

RAYALASEEMA UNIVERSITY
Department of Chemistry

M.Sc Organic Chemistry

SYLLABUS

NATIONAL EDUCATION POLICY-2020
Under Choice Based Credit System (CBCS)

(w.e.f.the academic year 2022-2023)

Syllabus for I,II,III,IV SEMESTERS

BOS APPROVED – AUGUST,2023



DEPARTMENT OF CHEMISTRY

KURNOOL-518007 (A.P)

INDIA

2022-2023

1. M.E. Rao
27.8.22

2. [Signature] 3. [Signature]
27/08/2022

4. [Signature]
27.8.22

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27/8/22

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27/8/22

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27/8/22

**MINUTES OF THE MEETING OF THE BOARD OF STUDIES HELD ON 27-08-2022 IN
THE HEAD CHAMBER, DEPT. OF CHEMISTRY, RAYALASEEMA UNIVERSITY,
KURNOOL.**

MEMBERS PRESENT

1. Prof. M.E.Rani, M.Sc., M.Phil, Ph.D., : Chairman
HEAD of Chemistry & Chairman, B.O.S.,
Rayalaseema University, Kurnool.
9705236392, Mail ID: drmerani@gmail.com
2. Prof.M.V.Basaweswar Rao : External Member
Professor of Chemistry,
Krishna University, Machilipatnam.
9618446677. Mail ID: professormandava@gmail.com
3. Prof. C.Suresh Reddy, M.Sc., Ph.D., : External Member
Professor of Chemistry,
S.V. University, Tirupathi.
9849694958, Mail ID: csrsvu@gmail.com
4. Dr.L.Subramanya Sharma, M.Sc., Ph.D., : External Member
Dept. of Chemistry
Yogi Vemana University, Kadapa.
9966927978, Mail ID: yogivemanauniversity.ac.in
5. Dr.B.Hari Babu, Associate Professor, : External member
Dept. of Chemistry
Acharya Nagarjuna University, Guntur.
8500338866, dr.b.haribabu@gmail.com
6. Dr.K.Laxma Reddy, Assistant Professor (Sr grade): External member
Dept. of Chemistry, Osmania University, Hyderabad.
9393560677, klreddy200542@gmail.com
7. Mr.Kishor Addanki, : External member
Senior Manager-Technology Transfer
M/S Shilpa Medicare Limited.
Raichur, Karnataka.
9848302477 , Mail ID: kishor.addanki@vbsilpa.com

AGENDA:

To frame the syllabus for P.G. course for the academic year 2022-2023 as per NEP-2020 duly following the guidelines given in the common BoS meeting held on 27-08-2022.

RESOLUTIONS:

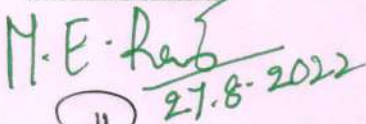
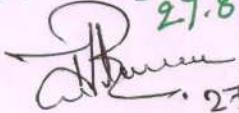

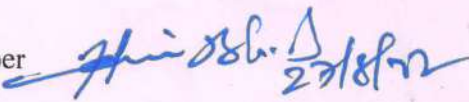

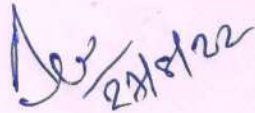
1. It is unanimously resolved to follow the core structure as per NEP-2020 and as per University

Instructions.

2. It is unanimously resolved to follow semester wise papers, marks and credits as given in the attachment.
3. It is unanimously resolved to follow external and internal component as 70:30 respectively.
4. It is unanimously resolved to follow five units in all papers as per NEP-2020 as per University Instructions.
5. It is unanimously resolved to follow external and internal question papers as described by University in the form of section A & section B.
6. It is unanimously resolved to follow one lab as Inorganic & Physical chemistry and one lab as Organic Chemistry for semesters I & II.
7. It is unanimously resolved to implement scheme of valuation for practicals from this academic year.

SIGNATURE OF THE MEMBERS:

SIGNATURES

- | | | | |
|---|---|-----------------|---|
| 1. Prof. M.E.Rani, | : | Chairman |  27.8.2022 |
| 2. Prof.M.V.Basaweswar Rao | : | External Member |  27/08/2022 |
| 3. Prof. C.Suresh Reddy, | : | External Member | _____ |
| 4. Dr.L.Subramanya Sharma, | : | External Member |  |
| 5. Dr.B.Hari Babu, Associate Professor,: | : | External member |  27/8/22 |
| 6. Dr.K.Laxma Reddy, Assistant Professor: | : | External member |  27/8/22 |
| 7. Mr.Kishor Addanki, | : | External member |  27/8/22 |

M.Sc DEGREE IN ORGANIC CHEMISTRY
CHOICE BASED CREDIT SYSTEM
NEP-COURSE STRUCTURE
WITH EFFECTIVE FROM THE ACADEMIC YEAR
2022-2023.



PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY
RAYALASEEMA UNIVERSITY
KURNOOL-518007 (A.P)
2022-2023

REGULATIONS

1. Short Title and Commencement

These regulations shall be called as “The Revised Regulations for the Master of Science (M. Sc.) Degree Program – Choice based credit system (CBCS). They shall come into effect from the Academic Year 2020-21. The regulations framed are subject to modifications from time to time by the authorities of the university.

2. Minimum qualification for admission

A Pass in the following examinations

- a) B.Sc Degree examination of an Indian university established by law in India and has scored not less than 55 % of the maximum marks.
- b) Every student, selected for admission to post graduate M.Sc program should have obtained registration with the university or should obtain the same within one month from the date of his/her admission, failing which the admission of the candidate shall be cancelled.

Note: It is mandatory to submit a migration certificate obtained from the respective university where the candidate had passed his/her qualifying degree (B.Sc)

3. Duration of the program

The program of study for M.Sc. shall extend over a period of four semesters (two academic years). The curricula and syllabi for the program shall be prescribed from time to time by the department.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

Each semester shall consist of not less than 100 working days. The odd semesters shall be conducted from the month of June/July to November/December and the even semesters shall be conducted from the month of December/January to May/June in every calendar year.

6. Attendance and progress

A candidate is required to put in at least 75% attendance in individual courses. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations.

7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, practical classes, seminars, assignments, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly the credit associated with any of the other academic, activities is

dependent upon the quantum of work expected to be put in for each of these activities per week/per activity.

Core, elective and self-study courses

The various courses offered to students are of three types.

Core course:

Core courses are those, knowledge of which is essential for students registered. These courses are mandatory.

Elective:

- An elective allows students to gain knowledge in areas where the concerned subject has applications.
- A department declares electives for its own students, out of which the desired electives are chosen by the students of parent department. These are called Internal Electives (IE).
- A department declares electives for the students of other departments (External elective (EE)).
- The credits obtained are mandatory.
- By choosing an elective from outside the department, a candidate may have to sacrifice an elective of her own department.

Self-study course:

The concerned department allows students to choose the additional one or more courses, to acquire more knowledge and extra credits. But these credits are not to be taken into account for awarding grades or class. Such courses should be in advanced areas of the subject. A teacher shall supervise the student. For self-study courses question paper setting and evaluation are internal only.

7.1. Credit assignment

7.1.1. Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having four lectures per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2. The contact hours of seminars, assignments and research work shall be treated as that of practical courses for the purpose of calculating credits. i.e., the contact hours shall be multiplied by 1/2.

7.2. Minimum credit requirements

The minimum credit points required for the award of M. Sc. degree is 96. However based on the credit points earned by the students under the head of co-curricular activities, a student

shall earn a maximum of 100 credit points. These credits are divided into Theory courses, Practical, Seminars, Assignments, are the curricular activities over the duration of four semesters. The credits are distributed semester-wise as shown in Table 1 to 4. Courses generally progress in sequence, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus.

8. Academic work

A regular record of attendance both in Theory, Practical, Seminar, Assignment shall be maintained by the department / teaching staff of respective courses.

9. Course of study

The course of study for M.Sc Programme shall include Semester wise Theory & Practical as given in Table – 1 to 4. The number of hours to be devoted to each theory and practical course in any semester shall not be less than that shown in Table – 1 to 4.



RAYALASEEMA UNIVERSITY
KURNOOL-518007 (A.P)
(A State University, Accredited with “B” Grade by NAAC)

NEP-CBCS-COURSE STRUCTURE

M.Sc. ORGANIC CHEMISTRY)
(For the students admitted during the year 2022-2023 onwards)

Table-I: Course of study for M.Sc. Organic Chemistry, 2022-2023

SEMESTER-I

| Course Code | Course | Hrs/week | Credit Points | Marks |
|----------------------------|-----------------------|---------------|---------------|------------|
| CHEM-101 | Inorganic Chemistry-I | 4 | 4 | 100 |
| CHEM-102 | Organic Chemistry-I | 4 | 4 | 100 |
| CHEM-103 | Physical Chemistry-I | 4 | 4 | 100 |
| CHEM-104 | General Chemistry-I | 4 | 4 | 100 |
| EXTERNAL PRACTICALS | | | | |
| CHEM-105 P | Inorganic Chemistry-I | 6 | 3 | 100 |
| CHEM-106 P | Organic Chemistry-I | 6 | 3 | 100 |
| CHEM-107 P | Physical Chemistry-I | 6 | 3 | 100 |
| TOTAL | | 34 hrs | 25 | 700 |

Table-II: Course of study for M.Sc. Organic Chemistry, 2022-2023

SEMESTER-II

| Course Code | Course | Hrs/week | Credit Points | Marks |
|----------------------------|--|---------------|---------------|------------|
| CHEM-201 | Inorganic Chemistry-II | 4 | 4 | 100 |
| CHEM-202 | Organic Chemistry-II | 4 | 4 | 100 |
| CHEM-203 | Physical Chemistry-II | 4 | 4 | 100 |
| CHEM-204* | Open elective Paper offered by the department | | | |
| CHEM-204 A | <i>Basic Chemistry</i> | 4 | 4 | 100 |
| CHEM-204 B | <i>Chemistry in day to day</i> | 4 | 4 | 100 |
| CHEM-204 C | <i>Polymer Science</i> | 4 | 4 | 100 |
| EXTERNAL PRACTICALS | | | | |
| CHEM-205 P | Inorganic Chemistry-I | 6 | 3 | 100 |
| CHEM-206 P | Organic Chemistry-I | 6 | 3 | 100 |
| CHEM-207 P | Physical Chemistry-I | 6 | 3 | 100 |
| TOTAL | | 34 hrs | 25 | 700 |

Note: *Student has to choose one Open Elective Paper from CHEM-204 (A/B/C).

Table-III: Course of study for M.Sc. Organic Chemistry, 2022-2023**SEMESTER-III**

| Course Code | Course | Hrs/week | Credit Points | Marks |
|----------------------------|--|---------------|---------------|------------|
| CHEM-301 | Organic Synthesis-I | 4 | 4 | 100 |
| CHEM-302 | Organic Spectroscopy-I | 4 | 4 | 100 |
| CHEM-303 | Organic Chemistry-III | 4 | 4 | 100 |
| CHEM-304* | Open elective Paper | | | |
| <i>CHEM-304 A</i> | <i>Industrial Organic Chemistry and its applications</i> | 4 | 4 | 100 |
| <i>CHEM-304 B</i> | <i>Drug Discovery, Design and Development</i> | 4 | 4 | 100 |
| <i>CHEM-304 C</i> | <i>MMOCS/SWAYAM/NPTEL</i> | 4 | 4 | 100 |
| EXTERNAL PRACTICALS | | | | |
| CHEM-305 P | a) Estimations of Organic Compounds b) Isolation and Identification of Natural Products | 6 6 | 8 | 200 |
| TOTAL | | 28 hrs | 24 | 600 |

Note: *Student has to choose one Open Elective Paper from CHEM-304 (A/B/C).

Table-IV: Course of study for M.Sc. Organic Chemistry, 2022-2023**SEMESTER-IV**

| Course Code | Course | Hrs/week | Credit Points | Marks |
|----------------------------|--|---------------|---------------|------------|
| CHEM-401 | Heterocyclic Chemistry | 4 | 4 | 100 |
| CHEM-402 | Chemistry of Natural Products | 4 | 4 | 100 |
| CHEM-403 | Chemistry of Antibiotics and Drugs | 4 | 4 | 100 |
| CHEM-404* | Internal elective Paper | | | |
| <i>CHEM-404 A</i> | <i>Applications of Synthetic Products</i> | 4 | 4 | 100 |
| <i>CHEM-404 B</i> | <i>Essential Lab Techniques for Industry.</i> | 4 | 4 | 100 |
| <i>CHEM-404 C</i> | <i>Spectral Identification of Organic Compounds (UV,IR,¹H&¹³C NMR and Mass).</i> | 4 | 4 | 100 |
| EXTERNAL PRACTICALS | | | | |
| CHEM-405* | Project Work | 12 | 8 | 200 |
| TOTAL | | 28 hrs | 24 | 550 |

Note: *Student has to choose one online course from CHEM-405.

HEAD & Chairman BoS
(Prof.M.E.Rani)

Table-5: Semester wise total marks and credits distribution, 2022-2023

| S.No | SEMESTER | TOTAL MARKS | CREDITS |
|--------------|-----------------|--------------------|----------------|
| 1. | I Semester | 700 | 25 |
| 2. | II Semester | 700 | 25 |
| 3. | III Semester | 600 | 24 |
| 4. | IV Semester | 600 | 24 |
| TOTAL | | 2600 | 98 |

**HEAD & Chairman BoS
(Prof.M.E.Rani)**

EXTERNAL MEMBERS

- | | | |
|-----------|-----------|-----------|
| 1. | 2. | 3. |
| 4. | 5. | 6. |

EXAMINATIONS/INTERNAL ASSESSMENTS EXAMINATIONS, 2022-2023

The schemes for Internal Assessment and End of the Semester Examinations for each theory and practical course/project through semesters I to IV shall be conducted by University.

Table-6: Schemes for IAE and semester end Examinations, 2022-2023.

I SEMESTER

| Course code | Course | Internal Assessment Exams (IAE) | | | | | End semester examinations | | Total Marks |
|---|-----------------------|---------------------------------|--------------|--------------------|----------|-------------|---------------------------|-------------|-------------|
| | | 1-IAE Theory | 2-IAE Theory | Seminar Assignment | Duration | Total Marks | Duration | Total Marks | |
| CHEM-101 | Inorganic Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-102 | Organic Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-103 | Physical Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-104 | General Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| External Practicals (End of semester Examinations) | | | | | | | | | |
| CHEM-105 P | Practical-I | Inorganic Chemistry-I | | | - | - | 6 hrs | 100 | 100 |
| CHEM-106 P | Practical-II | Organic Chemistry-I | | | - | - | 6 hrs | 100 | 100 |
| CHEM-107 P | Practical-III | Physical Chemistry-I | | | - | - | 6 hrs | 100 | 100 |
| TOTAL | | | | | | 120 | | 580 | 700 |

Table-7: Schemes for IAE and semester end Examinations, 2022-2023.

II SEMESTER

| Course code | Course | Internal Assessment Exams (IAE) | | | | | End semester examinations | | Total Marks |
|---|-----------------------|---------------------------------|--------------|--------------------|----------|-------------|---------------------------|-------------|-------------|
| | | 1-IAE Theory | 2-IAE Theory | Seminar Assignment | Duration | Total Marks | Duration | Total Marks | |
| CHEM-201 | Inorganic Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-202 | Organic Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-203 | Physical Chemistry-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-204 | Open Elective | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| External Practicals (End of semester Examinations) | | | | | | | | | |
| CHEM-205 P | Practical-I | Inorganic Chemistry-I | | | - | - | 6 hrs | 100 | 100 |
| CHEM-206 P | Practical-II | Organic Chemistry-I | | | - | - | 6 hrs | 100 | 100 |
| CHEM-207 P | Practical-III | Physical Chemistry-I | | | - | - | 6 hrs | 100 | 100 |
| TOTAL | | | | | | 120 | | 580 | 700 |

Table-8: Schemes for IAE and semester end Examinations, 2022-2023.**III SEMESTER**

| Course code | Course | Internal Assessment Exams (IAE) | | | | | End semester examinations | | Total Marks |
|---|------------------------|---|--------------|--------------------|----------|-------------|---------------------------|-------------|-------------|
| | | 1-IAE Theory | 2-IAE Theory | Seminar Assignment | Duration | Total Marks | Duration | Total Marks | |
| CHEM-301 | Organic Synthesis-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-302 | Organic Spectroscopy-I | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-303 | Organic Chemistry-III | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-304 | Open Elective | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| External Practicals (End of semester Examinations) | | | | | | | | | |
| CHEM-305 P | Practical-I | a) Estimations of Organic compounds. b) Isolation and Identification of Natural Products | | | - | - | 6 hrs 6 hrs | 200 | 200 |
| TOTAL | | | | | | 120 | | 480 | 600 |

Table-9: Schemes for IAE and semester end Examinations, 2022-2023.**IV SEMESTER**

| Course code | Course | Internal Assessment Exams (IAE) | | | | | End semester examinations | | Total Marks |
|---|---------------------------|---------------------------------|--------------|--------------------|----------|-------------|---------------------------|-------------|-------------|
| | | 1-IAE Theory | 2-IAE Theory | Seminar Assignment | Duration | Total Marks | Duration | Total Marks | |
| CHEM-401 | Organic Synthesis-II | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-402 | Organic Spectroscopy-II | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-403 | Advanced Natural Products | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| CHEM-404 | Internal Elective Paper | 20 | 20 | 10 | 1 hr | 30 | 3 hrs | 70 | 100 |
| External Practicals (End of semester Examinations) | | | | | | | | | |
| CHEM-405 P | PROJECT WORK | | | | - | - | 12 hrs | 200 | 200 |
| TOTAL | | | | | | 120 | | 480 | 600 |

Table-10: Sessional Examinations, 2022-2023.

- The Semester End Examinations (SEE) shall be conducted for 10 marks each theory course as per the schedule fixed by the University.
- Two Internal Examinations (IAE) shall be conducted for 20 marks each.
- Seminars & Assignment
There shall be one seminar or one assignment in each semester, which will be evaluated for 10 marks each

Table-11: Promotion and Award of grades.**Table-12: Grading of Performances.****Table-11: Letter grades and grade points allocation**



RAYALASEEMA UNIVERSITY : KURNOOL
DEPARTMENT OF CHEMISTRY
M.Sc. Chemistry,
Same pattern for all I, II, III & IV semesters

Time: 3 hrs

Max. Marks: 70

PART-A

Answer any four questions (4x5=20 marks)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

PART-B

Answer ALL questions, choosing are from each unit (4x10=50 marks)

9. (a)

Or

(b)

10. (a)

Or

(b)

11. (a)

Or

(b)

12. (a)

Or

(b)

