Re-Accredited 'B++' 2.86 CGPA by NAAC
VEER NARMAD SOUTH GUJARAT UNIVERSITY
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વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી
યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.
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ક્રમાંક :ઓથો./પરિપત્ર/૧૨૧૭૭/૨૦૨૫
તા.૩૦/૦૫/૨૦૨૫

પ્રતિ,
વડાશ્રી,
બાયોટેકનોલોજી ડિપાર્ટમેન્ટ,
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી,
સુરત.

વિષયઃ– M.Sc.(5 years Integrated) Biotechnology Sem.-5 Skill Enhancement Course-Food Packaging & Preservation Technology નાં અભ્યાસક્રમ અંગે.

મહાશય,

સવિનય જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૫–૨૬ થી અમલમાં આવનાર M.Sc.(5 years Integrated) Biotechnology Sem.-5 Skill Enhancement Course-Food Packaging & Preservation Technology નો નિયુક્ત પેટાસમિતિ દ્વારા તૈયાર કરવામાં આવેલ અભ્યાસક્રમ અંગે બાયોટેકનોલોજી વિષયની અભ્યાસ સમિતિની તા.૧૯/૦૪/૨૦૨૫ની સભાના ઠરાવ ક્રમાંકઃ૦૪ થી કરેલ ભલામણ સ્વીકારી વિજ્ઞાન વિદ્યાશાખાની તા.૩૦/૦૪/૨૦૨૫ની સભાનાં ઠરાવ ક્રમાંકઃ૩૪ થી કરેલ ભલામણ સ્વીકારી એકેડેમિક કાઉન્સિલની તા.૦૫/૦૫/૨૦૨૫ ની સભાનાં ઠરાવ ક્રમાંકઃ ૯૮ થી મંજુર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

બિડાણઃ ઉપર મુજબ

કુલસચિવ

પ્રતિ,
૧) ડીનશ્રી, વિજ્ઞાન વિદ્યાશાખા.
૨) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.

.....તરફ જાણ તેમજ અમલ સારૂ.

[Subject Code-2503001305066003]

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

Undergraduate Program (Science Faculty)

(3 Years B. Sc. Degree; 4 Years B. Sc. with Honours/Honours with Research)

Semester-V

Skill Enhancement Course: BT-SEC-502: Food Packaging & Preservation Technology

Course Code	BT-SEC-502
Course Title	**Food Packaging & Preservation Technology**
Credit	2
Course Level	300-399
Total engagement	2 Credits x 15 Hours = 30 Hours
Teaching per week	2 hours
Minimum weeks per semester	15 weeks (Including classwork, examination, preparation & holidays)
Effective from	2025-2026
Purpose of Course	This course is designed to provide students with a comprehensive understanding of the principles, techniques, and technologies involved in packaging and preserving food products. The course aims to equip students with the knowledge and skills necessary to ensure the safety, quality, and extended shelf-life of food through proper packaging and preservation methods.
Course Objective	The purpose of this course is to give students an understanding of the basics of food preservation and food packaging. The students will learn about numerous techniques for extending the shelf life of different food products.
Course Outcomes	CO1: Students will be able to analyse the requirements of packaging materials, classify different packaging materials, understand the interaction between packaging materials and foods, design packaging systems, ensure packet closure and integrity, and evaluate the environmental impacts of packaging. CO2: Students will be able to recognize and understand the sources of contamination and signs of spoilage specific to eggs, vegetables, fruits, sugars and sugar products, fish and other seafood, milk and milk-based products, and miscellaneous food items. Students will be also able to understand and apply the general principles of food preservation, including preservation by high and low temperature, drying, food additives and radiation.
Mapping between COs with PSOs	
Pre-requisite	Basic Science

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1								
CO2								

Course Content	**UNIT-1: Food Packaging:** Requirements of packaging materials, Classification and Properties of Packaging Materials, Interaction between packaging materials and foods, Packaging systems, Packet closure and integrity, Environmental impacts of packaging, Introduction types of packaging: Primary, Secondary, Tertiary, Modified Atmosphere Packaging (MAP), Intelligent, Smart, Active Packaging Systems. Safety and legislative aspects of packaging: Regulatory considerations, plastic, metal, paper and glass packaging.	Teaching Hours: 12 h
	UNIT-2: Food Spoilage and Preservation: **a. Spoilage of Food** Types of contamination: Biological, chemical & physical, sources, types and perishability of foods; Causes and types of food spoilage; Factors affecting food spoilage – extrinsic and intrinsic factors, Foodborne illness. **b. Food Preservation** General Principles of Food Preservation, Preservation by Heat treatment (blanching, canning, pasteurization & sterilization), Preservation by Low Temperature, Preservation by Drying & Dehydration, Preservation by Salt and Sugar, Preservation by Chemicals: Antioxidants, mould inhibitors, acidulants, Hurdle technology. Preservation by Irradiation, Overview on non-thermal preservation processes: Pulsed electric field, high pressure processing, microwave processing, ultrasound, ohmic heating, infrared heating.	Teaching Hours: 18 h
Reference Books	• Campbell-Plat, G. 1st Edition, (2010). Food Science & Technology, Wiley-Blackwell. ISBN 978-0-632-06421-2. • Frazier, W.C., & Westhoff, D.C. (1988). Food Microbiology. McGraw-Hill. ISBN 978-1-259-062513 • James M. Jay, Martin J. Loessner, David A. Golden (2005). 7th Edition, Modern Food Microbiology, Springer. ISBN 978-81-8128-528-7.	
e-learning resources	• https://link.springer.com/book/10.1007/978-1-4419-0826-1 • https://www.vivekanandcollege.ac.in/uploads/dptmicrobiology/ebooks/food-microbiology-by-wc-frazier-.pdf • https://zlib.pub/book/food-science-and-technology-5oq0stv3fi30 • https://bcs.wiley.com/hebcs/Books?action=index&bcsId=5112&itemId=0632064218	
Teaching Methodology	Classwork, Discussion, Self-Study, Projects, Seminars and/or Assignment	
Evaluation Method	50% Internal assessment based on class attendance, participation, class test, quiz, assignment, seminar, internal examination, etc. 50% External based on semester end University examination.	