
## DEPARTMENT OF TECHNOLOGY
# SHIVAJI UNIVERSITY, KOLHAPUR

# STRUCTURE
## For
## FIRST YEAR
## To
# FINAL YEAR B. TECH.
# FOOD TECHNOLOGY

## TO BE EFFECTIVE FROM
## ACADEMIC YEAR
## 2020-21

**DEPARMENT OF TECHNOLOGY**
**SHIVAJI UNIVERSITY, KOLHAPUR**
**FIRST YEAR B.TECH**
Scheme of Teaching and Examination

## Semester – I (Group-A)

| Course Code | Sr. No. | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Theory | | | Practical/Tutorial | | |
| | | | L | T | P | Credits | Scheme | Max. Marks | Min. Passing $ | Scheme | Max. Marks | Min. Passing $ |
| BS-11A1 | 1. | Engineering Mathematics–I | 4 | 1 | - | 05 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-11A2 | 2. | Engineering Physics | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-11A1 | 3. | Basics of Mechanical Engineering | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-11A2 | 4. | Engineering Mechanics | 4 | - | - | 04 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-11A3 | 5. | Basic Electronics Engineering | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-11A3 | 6. | Lab. –I Engineering Physics | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11A4 | 7. | Lab.–II Basics of Mechanical Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11A5 | 8. | Lab.–III Engineering Mechanics | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11A6 | 9. | Lab.–IV Basic Electronics Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11A7 | 10. | Lab.–V Computer Programming | 1 | - | 2 | 02 | --- | --- | --- | IPE | 50 | 20 |
| ES-11A8 | 11. | Lab.–VI Workshop Practice | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| | | **Total** | **18** | **1** | **12** | **25** | | **500** | | | **300** | |

Total Credits: 25
Total Contact Hours/Week: 31 hrs

**Note:**

$: In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

Tutorials and practical shall be conducted in batches with batch strength not exceeding 15 students.

CIE – Continuous Internal Evaluation

SEE – Semester End Examination

IPE – Internal Practical Evaluation

* Semester End Examination duration will be 4 hrs

**DEPARMENT OF TECHNOLOGY**
**SHIVAJI UNIVERSITY, KOLHAPUR**
**FIRST YEAR B.TECH**
Scheme of Teaching and Examination

## Semester – II (Group-A)

| Course Code | Sr. No. | Course Title | Teaching Scheme with Credits (Hours / Week)) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Theory | | | Practical/Tutorial | | |
| | | | L | T | P | Credits | Scheme | Max. Marks | Min. Passing $ | Scheme | Max. Marks | Min. Passing $ |
| BS-12A1 | 1. | Engineering Mathematics–II | 4 | 1 | - | 05 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-12A2 | 2. | Engineering Chemistry | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-12A1 | 3.* | Engineering Graphics | 4 | - | | 04 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-12A2 | 4. | Basic Civil Engineering | 3 | - | | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-12A3 | 5. | Basic Electrical Engineering | 3 | - | | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-12A3 | 6. | Lab.–I Engineering Chemistry | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12A4 | 7. | Lab.–II Engineering Graphics | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12A5 | 8. | Lab.–III Basic Civil Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12A6 | 9. | Lab. –IV Basic Electrical Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12A7 | 10. | Lab. –V Programming with Scilab and Matlab | - | 1 | - | 01 | --- | --- | --- | IPE | 50 | 20 |
| HS-12A1 | 11. | Lab.–VI Professional Communication | 2 | - | - | 02 | --- | --- | --- | IPE | 50 | 20 |
| | | **Total** | **19** | **2** | **8** | **25** | | **500** | | | **300** | |

Total Credits: 25
Total Contact Hours/Week: 29 hrs

**Note:**
$: In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.
Tutorials and practical shall be conducted in batches with batch strength not exceeding 15 students.
CIE – Continuous Internal Evaluation
SEE – Semester End Examination
IPE – Internal Practical Evaluation
* Semester End Examination duration will be 4 hrs

**DEPARMENT OF TECHNOLOGY**
**SHIVAJI UNIVERSITY, KOLHAPUR**
**FIRST YEAR B.TECH**
Scheme of Teaching and Examination

## Semester – I (Group-B)

| Course Code | Sr. No. | Course Title | Teaching Scheme with Credits (Hours / Week)) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Theory | | | Practical/Tutorial | | |
| | | | L | T | P | Credits | Scheme | Max. Marks | Min. Passing $ | Scheme | Max. Marks | Min. Passing $ |
| BS-11B1 | 1. | Engineering Mathematics–I | 4 | 1 | - | 05 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-11B2 | 2. | Engineering Chemistry | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-11B1 | 3.* | Engineering Graphics | 4 | - | | 04 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-11B2 | 4. | Basic Civil Engineering | 3 | - | | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-11B3 | 5. | Basic Electrical Engineering | 3 | - | | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-11B3 | 6. | Lab.–I Engineering Chemistry | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11B4 | 7. | Lab.–II Engineering Graphics | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11B5 | 8. | Lab.–III Basic Civil Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11B6 | 9. | Lab. –IV Basic Electrical Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-11B7 | 10. | Lab. –V Programming with Scilab and Matlab | - | 1 | - | 01 | --- | --- | --- | IPE | 50 | 20 |
| HS-11B1 | 11. | Lab.–VI Professional Communication | 2 | - | - | 02 | --- | --- | --- | IPE | 50 | 20 |
| | | **Total** | **19** | **2** | **8** | **25** | | **500** | | | **300** | |

Total Credits: 25
Total Contact Hours/Week: 29 hrs

**Note:**
$: In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.
Tutorials and practical shall be conducted in batches with batch strength not exceeding 15 students.
CIE – Continuous Internal Evaluation
SEE – Semester End Examination
IPE – Internal Practical Evaluation
* Semester End Examination duration will be 4 hrs

**DEPARMENT OF TECHNOLOGY**
**SHIVAJI UNIVERSITY, KOLHAPUR**
**FIRST YEAR B.TECH**
Scheme of Teaching and Examination

## Semester – II (Group-B)

| Course Code | Sr. No. | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Theory | | | Practical/Tutorial | | |
| | | | L | T | P | Credits | Scheme | Max. Marks | Min. Passing $ | Scheme | Max. Marks | Min. Passing $ |
| BS-12B1 | 1. | Engineering Mathematics–II | 4 | 1 | - | 05 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-12B2 | 2. | Engineering Physics | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-12B1 | 3. | Basics of Mechanical Engineering | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-12B2 | 4. | Engineering Mechanics | 4 | - | - | 04 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| ES-12B3 | 5. | Basic Electronics Engineering | 3 | - | - | 03 | CIE | 30 | 40 | --- | --- | --- |
| | | | | | | | SEE | 70 | | --- | --- | --- |
| BS-12B3 | 6. | Lab. –I Engineering Physics | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12B4 | 7. | Lab.–II Basics of Mechanical Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12B5 | 8. | Lab.–III Engineering Mechanics | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12B6 | 9. | Lab.–IV Basic Electronics Engineering | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| ES-12B7 | 10. | Lab.–V Computer Programming | 1 | - | 2 | 02 | --- | --- | --- | IPE | 50 | 20 |
| ES-12B8 | 11. | Lab.–VI Workshop Practice | - | - | 2 | 01 | --- | --- | --- | IPE | 50 | 20 |
| | | **Total** | **18** | **1** | **12** | **25** | | **500** | | | **300** | |

Total Credits: 25
Total Contact Hours/Week: 31 hrs

**Note:**
$: In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.
Tutorials and practical shall be conducted in batches with batch strength not exceeding 15 students.
CIE – Continuous Internal Evaluation
SEE – Semester End Examination
IPE – Internal Practical Evaluation
* Semester End Examination duration will be 4 hrs.

## DEPARTMEN OF TECHNOLOGY

## SECOND YEAR B.TECH

### Scheme of Teaching and Examination Semester – III (Food Technology)

### To be implemented from Academic Year 2021- 22

| Course Code | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Theory | | | Practical | | |
| | | L | T | P | Total Credits | Scheme | Max. marks | Min. Passing | Scheme | Max. marks | Min. Passing |
| FT211 | Principles of Food Preservation | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT212 | Engineering Mathematics-III | 03 | 1 | - | 04 | CIE | 30 | 40 | IOE | 50 | 20 |
| | | | | | | SEE | 70 | | - | - | - |
| FT213 | Food Microbiology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT214 | Food Chemistry | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT215 | Heat Transfer | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT211L | Principles of food preservation Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT212L | Food Microbiology Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT213L | Food Chemistry Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT214L | Heat Transfer Laboratory | - | - | 02 | 01 | | | | IOE | 50 | 20 |
| FT215L | Programming practices for Food Technologists | 1 | - | 02 | 02 | | | | IOE | 50 | 20 |
| | **Total** | **19** | **1** | **10** | **25** | - | **500** | - | - | **300** | - |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HS211 | Environmental Studies | **02** | - | - | - | Project*<br>Theory* | 30<br>70 | 40 | - | - | - |

| Audit Course-I | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HS212 | Soft Skills Development | **02** | - | - | - | Institute Level | - | - | - | - | - |

Total contact hours per week: **30+2+2=34,** Total Credits=25

**$** In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

CIE: Continuous Internal Evaluation SEE: Semester End Examination

IPE: Internal Practical Evaluation EPE: ExternalPracticalExamination

IOE: Internal Oral Evaluation EOE: External Oral Examination

***** indicates Environmental Studies project evaluation and the theory examination will be at the end of the year i.e. along with Semester IV End Examination.

**Note:** Tutorials and Practical to be conducted in batches with batch strength not exceeding 15 students.

**DEPARTMENT OF TECHNOLOGY**
**SHIVAJI UNIVERSITY, KOLHAPUR**
**SECOND YEAR B.TECH**
**Scheme of Teaching and Examination Semester – IV (Food Technology)**
**To be implemented from Academic Year 2021-22**

| Course Code | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Theory | | | Practical | | |
| | | L | T | P | Total Credits | Scheme | Max. marks | Min. Passing | Scheme | Max. marks | Min. Passing |
| FT221 | Food Process Engineering-I | 03 | 1 | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT222 | Food Additives and Contaminants | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT223 | Food Biochemistry | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT224 | Human Nutrition | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT225 | Fluid Mechanics | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT221L | Food Process Engineering-I Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| | | | | | | | | | EOE | 50 | 20 |
| FT222L | Food Additives and Contaminants Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT223L | Food Biochemistry Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT224L | Human Nutrition Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT225L | Fluid Mechanics Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| | **Total** | **19** | **1** | **10** | **25** | - | **500** | - | - | **300** | - |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HS221 | Environmental Studies | **02** | - | - | - | Project<br>Theory | 30<br>70 | 40 | - | - | - |

| Audit Course-II | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HS222 | Introduction to Performing Arts | **02** | - | - | - | Institute Level | - | - | - | - | - |

Total contact hours per week: **30+2+2=34,** Total Credits=25

**$** In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

**Note:** Tutorials and Practical to be conducted in batches with batch strength not exceeding 15 students

CIE: Continuous Internal Evaluation
IPE: Internal Practical Evaluation
IOE: Internal Oral Evaluation
SEE: Semester End Examination
EPE: ExternalPracticalExamination
EOE: External Oral Examination

# Equivalence of Second Year B.Tech (Food Technology)
# Semester III and IV

The Equivalence for the subjects/courses of Food Technology at Second Year B Tech Semester III and IV pre-revised Program under the faculty of Engineering and Technology is as follows.

**Second Year B.Tech(Food Technology)Semester III**

| Sr.No | Second Year B.Tech(Food Technology) Semester III Pre-revised syllabus | Second Year B.Tech(Food Technology) Semester III Revised syllabus | Remark |
|---|---|---|---|
| 1. | Principles of Food Preservation | Principles of Food Preservation | No Change |
| 2. | Engineering Mathematics-III | Engineering Mathematics-III | No Change |
| 3. | Food Microbiology | Food Microbiology | No Change |
| 4. | Food Chemistry | Food Chemistry | No Change |
| 5. | Heat Transfer | Heat Transfer | No Change |
| 6. | Principles of food preservation Laboratory | Principles of food preservation Laboratory | No Change |
| 7. | Food MicrobiologyLaboratory | Food MicrobiologyLaboratory | No Change |
| 8. | Food Chemistry Laboratory | Food Chemistry Laboratory | No Change |
| 9. | Heat Transfer Laboratory | Heat Transfer Laboratory | No Change |
| 10. | Programming practices for Food Technologists | Programming practices for Food Technologists | No Change |
| 11. | Environmental Studies | Environmental Studies | No Change |
| 12. | Soft Skills Development | Soft Skills Development | No Change |

## Second Year B.Tech(Food Technology)Semester IV

| Sr.No | Second Year B.Tech (Food Technology) Semester IV Pre-revised syllabus | Second Year B.Tech (Food Technology) Semester IV Revised syllabus | Remark |
|---|---|---|---|
| 1. | Food Process Engineering-I | Food Process Engineering-I | No Change |
| 2. | Food Additives and Contaminants | Food Additives and Contaminants | No Change |
| 3. | Food Biochemistry | Food Biochemistry | No Change |
| 4. | Human Nutrition | Human Nutrition | No Change |
| 5. | Fluid Mechanics | Fluid Mechanics | No Change |
| 6. | Food Process Engineering-I Laboratory | Food Process Engineering-I Laboratory | No Change |
| 7. | Food Additives and Contaminants Laboratory | Food Additives and Contaminants Laboratory | No Change |
| 8. | Food Biochemistry Laboratory | Food Biochemistry Laboratory | No Change |
| 9. | Human Nutrition Laboratory | Human Nutrition Laboratory | No Change |
| 10. | Fluid Mechanics Laboratory | Fluid Mechanics Laboratory | No Change |
| 11. | Environmental Studies | Environmental Studies | No Change |
| 12. | Introduction to Performing Arts | Introduction to Performing Arts | No Change |

Audit course have not been assigned any credits. The students will be evaluated for these courses by the concerned course in charge. There will be grade conferred to the student. The grade will be based on conversion of marks obtained out (Obtaining passing grade is essential). Please refer to chart in the detail examination scheme. The chart shows the marks range and the respectivegrade.

# DEPARTMENT OF TECHNOLOGY, SHIVAJI UNIVERSITY, KOLHAPUR

## THIRD YEAR B.TECH

**Scheme of Teaching and Examination: Semester- V (Food Technology)**

**To be implemented from Academic Year 2022-23**

| Course Code | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Theory | | | Practical | | |
| | | L | T | P | Credits | Scheme | Max. marks | Min. Passing | Scheme | Max. marks | Min. Passing |
| FT311 | Food Quality and Safety Management | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT312 | Fruits and Vegetables Processing Technology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT313 | Dairy Technology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT314 | Food Process Engineering-II | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT315 | Process Instrumentation, Dynamics and control | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT311L | Food Quality & Safety Management Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT312L | Fruits& Vegetables Processing Technology Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT313L | Dairy Technology Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT314L | Food Process Engineering-II Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT315L | Process Instrumentation, Dynamics and control Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT316 | Internship I | - | - | - | 01 | | | | EOE | 50 | 20 |
| | **Total** | **19** | **-** | **10** | **25** | - | **500** | - | - | **300** | - |

| Audit Course III | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LS311 | Introduction to Foreign Language | **02** | - | - | - | Institute Level | - | - | - | - | - |

Total contact hours per week: **29+2=31** Total Credits=25

**$** In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

Note: Tutorials and Practical to be conducted in batches with batch strength not exceeding 15 students.

| | | | |
|---|---|---|---|
| CIE: | Continuous Internal Evaluation | SEE: | Semester End Examination |
| IPE: | Internal Practical Evaluation | EPE: | External Practical Examination |
| IOE: | Internal Oral Evaluation | EOE: | External Oral Examination |

**Internship I** which is part of Semester V, evaluation will be the activity after the SEE of semester IV. It is mandatory for all the students to undergo the same and report to the institute for the semester V along with the completion certificate by the concerned organization. The students have to submit a hard as well as soft copy of the activity report to the institute.

# DEPARTMENT OF TECHNOLOGY,
# SHIVAJI UNIVERSITY, KOLHAPUR

## THIRD YEAR B.TECH

**Scheme of Teaching and Examination: Semester- VI (Food Technology)**

**To be implemented from Academic Year 2022 - 23**

| Course Code | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Theory | | | Practical | | |
| | | L | T | P | Credits | Scheme | Max. marks | Min. Passing | Scheme | Max. marks | Min. Passing |
| FT321 | Sugar andConfectionery Technology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT322 | Technology of Cereals and Bakery Products | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT323 | Design and Development of New Products | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT324 | Process Equipment Design and Drawing | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT325 | Industrial Economics and Management | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT326 | Food Laws and Regulations | 02 | - | - | 02 | - | - | - | IOE | 50 | 20 |
| FT321L | Sugar and Confectionery Technology Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT322L | Technology of Cereals and Bakery Products Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT323L | Design and Development of New Products Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT324L | Process Equipment Design and Drawing Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT325L | Mini Project | - | - | 02 | 01 | - | - | - | EOE | 50 | 20 |
| | **Total** | **20** | **-** | **10** | **25** | - | **500** | - | - | **300** | - |

| Audit Course IV | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RM321 | Research Methodology | 02 | - | - | Institute Level | - | - | - | - | - | - |

Total contact hours per week: **30+2=32** Total Credits=25

**$** In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

Note: Tutorials and Practical to be conducted in batches with batch strength not exceeding 15 students

| | | | |
|---|---|---|---|
| CIE: | Continuous Internal Evaluation | SEE: | Semester End Examination |
| IPE: | Internal Practical Evaluation | EPE: | External Practical Examination |
| IOE: | Internal Oral Evaluation | EOE: | External Oral Examination |

**Internship II** which is part of Semester VII evaluation will be the activity after the SEE of semester VI. It is mandatory for all the students to undergo the same and report to the institute for the semester VII along with the completion certificate by the concerned organization. The students have to submit a hard as well as soft copy of the activity report to the institute.

# Equivalence of Third Year B.Tech (Food Technology)

## Semester V and VI

The Equivalence for the subjects/courses of Food Technology at Third Year B Tech Semester V and VI pre-revised Program under the faculty of Engineering and Technology is as follows.

## Third Year B.Tech (Food Technology) Semester V

| Sr.No | Third Year B.Tech(Food Technology) Semester V Pre-revised syllabus | Third Year B.Tech(Food Technology) Semester V Revised syllabus | Remark |
|---|---|---|---|
| 1. | Food Packaging | Food Quality & Safety Management | Interchange between the Course Title of SEM-V & SEM-VII |
| 2. | Fruits and Vegetables Processing Technology | Fruits and Vegetables Processing Technology | No Change |
| 3. | Dairy Technology | Dairy Technology | No Change |
| 4. | Food Process Engineering-II | Food Process Engineering-II | No Change |
| 5. | Process Instrumentation, Dynamics and control | Process Instrumentation, Dynamics and control | No Change |
| 6. | Food Packaging Laboratory | Food quality & Safety Management Laboratory | Interchange between the Course Titleof SEM-V & SEM-VII |
| 7. | Fruits& Vegetables Processing TechnologyLaboratory | Fruits& Vegetables Processing TechnologyLaboratory | No Change |
| 8. | Dairy Technology Laboratory | Dairy Technology Laboratory | No Change |
| 9. | Food Process Engineering-II Laboratory | Food Process Engineering-II Laboratory | No Change |
| 10. | Process Instrumentation, Dynamics and controlLaboratory | Process Instrumentation, Dynamics and controlLaboratory | No Change |
| 11. | Internship I | Internship I | No Change |
| 12. | Introduction to Foreign Language | Introduction to Foreign Language | No Change |

## Third Year B.Tech (Food Technology) Semester VI

| Sr.No | Third Year B Tech(Food Technology) Semester VI Pre-revised syllabus | Third Year B.Tech(Food Technology) Semester VI Revised syllabus | Remark |
|---|---|---|---|
| 1. | Sugar and Confectionery Technology | Sugar and Confectionery Technology | No Change |
| 2. | Technology of Cereals and Bakery Products | Technology of Cereals and BakeryProducts | No Change |
| 3. | Biochemical Engineering | Design and Development of New Products | Interchange between the Course Titleof SEM-VI & SEM-VIII |
| 4. | Process Equipment Design and Drawing | Process Equipment Design and Drawing | No Change |
| 5. | Industrial Economics and Management | Industrial Economics and Management | No Change |
| 6. | - | Food Laws and Regulations | Introduction of the Course Title considering the new trends in job opportunities for the students |
| 7. | Sugar and Confectionery Technology Laboratory | Sugar and Confectionery Technology Laboratory | No Change |
| 8 | Technology of Cereals and Bakery Products Laboratory | Technology of Cereals and BakeryProducts Laboratory | No Change |
| 9. | Biochemical Engineering Laboratory | Design and Development of New Products Laboratory | Interchange between the Course Titleof SEM-VI & SEM-VIII |
| 10. | Process Equipment Design and Drawing Laboratory | Process Equipment Design and Drawing Laboratory | No Change |
| 11. | Mini Project | Mini Project | No Change |
| 12.. | Research Methodology | Research Methodology | No Change |

Audit course have not been assigned any credits. The students will be evaluated for these courses by the concerned course in charge. There will be grade conferred to the student. The grade will be based on conversion of marks obtained out (Obtaining passing grade is essential). Please refer to chart in the detail examination scheme. The chart shows the marks range and the respectivegrade.

**DEPARTMENT OF TECHNOLOGY,**
**SHIVAJI UNIVERSITY KOLHAPUR**
**FINAL YEAR B.TECH**
**Scheme of Teaching and Examination: Semester- VII (Food Technology)**
**To be implemented from Academic Year 2023 - 24**

| Course Code | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Theory | | | Practical | | |
| | | L | T | P | Total Credits | Scheme | Max. marks | Min. Passing | Scheme | Max. marks | Min. Passing |
| FT 411 | Meat, Poultry and Fish Processing Technology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT 412 | Legume and Oilseed Technology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT413 | Food Biotechnology | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT414 | Food Packaging | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT415 | Elective –I | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT411L | Meat, Poultry and Fish Processing Technology Laboratory | - | - | 02 | 01 | - | - | - | EOE | 50 | 20 |
| FT412L | Legume and Oilseed Technology Laboratory | - | - | 02 | 01 | - | - | - | EPE | 50 | 20 |
| FT413L | Food Biotechnology Laboratory | | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT414L | Food Packaging Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT415L | Major Project –Phase I | | | 02 | 01 | | | | IOE | 50 | 20 |
| FT416 | Internship II | - | - | - | 01 | - | - | - | EOE | 50 | 20 |
| | **Total** | **19** | **-** | **10** | **25** | - | **500** | - | - | **300** | - |

| Audit Course V | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HS411 | Introduction to Indian Constitution | **02** | - | - | - | Institute Level | -- | --- | --- | ---- | ---- |

Total contact hours per week: **29+2=31** Total Credits=25

**$** In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

| **Elective I** |
|---|
| 1. Functional Foods &Nutraceuticals : (FT 415.1) |
| 2. Beverages Technology : (FT 415.2) |
| 3.Refrigeration Engineering : (FT 415.3) |
| 4.Database Management : (FT 415.4 ) |

Note: Tutorials and Practical to be conducted in batches with batch strength not exceeding 15 students

CIE: Continuous Internal Evaluation SEE: Semester End Examination
IPE: Internal Practical Evaluation EPE: External Practical Examination
IOE: Internal Oral Evaluation EOE: External Oral Examination

## MAJOR PROJECT (Phase I)

**Teaching Scheme: P:2hour/week** **Credits: 01**

The students are required to carry out one of the following projects related to field of Food Technology.

1. Process based Project: Manufacture ofproduct.
2. Equipment based Project: Detailed design and fabrication of the equipment for a givencapacity.
3. Experiment based Project: Experimental investigation of basic or applied research problem.
4. Industrial Problems: Any problem or project directly related to existing plants for modification of process or equipment or regarding pollution control and energy conservation under the guidance of one or more faculty members. The activity will be undertaken at the beginning of the seventh semester in consultation with concerned guide and it must be completed in eighth semester.

The project work is to be carried out by a group of students (not more than five students in a group). The students will submit the report to the respective guide, present their work at the end of Semester. They need to cover the following aspects related to their project topic:

- Introduction to the Projecttopic
- Detailed Literature Survey on thetopic.
- Plan/outline of the Projectwork.
- Submitting requirements for execution the projectwork.

Based on the first phase work, it is desirable that the project group will publish a review article in a reputed and relevant Journal. The project group has to deliver Project Progress presentation.
The project progress will be evaluated by a research and review committee of internal teachers. The committee includes concerned guide, the Program Coordinator, and other faculty members at the Department. This particular activity is assigned 50 marks as an IOE.
The committee will evaluate the performance of the project group. The students will follow one specific format recommended by the Program Advisory Board for submission of their Project Report.

**Internship II** **Credit: 1**

**Internship II** which is part of Semester VII evaluation will be the activity after the SEE of semester VI.

It is mandatory for all the students to undergo the same and report to the institute for the semester VII along with the completion certificate by the concerned organization. The students have to submit a hard as well as soft copy of the activity report to the institute

**DEPARTMENT OF TECHNOLOGY,**
**SHIVAJI UNIVERSITY, KOLHAPUR**
**FINAL YEAR B.TECH**
**Scheme of Teaching and Examination: Semester- VIII (Food Technology)**
**To be implemented from Academic Year 2023 - 24**

| Course Code | Course Title | Teaching Scheme with Credits (Hours / Week) | | | | Examination Scheme (Marks) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Theory | | | Practical | | |
| | | L | T | P | Total | Scheme | Max. marks | Min. Passing | Scheme | Max. marks | Min. Passing |
| FT421 | Post-Harvest Technology of Plantation Crops | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT422 | Biochemical Engineering | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT423 | Waste Management of Food Industries | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT424 | Elective-II | 03 | - | - | 03 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT425 | Food Plant Design and Layout | 04 | - | - | 04 | CIE | 30 | 40 | - | - | - |
| | | | | | | SEE | 70 | | - | - | - |
| FT426 | Entrepreneurship Development for Food Technologists | 02 | - | - | 02 | - | - | - | IOE | 50 | 20 |
| FT421L | Post Harvest Technology of Plantation Crops Laboratory | - | - | 02 | 01 | - | - | - | IOE | 50 | 20 |
| FT422L | Biochemical Engineering Laboratory | - | - | 02 | 01 | - | - | - | EOE | 50 | 20 |
| FT423L | Major Project-Phase II | - | - | 06 | 03 | - | - | - | IPE | 100 | 40 |
| | | | | | | - | - | - | EOE | 50 | 20 |
| | **Total** | **20** | **-** | **10** | **25** | - | **500** | - | - | **300** | - |

| Audit Course VI | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HS422 | Professional Ethics | **02** | - | - | - | Institute Level | - | - | - | - | - |

Total contact hours per week: **30+2=32** Total Credits=25

**$** In theory student should appear for the CIE (Mid Semester Exam), submit the assignment and must secure 40% marks in SEE.

| **Elective II** | | |
|---|---|---|
| **1.** | Flavors Technology | : (FT 424.1) |
| **2.** | Snack Foods Technology | : (FT 424.2) |
| **3.** | Sugar Technology | : (FT 424.3) |
| **4.** | Energy Systems and Technology | : (FT 424.4) |

Note: Tutorials and Practical to be conducted in batches with batch strength not exceeding 15 students

CIE: Continuous Internal Evaluation
IPE: Internal Practical Evaluation
IOE: Internal Oral Evaluation
SEE: Semester End Examination
EPE: External Practical Examination
EOE: External Oral Examination

## ELECTIVE-II (OPEN ELECTIVE)

**Besides the departmental electives there is a concept of open elective listed under Teaching Scheme:**

**L: 3hours/week** **Credits:3**

The interested students have to choose the open elective from any of the specialized program available on the campus. The students have to contact the concerned course teacher and attend the classes in the respective course which will be taught by the concerned teacher.

## MAJOR PROJECT (PHASE II)

**Teaching Scheme: P: 06hours/week** **Credits:3**

In the second phase of the Project Work, all the project groups will carry out actual execution the work planned as stated as an outcome of the first phase in the seventh semester. They will submit the final project report in two hard bound copies along with soft copy to the guide. The guide will submit one copy to the Program office and the other copy will be owned by him/her. The report will be prepared in a standard format as provided by the Program Advisory Board.

Generally, the report will consist of Introduction, Review of Literature, Materials and Methods, Result & Discussion, Summary & Conclusion and References. There may be little variation in project report writing depending on the nature of the respective project problem under investigation.

The objective of the project is to make use of the knowledge gained by the students at various stages of the B.Tech Food Technology Program. This helps to judge the level of proficiency, originality and capacity for application of the knowledge attained by the students at the end of the studies.

This particular activity will be for 100 marks as an Internal Practical Evaluation (IPE). The same research and review committee will carry out the assessment of the project groups.

For External Practical Examination (EPE) carrying 50 marks, there will be external examiner to assess the project work. The research and review committee along with the external examiner will examine each of the project groups through VIVA VOCE and physical verification of the project models if any. The students group will demonstrate their work to all the examiners.

## Equivalence of Final Year B.Tech (Food Technology)

## Semester VII and VIII

The Equivalence for the subjects of Food Technology at Final Year B Tech Semester VII and VIII pre-revised course under the faculty of Engineering and Technology is as follows.

## Final Year B.Tech (Food Technology)
## Semester VII

| Sr.No | Final Year B.Tech(Food Technology) Semester VII Pre-revised syllabus | Final Year B.Tech(Food Technology) Semester VII Revised syllabus | Remark |
|---|---|---|---|
| 1. | Meat, Poultry and Fish Processing Technology | Meat, Poultry and Fish Processing Technology | No Change |
| 2. | Legume and Oilseed Technology | Legume and Oilseed Technology | No Change |
| 3. | Food Biotechnology | Food Biotechnology | No Change |
| 4. | Food Quality and Safety Management | Food Packaging | Interchange between the subjects of SEM-V & SEM-VII |
| 5. | Elective –I | Elective –I | No Change |
| 6. | Meat, Poultry and Fish Processing Technology Laboratory | Meat, Poultry and Fish Processing Technology Laboratory | No Change |
| 7. | Legume and Oilseed Technology Laboratory | Legume and Oilseed Technology Laboratory | No Change |
| 8. | Food Biotechnology Laboratory | Food Biotechnology Laboratory | No Change |
| 9. | - | Food Packaging Laboratory | Addition of laboratory course in Sem. VII |
| 10. | Major Project-Phase I | Major Project-Phase I | No Change |
| 11. | Internship II | Internship II | No Change |
| 12. | Introduction to Indian Constitution | Introduction to Indian Constitution | No Change |

## Final Year B.Tech (Food Technology) Semester VIII

| Sr.No | Final Year B.Tech (Food Technology) Semester VIII Pre-revised syllabus | Final Year B.Tech(Food Technology) Semester VIII Revised syllabus | Remark |
|---|---|---|---|
| 1. | Post-Harvest Technology of Plantation Crops | Post-Harvest Technology of Plantation Crops | No Change |
| 2. | Design and Development of New Products | Biochemical Engineering | Interchange between the Course Titleof SEM-VI & SEM-VIII |
| 3. | Waste Management of Food Industries | Waste Management of Food Industries | No Change |
| 4. | Elective-II | Elective-II | No Change |
| 5. | Food Plant Design and Layout | Food Plant Design and Layout | No Change |
| 6. | Entrepreneurship Development for FoodTechnologists | Entrepreneurship Development for FoodTechnologists | No Change |
| 7. | Post-Harvest Technology of Plantation Crops Laboratory | Post-Harvest Technology of Plantation Crops Laboratory | No Change |
| 8. | Design and Development of New Products Laboratory | Biochemical Engineering Laboratory | Interchange between the Course Titleof SEM-VI & SEM-VIII |
| 9. | Major Project-Phase II | Major Project-Phase II | No Change |
| 10. | Professional Ethics | Professional Ethics | No Change |

Audit course have not been assigned any credits. The students will be evaluated for these courses by the concerned course in charge. There will be grade conferred to the student. The grade will be based on conversion of marks obtained out of 50. (Obtaining passing grade is essential). Please refer to chart in the detail examination scheme. The chart shows the marks range and the respectivegrade.