



# UNIVERSITY OF JAMMU

(NAAC ACCREDITED 'A' GRADE' UNIVERSITY)  
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

Academic Section

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## NOTIFICATION (22/Sept./Adp/37)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the adoption of the Syllabi and Courses of Study in the subject of **Food Science and Quality Control** of Semesters Ist and IInd for **Four Year Under Graduate Programme** under the **Choice Based Credit System** as per NEP-2020 (as given in the annexure) for the examinations to be held in the years as per the details given below:

Subject	Semester	for the examination to be held in the years
Food Science and Quality Control	Semester-I	December 2022, 2023 and 2024
	Semester-II	May 2023, 2024 and 2025

The Syllabi of the courses is available on the University website: [www.jammuuniversity.ac.in](http://www.jammuuniversity.ac.in)

Sd/-  
DEAN ACADEMIC AFFAIRS

No. F. Acd/II/22/6137-6158

Dated: 21-9-2022

Copy for information and necessary action to:

1. Special Secretary to the Vice-Chancellor, University of Jammu for information of Hon'ble Vice-Chancellor
2. Dean, Faculty of Science
3. HOD/Convener, Board of Studies in **Home-Science**
4. Sr. P.A. to the Controller of Examinations
5. All members of the Board of Studies
6. Confidential Assistant to the Controller of Examinations
7. I/C Director, Computer Centre, University of Jammu
8. Deputy Registrar/Asst. Registrar (Conf. /Exams. UG/ Exam Eval Non-Prof/CDC)
9. Incharge, University Website for Uploading of the notification.

*Sumitshaemp*  
Deputy Registrar (Academic) 19/9/22

*19/9/22*  
*19/9/22*

# **University of Jammu**

Syllabi of *Food Science and Quality Control* at Four Year Under Graduate Programme (FYUP) under Choice Based Credit System as per NEP - 2020

**Semester - I**  
(Examination to be held December 2022, 2023, 2024)

S. no	Course Type	Course No.	Course Title	Credits (Theory + Practical)	Marks				Total Marks
					Theory		Practical/Tutorial		
1	Major	UMJFST101	Introduction to Food Science	( 3 + 1)	Mid Semester: 15 Marks	End Exam: 60 Marks	Assessment: 10 Marks	Exam: 15 Marks	75 + 25 = 100
2	Minor	UMIFST102	Introduction to Food Science	( 3 + 1)	Mid Semester: 15 Marks	End Exam: 60 Marks	Assessment: 10 Marks	Exam: 15 Marks	75 + 25 = 100
3	Multi-disciplinary	UMDFST103	Food Science ó Basic Concepts	3	Mid Semester: 15 Marks	End Exam: 60 Marks	–	–	75
4	Skill Enhancement Course	USEFST104	Food Product Development and Entrepreneurship	2	Mid Semester: 10 Marks	End Exam: 40 Marks	–	–	50

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**

**(Examination to be held in December 2022, 2023, 2024)**  
**Major Course (Theory)**

**Course Code:** UMJFST101  
**Credits:** 03

**Course Title:** Introduction to Food Science  
**Total No. of Lectures:** 45

**Maximum Marks: 100**  
**Theory= 75**  
**Practical/Tutorial= 25**

**Course learning outcomes:**

- Developing an Understanding the concept, importance and scope of Food Science
- Creating an awareness regarding application of Food Science
- Connecting Food Science to Career Building

**UNIT- 1**

- Definitions, concepts and importance of Food, nutrition, nutrients and Food Science
- Classification of foods on the basis of shelf life, pH and origin
- Types of food spoilage viz: Microbial, physical, biochemical

**UNIT – 2**

- Historical development and significance of food Microbiology
- Microbial spoilage of Food Products.
- Useful Microbes in food and human health.
- Food borne diseases (Salmonellosis, Botulism, Listeriosis, Diarrohea, Dysentery and Eschrechia Coli).

**UNIT- 3**

- Water activity- Definition and its importance.
- Sources and Nutritional importance of:
  - Carbohydrates.
  - Proteins and Amino Acids.
  - Fats
- Sources and functions of:
  - Vitamins(Fat soluble, Water soluble)
  - Minerals (Calcium, Iron, Iodine, Zinc and Selenium).
- Concept of balanced diet.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**

**(Examination to be held in December 2022, 2023, 2024)**  
**Major Course (Theory)**

**Course Code:** UMJFST101  
**Credits:** 03

**Course Title:** Introduction to Food Science  
**Total No. of Lectures:** 45

**UNIT- 4**

- Preservation by sugar and salt.
- Preservation by low temperature(Freezing, Refrigeration)
- Preservation by high temperature (Pasteurization, Sterilization and Aseptic).
- Preservation through moisture removal processes viz Concentration, Evaporation, Drying and Dehydration.
- Preservation by use of irradiation.
- Preservation by use of Chemicals.

**References:**

1. *Sunitra Roday, Food Science and Nutrition, 3<sup>rd</sup> Edition, 2018*
2. *Sumati R Mudambi, Rajagopal M. V Fundamentals of Foods, Nutrition and Diet Therapy, 6th Edition, New Age International Publishers, 2010*
3. *Srilakshmi, B, Nutrition Science, New age international (P) Ltd publishers, New Delhi, 2016.*
4. *Swaminathan, M. Advanced Text book on food and Nutrition, Vol.I. Bangalore Printing and Publishing Co. Ltd Bangalore.*
5. *H.-D. Belitz, Werner Grosch, Peter Schieberle, Food Chemistry, 3<sup>rd</sup> Edition, Springer-Verlag Berlin Heidelberg, 2004*
6. *John M. deMan, John W. Finley, W Jeffrey Hurst, Chang Yong Lee, Principles of Food Chemistry, 4<sup>th</sup> Edition, Springer, 2018*
7. *Food Science – Norman N. Potter, Joseph H. Hotchkiss*

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**

**Food Science and Quality Control**

**Semester I**

**(Examination to be held in December 2022, 2023, 2024)**

**Major Course (Practical)**

**Course Code:** UMJFST101

**Course Title:** Introduction to Food Science

**Credits:** 01

**Total No. of Lectures:** 30

**Maximum Marks:** 25

**Note:** Perform any five of the following experiments as per the availability of equipment/ apparatus

**List of Experiments:**

1. Preparation of standard (Normal, Molar and Percentage) solutions.
2. Preparation of brine and syrup
3. Determination of moisture content.
4. Determination of ash content.
5. Qualitative and quantitative tests for proteins.
6. Determination of crude fat.
7. Proximate Composition of Food.
8. Qualitative and quantitative tests of carbohydrates.
9. Determination of crude fibre.
10. Determination of free fatty acid and acid value.
11. Determination of peroxide value.

<b>THEORY</b>		
<b>DESCRIPTION</b>	<b>TIME ALLOTTED</b>	<b>MAR KS</b>
<b>Mid Semester Assessment Test</b> shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ Hours	15 Marks
<b>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</b> <b>Section A</b> shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. <b>Section B</b> shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.	03 Hours	60 Marks
<b>PRACTICAL/TUTORIAL</b> I. Daily evaluation of practical's/tutorials/Viva voce /Records etc.	10 Marks for Continuous assessment	
ii. Final Examination <b>Note: The BOS shall device the mechanism of Final examination.</b>	15 Marks for Final examination	

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**  
**(Examination to be held in December 2022, 2023, 2024)**  
**Minor Course (Theory)**

**Course Code:** UMIFST102  
**Credits:** 03

**Course Title:** Introduction to Food Science  
**Total No. of Lectures:**45

**Maximum Marks: 100**  
**Theory= 75**  
**Practical/Tutorial= 25**

**Course learning outcomes:**

- Creating an understanding of the concept and Scope of Food Science
- Creating awareness regarding application of Food Science
- Connecting Food Science to Career Building

**UNIT- 1**

- Food Science ó Introduction and significance
- Scope, importance and constraints of food processing in India.
- Classification of foods on the basis of shelf life, pH and origin.
- Types of food spoilage viz: Microbial, physical, biochemical.

**UNIT – 2**

- Food Microbiology and its significance.
- Microbial spoilage of Food Products.
- Useful Microbes in food and human health.
- Food borne diseases (Salmonellosis, Botulism, Listeriosis, Diarrohea, Dysentry and Eschrechia Coli).

**UNIT- 3**

- Water activity- Definition and its importance.
- Sources and Nutritional importance of:
  - Carbohydrates.
  - Proteins and Amino Acids.
  - Fats
- Sources and functions of:
- Vitamins(Fat soluble, Water soluble)
- Minerals (Calcium, Iron, Iodine, Zinc and Selenium).
- Concept of balanced diet.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**

**Food Science and Quality Control**

**Semester I**

**(Examination to be held in December 2022, 2023, 2024)**

**Minor Course**

**Course Code:** UMIFST102

**Course Title:** Introduction to Food Science

**Credits:** 03

**Total No. of Lectures:**45

**UNIT- 4**

- Preservation by sugar and salt.
- Preservation by low temperature(Freezing, Refrigeration)
- Preservation by high temperature (Pasteurization, Sterilization and Aseptic).
- Preservation through moisture removal processes viz Concentration, Evaporation, Drying and Dehydration.
- Preservation by use of irradiation.
- Preservation by use of Chemicals.

**References:**

1. *Sunitra Roday, Food Science and Nutrition, 3<sup>rd</sup> Edition, 2018*
2. *Sumati R Mudambi, Rajagopal M. V Fundamentals of Foods, Nutrition and Diet Therapy, 6th Edition, New Age International Publishers, 2010*
3. *Srilakshmi, B, Nutrition Science, New age international (P) Ltd publishers, New Delhi, 2016.*
4. *Swaminathan, M. Advanced Text book on food and Nutrition, Vol.I. Bangalore Printing and Publishing Co. Ltd Bangalore.*
5. *H.-D. Belitz, Werner Grosch, Peter Schieberle, Food Chemistry, 3<sup>rd</sup> Edition, Springer-Verlag Berlin Heidelberg, 2004*
6. *John M. deMan, John W. Finley, W Jeffrey Hurst, Chang Yong Lee, Principles of Food Chemistry, 4<sup>th</sup> Edition, Springer, 2018*
7. *Food Science – Norman N. Potter, Joseph H. Hotchkiss*

**Practicals**

**Note: Perform any five of the following experiments as per the availability of equipment/ apparatus**  
**List of Experiments:**

1. Preparation of standard (Normal, Molar and Percentage) solutions.
2. Preparation of brine and syrup
3. Determination of moisture content.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**  
**(Examination to be held in December 2022, 2023, 2024)**  
**Minor Course (Practicals)**

**Course Code:** UMIFST102  
**Credits:** 01  
**Maximum Marks:** 25

**Course Title:** Introduction to Food Science  
**Total No. of Lectures:** 30

4. Determination of ash content.
5. Qualitative and quantitative tests for proteins.
6. Determination of crude fat.
7. Proximate Composition of Food.
8. Qualitative and quantitative tests of carbohydrates.
9. Determination of crude fibre.
10. Determination of free fatty acid and acid value.
11. Determination of peroxide value.

**Scheme of Examination:**

<b>THEORY</b>		
DESCRIPTION	TIME ALLOTTED	MARKS
Mid Semester Assessment Test shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ Hours	15 Marks
<p><b>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</b></p> <p><b>Section A</b> shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks.</p> <p><b>Section B</b> shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.</p>	03 Hours	60 Marks

<b>PRACTICAL/TUTORIAL</b>	
Daily evaluation of practical's/tutorials/Viva voce/Records etc.	10 Marks for Continuous assessment
ii. Final Examination <b>Note: The BOS shall device the mechanism of Final examination.</b>	15 Marks for Final examination

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**  
**(Examination to be held in May 2022, 2023, 2024)**  
**Multi- disciplinary Course**

**Course Code:** UMDFST103  
**Credits:** 03

**Course Title:** Food Science ó Basic Concepts  
**Total No. of Lectures:** 45

**Maximum Marks: 100**  
**Theory= 75**  
**Practical/Tutorial= 25**

**Course Outcomes:**

- Enable the students to be familiar with various basic concepts of Food Science and Technology
- Create awareness regarding application of Food Science

**Unit-I**

- Food Science ó Basic Concepts
- Scope, importance and constraints of food processing
- Classification of foods on the basis of shelf life, pH and origin.
- Different types of food spoilage viz: Microbial, physical, biochemical.

**Unit-II**

**Food Microbiology:**

- Historical development in food Microbiology and its significance.
- Microbial spoilage of different food products
- Useful Microbes in food and human health.
- Food borne diseases (Salmonellosis, Botulism, Diarrhea, and Eschrechia Coli).

**Unit III**

**Principles of Food Preservation:**

- Preservation by sugar and salt.
- Preservation by low temperature(Freezing, Refrigeration)
- Preservation by high temperature (Pasteurization, Sterilization and Aseptic).
- Preservation through moisture removal processes
- Preservation by use of irradiation.
- Preservation by use of Chemicals.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**  
**(Examination to be held in December 2022, 2023, 2024)**  
**Multidisciplinary Course**

**Course Code:** UMDFST103  
**Credits:** 03

**Course Title:** Food Science ó Basic Concepts  
**Total No. of Lectures:** 45

**Unit IV**

**Food Nutrition:**

- Sources and nutritional importance of: Carbohydrates. Proteins, Fats.
- Sources and functions of: Vitamins and Minerals (Calcium, Iron, Iodine, Zinc and Selenium).

**Text and Reference Books:**

1. *Food Science* by B. Srilakshmi
2. *Food Science – Norman N. Potter, Joseph H. Hotchkiss*
3. *Food Chemistry – H D Blitz, W. Grosch*
4. *Food Chemistry and Nutrition – A.W. Duncan*
5. *Food Microbiology* □ *William Frazier, Dannise Westhoff*

**Scheme of Examination:**

<b>THEORY</b>		
DESCRIPTION	<b>TIME ALLOTTED</b>	<b>MARKS</b>
Mid Semester Assessment Test shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ Hours	15 Marks
End Semester University Examination shall be conducted for entire syllabus. The break up is as under: <b>Section A</b> shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. <b>Section B</b> shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.	03 Hours	60 Marks

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**

**(Examination to be held in December 2022, 2023, 2024)**  
**Skill Enhancement Course**

**Course Code:** USEFST104

**Course Title:** Food Product Development and  
Entrepreneurship

**Credits:** 02

**Total No. of Lectures:** 30

**Maximum Marks:** 50

**Course Objectives:**

- Creating understanding and knowledge of various aspects of new food product development.
- Developing products which meet consumer needs and nutrition and commercially viable.
- Enable entrepreneurship among students.

**Unit-I**

- New Food Products: Definition, Classification
- Factors shaping new product development
- Reasons for new food product development
- Business Idea Generation
- Sources of idea and evaluation

**Unit-II**

- Brief introduction of phases in food product development
- Recipe development, food safety and food spoilage.
- Basic concept of Shelf Life
- Sensory Evaluation
- Different preservation methods, packaging, labelling

**Unit-III**

- Entrepreneurship: Preparation of business plan, Plant location, investment, financing the project, , Preparation of project report

**REFERENCES**

1. Fuller 2004. *New Food Product Development-from concept to market place.* CRC.
2. Earle and Earle 2001. *Creating New Foods.* Chadwick House Group.
3. Vasant Desai (2012) *Fundamentals of Entrepreneurship and Small Business Management,* Himalya Publishing House Pvt. Ltd., Mumbai
4. Clarke & Wright W.1999. *Managing New Product and Process Development.* Woodhead Publ.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester I**  
**(Examination to be held in December 2022, 2023, 2024)**  
**Skill Enhancement Course**

**Course Code:** USEFST104

**Course Title:** Food Product Development and Entrepreneurship

**Credits:** 02

**Total No. of Lectures:** 30

**Maximum Marks:** 50

**SCHEME OF EXAMINATION**

<b>THEORY</b>		
<b>DESCRIPTION</b>	<b>TIME ALLOTTED</b>	<b>MARKS</b>
Mid Semester Assessment Test shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ hours	10 Marks
<p>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</p> <p>Section A shall consist Four (4) short answer questions covering each unit. The students are required to attempt all questions. Each question shall be of 2½ Marks.</p> <p>Section B shall consist Six (6) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 10 Marks.</p>	2½ hours	40 Marks

**Semester - II**  
(Examination to be held May 2023, 2024, 2025)

S. no	Course Type	Course No.	Course Title	Credits (Theory + Practical)	Marks				Total Marks
					Theory		Practical/Tutorial		
1	Major	UMJFST201	Food Quality Assurance and Packaging	(3 + 1)	Mid Semester: 15 Marks	End Exam: 60 Marks	Assessment: 10 Marks	Exam: 15 Marks	75 + 25 = 100
2	Minor	UMIFST202	Quality Control and Packaging Technology	(3 + 1)	Mid Semester: 15 Marks	End Exam: 60 Marks	Assessment: 10 Marks	Exam: 15 Marks	75 + 25 = 100
3	Multi-disciplinary	UMDFST203	Technology of Food Processing and Preservation	3	Mid Semester: 15 Marks	End Exam: 60 Marks	–	–	75
4	Skill Enhancement Course	USEFST204	Food Product Development and Entrepreneurship	2	Mid Semester: 10 Marks	End Exam: 40 Marks	–	–	50

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Major Course (Theory)**

**Course Code:** UMJFST201

**Course Title:** Food Quality Assurance and Packaging

**Credits:** 03

**Total No. of Lectures:** 45

**Maximum Marks: 100**

**Theory= 75**

**Practical/Tutorial= 25**

**Course learning outcomes:**

- Creating an understanding of food quality and its evaluation.
- Acquainting students about packaging requirements of food and properties of different packaging materials used in food packaging

**Unit – I**

- Food sampling-Definition and types
- Concept of Hazard Analysis Critical Control Point (HACCP), Good Manufacturing Practices (GMP).
- Introduction of National (FSSAI) Food laws.

**Unit –II**

- Sensory evaluation of foods-Introduction; Sensory perception-Appearance, flavour, texture, Sound and Taste
- Selection of sensory panelists.
- Classification of sensory tests.

**Unit – 3**

- Packaging- definition and functions
- Properties of different packaging materials-Glass, Metal and Polymers.
- Packaging requirements of different food products

**Unit – 4**

- Novel Food Packaging techniques- Active packaging, MA and CA
- Food Packaging Laws and Regulations.
- Testing Procedures for Packaging Materials- thickness, tensile strength, puncture resistance, bursting strength, seal strength, water vapor permeability, Gas permeability, grease resistance

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Major Course**

**Course Code:** UMJFST201

**Course Title:** Food Quality Assurance and Packaging

**Credits:** 03

**Total No. of Lectures:** 45

**References:**

1. *Eram S. Rao., Food Quality Evaluation, Variety Books Publishers and Distributors (2013)*
2. *Pomeranz, Y. Food Analysis-Theory and Practice, Springer*
3. *Nielsen, Suzanne, Food Analysis, Springer US (2010)*
4. *Gordon Robertson, Food Packaging Principles, 3<sup>rd</sup> Edition (2013), CRC Press*
5. *Paine, Frank A., Paine, Heather Y, Food Packaging, 2<sup>nd</sup> Edition, Springer US*
6. *Dong Sun Lee, Kit L. Yam, Luciano Piergiovanni, Food Packaging Science and Technology, CRC Press*

**Practicals**

**Credits:** 01

**Total No. of Lectures:** 30

**Maximum Marks:** 25

**Note : Perform any five of the following experiments as per the availability of equipment/ apparatus.**

**List of Experiments:**

1. To examine the quality of fruits & vegetables.
2. Sensory methods for measuring food attributes- Threshold Test
3. To perform Rating/Ranking tests.
4. Common adulterants in milk/ chili powder/ honey and their detection. (Any one)
5. Identification of different packaging materials.
6. Determination of GSM
7. To find the thickness of packaging material using Screw Gauge.
8. Determination of shelf life of packaged foods
9. Visit to research labs and industries.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Major Course**

**Course Code:** UMJFST201

**Course Title:** Food Quality Assurance and Packaging

**Credits:** 03

**Total No. of Lectures:** 45

**Scheme of Examination:**

<b>THEORY</b>		
<b>DESCRIPTION</b>	<b>TIME ALLOTTED</b>	<b>MARKS</b>
<b>Mid Semester Assessment Test</b> shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ Hours	15 Marks
<b>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</b> <b>Section A</b> shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks. <b>Section B</b> shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.	03 Hours	60 Marks

<b>PRACTICAL/TUTORIAL</b>	
iii) Daily evaluation of practical's/tutorials/Viva voce/Records etc.	10 Marks for Continuous assessment
ii) Final Examination <b>Note: The BOS shall device the mechanism of Final examination.</b>	15 Marks for Final examination

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Minor Course (Theory)**

**Course Code:** UMIFST202

**Course Title:** Quality Control and Packaging  
Technology

**Credits:** 03

**Total No. of Lectures:** 45

**Maximum Marks: 100**

**Theory= 75**

**Practical/Tutorial= 25**

**Course learning outcomes:**

- Creating an understanding about food quality and its evaluation.
- Acquainting students about packaging requirements of food and properties of different packaging materials used in food packaging

**Unit – I**

- Food sampling-Definition and types
- Concept of Hazard Analysis Critical Control Point (HACCP), Good Manufacturing Practices (GMP).
- Introduction of National (FSSAI) Food laws.

**Unit –II**

- Sensory evaluation of foods-Introduction; Sensory perception-Appearance, flavour, texture, Sound and Taste
- Selection of sensory panelists.
- Classification of sensory tests.

**Unit – 3**

- Packaging- definition and functions
- Properties of different packaging materials-Glass, Metal and Polymers.
- Packaging requirements of different food products

**Unit – 4**

- Novel Food Packaging techniques- Active packaging, MA and CA
- Food Packaging Laws and Regulations.
- Testing Procedures for Packaging Materials- thickness, tensile strength, puncture resistance, bursting strength, seal strength, water vapor permeability, Gas permeability, grease resistance

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Minor Course**

**Course Code:** UMIFST202

**Course Title:** Quality Control and Packaging  
Technology

**Credits:** 03

**Total No. of Lectures:** 45

**References:**

1. *Eram S. Rao., Food Quality Evaluation, Variety Books Publishers and Distributors (2013)*
2. *Pomeranz, Y. Food Analysis-Theory and Practice, Springer*
3. *Nielsen, Suzanne, Food Analysis, Springer US (2010)*
4. *Gordon Robertson, Food Packaging Principles, 3rd Edition (2013), CRC Press*
5. *Paine, Frank A., Paine, Heather Y, Food Packaging, 2nd Edition, Springer US*
6. *Dong Sun Lee, Kit L. Yam, Luciano Piergiovanni, Food Packaging Science and Technology, CRC Press*

**Practicals**

**Credits:** 01

**Total No. of**

**Lectures:** 30

**Maximum Marks:** 25

**Note : Perform any five of the following experiments as per the availability of equipment/ apparatus.**

**List of Experiments:**

1. To examine the quality of fruits & vegetables.
2. Sensory methods for measuring food attributes- Threshold Test
3. To perform Rating/Ranking tests.
4. Common adulterants in milk/ chili powder/ honey and their detection. (Any one)
5. Identification of different packaging materials.
6. Determination of GSM
7. To find the thickness of packaging material using Screw Gauge.
8. Determination of shelf life of packaged foods
9. Visit to research labs and industries.

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Minor Course**

**Course Code:** UMIFST202

**Course Title:** Quality Control and Packaging Technology

**Credits:** 03

**Total No. of Lectures:** 45

**Scheme of Examination**

<b>THEORY</b>		
<b>DESCRIPTION</b>	<b>TIME ALLOTTED</b>	<b>MARKS</b>
<b>Mid Semester Assessment Test</b> shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ Hours	15 Marks
<p><b>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</b></p> <p><b>Section A</b> shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks.</p> <p><b>Section B</b> shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.</p>	03 Hours	60 Marks

<b>PRACTICAL/TUTORIAL</b>	
iii. Daily evaluation of practical's/tutorials/Viva voce/Records etc.	10 Marks for Continuous assessment
ii. Final Examination <b>Note: The BOS shall device the mechanism of Final examination.</b>	15 Marks for Final examination

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Multi- disciplinary Course**

**Course Code:** UMDFST203

**Course Title:** Technology of Food Processing  
and Preservation

**Credits:** 03

**Total No. of Lectures:** 45

**Maximum Marks: 100**

**Theory= 75**

**Practical/Tutorial= 25**

**Course Objectives:**

- Creating awareness regarding various food products and their processing technology
- Creating understanding of Bakery Technology.

**Unit-I**

**Fruits and Vegetable Processing Technology**

- Basic concept of process for manufacture of Jams, Jellies, Marmalades, Preserves, Candies, Pickles and Chutneys.
- Basic concept of Tomato Processing-Ketchup, Sauce, Puree.
- Basic concept for preparation of different fruit juices-Squash, Nectar, Cordial and Concentrate.
- Drying and dehydration of fruits and Vegetables
- MAP and CAP

**Unit-II**

**Cereal and Pulses Processing Technology:**

- Wheat: Structure, Compositions, types of wheat, conditioning, Wheat milling.
- Rice: Structure, Composition, Parboiling, Rice milling.
- Maize: Structure, Composition, Dry and Wet Milling.
- Pulses: Concept of anti-nutritional factors in pulses, Pre-treatment of pulses before milling, Milling of pulses.

**Unit-III**

**Milk and Milk Products Processing Technology:**

- Milk: Sources, Composition and Nutritive value.
- Factors effecting quality of milk.
- Milk processing ó Collection, chilling, standardization and pasteurization and its effects.
- Milk products- preparation and storage of Curd, Ice cream, Paneer. Butter and Ghee

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**Total No. of Lectures:** 45

**Unit-IV**

**Bakery Technology:**

- Raw materials and their role in bakery products.
- Types, preparation and quality evaluation of Bread
- Preparation of Biscuits
- Preparation of Cakes
- Staling of Bread.

**Scheme of Examination:**

<b>THEORY</b>		
<b>DESCRIPTION</b>	<b>TIME ALLOTTED</b>	<b>MARKS</b>
<b>Mid Semester Assessment Test</b> shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.	1½ Hours	15 Marks
<b>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</b>  <b>Section A</b> shall consist Four (4) short answer questions having one question from each unit. The students are required to attempt all questions. Each question shall be of 3 Marks.  <b>Section B</b> shall consist Eight (8) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 12 Marks.	03 Hours	60 Marks

**Syllabi of Food Science and Quality Control at FYUP under CBCS as per NEP-2020**  
**Food Science and Quality Control**  
**Semester II**  
**(Examination to be held in May 2023, 2024, 2025)**  
**Skill Enhancement Course**

**Course Code:** USEFST204

**Course Title:** Technology of Processing  
of Fruits and Vegetables

**Credits:** 02

**Total No. of Lectures:** 30

**Maximum Marks:** 50

**Course Outcomes:**

- Providing an understanding of composition of various fruits and vegetables.
- Familiarizing students with changes occurring in various fruits and vegetables as a result of processing and cooking.
- Motivating entrepreneurship in the field of Fruits and Vegetables.

**Unit-I**

- History and need of preservation, reasons of spoilage.
- Principles and methods of fruits and vegetables preservation
  - Low temp. preservation,
  - High temp. preservation,
  - Dehydration( Sun drying & mechanical dehydration)

**Unit-II**

- Technology of processing of juices
- Preservation of fruit juices (pasteurization, sterilization, chemically preserved with sugars, freezing, drying, carbonation).
- Processing of Squash, Cordials, Nectar.
- 

**Unit-III**

- Preparation of Jams, Jelly, Marmalades
- Preparation of Chutney, Sauce, Puree
- Preparation Pickles, Preserves and Candied fruits
- Canning of Fruits and Vegetables: Selection of fruits and vegetables, process of canning. , factors affecting the process- time and temperature, containers of packing, lacquering, syrups and brines for canning, Spoilage in canned foods.

***REFERENCES***

1. Girdhari Lal, Siddappaa, G.S and Tandon, G.L. *Preservation of fruits & Vegetables*, ICAR, New Delhi.
2. W B Crusess.2004. *Commercial Unit and Vegetable Products*, W.V. *Special Indian Edition*, Pub: Agrobios India.
3. Manay, S. & Shadaksharaswami, M.2004. *Foods: Facts and Principles*, New Age Publishers
4. Ranganna S. *Handbook of analysis and quality control for fruits and vegetable products*, Tata McGraw-Hill publishing company limited.

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5. *Srivastava, R.P. and Kumar, S. Fruits and Vegetables Preservation- Principles and Practices. 3rd ed. International Book Distributing Co.*

6. *Srilakshmi.B. Food Science. 3rd. New age international publishers.*

**SCHEME OF EXAMINATION**

<b>THEORY</b>		
<b>DESCRIPTION</b>	<b>TIME ALLOTTED</b>	<b>MARKS</b>
<p><b>Mid Semester Assessment Test</b> shall be conducted by the course coordinator after completion of the syllabus up to 50% and the pattern of the examination shall be decided by the respective Board of Studies.</p>	1½ hours	10 Marks
<p><b>End Semester University Examination shall be conducted for entire syllabus. The break up is as under:</b></p> <p><b>Section A</b> shall consist Four (4) short answer questions covering each unit. The students are required to attempt all questions. Each question shall be of 2½ Marks.</p> <p><b>Section B</b> shall consist Six (6) long answer questions having two questions from each unit. The students are required to attempt one question from each unit. Each question shall be of 10 Marks.</p>	2½ hours	40 Marks