**Department of Applied Chemistry**

**2018/19 First Semester PhD Course breakdown**

**Organic synthesis sub-specialization**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | **Course Title** | **Cr.hr** | **Lec.** | **lab** | **Lec. Equiv.** | **Instructors** |
| 1 | Chem7021 | Advanced organic synthesis | 3 | 3 | 0 | 4.5 | Dr. Endale Mulugeta |
| 2 | Chem7023 | Advanced organic spectroscopy | 3 | 3 | 0 | 4.5 | Dr Milkyas Endale |
| 3 | MREL | Elective \* | 2 | 2 | 0 | 3 |  |
|  | Chem7621 | Seminar I | 1 | 0 | 0 | 1.5 | Prof. Rajinder Mahajan |
| 4 | MREL. | Elective \* | 2 | 2 | 0 | 3 |  |
| **Total cr. Hrs** | | | **11** | | | | |

**Year I Semester I**

**MR-EL\*:**

Special Topics in Organic Synthesis I (Chem7125) (Prof. Rajinder Mahajan)

Polymer Synthesis (Chem7121);

Bioassay Techniques for Drug Development (Chem7123); ( Prof Senthikumar)

**\*The highlighted with green agree are electives being taken by students at this semester**

**Year II, Semester-I**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | |  |  |  |  | | --- | --- | --- | --- | | **Course Title** | **Cr.hr** | **Lec. Equiv.** | **Instructors** | | |  |  |  |  | | --- | --- | --- | --- | | **Cr.Hr** | **Cr.hr** | **Lec. Equiv.** | **Instructors** | | **Lec.** | **lab** | |  |  |  |  | | --- | --- | --- | --- | | **Lec. Equiv** | **Cr.hr** | **Lec. Equiv.** | **Instructors** | | |  |  |  |  | | --- | --- | --- | --- | | **Instructor** | **Cr.hr** | **Lec. Equiv.** | **Instructors** | |
| 1 | MR-EL\*\*\* | Elective II | 2 | 2 | 0 | 3 |  |
| 2 | Chem8721 | Doctoral Directed Research | 12 | 0 | 0 | 12 |  |
| **Total cr. Hrs** | | | **14** | | | | |

**MR-EL\*\*\***

* Advanced Heterocyclic Chemistry (Chem8121) Prof. Rajinder Mahajan)
* Advanced Bioorganic Chemistry (Chem8123) (

**\*The highlighted with green agree are electives being taken by students at this semester**

**Natural Product Chemistry sub-specialization**

**Year I Semester I**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | **Course Title** | **Cr.hr** | **Lec. Equiv.** | **Instructors** |
| 1 | Chem7031 | Advanced organic synthesis | 3 |  | Dr. Endale Mulugeta |
| 2 | Chem7033 | Advanced organic spectroscopy | 3 |  | Dr. Milkyas Endale |
| 3 | MREL | Elective\* | 2 |  |  |
| 4 | Chem7631 | Seminar I | 1 |  | Dr. Hailemichael Tesso |
| 5 | MREL | Elective\* | 2 |  |  |
|  | **Total Credit Hour** | | 11 |  |  |

**MR-EL\*:**

* Special Topic in Natural Products Chemistry I (Chem7137) ( Dr, Milkyas Endale )
* Drug Biotransformation and Molecular Mechanisms of Toxicity (Chem7131) (Dr. Hailemichael Tesso)
* Advanced Heterocyclic Chemistry (Chem7133) (Prof. Mahajan)
* Advanced Bioorganic Chemistry (Chem7135)

**\*The highlighted with green agree are electives being taken by students at this semester**

**Year II Semester I**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | **Course Title** | **Cr.hr** | **Lec. Equiv.** | **lab** | **Lec.Equiv** | **Instructors** |
| 1 | MR-EL\*\*\* | Elective | 2 | 2 | 0 | 3 |  |
| 2 | MR-EL\*\*\* | Elective | 2 | 2 | 0 | 3 |  |
|  |  |  |  | 4 | 0 |  |  |
|  | Chem8731 | Doctoral Directed Research | 12 |  |  |  |  |
|  | **Total Credit Hour** | | 16 |  |  |  |  |

**MR-EL\*\*\***

* Special Topics in Natural Product Chemistry II (Chem8131) (Dr. Hailemichael Tesso)
* Industrial Biotechnology (Chem8133) (Dr. Belay Zerihun)
* Advanced Biochemistry (Chem8135) ( Prof. Senthilkumar)
* Chemical Biology (Chem8137) (being given by Guest Instructor)

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**Material Chemistry sub-specialization**

**Year I Semester I**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | **Course Title** | **Cr.hr** | **lab** | **Lec.** | **Lec. Equiv.** | **Instructors** |
| 1 | Chem7041 | Materials Chemistry | 3 | 0 | 3 | 4.5 | Dr. H.C. Ananda Murthy |
| 2 | Chem7043 | Polymer Chemistry | 3 | 0 | 3 | 4.5 | Prof. Neeraj Gupta |
| 3 | MREL | Elective\* | 2 | 0 | 3 | 3 |  |
| 4 | MREL | Elective \* | 2 | 0 | 3 | 3 |  |
|  | **Total Credit Hour** | |  |  | **10** | | |

**MR-EL\*:**

* Thermodynamics of Materials (Chem7141)
* Corrosion and Materials (Chem7143) (Dr. H.C. Ananda Murthy)
* Special topics in Material Chemistry I (Chem7147) (Prof. Veerabhadram Guttena)

**\*The highlighted with green agree are electives being taken by students at this semester**

**Year II Semester I**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | **Course Title** | **Cr.hr** | **Lec..** | **lab** | **Lec.Equiv** | **Instructors** |
| 1 | MR-EL\*\*\* | Elective | 3 | 3 | 0 | 4.5 |  |
| 2 | MR-EL\*\*\* | Elective | 3 | 3 | 0 | 4.5 |  |
|  | Chem7643 | Students seminar II | 1 | 0 | 0 | 1.5 | Dr. H.C. Ananda Murthy |
|  |  |  |  |  | 0 |  |  |
|  | Chem8741 | Doctoral Directed Research | 12 | 12 |  |  |  |
|  | **Total Credit Hour** | | 19 |  |  |  |  |

**MR-EL\*\*\***

* Coatings and Materials Chemistry II (Chem8141) ( Prof. Neeraj Gupta)
* Composite materials (Chem8143) (Dr. H.C. Ananda Murthy & Prof. Neeraj Gupta)
* Nanomaterials (Chem8145) (Prof. Veerabhadram Guttena)
* Renewable energy Materials and Devices (Chem8147)
* Computational Quantum Chemistry for Molecules and materials (Chem8149)

**\*The highlighted with green agree are electives being taken by students at this semester**

**Bioinorganic Chemistry sub-specialization**

**Year I Semester I**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.NO** | **Course Code** | **Course Title** | **Cr.hr** | **Lec.** | **Lab** | **Lec. Equiv.** | **Instructors** |
| 0.0321.  -1- | Chem7051 | Bioinorganic Chemistry | 3 | 3 | 0 | 4.5 | Dr. Rajalakshmanan Eswaramoorthy |
| 2 | Chem7053 | Solution Equilibria | 3 | 3 | 0 | 4.5 | Dr. Tajudin Alansi |
| 3 | MREL | Elective\* | 2 | 2 | 0 | 3 |  |
| 4 | Chem7651 | Student Seminar I | 1 | 0 | 0 | 1.5 | Dr. Tajudin Alansi |
|  | **Total Credit Hour** | | 9 |  |  |  |  |

**MR-EL\*:**

* Organo-metallic synthesis and catalysis (Chem7153):
* **Special topics I (Chem7155): (**Dr. Rajalakshmanan Eswaramoorthy**)**
* Marine Bioinorganic Chemistry (Chem7151)

**\*The highlighted with green agree are electives being taken by students at this semester**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **NO** | **Course Code** | **Course Title** | **Cr.hr** | **Lec.** | **lab** | **Lec. Equiv.** | **Instructors** |
| 1 | MR-EL\*\*\* | Elective | 3 | 3 | 0 | 4.5 |  |
| 2 | MR-EL\*\*\* | Elective | 3 | 3 | 0 | 4.5 |  |
| 4 | Chem8141 | Doctoral Dissertation research | 12 | 0 | 0 |  |  |
|  | **Total Credit Hour** | | 18 |  |  |  |  |

**Year II Semester I**

**MR-EL\*\*\***

* Nanomaterials (Chem8151) (Prof. Veerabhadram Guttena)
* Bioorganic Chemistry (Chem8155) (Dr. Rajalakshmanan Eswaramoorthy)
* Polymer Chemistry (Chem8153) (Prof. Neeraj)

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