



SEETHALAKSHMI RAMASWAMI COLLEGE
(AUTONOMOUS)
AFFILIATED TO BHARATHIDASAN UNIVERSITY
TIRUCHIRAPPALLI
Accredited with A+ by NAAC (4th Cycle)



SYLLABUS

CBCS - OBE - LOCF BASED Curriculum Structure

DEPARTMENT OF BIOCHEMISTRY

UG PROGRAMME

(2024 onwards)

Guidelines for UG Curriculum Revision 2024-2025

The CBCS - OBE – LOCF Curriculum pattern for the Undergraduate programme to be implemented from 2024 onwards, is based on the recommendations of the apex bodies namely **TANSCHÉ, UGC, Bharathidasan University (Parent University) and NAAC in lieu of the National Education Policy.**

- As per the norms of UGC and Bharathidasan University, the sum total credits for UG programme is **140** including the domain specific **Group Project (3 credits)** which is to be completed by the students to orient them towards research activities.
- Apart from 140 credits, **12 extra credit courses** have been introduced with the **total credits of 20**, in order to promote diversified skills among students.
- A 30 hour **Course** entitled “**Communicative and Functional English**” has been introduced as a **mandatory** course, to enhance Communicative English.
- Three **Courses** on the titles “**Office Automation, Web Designing and Internet Concepts**” with 30 hours for each course have been introduced as **mandatory** courses for honing the technical skills.
- Students are given the provision of completing one **Online Course** as an **optional** course (**MOOC/SWAYAM/NPTEL**) for strengthening the domain specific knowledge.
- One **Community outreach Activity** may be carried out as an **optional** course by students who are interested to earn extra credit to showcase their commitment towards society and to fulfil the social responsibility of the institution.
- A 30 hour **Certificate Course** on “**Indian Knowledge System**” has been introduced as a **mandatory** course to familiarize India’s knowledge contribution to the major disciplines, to fall in line with the **National Education Policy**.
- A discipline specific **Value Added Course** has been introduced as **mandatory** course as per **TANSCHÉ** requirements.
- Three Internships (**1 credit each**) are introduced of which **Internship –I (at the II Semester vacation)** is made **mandatory** for every student of UG programme to enhance the employability and entrepreneurship skills.
- A 30 hour **Course** titled “**Capacity Building for Enhancing Professional Skills**” (15 hours for the Professional Placement by the Union and 15 hours for Career Guidance Workshop by the respective Departments) has been introduced as a **mandatory** course to help the students acquire professional competency.



SEETHALAKSHMI RAMASWAMI COLLEGE

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B.Sc. Biochemistry

CBCS – OBE – LOCF Curriculum Structure

(For students admitted from 2024 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 | | Chemistry of Biomolecules | 7 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical-I | | Practical-I:Microscopic and Biomolecule Analysis | 3 | - | INT | - | - | - |
| | III | First Allied Course-I | | General chemistry | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | First Allied Practical | | Practical:Biophysical chemistry | 2 | - | INT | - | - | - |
| | IV | VBE | | Value Based Education | 2 | 2 | EXT | 25 | 75 | 100 |
| | Total | | | | 30 | 16 | | | | 500 |
| 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 | | Cell Biology | 7 | 6 | EXT | 25 | 75 | 100 |
| | III | Core Practical-I | | Practical-I:Microscopic and Biomolecule Analysis | 3 | 4 | INT | 40 | 60 | 100 |
| | III | First Allied Course-II | | Biophysical chemistry | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | First Allied Practical | | Practical:Biophysical chemistry | 2 | 3 | INT | 40 | 60 | 100 |
| | IV | EVS | | Environmental Studies | 2 | 2 | EXT | 25 | 75 | 100 |
| | Total | | | | 30 | 24 | | | | 700 |
| | | EXTRA CREDIT COURSE | | Communicative and Functional English offered by Department of English (MANDATORY) | 2 | 2 | INT | 100 | - | 100 |

| 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 | | Techniques in Biochemistry | 6 | 6 | EXT | 25 | 75 | 100 |
| | III | Core Practical-II | | Practical-II:Biochemical techniques and Enzyme analysis | 2 | - | INT | - | - | - |
| | III | Second Allied Course-I | | Offered by the Department of Biotechnology | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | Second Allied Practical | | Offered by the Department of Biotechnology | 2 | - | INT | - | - | - |
| | IV | NME-I* | | Offered by other Departments | 2 | 2 | EXT | 25 | 75 | 100 |
| | IV | SBE-I | | Herbal Medicine | 2 | 2 | EXT | 25 | 75 | 100 |
| | Total | | | | 30 | 19 | | | | 600 |
| | | EXTRA CREDIT COURSE | | Internship-I - (II Semester vacation) Online/Offline - Certificate, Report & Photo (MANDATORY) | - | 1 | INT | - | - | 100 |
| | | | | Community outreach activity (II Semester vacation - Report, Photo & Feedback) (OPTIONAL | - | 1 | INT | - | - | 100 |

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/ EXT | CIA | SE | TOT |
|--|---|-------------------------|-------------------------------|--|-----|-----|----------|-----|-----|-----|
| 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 | | Enzymology | 6 | 6 | EXT | 25 | 75 | 100 |
| | III | Core Practical-II | | Practical-II:Biochemical techniques and Enzyme analysis | 2 | 4 | INT | 40 | 60 | 100 |
| | III | Second Allied Course-II | | Offered by the Department of Biotechnology | 4 | 3 | EXT | 25 | 75 | 100 |
| | III | Second Allied Practical | | Offered by the Department of Biotechnology | 2 | 3 | INT | 40 | 60 | 100 |
| | IV | NME-II* | | Offered by other Departments | 2 | 2 | EXT | 25 | 75 | 100 |
| | IV | SBE-II | | Drug Biochemistry | 2 | 2 | EXT | 25 | 75 | 100 |
| | Total | | | | 30 | 26 | | | | 800 |
| | | EXTRA CREDIT COURSE | | Certificate Course (IKS) – Offered by other Departments (beyond class hours) (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| | | | Office Automation (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 | |
| | Internship – II (III Semester vacation) - Online/Offline - Certificate, Report & Photo (OPTIONAL) | | - | 1 | INT | - | - | 100 | | |
| * 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 | | Molecular Biology | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Course-VI | | Metabolism | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Course-VII | | Genetics | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical-III | | Practical-III:Phytochemical analysis | 6 | 5 | INT | 40 | 60 | 100 |
| | III | MBE-I | | Plant and Microbial Biochemistry | 5 | 4 | EXT | 25 | 75 | 100 |
| | IV | SBE-III | | Nutritional Biochemistry | 2 | 2 | EXT | 25 | 75 | 100 |
| | IV | SSD | | Soft Skill Development | 2 | 2 | INT | 25 | 75 | 100 |
| | | | | Total | 30 | 28 | | | | 700 |
| | | EXTRA CREDIT COURSE | | Value Added Course-offered to the same department (beyond class hours) (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| | | | | Web Designing (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| | | | | Internship-III (IV Semester vacation) - Online/Offline - Certificate, Report & Photo (OPTIONAL) | - | 1 | INT | - | - | 100 |
| | | | | Online Course (MOOC/ Swayam / NPTEL) - Before V Semester (OPTIONAL) | - | 2 | INT | - | - | 100 |

| SEM | PART | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/ EXT | CIA | SE | TOT |
|-----|--------------------|---------------------|-------------|---|------------|------------|----------|-----|----|-------------|
| VI | III | Core Course-VIII | | Endocrinology | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Course-IX | | Clinical Biochemistry | 5 | 5 | EXT | 25 | 75 | 100 |
| | III | Core Practical-IV | | Practical-IV:Blood and Urine Analysis | 6 | 4 | INT | 40 | 60 | 100 |
| | III | MBE-II | | Immunology | 5 | 4 | EXT | 25 | 75 | 100 |
| | III | MBE-III | | Human Physiology | 5 | 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 |
| | V | Extension | | Extension Activities (NSS/NCC/YRC/Sports and Exnora) | - | 1 | INT | - | - | 100 |
| | Total | | | | 30 | 27 | | | | 800 |
| | Grand Total | | | | 180 | 140 | | | | 4100 |
| | | EXTRA CREDIT COURSE | | Capacity Building for Enhancing Professional Skills- Offered by the Department (MANDATORY) | 2 | 2 | INT | - | - | 100 |
| | | | | Internet Concepts (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |

| TOTAL DISTRIBUTION OF HOURS, CREDITS & MARKS FOR UG PROGRAMME | | | |
|--|--------------|----------------|--------------------|
| SEMESTER | HOURS | CREDITS | TOTAL MARKS |
| I | 30 | 16 | 500 |
| II | 30 | 24 | 700 |
| III | 30 | 19 | 600 |
| IV | 30 | 26 | 800 |
| V | 30 | 28 | 700 |
| VI | 30 | 27 | 800 |
| TOTAL | 180 | 140 | 4100 |

ALLIED COURSES

(Offered to the Students of Biotechnology)

| SEM | PART | COURSES | COURSE CODE | COURSE TITLE | HRS | CREDIT | INT /EXT | CIA | SE | TOT |
|-------|------|-------------------------|-------------|--------------------------|-----|--------|----------|-----|----|-----|
| III | III | Allied Course-I | | Basic Biochemistry | 4 | 3 | EXT | 25 | 75 | 100 |
| IV | III | Allied Course-II | | Microbial Metabolism | 4 | 3 | EXT | 25 | 75 | 100 |
| | | Second Allied Practical | | Analysis of Biomolecules | 4 | 3 | INT | 40 | 60 | 100 |
| TOTAL | | | | | 12 | 9 | | | | 300 |

MAJOR BASED ELECTIVES COURSES

| SEM | PART | GROUP | COURSE CODE | COURSE TITLE | HRS | CRD | INT/ EXT | CIA | SE | TOT |
|--------------|------|-----------------------------------|-------------|---|-----------|-----------|----------|-----|----|------------|
| V | III | Group-I (Choose any one Course) | | A) Plant and Microbial biochemistry B) Basic Bioinformatics (Optional) | 5 | 4 | EXT | 25 | 75 | 100 |
| VI | III | Group-II (Choose any one Course) | | A) Immunology B) Microbiology (Optional) | 5 | 4 | EXT | 25 | 75 | 100 |
| VI | III | Group-III (Choose any one Course) | | A) Human Physiology B) Biostatistics (Optional) | 5 | 4 | EXT | 25 | 75 | 100 |
| TOTAL | | | | | 15 | 12 | | | | 300 |

SKILL BASED ELECTIVES

| SEM | PART | GROUP | COURSE CODE | COURSES | HRS | CRD | INT/ EXT | CIA | SE | TOT |
|--------------|------|--------------------------------------|----------------|--|----------|----------|-------------|-----|----|------------|
| III | IV | Group-I (Choose any One Course) | | A) Herbal Medicine B) First Aid Management (Optional) | 2 | 2 | EXT | 25 | 75 | 100 |
| IV | IV | Group-II (Choose any One Course) | | A) Drug Biochemistry B) Hospital Management (Optional) | 2 | 2 | EXT | 25 | 75 | 100 |
| V | IV | Group-III (Choose any One Course) | | A) Nutritional Biochemistry B) Industrial Biochemistry (Optional) | 2 | 2 | EXT | 25 | 75 | 100 |
| TOTAL | | | | | 6 | 6 | | | | 300 |

NON MAJOR BASED ELECTIVES

| SEM | PART | COURSE CODE | COURSE TITLE | HRS | CRD | INT/ EXT | CIA | SE | TOT |
|--------------|------|----------------|---------------------------------|----------|----------|-------------|-----|----|------------|
| III | IV | | NME-I Biomolecules | 2 | 2 | EXT | 25 | 75 | 100 |
| IV | IV | | NME-II Diagnosis of diseases | 2 | 2 | EXT | 25 | 75 | 100 |
| TOTAL | | | | 4 | 4 | | | | 200 |

VALUE ADDED COURSE

Extra Credit Course for Skill Development

| SEM | COURSE | COURSE CODE | COURSE TITLE |
|-----|--------|-------------|----------------|
| V | I | | Medical coding |

CERTIFICATE COURSE OFFERED TO OTHER DEPARTMENTS

Extra Credit Course for Skill Development

| SEM | COURSE | COURSE CODE | COURSE TITLE |
|-----|--------|-------------|--------------------|
| IV | I | | Lifestyle Diseases |

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B.Sc. Biochemistry
(CBCS - OBE – LOCF System)

(For Students admitted from June 2024 onwards)

| Subject | Number of Courses | Hours | Credit |
|-----------------------------------|--------------------------|--------------|---------------|
| Language | 4 | 24 | 12 |
| English | 4 | 24 | 12 |
| Core Course | 9 | 51 | 48 |
| Core Practical | 4 | 22 | 17 |
| Allied Course | 4 | 16 | 12 |
| Allied Practical | 2 | 8 | 6 |
| Major Based Elective Course (3x4) | 3 | 15 | 12 |
| Skill Based Elective Course | 3 | 6 | 6 |
| Non Major Elective Course | 2 | 4 | 4 |
| Value Based Education | 1 | 2 | 2 |
| Environmental Studies | 1 | 2 | 2 |
| Soft Skill Development | 1 | 2 | 2 |
| Gender Studies | 1 | 1 | 1 |
| Extension Activities | 1 | | 1 |
| Group Project | 1 | 3 | 3 |
| Total | 41 | 180 | 140 |

B.Sc. Biochemistry
(CBCS - OBE – LOCF System)

(For Students admitted from June 2024 onwards)
EXTRA CREDIT COURSES FOR SKILL DEVELOPMENT*

| Subject | Common/Subject Specific | Number of Courses | Credit |
|--|--|--------------------------|---------------|
| **Office Automation (MANDATORY) | Common to All | 1 | 2 |
| **Web Designing (MANDATORY) | Common to All | 1 | 2 |
| **Internet Concepts (MANDATORY) | Common to All | 1 | 2 |
| **Online Course (MOOC/SWAYAM/NPTEL) (OPTIONAL) | Subject Specific | 1 | 2 |
| Communicative and Functional English (MANDATORY) | Common to All | 1 | 2 |
| Community outreach activity (OPTIONAL) | Subject Specific | 1 | 1 |
| Certificate Course (IKS - Indian Knowledge System) (MANDATORY) | Subject Specific (offered to other departments) | 1 | 2 |
| Value Added Course (MANDATORY) | Subject Specific | 1 | 2 |
| Internship – I To be completed during II Semester Vacation (MANDATORY) Internship – II & III (OPTIONAL) | Subject Specific | 3 | 3 |
| Capacity Building for Enhancing Professional Skills (MANDATORY) | 50%Common to All (Placement Training) 50% Subject Specific(Career Guidance by the respective Departments) | 1 | 2 |
| TOTAL | | 12 | 20 |

*The extra credit courses have been introduced in the CBCS - OBE – LOCF Curriculum pattern to be implemented from 2024 onwards based on the recommendations of the apex bodies namely **TANSCHÉ, UGC, Bharathidasan University (Parent University), NAAC in lieu of the National Education Policy.**

**Courses with Credit Transfer provision

B.Sc. Biochemistry
(CBCS - OBE – LOCF System)

EXTRA CREDIT COURSE FOR SKILL DEVELOPMENT*

| SEM | COURSE | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|-----|-----------------------------|-------------|--|-----|-----------|---------|-----|----|-------------|
| II | EXTRA CREDIT COURSES | | Communicative and Functional English offered by Department of English (MANDATORY) | 2 | 2 | INT | 100 | - | 100 |
| III | | | Community outreach activity (II Semester vacation – Report, Photo & Feedback) (OPTIONAL) | - | 1 | INT | - | - | 100 |
| III | | | Internship – I - (II Semester vacation) Online/Offline - Certificate, Report & Photo (MANDATORY) | - | 1 | INT | - | - | 100 |
| IV | | | Certificate Course (IKS) – Offered to other Department (beyond class hours) (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| IV | | | Internship – II (III Semester vacation) - Online/Offline -Certificate, Report & Photo (OPTIONAL) | - | 1 | INT | - | - | 100 |
| IV | | | Office Automation (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| V | | | Value Added Course – Offered to the same department (beyond class hours) (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| V | | | Internship – III (IV Semester vacation) – Online/Offline - Certificate, Report & Photo (OPTIONAL) | - | 1 | INT | - | - | 100 |
| V | | | Web Designing (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| V | | | Online – Course (MOOC/Swayam/NPTEL) – Before V Semester (OPTIONAL) | - | 2 | INT | - | - | 100 |
| VI | | | Capacity Building for Enhancing Professional Skills – Offered by the Department (MANDATORY) | 2 | 2 | INT | - | - | 100 |
| VI | | | Internet Concepts (MANDATORY) | 2 | 2 | INT | 25 | 75 | 100 |
| | | | TOTAL | | 20 | | | | 1200 |

B.Sc. Biochemistry
(CBCS - OBE – LOCF System)

MANDATORY EXTRA CREDIT COURSE FOR SKILL DEVELOPMENT*

| SEM | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|------------|--------------------|---|------------|------------|----------------|------------|-----------|------------|
| II | | Communicative and Functional English offered by Department of English | 2 | 2 | INT | 100 | - | 100 |
| III | | Internship – I - (II Semester vacation) Online/Offline - Certificate, Report & Photo | - | 1 | INT | - | - | 100 |
| IV | | Certificate Course (IKS) – Offered to other Department (beyond class hours) | 2 | 2 | INT | 25 | 75 | 100 |
| IV | | Office Automation | 2 | 2 | INT | 25 | 75 | 100 |
| V | | Value Added Course – Offered to the same department (beyond class hours) | 2 | 2 | INT | 25 | 75 | 100 |
| V | | Web Designing | 2 | 2 | INT | 25 | 75 | 100 |
| VI | | Capacity Building for Enhancing Professional Skills – Offered by the Department | 2 | 2 | INT | - | - | 100 |
| VI | | Internet Concepts | 2 | 2 | INT | 25 | 75 | 100 |
| | | TOTAL NO OF COURSES 8 | 14 | 15 | | | | 800 |

B.Sc. Biochemistry
(CBCS - OBE – LOCF System)

OPTIONAL EXTRA CREDIT COURSE FOR SKILL DEVELOPMENT*

| SEM | COURSE CODE | COURSE TITLE | HRS | CRD | INT/EXT | CIA | SE | TOT |
|------------|--------------------|--|------------|------------|----------------|------------|-----------|------------|
| III | | Community outreach activity (II Semester vacation – Report, Photo & Feedback) | - | 1 | INT | - | - | 100 |
| IV | | Internship – II (III Semester vacation) - Online/Offline -Certificate, Report & Photo | - | 1 | INT | - | - | 100 |
| V | | Internship – III (IV Semester vacation) – Online/Offline - Certificate, Report & Photo | - | 1 | INT | - | - | 100 |
| V | | Online – Course (MOOC/Swayam/NPTEL) – Before V Semester | - | 2 | INT | - | - | 100 |
| | | TOTAL NO OF COURSES 4 | | 5 | | | | 400 |

