

**Institute for Excellence in Higher Education (IEHE),  
Bhopal (MP)**



**NAAC Re-accredited (Third Cycle) Autonomous College  
Under the UGC Scheme with 'A' Grade (CGPA-3.10)**

**Program Outcomes (POs),  
Program Specific Outcome (PSOs)  
&  
Course Outcomes (COs)**

**Food Science and Quality Control  
as  
Minor/Subsidiary Course  
(Session: 2021-22)**

**Program Outcomes (PO) of the Under-Graduate Courses Offered**

- PO1: Domain Knowledge:** Capable of demonstrating comprehensive knowledge & understanding of one or more other disciplines that form a part of an undergraduate programme of study.
- PO2: Critical Thinking:** Critically evaluate practices, policies and theories by following scientific approach to knowledge development. Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO3: Problem Solving and Analytical Skills:** Ability to think rationally, analyse situations and solve problems adequately.
- PO4: Information and Digital Literacy:** Capability to use ICT in a variety of learning situations. Demonstrate ability to access, evaluate and use a variety of relevant information sources; and use appropriate software for analysis of data.
- PO5: Communication Skills:** The capacity to communicate effectively using appropriate media, to present complex information in a clear & concise manner. Acquire the learning abilities by focusing on LSRW (Listening, Speaking, Reading & Writing skill, which provide a stage to the students to sharpen their capacity to learn more.
- PO6: Social Interaction and sensitivity towards the societal issues:** Work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group and act together as a group or a team in the interests of a common cause. Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- PO7: Self-directed & Life-long Learning:** Acquire the potential to engage in independent & life-long learning in the broadest context socio-technological changes. Critical sensibility to live experiences, with self-awareness and reflexivity of both and society.
- PO8: Environment and Sustainability:** Understand the issues of environmental contexts & sustainable development.
- PO9: Moral and Ethical Awareness:** Ability to embrace moral/ ethical values in conducting one's life, possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.
- PO10: Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO11: Research-related skills:** A sense of inquiry and capability for asking relevant/appropriate questions, problematizing, synthesizing and articulating; Ability to recognize cause and effective relationships, define problems, formulate hypotheses, interpret and draw conclusions from data, ability to plan, execute and report the results of an experiment or investigation. Efficiency to apply one's learning to real life situations or in interdisciplinary areas.
- PO12: Leadership and Management Skills:** Competence to use skills in organizing for people to reach a shared goal. During leading a project, ability to motivate others to complete a series of tasks, often according to a schedule.
- PO13: Employability and Entrepreneurial Skill:** Ability to develop employability skills such as, positive attitude, good business sense, willingness to learn, resilience, ability to work under pressure, optimism, adaptability, perseverance and motivation, and a host of similar skills.



## Department of Food Science & Quality Control

### PROGRAMME OUTCOMES (PO): B.Sc. Honours

Predefined Programme Outcomes	<i>Students taking admission to this program of B.Sc. get equipped with following outcomes:</i>
PO1	<b>Domain Knowledge:</b> Acquiring knowledge of fundamentals, basic Mathematics, domain knowledge of proper scientific models and Computing Specialization from defined problems and explaining the basic scientific principles and methods.
PO2	<b>Scientific thinking:</b> Inculcating scientific thinking and awareness, getting an ability to use necessary current techniques, skills, and modern tools.
PO3	<b>Problem Analysis:</b> Identifying, formulating, & analysing complex problems, reaching substantiated conclusions using first principles of Mathematics, natural sciences and electronic sciences.
PO4	<b>Communication:</b> Communicate concepts, designs, and solutions of scientific activities effectively and professionally with society at large.
PO5	<b>Information &amp; Digital Literacy:</b> Capability to use ICT in a variety of learning situations. Demonstrate ability to access, evaluate and use a variety of relevant information sources; and use appropriate software for analysis of data.
PO6	<b>Ethical Awareness:</b> Ability to embrace moral/ ethical values in conducting one's life, possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to support the values required for collaborative work such as mutual trust & fairness.
PO7	<b>Environment &amp; Sustainability:</b> Understanding the impact of scientific solutions on societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
PO8	<b>Self-directed and Life-long Learning:</b> Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes. Critical sensibility to live experiences, with self-awareness and reflexivity of both and society.
PO9	<b>Research-related skills:</b> <ul style="list-style-type: none"> <li>• Acquiring familiarity with emerging areas of different subjects in science and their applications in various spheres of sciences and getting appraise of its relevance in future studies.</li> <li>• Getting ability to apply various statistical tools to research problems and ability to build statistical knowledge and knowing the statistical organization in India and abroad.</li> <li>• Developing scientific intuition, ability and techniques to tackle problems either theoretical or experimental in nature.</li> </ul>
PO10	<b>Employability Skill:</b> Ability to develop employability skills such as, positive attitude, good business sense, willingness to learn, resilience, ability to work under pressure, optimism, adaptability, perseverance and motivation, and a host of similar skills.



## Department of Food Science & Quality Control

### Programme Specific Outcomes (PSO): Food Science and Quality Control

*(As Minor/Generic Elective/Subsidiary Course)*

Programme Specific Outcomes	<b><i>The students taking up this program of Food Science &amp; Quality Control (BSc) with Chemistry (Honours/Major) as a special subject of study, receive the following outcomes:</i></b>
PSO-1	<b>Domain Knowledge:</b> Acquiring knowledge of fundamentals of Food & Nutrition domain, knowledge of proper scientific methods, problems and explaining the basic scientific principles and procedure regarding Food-products.
PSO-2	<b>Scientific thinking:</b> Inculcating scientific thinking and awareness, getting an ability to use necessary current techniques, skills, and modern tools in food sector.
PSO-3	<b>Communication:</b> Communicate concepts, designs, and solutions of scientific activities effectively and professionally with society at large scale.
PSO-4	<b>Ethical Awareness:</b> Ability to embrace moral/ ethical values in conducting one's life, possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to support the values required for collaborative work such as mutual trust & concern regarding health, fitness, food security and feeding programmes for vulnerable groups of society.
PSO-5	<b>Environment &amp; Sustainability:</b> Understanding the impact of scientific solutions on social and environmental contexts and demonstrate knowledge of and need for sustainable development in various sector related to food industries. Impact of pollution, adulteration, pesticides, chemical fertilizers and non-permitted food additives on the health of people consuming processed food.
PSO-6	<b>Self-directed and Life-long Learning:</b> Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes. Critical sensibility to live experiences, with self-awareness and reflexivity of both in society.
PSO-7	<b>Employability Skill:</b> Ability to develop employability skills such as, positive attitude, good business sense, willingness to learn, resilience, ability to work under pressure, optimism, adaptability, perseverance and motivation, and a host of similar skills in the field of food related industries, agriculture sector, packaging, adulteration testing, laboratories, hospitals, gym, sports nutrition, food plant sanitation, preservation etc.

## Department of Food Science & Quality Control

### Course Outcomes (CO)s

#### Semester: I

Course: **Food Chemistry Basic & Applied Nutrition (Minor)** Code: **MNS-184 TH**

Course Outcomes	<i>The students taking up this course of (BSc) Food Science &amp; Quality Control (Minor) with Chemistry (Major) as a special subject of study receive the following outcomes:</i>
CO-1	Students will understand the composition of food
CO-2	Students will learn the effect of processing on various components.
CO-3	They will be able to understand about proteins, carbohydrates, lipids, vitamins and minerals.
CO-4	Students will know about the structure, function, RDA, deficiency diseases of nutrients.
CO-5	They will learn to find out alkalinity of water, types of water for industrial purpose.

#### Semester: I

Course: **Nutrition & Fitness (Generic Elective)** Code: **GES-184**

Course Outcomes	<i>The students taking up this course of Nutrition &amp; Fitness (BA/BSc/BCom) with (Generic Elective) as a special subject of study receive the following outcomes:</i>
CO-1	Students will be able to understand the importance of fitness.
CO-2	Role of nutrition for maintaining health and fitness.
CO-3	Importance of nutrition for sports person.
CO-4	Balanced diet for sports person, Height / Weight and BMI for sports person.
CO-5	Healthy food and energy expenditure in sports person for various sports.

#### Semester: I

Course: **Food Chemistry Basic & Applied Nutrition (Practical)** Code: **MNS-184 PR**

Course Outcomes	<i>The students taking up this course of (BSc) Food Science &amp; Quality Control (Minor) with Chemistry (Major) as a special subject of study receive the following outcomes:</i>
CO-1	They will learn to analyse water for industrial purpose.
CO-2	They will learn to analyse the effect of various pH on food commodities.
CO-3	They will learn the analysis of milk on quality parameters.
CO-4	Students will learn about recrystallization of sugar which will be beneficial in confectionery industry.
CO-5	They will learn about natural pigments present in fruits and vegetables and the effect of acid and alkali on them



## Department of Food Science & Quality Control

### Semester: II

Course: **Sensory Evaluation and Food Preservation Techniques (Minor)** Code: **MNS- 284**

Course Outcomes	<i>The students taking up this course of (BSc) Food Science &amp; Quality Control (Minor) with Chemistry (Major) as a special subject of study receive the following outcomes:</i>
CO-1	Students will know about the sensory responses for food.
CO-2	Sense organs, their anatomy, physiology
CO-3	Various tests to assess their response
CO-4	Basic and practical knowledge regarding food processing
CO-5	Principles and application

### Semester: II

Course: **Nutrition - A Lifespan Approach (Generic Elective)**

Code: **GES-284**

Course Outcomes	<i>The students taking up this course of Nutrition A Lifespan Approach (BA/BSc/BCom) with (Generic Elective) as a special subject of study receive the following outcomes:</i>
CO-1	Importance of nutrition during life span.
CO-2	Growth & Development of infants to adulthood.
CO-3	Meal Planning for each age group
CO-4	Workmanship- Sedentary, Moderate & hard work
CO-5	Nutrition during pregnancy, lactation.

### Semester: II

Course: **Sensory Evaluation & Food Preservation Techniques (Practical)** Code: **MNS-284 (PR)**

Course Outcomes	<i>The students taking up this course of (BSc) with Minor II as a special subject of study receive the following outcomes:</i>
CO-1	Students will learn to evaluate sensory quality of various food commodities.
CO-2	They will learn how to preserve food by various methods and principles.
CO-3	Students will learn to increase shelf life of different food in various seasons.
CO-4	They will learn to find out cost of processed food.
CO-5	They will learn to procure, process and store of food commodities in house hold and commercial level

**Semester: III**

**Sensory Evaluation and Food Preservation (Subsidiary)**

Code: S-384(TH)

Course Outcomes	<i>The students taking up this course of BSc Subsidiary with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will understand the sensory responses for food.
CO-2	They will evaluate the food on various scientific scale.
CO-3	They will learn to process and preserve food using different preservation techniques.
CO-4	Students will learn to increase shelf life of different food according to season.
CO-5	Household and commercial methods of food preservation

**Semester: III**

**Sensory Evaluation and Food Preservation (Practical)**

Code: S-384(PR)

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will learn to evaluate food quality using various scientific methods.
CO-2	They will learn food preservation using various household and commercial methods.
CO-3	Students will learn to increase shelf life of perishable commodities.
CO-4	They will learn to find out cost of processed food.
CO-5	They will learn to procure, process and storage of food commodities.

**Semester: IV**

**Post-harvest Technology, Processing and Manufacture (Subsidiary) Code: S-484(TH)**

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will know about the need and importance of various food commodities.
CO-2	They will learn about technical knowledge regarding processing.
CO-3	Students will learn about postharvest losses.
CO-4	Students will learn about modern techniques of processing, microwave, pulsed electric field processing, ohmic heating.
CO-5	Students will learn about value added food commodities.



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### Semester: IV

#### Postharvest Technology Processing and Manufacture (Practical) Code: S-484(PR)

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will learn about edible and non-edible part of crop.
CO-2	Students will learn about the value addition in agriculture produce.
CO-3	Students will learn to enhance market strategy and market skills.
CO-4	Student will understand to differentiate gluten and no gluten cereals.
CO-5	They will understand the market of food commodities for health benefits.

### Semester: V

#### Food Industry Management (Subsidiary) Code: S-584(TH)

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will understand the unit operations in food industries.
CO-2	They will acquaint with fundamentals of food engineering.
CO-3	Students will know the safety rules, prevention of accidents.
CO-4	Students will know about the various policies for welfare of commercial personnel.
CO-5	They will learn work simplification and work operations in food industries.

### Semester: V

#### Food Industry Management (Practical) Code: S-584(PR)

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will learn to make hand sanitizers, floor cleaner, hand wash, liquid soap.
CO-2	students can become entrepreneur.
CO-3	Students will understand the water purification methods on commercial level.
CO-4	They will learn about food plant sanitation.
CO-5	They will learn about food engineering.



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### Semester: VI

Course: **Food Quality Management Packaging Acts and Regulations** (Subsidiary) Code: **S-684**

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will understand about different food packaging materials.
CO-2	Students will learn packaging designs and techniques
CO-3	Students will learn about food adulteration testing techniques.
CO-4	They will learn to use qualitative and quantitative techniques to detect food adulteration.
CO-5	They will study the composition of sanitizers, detergents, floor cleaners etc.

### Semester: VI

Course: **Food Quality Management Packaging Acts and Regulations** (Practical) Code: **S-684**

Course Outcomes	<i>The students taking up this course of Subsidiary (BSc) with Chemistry (Honours) as a special subject of study receive the following outcomes:</i>
CO-1	Students will understand about rules and regulations regarding food safety.
CO-2	Students will understand the importance of food packaging techniques in food industries
CO-3	Students will learn about the types of packaging materials, their merits and demerits.
CO-4	Students will learn to develop packaging materials for food packaging.
CO-5	They will know about the national and international agencies/ organisation in the field of food safety, marketing



## Department of Food Science & Quality Control

### Programme: BSc - *Subject-Food Science & Quality Control (Minor/Generic Elective)*

#### Mapping of COs with PSOs for Semester-I (Minor)

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
<i>Paper Title: Food Chemistry Basic &amp; Applied Nutrition</i>  <i>Paper Code: MNS-184</i>	CO1	*									
	CO2		*								
	CO3			*	*						
	CO4				*						
	CO5				*						

#### Mapping of COs and PSOs for Semester-I (Generic Elective)

<i>Paper Title: Nutrition and Fitness</i>  <i>Paper Code: GES-184</i>	CO1	*									
	CO2		*								
	CO3				*						
	CO4					*					
	CO5					*					

#### Mapping of COs and PSOs for Semester-II (Minor)

<i>Paper Title: Sensory Evaluation and Food Preservation</i>  <i>Paper Code: MNS-284</i>	CO1	*									
	CO2						*				
	CO3					*					
	CO4							*			
	CO5							*			

#### Mapping of COs and PSOs for Semester-II (Generic Elective)

<i>Paper Title: Nutrition- A Lifespan Approach</i>  <i>Paper Code: GES-284</i>	CO1	*									
	CO2		*								
	CO3				*						
	CO4							*			
	CO5				*						

### Programme: BSc - *Food Science & Quality Control (As Subsidiary Course)*

#### Mapping of COs and PSOs for Semester-III (Subsidiary)

<i>Paper Title: Sensory Evaluation and Food Preservation Technique</i>  <i>Paper Code: S-384</i>	CO1	*									
	CO2						*				
	CO3					*					
	CO4							*			
	CO5							*			

#### Mapping of COs and PSOs for Semester-IV (Subsidiary)

<i>Paper Title: Post Harvest Technology Processing &amp; Manufacture</i>  <i>Paper Code: S-484</i>	CO1	*									
	CO2		*								
	CO3				*		*	*			
	CO4						*				
	CO5				*			*			



## Department of Food Science & Quality Control

### Mapping of COs with PSOs for Semester-V (Subsidiary)

Course		PS01	PS02	PS03		PS04	PS05	PS06	PS07	PS08	PS09	PS010
<b>Paper Title: Food Industry Management</b> <b>Paper Code: S-584</b>	CO1	*										
	CO2		*									
	CO3					*						
	CO4								*			
	CO5							*				

### Mapping of COs and PSOs for Semester-VI (Subsidiary)

<b>Paper Title: Food Quality Management Packaging Acts &amp; Regulations</b> <b>Paper Code: S- 684</b>	CO1	*										
	CO2		*									
	CO3								*			
	CO4								*			
	CO5						*		*			

*Ahde*

(IQAC Coordinator)

*[Signature]*

(Convenor, Academic Committee)

संयोजक  
अकादमिक समिति  
उच्चशिक्षा उत्कृष्टता संस्थान  
भोपाल

*P. Shukla*

(HOD, Food Science & Quality Control)

उच्चशिक्षा उत्कृष्टता संस्थान, भोपाल

*[Signature]*

(Dr Pragyesh Kumar Agarwal)

Director

**DIRECTOR,**  
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**BHOPAL-462016**

