

Department of Food Technology
GNIT
Minutes of the BOS meeting

Date: 05/03/2021

Venue: Online platform, Google Meet

Time: 11.00 AM

As per the notice dated 22.02.2021 with Ref. No. GNIT/FT/BOS/2021/01, a BOS meeting was held on 05/03/2021 in presence of following experts and members:

Members present (Internal):

1. Dr. Kakali Bandyopadhyay :HOD, Chairman
2. Prof. Utpal Raychowdhury :Professor, Member, Dean, Academics
3. Prof. Uttam Raychaudhuri :Professor, Member
4. Dr. Deborshi De : Associate Professor, Member
5. Ms. Shairee Ganguly :Assistant Professor, Member
6. Ms. Sanchita Sinha :Assistant Professor, Member
7. Ms. Dolanchapa Sikdar :Assistant Professor, Member
8. Dr. Shiladitya Ghosh :Assistant Professor, Member
9. Mr. Saikat Mazumder :Assistant Professor, Member
10. Mr. Souptik Bhattacharya :Assistant Professor, Member
11. Ms. Kaninika Paul :Assistant Professor, Member

External Members Present:

1. Dr. Sunita Adhikari :Associate Professor, Dept. of Food Technology and Bio Chemical Engineering, Jadavpur University, Kolkata
2. Dr. Madhumita Basu : R & D Incharge Head scientist, CNGA grocare Pvt. Ltd., Kolkata Biosar
3. Mrs. Krita Ganguli :Lecturer, Govt. Polytechnic College. (Student Alumni)

Members Absent:

1. Ms. Madhumita Saha :Assistant Professor, Internal Member
2. Ms. Rosalin Nath :Assistant Professor, Internal Member

The discussion was based on the following agenda:

Agenda:

1. Confirmation of Minutes of last BOS Meeting
2. Approval of Action taken report of the resolutions taken in the last meeting
3. Discussion on course which strengthen employability, entrepreneurship and skill development in Regulation 21 (R 21) Curriculum and Syllabus of Food Technology wef. 2021-22 admission batches
4. Finalization of Elective Courses added in R 21) Curriculum and Syllabus of Food Technology
5. New Course Added in R 21 Curriculum
6. Finalization of Regulation 21 (R 21) Curriculum and Syllabus of Food Technology wef. 2021-22 admission batches under autonomy
7. Result analysis of the students and success rate

Resolutions:

After sufficient discussion and exchange of ideas, the following resolutions were taken:

Agenda 1: Confirmation of Minutes of last BOS Meeting

The minutes of last BOS meeting was duly confirmed and approved

Agenda 2: Approval of Action taken report of the resolutions taken in the last meeting

Action taken report of last BOS meeting' resolution was noted (vide Annexure I).

Agenda 3: Discussion on course which strengthen employability, entrepreneurship and skill development in Regulation 21 (R 21) Curriculum and Syllabus of Food Technology wef. 2021-22 admission batches

The list of tentative courses that strengthen employability, entrepreneurship and skill development was discussed in previous BOS meeting held on 07.09.2020. All experts agreed with the list of

courses which strengthen employability, entrepreneurship and skill development (Vide Annexure II). It was assessed that about 70% of the courses being offered under R 21 syllabus for FT contributes to the abovementioned purpose.

Agenda 4: Finalization of Elective Courses added in R21 Curriculum and Syllabus:

39 Elective courses are selected out of 43 for R21 syllabus after taking Stakeholder's feedback. Further, these 39 elective courses are finalized by the BoS Members (Vide Annexure III). All BOS approved that the final R21 Curriculum and Syllabus has been revised by increasing the percentage of Open Elective courses for multidisciplinary holistic development which is as per National Education Policy.

Agenda 5: New Course Added in R 21 Curriculum

As per suggestions of all stakeholders some new courses have been introduced in R21 curriculum. As per suggestion of external BOS experts Dr. Sunita Adhikari and Dr. Madhumita Basu following new courses are added in R 21 Curriculum:

- Mass Transfer theory and practical
- Separation Process theory and practical
- Food Additives
- Supply Chain Management and Food Marketing
- Food Security and Sustainability

Finally, the list of new courses added in R 21 curriculum were approved by all BOS members (Vide Annexure IV).

Agenda 6: Finalization of Regulation 21 (R 21) Curriculum and Syllabus of Food Technology wef. 2021-22 admission batches under autonomy

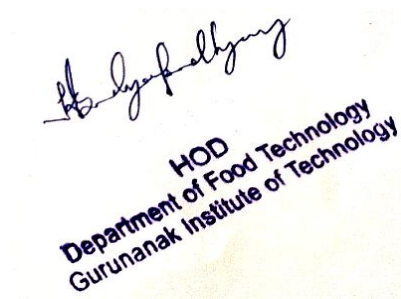
Chairperson of BOS Committee has presented stakeholders feedback analysis on curriculum in front of all BOS members.

Finally, the curriculum and syllabus of Food Technology discipline was finalized and approved by BOS members (Vide Annexure V). All BOS members commented that the final R21 Curriculum is well organized and linked with departmental vision, mission, PEOs and PSOs.

Agenda 7: Result analysis of the students and success rate

The result analysis of the students of B.Tech FT 2nd, 3rd and 4th year for the academic year 2019-20 has been placed. The success rate was appreciated by the external experts.

The meeting ended with vote of thanks by the HOD; FT & Chairman, BOS



HOD
Department of Food Technology
Gurunank Institute of Technology

Head and Chairman
Dr. Kakali Bandyopadhyay

Annexure I
Department of Food Technology
Guru Nanak Institute of Technology
BOS Meeting
Action Taken Report

Following are the Action Taken Report of the BOS meeting held on 07.09.2020:

| Agenda No. | Agenda Note | Resolution | Action Taken |
|------------|---|---|--|
| Agenda 3 | Review of 7th and 8th Semester autonomy syllabus(R 18) | The external experts reviewed the syllabus of 7th and 8th Semester autonomy syllabus (R 18) and suggested some credit transfer for some theory and practical subjects. Regarding the course content of the modules of some subjects the experts suggested some additions (inclusion of more options for reference books) and minor modifications (addition of prerequisite, renaming of few laboratory experiments etc.). | Specific points were noted by concerned faculties and the syllabus was modified by following the guidelines provided by the experts |
| Agenda 4 | Suggestion on innovative ideas for new project | some innovative project based collaborative R&D activities along with VABL and SMC for the FT students | As per suggestion some innovative project based collaborative R&D activities along with VABL and SMC for the FT students was initiated |
| Agenda 6 | Discussion on online video lectures and virtual lab preparation | External experts of BOS suggested that the video lectures and the virtual labs must be interactive. | Interactive video lectures and virtual labs were prepared and uploaded in portal |
| Agenda 7 | Discussion about Industry visit and Industry mentor | The experts discussed about | Identification and |

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| | meet | arrangement of virtual tours inside some industrial operational units with cooperation and assistance from the concerned industry experts. | selection of such industries was initiated |
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Annexure II

| Course Name | Course Code | Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development |
|--|-------------|--|
| Workshop & Manufacturing Practices Lab | ME 191 | Skill Development |
| Theme based Project I | PR191 | Skill Development, Entrepreneurship |
| Skill Development I: Soft Skill | PR192 | Employability, Skill Development |
| Professional Communication LAB | HSMC 291 | Employability, Skill Development, Entrepreneurship |
| Theme based Project II | PR291 | Skill Development, Entrepreneurship |
| Skill Development II: Life Skill | PR292 | Skill Development |
| Engineering Graphics & Design Lab | ME 292 | Skill Development |
| Thermodynamics & Kinetics | FT 301 | Employability |
| Food Microbiology Lab | FT 302 | Employability, Skill Development |
| Theme Based Project III | PR 391 | Skill Development, Entrepreneurship |
| Skill Development III: Technical Seminar Presentation | PR 392 | Employability, Skill Development |
| Behavioral and Interpersonal Skills | MC 381 | Skill development |
| Applied Statistics and Numerical Methods | M 401 | Employability |
| Principles of Food Preservation | FT402 | Employability |
| Microbial Technology and Food Biotechnology | FT 403 | Employability |
| Food Process Technology–I (Cereals, Fruits, Vegetables, Beverages) | FT 404 | Employability |
| Theme based Project IV | PR 491 | Skill Development, Entrepreneurship |
| Skill Development IV: Soft Skill and Aptitude-I | PR 492 | Employability, Skill Development |
| Principles of Management | HSMC 505 | Employability, Entrepreneurship |

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| Food Process Technology–II (Fish, Meat, Poultry) | FT501 | Employability, Entrepreneurship |
| Food Process Technology–III (Milk and Milk Products) | FT502 | Employability, Entrepreneurship |
| Principles of Biochemical Engineering | FT 503A | Employability |
| Enzyme Technology | FT 503B | Employability |
| Modeling and Simulation of Food Processing | FT 503C | Employability |
| Fluid Mechanics and Heat Transfer | FT 504A | Employability |
| Mass Transfer I | FT 504B | Employability |
| Mechanical Operation and Separation Process I | FT504C | Employability |
| Food Processing Lab–I | FT591 | Employability, Skill Development, Entrepreneurship |
| Food Analysis & Quality Control Lab | FT592 | Employability, Skill Development |
| Fluid Mechanics and Heat Transfer Lab | FT 593A | Employability, Skill Development |
| Mass Transfer I Lab | FT 593B | Employability, Skill Development |
| Mechanical Operation and Separation Process I Lab | FT593C | Employability, Skill Development |
| Minor Project I | PR 591 | Skill Development, Entrepreneurship |
| Skill Development V: Soft Skill and Aptitude-II | PR 592 | Employability, Skill Development |
| Economics for Engineers | HSMC 604 | Employability, Entrepreneurship |
| Bakery, Confectionary and Extruded Foods | FT601 | Employability, Entrepreneurship |
| Food Process Technology–IV (Edible Fats and Oils) | FT602 | Employability, Entrepreneurship |
| Mass Transfer II | FT 603A | Employability |
| Separation Process II | FT 603B | Employability |
| Transport Phenomena | FT 603C | Employability |
| Food Additives | FT 604A | Employability |
| Supply Chain Management and Food Marketing | FT 604B | Employability |

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| Food Security and Sustainability | FT 604C | Employability |
| Data Structure and Algorithm | FT 605A | Employability |
| Database Management System | FT 605B | Employability |
| Software Engineering | FT 605C | Employability |
| Food Processing Lab–II | FT 691 | Employability, Skill Development, Entrepreneurship |
| Food Analysis and Quality Control Lab-II | FT 692 | Employability, Skill Development |
| Mass Transfer Lab II lab | FT 693A | Employability, Skill Development |
| Separation Process II Lab | FT 693B | Employability, Skill Development |
| Transport Phenomena Lab | FT 693C | Employability, Skill Development |
| Data Structure and Algorithm Lab | FT 694A | Employability, Skill Development |
| Database Management System Lab | FT 694B | Employability, Skill Development |
| Software Engineering Lab | FT 694C | Employability, Skill Development |
| Minor Project II | PR 691 | Skill Development, Entrepreneurship |
| Skill Development VI: Soft Skill and Aptitude-III | PR 692 | Employability, Skill Development |
| Food Packaging Technology | FT 702A | Employability |
| Functional Foods and Nutraceuticals | FT 702B | Employability |
| Protein Technology | FT 702C | Employability |
| Process Instrumentation and Control | FT 703A | Employability |
| Renewable Energy Technology | FT 703B | Employability |
| Nanotechnology | FT 703C | Employability |
| Artificial Intelligence | FT 704A | Employability |
| Machine Learning | FT 704B | Employability |
| Introduction to Internet of Things | FT 704C | Employability |
| Major Project-I | PR 791 | Skill Development, Entrepreneurship |
| Industrial Training / Internship | PR 792 | Employability |
| Skill Development VII: Seminar and Group Discussion | PR 793 | Employability, Skill Development |
| Waste Management of Food Industries | FT 801A | Employability |

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| Project Engineering and Food Plant Layout | FT 801B | Employability, Entrepreneurship |
| Plant Maintenance, Safety and Hygiene | FT 801C | Employability, Entrepreneurship |
| Entrepreneurship Development and Start-Up Management | FT 802 A | Employability, Entrepreneurship |
| Quality Management System | FT 802 B | Employability |
| Smart Technologies | FT 802 C | Employability |
| Major Project-II | PR 891 | Skill Development, Entrepreneurship |

Annexure III

| Professional Electives: | | |
|--------------------------------|--------------------|---|
| Sl. No. | Course Code | Course Name |
| 1. | FT 503 A | Principles of Biochemical Engineering |
| 2. | FT 503 B | Enzyme Technology |
| 3. | FT 503 C | Modeling and Simulation of Food Processing |
| 4. | FT 504 A | Fluid Mechanics and Heat Transfer |
| 5. | FT 504 B | Mass Transfer I |
| 6. | FT 504 C | Mechanical Operation and Separation Process I |
| 7. | FT 593 A | Fluid Mechanics and Heat Transfer Lab |
| 8. | FT 593 B | Mass Transfer I Lab |
| 9. | FT 593 C | Mechanical Operation and Separation Process I Lab |
| 10. | FT 603 A | Mass Transfer II |
| 11. | FT 603B | Separation Process II |
| 12. | FT 603 C | Transport Phenomena |
| 13. | FT 604 A | Food Additives |
| 14. | FT 604 B | Supply Chain Management and Food Marketing |
| 15. | FT 604 C | Food Security and Sustainability |
| 16. | FT 693 A | Mass Transfer Lab II lab |

| 17. | FT 693 B | Separation Process II Lab |
|------------------------|-------------|---|
| 18. | FT 693 C | Transport Phenomena Lab |
| 19. | FT 702 A | Food Packaging Technology |
| 20. | FT 702 B | Functional Foods and Nutraceuticals |
| 21. | FT 702 C | Protein Technology |
| 22. | FT 801A | Waste Management of Food Industries |
| 23. | FT 801 B | Project Engineering and Food Plant Layout |
| 24. | FT 801 C | Plant Maintenance, Safety and Hygiene |
| Open Electives: | | |
| Sl. No. | Course Code | Course Name |
| 25. | FT 605 A | Data Structure and Algorithms |
| 26. | FT 605 B | Data Base Management System |
| 27. | FT 605 C | Software Engineering |
| 28. | FT 694 A | Data Structure and Algorithms Lab |
| 29. | FT 694 B | Data Base Management System Lab |
| 30. | FT 694 C | Software Engineering Lab |
| 31. | FT 703 A | Process Instrumentation and Control |
| 32. | FT 703 B | Renewable Energy Technology |
| 33. | FT 703 C | Nanotechnology |
| 34. | FT 704 A | Artificial Intelligence |
| 35. | FT 704 B | Machine Learning |
| 36. | FT 704 C | Introduction to Internet of Things |

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| 37. | FT 802 A | Entrepreneurship Development and Start-Up Management |
| 38. | FT 802 B | Quality Management System |
| 39. | FT 802 C | Smart Technologies |

Annexure IV

| List of New courses introduced Program-wise during the assessment year | | | |
|--|---------------------------------------|-------------|--|
| Program Code | Program name | Course Code | Course Name |
| FT (09.) | B. Tech. in Food Technology | HSMC 303 | Universal Human Values 2: Understanding Harmony |
| | | MC 381 | Learning an Art Form [vocal or instrumental, dance, painting, clay modeling, etc.] |
| | | HSMC 402 | Gender Culture and Development |
| | | PR 392 | Skill Development III: Technical Seminar Presentation |
| | | M (CS) 491 | Numerical Methods Laboratory |
| | | PR 492 | Skill Development IV: Soft Skill and Aptitude I |
| | | FT 504 B | Mass Transfer I |
| | | FT 593B | Mass Transfer I Lab |
| | | PR 592 | Skill Development V: Soft Skill and Aptitude-II |
| | | FT 603B | Separation Process II |
| | | FT 604A | Food Additives |
| | | FT 604 B | Supply Chain Management and Food Marketing |
| | | FT 604 C | Food Security and Sustainability |
| | | FT 693 B | Separation Process II Lab |
| | | PR 692 | Skill Development VI: Soft Skill and Aptitude-III |
| | | MC 601 | Intellectual Property Right |
| | | FT 703C | Nanotechnology |
| | | FT 704 A | Artificial Intelligence |
| | | FT 704 B | Machine Learning |
| | | FT 704 C | Introduction to Internet of Things |
| MC 701 | Entrepreneurship and Innovation Skill | | |
| PR 792 | Industrial Training / Internship | | |

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| | | FT 802 B | Quality Management System |
| | | FT 802 C | Smart Technologies |
| | | PR 892 | Grand Viva |

Annexure V

Revised Curriculum Structure (Effective from 2021-22 admission batch) Department: FOOD TECHNOLOGY

First Year First Semester

| S l. N o. | Category | Course Code | Course Title | Hours per week | | | | Credits |
|--|---|----------------|--|----------------|---|---|-------|---------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | Basic Science course | PH101 | Physics-I | 3 | 0 | 0 | 3 | 3 |
| 2 | Basic Science course | M101 | Mathematics –I | 4 | 0 | 0 | 4 | 4 |
| 3 | Humanities and Social Sciences including Management courses | HSMC 101 | Professional Communication | 2 | 0 | 0 | 2 | 2 |
| B. PRACTICAL | | | | | | | | |
| 4 | Basic Science course | PH191 | Physics-I Lab | 0 | 0 | 3 | 3 | 1.5 |
| 5 | Engineering Science Courses | ME 191 | Workshop & Manufacturing Practices Lab | 0 | 0 | 3 | 3 | 1.5 |
| 6 | PROJECT | PR191 | Theme based Project I | 0 | 0 | 1 | 1 | 0.5 |
| 7 | PROJECT | PR192 | Skill Development I: Soft Skill | 0 | 0 | 1 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |

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|---------------------|------------------|-------|-------------------|---|---|---|---|------|
| 8 | Mandatory Course | MC181 | Induction Program | 0 | 0 | 0 | 0 | 0 |
| TOTAL CREDIT | | | | | | | | 13.0 |

| Sl. No. | Category | Course Code | Course Title | Hours per week | | | | Credits |
|--|---|-------------|-------------------------------------|----------------|---|---|-------|---------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | Basic Science courses | CH 201 | Chemistry-I | 3 | 0 | 0 | 3 | 3 |
| 2 | Basic Science courses | M 201 | Mathematics –II | 4 | 0 | 0 | 4 | 4 |
| 3 | Engineering Science Courses | EE 201 | Basic Electrical Engineering | 3 | 0 | 0 | 3 | 3 |
| 4 | Engineering Science Courses | CS 201 | Programming for Problem Solving | 3 | 0 | 0 | 3 | 3 |
| B. PRACTICAL | | | | | | | | |
| 5 | Basic Science course | CH 291 | Chemistry-I Lab | 0 | 0 | 3 | 3 | 1.5 |
| 6 | Humanities and Social Sciences including Management courses | HSMC 291 | Professional Communication LAB | 0 | 0 | 2 | 2 | 1.0 |
| 7 | Engineering Science Courses | EE 291 | Basic Electrical Engineering Lab | 0 | 0 | 3 | 3 | 1.5 |
| 8 | Engineering Science Courses | ME 292 | Engineering Graphics & Design Lab | 0 | 0 | 3 | 3 | 1.5 |
| 9 | Engineering Science Courses | CS 291 | Programming for Problem Solving Lab | 0 | 0 | 3 | 3 | 1.5 |
| 10 | PROJECT | PR291 | Theme based Project II | 0 | 0 | 1 | 1 | 0.5 |
| 11 | PROJECT | PR292 | Skill Development II: Life Skill | 1 | 0 | 0 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |

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|---------------------|------------------|-------|---|---|---|---|---|----|
| 12 | Mandatory Course | MC281 | NSS/Physical Activities / Meditation & Yoga / Photography | 0 | 0 | 3 | 3 | 0 |
| TOTAL CREDIT | | | | | | | | 21 |

First Year 2nd Semester

2nd Year 1st Semester

| Sl. No. | Category | Course Code | Course Title | Hours per week | | | | Credits |
|--|---|-------------|---|----------------|---|---|-------|---------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | Basic Science course | CH(FT)301 | Chemistry-II | 3 | 0 | 0 | 3 | 3 |
| 2 | Engineering Science Courses | CH(FT) 302 | Environmental Engineering | 3 | 1 | 0 | 4 | 4 |
| 3 | Engineering Science Courses | FT 301 | Thermodynamics and Kinetics | 3 | 1 | 0 | 4 | 4 |
| 4 | Program Core Course (PC) | FT 302 | Food Microbiology | 3 | 0 | 0 | 3 | 3 |
| 5 | Program Core Course | FT 303 | Chemistry of Food | 3 | 0 | 0 | 3 | 3 |
| 6 | Humanities and Social Sciences including Management courses | HSMC 303 | Universal Human Values 2: Understanding Harmony | 3 | 0 | 0 | 3 | 3 |
| B. PRACTICAL | | | | | | | | |
| 7 | Basic Science course | CH(FT)391 | Chemistry-II Lab | 0 | 0 | 3 | 3 | 1.5 |
| 8 | Engineering Science Courses | CH (FT)392 | Environmental Engineering Lab | 0 | 0 | 3 | 3 | 1.5 |
| 9 | Program Core Course | FT 391 | Chemistry of Food Lab-I | 0 | 0 | 3 | 3 | 1.5 |
| 10 | Program Core Course | FT 392 | Food Microbiology Lab | 0 | 0 | 3 | 3 | 1.5 |
| 11 | PROJECT | PR391 | Theme Based Project III | 0 | 0 | 1 | 1 | 0.5 |
| 12 | PROJECT | PR392 | Skill Development III: Technical Seminar Presentation | 0 | 0 | 1 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |

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| 13 | MC | MC 381 | Learning an Art Form [vocal or instrumental, dance, painting, clay modeling, etc.] OR Environmental Protection Initiatives | 0 | 0 | 2 | 2 | 0 |
| TOTAL CREDIT WITHOUT MOOCS COURSES | | | | | | | | 27 |
| D.MOOCS COURSES** | | | | | | | | |
| 14 | MOOCS COURSES | HM301 | MOOCS Course-I | 3 | 1 | 0 | 4 | 4 |
| TOTAL CREDIT WITH MOOCS COURSES | | | | | | | | 31 |

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

2nd Year 2nd Semester

| Sl. No. | Category | Course Code | Course Title | Hours per week | | | | Credits |
|--|---|-------------|--|----------------|---|---|-------|---------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | Basic Science course | M 401 | Applied Statistics and Numerical Methods | 2 | 1 | 0 | 3 | 3 |
| 2 | PC | FT 401 | Biochemistry and Nutrition | 4 | 0 | 0 | 4 | 4 |
| 3 | PC | FT 402 | Principles of Food Preservation | 3 | 0 | 0 | 3 | 3 |
| 4 | PC | FT 403 | Microbial Technology and Food Biotechnology | 4 | 0 | 0 | 4 | 4 |
| 5 | PC | FT 404 | Food Process Technology-I (Cereals, Fruits, Vegetables, Beverages) | 3 | 0 | 0 | 3 | 3 |
| 6 | Humanities and Social Sciences including Management courses | HSMC 402 | Gender Culture and Development | 2 | 0 | 0 | 2 | 2 |
| B. PRACTICAL | | | | | | | | |
| 7 | Engineering Science course | M (CS) 491 | Numerical Methods Laboratory | 0 | 0 | 3 | 3 | 1.5 |
| 8 | PC | FT 491 | Biochemistry Lab | 0 | 0 | 3 | 3 | 1.5 |
| 9 | PC | FT 492 | Chemistry of Food Lab-II | 0 | 0 | 3 | 3 | 1.5 |
| 10 | PC | FT 493 | Microbial Technology Lab | 0 | 0 | 3 | 3 | 1.5 |
| 11 | PROJECT | PR 491 | Theme based Project IV | 0 | 0 | 1 | 1 | 0.5 |
| 12 | PROJECT | PR492 | Skill Development IV: Soft Skill and Aptitude-I | 0 | 0 | 1 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |

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|---|------------------|-----------|-----------------------|---|---|---|---|----|
| 13 | MC | MC 401 | Environmental Science | 3 | 0 | 0 | 3 | 0 |
| TOTAL CREDIT WITHOUT MOOCS COURSES | | | | | | | | 26 |
| D.MOOCS COURSES | | | | | | | | |
| 14 | MOOCS COURSES | HM 401 | MOOCS COURSE-II | 3 | 1 | 0 | 4 | 4 |
| TOTAL CREDIT WITH MOOCS COURSES | | | | | | | | 30 |

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

3rd Year 1st Semester

| Sl. No. | Category | Course Code | Course Title | Hours per week | | | | Credits |
|---------------------|---|--------------------------------------|--|----------------|---|---|-------|---------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | Humanities and Social Sciences including Management courses | HSMC 505 | Principles of Management | 2 | 0 | 0 | 2 | 2 |
| 2 | PC | FT 501 | Food Process Technology–II (Fish, Meat, Poultry) | 3 | 0 | 0 | 3 | 3 |
| 3 | PC | FT 502 | Food Process Technology–III (Milk and Milk Products) | 3 | 0 | 0 | 3 | 3 |
| 4. | (Professional Elective) PE | FT 503 (Professional Elective I) | A. Principles of Biochemical Engineering | 2 | 1 | 0 | 3 | 3 |
| | | | B. Enzyme Technology | 2 | 1 | 0 | 3 | 3 |
| | | | C. Modeling and Simulation of Food Processing | 2 | 1 | 0 | 3 | 3 |
| 5 | PE | FT 504 (Professional Elective II) | A. Fluid Mechanics and Heat Transfer | 2 | 1 | 0 | 3 | 3 |
| | | | B. Mass Transfer I | 2 | 1 | 0 | 3 | 3 |
| | | | C. Mechanical Operation and Separation Process I | 2 | 1 | 0 | 3 | 3 |
| B. PRACTICAL | | | | | | | | |
| 7 | PC | FT 591 | Food Processing Lab–I | 0 | 0 | 3 | 3 | 1.5 |
| 8 | PC | FT 592 | Food Analysis and Quality Control Lab-I | 0 | 0 | 3 | 3 | 1.5 |
| 9 | PE | FT 593 (Professional Elective II) | A. Fluid Mechanics and Heat Transfer Lab | 0 | 0 | 3 | 3 | 1.5 |
| | | | B. Mass Transfer I Lab | 0 | 0 | 3 | 3 | 1.5 |
| | | | C. Mechanical Operation and Separation Process I Lab | 0 | 0 | 3 | 3 | 1.5 |

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|---|---------------|--------|--|---|---|---|---|-----|
| | | Lab) | | | | | | |
| 10 | PROJECT | PR 591 | Minor Project I | 0 | 0 | 2 | 2 | 1 |
| 11 | PROJECT | PR 592 | Skill Development V: Soft Skill and Aptitude-II | 0 | 0 | 1 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |
| 12 | MC | MC 501 | Constitution of India | 2 | 0 | 0 | 2 | 0 |
| TOTAL CREDIT WITHOUT MOOCS COURSES | | | | | | | | 20 |
| D. MOOCS COURSES** | | | | | | | | |
| 13 | MOOCS COURSES | HM501 | MOOCS COURSE-III | 3 | 1 | 0 | 4 | 4 |
| TOTAL CREDIT WITH MOOCS COURSES | | | | | | | | 24 |

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

3rd Year 2nd Semester

| Sl. No. | Category | Course Code | Course Title | Hours per week | | | | Credits |
|------------------|---|---------------------------------------|---|----------------|---|---|-------|---------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | Humanities and Social Sciences including Management courses | HSMC 604 | Economics for Engineers | 2 | 0 | 0 | 2 | 2 |
| 2 | PC | FT 601 | Bakery, Confectionary and Extruded Foods | 3 | 0 | 0 | 3 | 3 |
| 3 | PC | FT 602 | Food Process Technology–IV (Edible Fats and Oils) | 3 | 0 | 0 | 3 | 3 |
| 4 | PE | FT 603 (Professional Elective III) | A. Mass Transfer II | 2 | 1 | 0 | 3 | 3 |
| | | | B. Separation Process II | 2 | 1 | 0 | 3 | 3 |
| | | | C. Transport Phenomena | 2 | 1 | 0 | 3 | 3 |
| 5 | PE | FT 604 (Professional Elective IV) | A. Food Additives | 3 | 0 | 0 | 3 | 3 |
| | | | B. Supply Chain Management and Food Marketing | 3 | 0 | 0 | 3 | 3 |
| | | | C. Food Security and Sustainability | 3 | 0 | 0 | 3 | 3 |
| 6 | OE | FT 605 (Open Elective I) | A. Data Structure and Algorithms | 2 | 1 | 0 | 3 | 3 |
| | | | B. Data Base Management System | 2 | 1 | 0 | 3 | 3 |
| | | | C. Software Engineering | 2 | 1 | 0 | 3 | 3 |

| B. PRACTICAL | | | | | | | | |
|---|--------------------|---|--|---|---|---|---|-------------|
| 7 | PC | FT 691 | Food Processing Lab–II | 0 | 0 | 3 | 3 | 1.5 |
| 8 | PC | FT 692 | Food Analysis and Quality Control Lab-II | 0 | 0 | 3 | 3 | 1.5 |
| 9 | PE | FT 693 (Professional Elective III Lab) | A. Mass Transfer Lab II lab | 0 | 0 | 3 | 3 | 1.5 |
| | | | B. Separation Process II Lab | 0 | 0 | 3 | 3 | 1.5 |
| | | | C. Transport Phenomena Lab | 0 | 0 | 3 | 3 | 1.5 |
| 11 | (Open Elective) OE | FT 694 (Open Elective I Lab) | A. Data Structure and Algorithms Lab | 0 | 0 | 2 | 2 | 1 |
| | | | B. Data Base Management System Lab | 0 | 0 | 2 | 2 | 1 |
| | | | C. Software Engineering Lab | 0 | 0 | 2 | 2 | 1 |
| 12 | PROJECT | PR 691 | Minor Project II | 0 | 0 | 3 | 2 | 1 |
| 13 | PROJECT | PR 692 | Skill Development VI: Soft Skill and Aptitude-III | 0 | 0 | 1 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |
| 14 | MC | MC 601 | Intellectual Property Right | 2 | 0 | 0 | 2 | 0 |
| TOTAL CREDIT WITHOUT MOOCS COURSES | | | | | | | | 24.0 |
| D.MOOCS COURSES** | | | | | | | | |
| 15 | MOOCS COURSES | HM601 | MOOCS COURSE-IV | 3 | 1 | 0 | 4 | 4 |
| TOTAL CREDIT WITH MOOCS COURSES | | | | | | | | 28.0 |

**** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET**

4th Year 1st Semester

| Sl No | Course Code | Paper Code | Theory | Contact Hours /Week | | | | Credit Points |
|---------------------|-------------|-------------------------------------|--|---------------------|---|---|-------|---------------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | PC | FT 701 | Food Process Engineering | 3 | 1 | 0 | 4 | 4 |
| 2 | PE | FT 702 (Professional Elective V) | A. Food Packaging Technology | 3 | 0 | 0 | 3 | 3 |
| | | | B. Functional Foods and Nutraceuticals | 3 | 0 | 0 | 3 | 3 |
| | | | C. Protein Technology | 3 | 0 | 0 | 3 | 3 |
| 3 | OE | FT 703 (Open Elective II) | A. Process Instrumentation and Control | 3 | 0 | 0 | 3 | 3 |
| | | | B. Renewable Energy Technology | 3 | 0 | 0 | 3 | 3 |
| | | | C. Nanotechnology | 3 | 0 | 0 | 3 | 3 |
| 4 | OE | FT 704 (Open Elective III) | A. Artificial Intelligence | 3 | 0 | 0 | 3 | 3 |
| | | | B. Machine Learning | 3 | 0 | 0 | 3 | 3 |
| | | | C. Introduction to Internet of Things | 3 | 0 | 0 | 3 | 3 |
| B. PRACTICAL | | | | | | | | |
| 5 | PC | FT 791 | Food Engineering Lab | 0 | 0 | 3 | 3 | 1.5 |
| 6 | PROJECT | PR 791 | Major Project-I | 0 | 0 | 0 | 4 | 2 |
| 7 | PROJECT | PR 792* | Industrial Training / Internship | 0 | 0 | 0 | 0 | 1 |

| | | | | | | | | |
|---|------------------|--------|--|---|---|---|---|-----|
| 8 | PROJECT | PR 793 | Skill Development VII: Seminar and Group Discussion | 0 | 0 | 1 | 1 | 0.5 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |
| 9 | MC | MC 701 | Entrepreneurship and Innovation Skill | 2 | 0 | 0 | 2 | 0 |
| TOTAL CREDIT WITHOUT MOOCS COURSES | | | | | | | | 18 |
| D.MOOCS COURSES** | | | | | | | | |
| 10 | MOOCS COURSES | HM701 | MOOCS COURSE-V | 3 | 1 | 0 | 4 | 4 |
| TOTAL CREDIT WITH MOOCS COURSES | | | | | | | | 22 |

*Collective Data from 3rd to 6th Semester (Summer/Winter Training during Semester Break & Internship should be done after 5th Semester or 6th Semester). All related certificates to be collected by the training/internship coordinator(s).

** MOOCS COURSES for HONOURS/MINOR Degree are Program specific and to be taken from MOOCS BASKET

4th Year 2nd Semester

| SI No | Course Code | Paper Code | Theory | Contact Hours /Week | | | | Credit Points |
|--|-------------|--------------------------------------|---|---------------------|---|----|-------|---------------|
| | | | | L | T | P | Total | |
| A. THEORY | | | | | | | | |
| 1 | PE | FT 801 (Professional Elective VI) | A. Waste Management of Food Industries | 3 | 1 | 0 | 4 | 4 |
| | | | B. Project Engineering and Food Plant Layout | 3 | 1 | 0 | 4 | 4 |
| | | | C. Plant Maintenance, Safety and Hygiene | 3 | 1 | 0 | 4 | 4 |
| 2 | OE | FT 802 (Open Elective IV) | A. Entrepreneurship Development and Start-Up Management | 3 | 0 | 0 | 3 | 3 |
| | | | B. Quality Management System | 3 | 0 | 0 | 3 | 3 |
| | | | C. Smart Technologies | 3 | 0 | 0 | 3 | 3 |
| B. PRACTICAL | | | | | | | | |
| 3 | PROJECT | PR 891 | Major Project-II | 0 | 0 | 12 | 12 | 6 |
| 4 | PROJECT | PR 892 | Grand Viva | 0 | 0 | 0 | 0 | 1 |
| C. MANDATORY ACTIVITIES / COURSES | | | | | | | | |
| 5 | MC | MC 801 | Essence of Indian Knowledge Tradition | 3 | 0 | 0 | 3 | 0 |
| TOTAL CREDIT | | | | | | | | 14 |

Total:

| Total for FT | |
|----------------------|------------------------|
| Without MOOCS | With MOOCS |
| 34 | 34 |
| 27 | 31 |
| 26 | 30 |
| 20 | 24 |
| 24 | 28 |
| 18 | 22 |
| 14 | 14 |
| 163 | 183 (for Honors/minor) |

Credit Distribution:

| Category | Total Credit Allocation | Credit Allocation percentage | Credit Allocation percentage As per AICTE |
|--------------------------------------|-------------------------|------------------------------|---|
| Basic Sciences (BS) | 24.5 | 15.3 | 15-20 |
| Humanities & Social Sciences (HS) | 9 | 5.63 | 5-10 |
| Engineering Sciences and Skills (ES) | 23 | 14.38 | 15-20 |
| Professional Core (PC) | 51 | 31.88 | 30-40 |
| Professional Electives (PE) | 22 | 13.75 | 10-15 |
| Open Elective (OE) | 13 | 8.13 | 5-10 |
| Project | 17.5 | 10.94 | 10-15 |
| Total | 160 | - | - |