

**Annexure: I**

**Faculty of Science**  
**Department of Chemistry**  
**Ordinance, Curriculum & Syllabus**  
**Master of Science (Chemistry)**  
**(2020-21)**



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**Registrar**  
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**M.Sc.(Chemistry)**  
**Syllabus (2020-21)**  
**Program Structure under Choice Based Credit System (CBCS)**

| SEMESTER                                                         | COURSE CODE                                                                        | COURSENAME                                      | L  | T | P  | Contact hours/ week | Credits | Max. Marks | Formative Assessment | Summative Assessment |
|------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------|----|---|----|---------------------|---------|------------|----------------------|----------------------|
| I                                                                | Core Courses (CC)                                                                  |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060101                                                                           | Transition Metal Chemistry                      | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | 17060102                                                                           | Quantum Chemistry and Thermodynamics            | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | 17060103                                                                           | Stereo Chemistry and Organic Reaction Mechanism | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | 17060104                                                                           | Inorganic Chemistry Practical-I                 | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | 17060105                                                                           | Physical Chemistry Practical-I                  | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | 17060106                                                                           | Organic Chemistry Practical-I                   | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | Ability Enhancement Compulsory Course (AECC)                                       |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060107                                                                           | Professional Ethics and Human Values            | 2  | 0 | 0  | 2                   | 2       | 100        | 40                   | 60                   |
|                                                                  | Skill Enhance Course                                                               |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060108                                                                           | Analytical Chemistry                            | 2  | 0 | 0  | 2                   | 2       | 100        | 40                   | 60                   |
| Total Credits                                                    |                                                                                    |                                                 | 13 | 0 | 12 | 25                  | 19      | 800        | 380                  | 420                  |
| II                                                               | Core Courses                                                                       |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060201                                                                           | Bioinorganic Chemistry and Metal Clusters       | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | 17060202                                                                           | Chemical Kinetics and Electro Chemistry         | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | 17060203                                                                           | Organic Spectroscopy                            | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | 17060204                                                                           | Inorganic Chemistry Practical-II                | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | 17060205                                                                           | Physical Chemistry Practical-II                 | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | 17060206                                                                           | Organic Chemistry Practical-II                  | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | Ability Enhancement Compulsory Course (AECC)                                       |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060207                                                                           | Research Methodology and Technical Writing      | 2  | 0 | 0  | 2                   | 2       | 100        | 40                   | 60                   |
|                                                                  | Skill Enhancement Course                                                           |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060208                                                                           | Material Chemistry                              | 2  | 0 | 0  | 2                   | 2       | 100        | 40                   | 60                   |
| Total Credits                                                    |                                                                                    |                                                 | 13 | 0 | 12 | 25                  | 19      | 800        | 380                  | 420                  |
|                                                                  | 17060209                                                                           | Summer Training(4 weeks)                        | -  | - | -  | -                   | 4       | 200        | 100                  | 100                  |
| III                                                              | Specialization                                                                     |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | Discipline Specific Elective Courses(DSEC)                                         |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | xxxxxxx                                                                            | DSEC - 1                                        | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | xxxxxxx                                                                            | DSEC - 2                                        | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | xxxxxxx                                                                            | DSEC - 3                                        | 3  | 0 | 0  | 3                   | 3       | 100        | 40                   | 60                   |
|                                                                  | xxxxxxx                                                                            | DSEC - 1 Lab                                    | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | xxxxxxx                                                                            | DSEC - 2 Lab                                    | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | xxxxxxx                                                                            | DSEC - 3 Lab                                    | 0  | 0 | 4  | 4                   | 2       | 100        | 60                   | 40                   |
|                                                                  | Skill Enhancement Course (SEC-3) (Common for all the specializations)              |                                                 |    |   |    |                     |         |            |                      |                      |
|                                                                  | 17060319                                                                           | Drug Design and Development                     | 2  | 0 | 0  | 2                   | 2       | 100        | 40                   | 60                   |
|                                                                  | Open Elective Course ( From University Basket)(Common for all the specializations) |                                                 |    |   |    |                     |         |            |                      |                      |
| 17060320                                                         | OEC                                                                                | 3                                               | 0  | 0 | 3  | 3                   | 100     | 40         | 60                   |                      |
| Total Credits                                                    |                                                                                    |                                                 | 14 | 0 | 12 | 26                  | 20      | 800        | 380                  | 420                  |
| Research Training(Mandatory)(Common for all the specializations) |                                                                                    |                                                 |    |   |    |                     |         |            |                      |                      |

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|               |          |                |    |   |    |    |    |      |      |      |
|---------------|----------|----------------|----|---|----|----|----|------|------|------|
| IV            | 17060401 | * Project Work | 0  | 0 | 20 | 20 | 20 | 400  | 200  | 200  |
| Total Credits |          |                | 0  | 0 | 20 | 20 | 20 | 400  | 200  | 200  |
| Grand Total   |          |                | 40 | 0 | 56 | 96 | 82 | 3000 | 1440 | 1560 |

**\*Project Work:** The project work may be carried out at in-house labs or some outside agency having required facilities for the specified work. On successful completion of the project, every candidate has to submit a final dissertation/report to their concerned department.

| Semester (Credits)                                      | Core Courses | DSE Courses | SE Courses | AEC Courses | Research Training | Open Elective | Total |
|---------------------------------------------------------|--------------|-------------|------------|-------------|-------------------|---------------|-------|
| I                                                       | 15           | -           | 2          | 2           | -                 | -             | 19    |
| II                                                      | 15           | -           | 2          | 2           | -                 | -             | 19    |
| III                                                     | -            | 15          | 2          | -           | -                 | 3             | 20    |
| IV                                                      | -            | -           | -          | -           | 20                | -             | 20    |
| Total                                                   | 30           | 15          | 6          | 4           | 20                | 3             | 78    |
| Summer Training (4/6 Weeks) after second semester       |              |             |            |             |                   |               | 04    |
| Online courses from MOOC (Sem - I to Sem - III) Maximum |              |             |            |             |                   |               | 09    |
| Grand Total                                             |              |             |            |             |                   |               | 91    |
| Minimum Credits for award of degree                     |              |             |            |             |                   |               | 82    |

| Category                                         | Credits | %   |
|--------------------------------------------------|---------|-----|
| Core Course(CC)                                  | 30      | 40% |
| Discipline Specific Elective Course(DSEC)        | 15      | 17% |
| Skill Enhancement Course (SEC)                   | 6       | 7%  |
| Ability Enhancement Compulsory Course (AECC)     | 4       | 4%  |
| Research Training                                | 20      | 22% |
| Open Elective                                    | 3       | 3%  |
| Summer Training after second semester            | 4       | 4%  |
| Online courses from SWYAM (Sem - I to Sem - III) | 9       | 10% |
| Total                                            | 91      |     |

| Discipline Specific Elective Courses(DSEC) |             |                                 |
|--------------------------------------------|-------------|---------------------------------|
| S.No                                       | Course Code | Course Name                     |
| Specialization: Inorganic Chemistry        |             |                                 |
| 1                                          | 17060301    | Advanced Inorganic Spectroscopy |
| 2                                          | 17060302    | Coordination Chemistry          |
| 3                                          | 17060303    | Organometallic Chemistry        |
| 4                                          | 17060304    | Inorganic Special Practical-I   |
| 5                                          | 17060305    | Inorganic Special Practical-II  |
| 6                                          | 17060306    | Inorganic Special Practical-III |

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| Specialization: Physical Chemistry |          |                                                          |
|------------------------------------|----------|----------------------------------------------------------|
| 7                                  | 17060307 | Chemical Dynamics and Surface Chemistry                  |
| 8                                  | 17060308 | Advance Quantum Chemistry and Statistical Thermodynamics |
| 9                                  | 17060309 | Solid State and Biophysical Chemistry                    |
| 10                                 | 17060310 | Physical Special Practical-I                             |
| 11                                 | 17060311 | Physical Special Practical-II                            |
| 12                                 | 17060312 | Physical Special Practical-III                           |
| Specialization: Organic Chemistry  |          |                                                          |
| 13                                 | 17060313 | Photo Chemistry and Pericyclic Reactions                 |
| 14                                 | 17060314 | Heterocyclic Chemistry and Organic Synthesis             |
| 15                                 | 17060315 | Reagents and Rearrangements                              |
| 16                                 | 17060316 | Organic Special Practical-I                              |
| 17                                 | 17060317 | Organic Special Practical-II                             |
| 18                                 | 17060318 | Organic Special Practical-III                            |

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