Related image

# Department of Chemistry

# Indian Institute of Engineering Science and Technology, Shibpur

# Howrah 711 103

**Proposed Course Structure for Two-Year M. Sc Program**

**(From 2019 Onward)**

***First Semester***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject Code** | **Subject Name** | Class Load/Week | | | Total load/Week | **Credit** | **Marks** |
| **L** | **T** | **P** |
| 1 | CH5101 | Paper-I (Core):  Quantum mechanics and molecular spectroscopy | 3 | 1 | 0 | 4 | 4 | 100 |
| 2 | CH5102 | Paper-II (Core):  Transition metal chemistry: Structure-bonding correlation, Magnetic properties and Bioinorganic chemistry | 3 | 1 | 0 | 4 | 4 | 100 |
| 3 | CH5103 | Paper-III (Core):  Stereochemistry, Reaction mechanism and Heterocyclic chemistry | 3 | 1 | 0 | 4 | 4 | 100 |
| 4 |  | Paper-IV  (Departmental Elective)**\*** | 3 | 0 | 0 | 3 | 3 | 100 |
| 5 | CH5161 | Paper-V (Open Elective):  Chemistry of nanomaterial | 3 | 0 | 0 | 3 | 3 | 100 |
| 6 | CH5171 | Inorganic Chemistry Laboratory-I | 0 | 0 | ~~4~~ | ~~4~~ | 2 | 50 |
| 7 | CH5172 | Organic Chemistry Laboratory-I | 0 | 0 | ~~4~~ | ~~4~~ | 2 | 50 |
| **Total** |  |  | **15** | **3** | 08 | 26 | **22** | **600** |

**\*Departmental Elective**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Subject Code** | **Subject Name** |
|
| 1 | CH5121 | Group theory and application of spectroscopy |
| 2 | CH5122 | Instrumental techniques for chemical analysis |

**Second Semester**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Subject Code** | **Subject Name** | Class Load/Week | | | Total load/Week | **Credit** | **Marks** |
| **L** | **T** | **P** |
| 1 | CH5201 | Paper-VI (Core):  Classical and statisticalthermodynamics, surface and bio-physical chemistry | 3 | 1 | 0 | 4 | 4 | 100 |
| 2 | CH5202 | Paper-VII (Core):  Organometallics, Homogeneous catalysis and Solid state chemistry | 3 | 1 | 0 | 4 | 4 | 100 |
| 3 | CH5203 | Paper-VIII (Core):  Synthetic Organic Chemistry | 3 | 1 | 0 | 4 | 4 | 100 |
| 4 |  | Paper-IX  (Departmental Elective)**\*** | 3 | 0 | 0 | 3 | 3 | 100 |
| 5 | CH5261 | Paper-X (Open Elective):  Spectroscopy for Chemical Analysis | 3 | 0 | 0 | 3 | 3 | 100 |
| 6 | CH5271 | Physical Chemistry Laboratory-I | 0 | 0 | ~~4~~ | ~~4~~ | 2 | 50 |
| 7 | CH5272 | Organic Chemistry Laboratory-II | 0 | 0 | ~~4~~ | ~~4~~ | 2 | 50 |
| 8 | CH5273 | Term Paper | 0 | 0 | 8 | 8 | 4 | 100 |
| 9 | CH5291 | Term Paper Viva voce | 0 | 0 | 0 | 0 | 2 | 100 |
| **Total** |  |  | **15** | **3** | 16 | 34 | **28** | **800** |

**\*Departmental Elective**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Subject Code** | **Subject Name** |
|
| 1 | CH5221 | Green chemistry, Pericyclic reactions and Organic photochemistry |
| 2 | CH5222 | Photophysical processes and Polymer chemistry |
| 3 | CH5223 | Advanced bioinorganic and Inorganic supramolecular chemistry |