

B.Sc. Chemistry

Syllabus

CHOICE BASED CREDIT SYSTEM

(CBCS)

(from the academic year 2021 – 2022 onwards)



Post Graduate and Research Department of Chemistry

Seethalakshmi Ramaswami College (Autonomous)

Affiliated to Bharathidasan University

Tiruchirappalli – 620 002

Tamil Nadu, India

Accredited with A+ Grade by NAAC (4th Cycle)



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Tiruchirappalli

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B.Sc. CHEMISTRY

Revised CBCS - OBE - BASED Curriculum Structure

(For students admitted from 2021 onwards)

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|-----|--------------|--|-------------|--|-----|-----------|-----------|-----|----|-----|
| I | I | Language - I | | Course - I | 6 | 3 | EXT | 25 | 75 | 100 |
| | II | English - I | | Course - I | 6 | 3 | EXT | 25 | 75 | 100 |
| | III | Core Course - I | | Inorganic, Organic and Physical Chemistry - I | 5+1 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical - I | | Practical-I : Volumetric Analysis | 3 | - | INT | - | - | - |
| | III | First Allied Course - I | | Offered by the Department of Physics | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | First Allied Practical | | Offered by the Department of Physics | 2 | - | INT | - | - | - |
| | III | Cross Disciplinary Course (CDC) (Chemistry, Computer Science & Physics) | | Radiation and Safety management | 1 | - | EXT | - | - | - |
| | IV | VBE | | Value Based Education | 2 | 2 | EXT | 25 | 75 | 100 |
| | TOTAL | | | | | 30 | 16 | | | |
| II | I | Language - II | | Course - II | 6 | 3 | EXT | 25 | 75 | 100 |
| | II | English - II | | Course - II | 6 | 3 | EXT | 25 | 75 | 100 |
| | III | Core Course - II | | Inorganic, Organic and Physical Chemistry - II | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical - I | | Practical-I: Volumetric Analysis | 2 | 4 | INT | 40 | 60 | 100 |
| | III | First Allied Course -II | | Offered by the Department of Physics | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | First Allied Practical | | Offered by the Department of Physics | 2 | 3 | INT | 40 | 60 | 100 |
| | III | Cross Disciplinary Course (CDC) | | Radiation and Safety management | 3 | 4 | EXT | 25 | 75 | 100 |

(Chemistry,
Computer Science
& Physics)

IV

EVS

Environmental Studies

2

2

EXT

25

75

100

TOTAL

30

27

800

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|--|------|---------------------------|-------------|---|-----------|-----------|---------|-----|----|------------|
| III | I | Language - III | | Course - III | 6 | 3 | EXT | 25 | 75 | 100 |
| | II | English - III | | Course - III | 6 | 3 | EXT | 25 | 75 | 100 |
| | III | Core Course - III | | Inorganic, Organic and Physical Chemistry - III | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical- II | | Practical-II: Semimicro Analysis | 3 | - | INT | - | - | - |
| | III | Second Allied Course - I | | Offered by the Department of Mathematics / Botany | 4+2 / 4 | 3 | EXT | 25 | 75 | 100 |
| | III | Second Allied Practical | | Offered by the Department of Botany | 2 | - | INT | - | - | - |
| | IV | NME - I* | | Offered by other Departments | 2 | 2 | EXT | 25 | 75 | 100 |
| | IV | SBE - I | | Chemistry of Commercial products | 2 | 2 | EXT | 25 | 75 | 100 |
| TOTAL | | | | | 30 | 18 | | | | 600 |
| IV | I | Language - IV | | Course - IV | 6 | 3 | EXT | 25 | 75 | 100 |
| | II | English - IV | | Course - IV | 6 | 3 | EXT | 25 | 75 | 100 |
| | III | Core Course - IV | | Inorganic, Organic and Physical Chemistry - IV | 5+1 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical - II | | Practical-II: Semimicro Analysis | 2 | 4 | INT | 40 | 60 | 100 |
| | III | Second Allied Course - II | | Offered by the Department of Mathematics / Botany | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | Second Allied Practical | | Offered by the Department of Mathematics / Botany | 2 / 2 | 3 / 3 | INT | 40 | 60 | 100 |
| | IV | NME - II* | | Offered by other Departments | 2 | 2 | EXT | 25 | 75 | 100 |
| | IV | SBE - II | | Phytochemistry | 2 | 2 | EXT | 25 | 75 | 100 |
| TOTAL | | | | | 30 | 25 | | | | 800 |
| * Offered by the Department to the students of other disciplines | | | | | | | | | | |

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT | |
|-----|------|----------------------|-------------|--|--------------|-----------|-----------|-----|----|------------|------------|
| V | III | Core Course - V | | Inorganic Chemistry - I | 5 | 5 | EXT | 25 | 75 | 100 | |
| | III | Core Course - VI | | Organic Chemistry - I | 5 | 5 | EXT | 25 | 75 | 100 | |
| | III | Core Course - VII | | Physical Chemistry | 5 | 5 | EXT | 25 | 75 | 100 | |
| | III | Core Practical - III | | Practical-III: Gravimetric and Organic Analyses | 3 | - | INT | - | - | - | |
| | III | Core Practical - IV | | Practical-IV: Experimental techniques in Physical Chemistry | 3 | - | INT | - | - | - | |
| | III | MBE - I | | C Language and Chemistry | 5 | 4 | EXT | 25 | 75 | 100 | |
| | IV | SBE - III | | Polymer Chemistry | 2 | 2 | EXT | 25 | 75 | 100 | |
| | IV | SSD | | Soft Skill Development | 2 | 2 | INT | 25 | 75 | 100 | |
| | | | | | TOTAL | 30 | 23 | | | | 600 |
| VI | III | Core Course - VIII | | Inorganic Chemistry - II | 5 | 5 | EXT | 25 | 75 | 100 | |
| | III | Core Course - IX | | Organic Chemistry - II | 5 | 5 | EXT | 25 | 75 | 100 | |
| | III | Core Practical - III | | Practical-III: Gravimetric and Organic Analyses | 4 | 5 | INT | 40 | 60 | 100 | |
| | III | Core Practical -IV | | Practical-IV: Experimental techniques in Physical Chemistry | 3 | 3 | INT | 40 | 60 | 100 | |
| | III | MBE- II | | Spectroscopy, Electrochemistry and Group Theory | 5 | 4 | EXT | 25 | 75 | 100 | |
| | III | MBE - III | | Biochemistry/ Pharmaceutical Chemistry | 4 | 4 | EXT | 25 | 75 | 100 | |
| | III | Project | | Group project | 3 | 3 | EXT | 20 | 80 | 100 | |
| | V | GS | | Gender Studies | 1 | 1 | INT | 25 | 75 | 100 | |
| | | | | | TOTAL | 30 | 30 | | | | 800 |
| | V | Extension | | Extension Activities | - | 1 | INT | -- | -- | 100 | |
| | | | | TOTAL | - | 31 | | | | 900 | |

| TOTAL DISTRIBUTION OF HOURS, CREDITS & MARKS FOR UG PROGRAMME | | | |
|--|--------------|----------------|--------------------|
| SEMESTER | HOURS | CREDITS | TOTAL MARKS |
| I | 30 | 16 | 500 |
| II | 30 | 27 | 800 |
| III | 30 | 18 | 600 |
| IV | 30 | 25 | 800 |
| V | 30 | 23 | 600 |
| VI | 30 | 31 | 900 |
| TOTAL | 180 | 140 | 4200 |

ALLIED COURSES OFFERED TO OTHER DEPARTMENTS**For Botany & Zoology Majors**

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|-----|------|--------------------------|-------------|---|-----|-----|---------|-----|----|-----|
| I | III | First Allied Course - I | | Chemistry for Biologists - I | 4 | 3 | EXT | 25 | 75 | 100 |
| II | III | First Allied Course - II | | Chemistry for Biologists - II | 4 | 3 | EXT | 25 | 75 | 100 |
| II | III | First Allied Practical | | Volumetric analysis and Simple experimental techniques in Chemistry | 2+2 | 3 | INT | 40 | 60 | 100 |

For Home Science Major

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|-----|------|--------------------------|-------------|--|-----|-----|---------|-----|----|-----|
| I | III | First Allied Course - I | | General Chemistry - I | 4 | 3 | EXT | 25 | 75 | 100 |
| II | III | First Allied Course - II | | General Chemistry - II | 4 | 3 | EXT | 25 | 75 | 100 |
| II | III | First Allied Practical | | Titrimetric and Analytical techniques in Chemistry | 2+2 | 3 | INT | 40 | 60 | 100 |

For Physics Major

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|-----|------|--------------------------|-------------|---------------------------------------|-----|-----|---------|-----|----|-----|
| I | III | First Allied Course - I | | Chemistry for Physicists - I | 4 | 3 | EXT | 25 | 75 | 100 |
| II | III | First Allied Course - II | | Chemistry for Physicists - II | 4 | 3 | EXT | 25 | 75 | 100 |
| II | III | First Allied Practical | | Volumetric and Analytical Experiments | 2+2 | 3 | INT | 40 | 60 | 100 |

LIST OF MAJOR BASED ELECTIVE COURSES

| SEM | GROUP | COURSE CODE | COURSE TITLE |
|------------|-----------------------------|--------------------|---|
| V | I (Choose any one course) | | (A) C Language and Chemistry (B) Basics of Nano Chemistry |
| VI | II (Choose any one course) | | (A) Spectroscopy, Electrochemistry and Group Theory (B) Essential Topics in Chemistry |
| | III (Choose any one course) | | (A) Biochemistry (B) Pharmaceutical Chemistry |

LIST OF SKILL BASED ELECTIVE COURSES

| SEM | GROUP | COURSE CODE | COURSE TITLE |
|------------|-----------------------------|--------------------|--|
| III | I (Choose any one course) | | (A) Chemistry of Commercial products (B) Dyeing Techniques and Water Treatment |
| IV | II (Choose any one course) | | (A) Phytochemistry (B) Forensic Science |
| V | III (Choose any one course) | | (A) Polymer Chemistry (B) Selected Topics in Chemistry |

NON MAJOR ELECTIVE COURSES OFFERED TO OTHER DEPARTMENTS

| SEM | COURSE | COURSE CODE | COURSE TITLE |
|-----|--------|-------------|---------------------------------|
| III | I | | Material Chemistry |
| IV | II | | Role of Chemistry in Daily Life |

CROSS DISCIPLINARY COURSE (CDC) (Chemistry, Computer Science & Physics)

| SEM | COURSE | COURSE CODE | COURSE TITLE |
|-----|--------|-------------|---------------------------------|
| II | I | | Radiation and Safety management |

BEYOND CURRICULUM EXTRA COURSES OFFERED

LIST OF VALUE ADDED COURSE

| SEM | COURSE | COURSE CODE | COURSE TITLE |
|-----|--------|-------------|--|
| I | I | | Chemistry of Petroleum products |
| III | II | | Chemistry of Dyes |
| V | III | | Chemistry for competitive examinations |

CERTIFICATE COURSES OFFERED TO OTHER DEPARTMENTS

Certificate course on **CHEMISTRY IN EVERY DAY LIFE**

| SEM | COURSE | COURSE CODE | COURSE TITLE |
|-----|--------|-------------|--|
| II | I | | Food Adulteration and chemistry of Cosmetics |
| IV | II | | Agricultural Chemistry |
| VI | III | | Aqua Chemistry |

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B.Sc. CHEMISTRY – CBCS System

**(For Students admitted from June 2021
onwards)**

| Subject | Number of Courses | Credit |
|---|-------------------|------------|
| Language | 4 | 12 |
| English | 4 | 12 |
| Core Course (9x5) | 9 | 45 |
| Core Practical (2x4=8) +(1x5=5)+(1x3=3) | 4 | 16 |
| Cross disciplinary | 1 | 4 |
| Allied Course : Physics and Botany / Physics and Mathematics | 4 | 12 |
| Allied Practical: Physics and Botany / Physics and Mathematics | 2 | 6 |
| Major Based Elective (3x4=12) | 3 | 12 |
| Environmental Studies | 1 | 2 |
| Value Based Education | 1 | 2 |
| Non Major Elective | 2 | 4 |
| Soft Skill Development | 1 | 2 |
| Skill Based Course | 3 | 6 |
| Gender Studies | 1 | 1 |
| Extension Activities | 1 | 1 |
| Group Project | 1 | 3 |
| Total | 42 | 140 |