



DEPARTMENT OF FOOD TECHNOLOGY
REGULATION 2017
COURSE OUTCOMES

Course Code: HS8151

Course: COMMUNICATIVE ENGLISH

On completion of this course the students will be able to

HS8151.1	Read articles of a general kind in magazines and newspapers.
HS8151.2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
HS8151.3	Comprehend conversations and short talks delivered in English
HS8151.4	Write short essays of a general kind and personal letters and emails in English.

Course Code: MA8151

Course: ENGINEERING MATHEMATICS – I

On completion of this course the students will be able to

MA8151.1	Use both the limit definition and rules of differentiation to differentiate functions.
MA8151.2	Apply differentiation to solve maxima and minima problems.
MA8151.3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
MA8151.4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
MA8151.5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
MA8151.6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
MA8151.7	Apply various techniques in solving differential equations.

Course Code: PH8151

Course: ENGINEERING PHYSICS

On completion of this course the students will be able to

PH8151.1	the students will gain knowledge on the basics of properties of matter and its applications
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PH8151.2	the students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics
PH8151.3	the students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
PH8151.4	the students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
PH8151.5	the students will understand the basics of crystals their structures and different crystal growth techniques.

Course Code: CY8151

Course: ENGINEERING CHEMISTRY

On completion of this course the students will be able to

CY8151.1	To make the students conversant with boiler feed water requirements, related problems and water treatment techniques.
CY8151.2	To develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys.
CY8151.3	Preparation, properties and applications of engineering materials.
CY8151.4	Types of fuels, calorific value calculations, manufacture of solid, liquid and gaseous fuels.
CY8151.5	Principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.
CY8151.6	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

Course Code: GE8151

Course: PROBLEM SOLVING AND PYTHON PROGRAMMING

On completion of this course the students will be able to

GE8151.1	Develop algorithmic solutions to simple computational problems
GE8151.2	Read, write, execute by hand simple Python programs.
GE8151.3	Structure simple Python programs for solving problems.
GE8151.4	Decompose a Python program into functions.
GE8151.5	Represent compound data using Python lists, tuples, dictionaries.
GE8151.6	Read and write data from/to files in Python Programs.

Course Code: GE8152

Course: ENGINEERING GRAPHICS

On completion of this course the students will be able to

GE8152.1	familiarize with the fundamentals and standards of Engineering graphics
GE8152.2	perform freehand sketching of basic geometrical constructions and multiple views of objects.
GE8152.3	project orthographic projections of lines and plane surfaces.
GE8152.4	draw projections and solids and development of surfaces.
GE8152.5	visualize and to project isometric and perspective sections of simple solids.

Course Code: GE8161

Course: PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

On completion of this course the students will be able to

GE8161.1	Write, test, and debug simple Python programs.
GE8161.2	Implement Python programs with conditionals and loops.
GE8161.3	Develop Python programs step-wise by defining functions and calling them.
GE8161.4	Use Python lists, tuples, dictionaries for representing compound data.
GE8161.5	Read and write data from/to files in Python.

Course Code: BS8161

Course: PHYSICS AND CHEMISTRY LABORATORY

On completion of this course the students will be able to

BS8161.1	introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics, properties of matter and liquids
BS8161.2	apply principles of elasticity, optics and thermal properties for engineering applications.
BS8161.3	acquire practical skills in the determination of water quality
BS8161.4	acquaint the students with the determination of molecular weight of polymer by viscometry.

Course Code: HS8251

Course: TECHNICAL ENGLISH

On completion of this course the students will be able to

HS8251.1	Read technical texts and write area- specific texts effortlessly.
HS8251.2	Listen and comprehend lectures and talks in their area of specialisation successfully.
HS8251.3	Speak appropriately and effectively in varied formal and informal contexts.
HS8251.4	Write reports and winning job applications.

Course Code: MA8251

Course: ENGINEERING MATHEMATICS – II

On completion of this course the students will be able to

MA8251.1	Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
MA8251.2	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
MA8251.3	Analytic functions, conformal mapping and complex integration.
MA8251.4	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients

Course Code: PH8254

Course: PHYSICS OF MATERIALS

On completion of this course the students will be able to

PH8254.1	gain knowledge on phase diagrams and various material processing methods,
PH8254.2	acquire knowledge on basics of conducting materials, superconductors and their applications
PH8254.3	get knowledge on the functioning of semiconducting materials and their applications in LED and solar cells,
PH8254.4	understand the functioning of various dielectric and magnetic materials ,
PH8254.5	have the necessary understanding on various advanced materials.

Course Code: BE8252

Course: BASIC CIVIL AND MECHANICAL ENGINEERING

On completion of this course the students will be able to

BE8252.1	appreciate the Civil and Mechanical Engineering components of Projects.
BE8252.2	explain the usage of construction material and proper selection of construction materials.
BE8252.3	measure distances and area by surveying
BE8252.4	identify the components used in power plant cycle.
BE8252.5	demonstrate working principles of petrol and diesel engine.
BE8252.6	elaborate the components of refrigeration and Air conditioning cycle.

Course Code: BT8291

Course: MICROBIOLOGY

On completion of this course the students will be able to

BT8291.1	To introduce students to the principles of Microbiology to emphasize structure and biochemical aspects of various microbes.
BT8291.2	To solve the problems in microbial infection and their control.

Course Code: FD8201

Course: BIOCHEMISTRY

On completion of this course the students will be able to

FD8201.1	To ensure students have a strong foundation in the structure and reactions of Biomolecules.
FD8201.2	To introduce them to metabolic pathways of the major biomolecules and relevance to clinical conditions.
FD8201.3	To correlate Biochemical processes with Biotechnology applications.

Course Code: GE8261

Course: ENGINEERING PRACTICES LABORATORY

On completion of this course the students will be able to

GE8261.1	fabricate carpentry components and pipe connections including plumbing works.
GE8261.2	use welding equipments to join the structures.
GE8261.3	Carry out the basic machining operations
GE8261.4	Make the models using sheet metal works
GE8261.5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings Carry out basic home electrical works and appliances
GE8261.6	Measure the electrical quantities
GE8261.7	Elaborate on the components, gates, soldering practices

Course Code: BT8261

Course: BIOCHEMISTRY LABORATORY

On completion of this course the students will be able to

BT8261.1	To learn and understand the principles behind the qualitative and quantitative estimation of biomolecules (proteins, carbohydrates, lipids, metabolites etc.,) and laboratory analysis of the same in the body fluids.
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Course Code: MA8353

Course: TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

On completion of this course the students will be able to

MA8353.1	Understand how to solve the given standard partial differential equations.
MA8353.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
MA8353.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
MA8353.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
MA8353.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Code: FD8301

Course: INTRODUCTION TO FOOD PROCESSING

On completion of this course the students will be able to

FD8301.1	Be aware of the different methods applied to processing foods.
FD8301.2	Be able to understand the significance of food processing and the role of food and beverage industries in the supply of foods.

Course Code: FD8302

Course: FOOD PROCESS CALCULATIONS

On completion of this course the students will be able to

FD8302.1	Learn Units and Dimensions: Basic and derived units, use of model units in calculations
FD8302.2	Learn Methods of expression, compositions of mixture and solutions. Ideal and real gas laws – Gas constant - calculations of pressure, volume and temperature using ideal gas law

Course Code: FD8303**Course: FOOD MICROBIOLOGY****On completion of this course the students will be able to**

FD8303.1	Be able to understand and identify the various microbes associated with foods and food groups.
FD8303.2	Be able to understand and identify the role of these microbes in food spoilage, food preservation.
FD8303.3	Understand the role of pathogens in food borne infections. • Understand the methods used to detect pathogens in foods.

Course Code: FD8304**Course: PRINCIPLES OF FLUID MECHANICS****On completion of this course the students will be able to**

FD8304.1	The students will be able to get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.
FD8304.2	They will also gain the knowledge of the applicability of physical laws in addressing problems in hydraulics.

Course Code: FD8305**Course: FOOD CHEMISTRY AND NUTRITION****On completion of this course the students will be able to**

FD8305.1	Be able to understand and identify the various food groups; the nutrient components (macro and micro), proximate composition.
FD8305.2	Be able to understand and identify the non-nutritive components in food, naturally present.
FD8305.3	Understand and use effectively, food composition tables and databases.
FD8305.4	Grasp the functional role of food components and their interaction in food products in terms of colour, flavour, texture and nutrient composition

Course Code: FD8311**Course: FOOD MICROBIOLOGY LABORATORY****On completion of this course the students will be able to**

FD8311.1	Complete understanding of isolation, characterization of various microbes associated with foods and food groups.
FD8311.2	Familiarize with microbiological techniques for the study of foods.
FD8311.3	Better understanding of methods to detect pathogens in foods.

Course Code: FD8312

Course: FOOD CHEMISTRY AND NUTRITION LABORATORY

On completion of this course the students will be able to

FD8312.1	Better understanding the physical and chemical properties of food. Familiarize in precipitation of casein and gellation of starch.
FD8312.2	Understanding the food groups, constituents of food, energy from food
FD8312.3	Exposing to nutritional assessment, food constituents and their daily dietary allowances

Course Code: HS8381

Course: INTERPERSONAL SKILLS/LISTENING AND SPEAKING

On completion of this course the students will be able to

HS8381.1	Listen and respond appropriately.
HS8381.2	Participate in group discussions
HS8381.3	Make effective presentations
HS8381.4	Participate confidently and appropriately in conversations both formal and informal

Course Code: MA8391

Course: PROBABILITY AND STATISTICS

On completion of this course the students will be able to

MA8391.1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
MA8391.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
MA8391.3	Apply the concept of testing of hypothesis for small and large samples in real life problems.
MA8391.4	Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control.
MA8391.5	Have the notion of sampling distributions and statistical techniques used in engineering and management problems.

Course Code: FD8401

Course: FOOD ANALYSIS

On completion of this course the students will be able to

FD8401.1	To understand the principles behind analytical techniques in food analysis.
FD8401.2	To know the methods of selecting appropriate techniques in the analysis of food products.
FD8401.3	Appreciate the role of food analysis in food standards and regulations for the manufacture

	and the sale of food products and food quality control in food industries.
FD8401.4	To familiarize with the current state of knowledge in food analysis.

Course Code: FD8491

Course: FUNDAMENTALS OF HEAT AND MASS TRANSFER

On completion of this course the students will be able to

FD8491.1	To understand and apply the principles in heat transfer phenomena
FD8491.2	To understand and apply the principles in mass transfer phenomena To design heat and mass transfer equipments.

Course Code: GE8291

Course: ENVIRONMENTAL SCIENCE AND ENGINEERING

On completion of this course the students will be able to

GE8291.1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
GE8291.2	Public awareness of environmental is at infant stage.
GE8291.3	Ignorance and incomplete knowledge has lead to misconceptions
GE8291.4	Development and improvement in std. of living has lead to serious environmental disasters

Course Code: FD8402

Course: THERMODYNAMICS

On completion of this course the students will be able to

FD8402.1	To introduce fundamental thermodynamic principles and their application.
FD8402.2	Students will learn laws of thermodynamics, thermodynamic property relations and their application to fluid flow, power generation and refrigeration processes.

Course Code: FD8403

Course: UNIT OPERATIONS FOR FOOD INDUSTRIES

On completion of this course the students will be able to

FD8403.1	understand the principles involved in separation methods.
FD8403.2	understand Principles of separation methods used in the process industry. To appreciate different equipments developed for separation.

Course Code: FD8411**Course: FOOD ANALYSIS LABORATORY****On completion of this course the students will be able to**

FD8411.1	Better understanding in analysis of foods and food products for chemical components. Knowing standards for food products.
FD8411.2	Obtain knowledge of adulterants in foods.

Course Code: FD8412**Course: UNIT OPERATIONS LABORATORY****On completion of this course the students will be able to**

FD8412.1	Have knowledge on the basic principles of chemical engineering and its applications.
FD8412.2	Be able to apply the skill of material balance and energy balance in unit operations unit process

Course Code: HS8461**Course: ADVANCED READING AND WRITING****On completion of this course the students will be able to**

HS8461.1	Write different types of essays.
HS8461.2	Write winning job applications.
HS8461.3	Read and evaluate texts critically.
HS8461.4	Display critical thinking in various professional contexts.

Course Code: FD8501**Course: FOOD ADDITIVES****On completion of this course the students will be able to**

FD8501.1	To understand the principles of chemical preservation of foods
FD8501.2	To understand the role of different food additives in the processing of different foods and their specific functions in improving the shelf life, quality, texture and other physical and sensory characteristics of foods
FD8501.3	To know the regulations and the monitoring agencies involved in controlling the safer use of additives in foods

Course Code: FD8502**Course: BIOCHEMICAL ENGINEERING FOR FOOD TECHNOLOGISTS****On completion of this course the students will be able to**

FD8502.1	Understand the fundamentals of Enzyme kinetics
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FD8502.2	Inhibition kinetics and Immobilization Understand the concept of basic fermentation processes and its application during scaleup operations.
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Course Code: FD8503

Course: REFRIGERATION AND COLD CHAIN MANAGEMENT

On completion of this course the students will be able to

FD8503.1	the operations in different Refrigeration & cold storage systems and also able to design Refrigeration & cold storage systems.
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Course Code: FD8504

Course: FOOD PROCESSING AND PRESERVATION

On completion of this course the students will be able to

FD8504.1	To understand the principles of food processing and preservation.
FD8504.2	To understand the role of different methods the processing of different foods and their impact on the shelf life, quality, and other physical and sensory characteristics of foods.
FD8504.3	To familiarize with the recent methods of minimal processing of foods To understand the materials and types of packaging for foods

Course Code: FD8003

Course: TRADITIONAL FOODS

On completion of this course the students will be able to

FD8003.1	To understand the historical and traditional perspective of foods and food habits
FD8003.2	To understand the wide diversity and common features of traditional Indian foods and meal patterns.

Course Code: OAI551

Course: ENVIRONMENT AND AGRICULTURE

On completion of this course the students will be able to

OAI551.1	Students will appreciate the role of environment in the current practice of agriculture and concerns of sustainability, especially in the context of climate change and emerging global issues.
OAI551.2	Ecological context of agriculture and its concerns will be understood

Course Code: FD8511

Course: FOOD PROCESSING AND PRESERVATION LABORATORY

On completion of this course the students will be able to

FD8511.1	Ability to select the specific preservation technology suitable for a specific food
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FD8511.2	Ability to Process the different categories of food
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Course Code: FD8512

Course: BIOCHEMICAL ENGINEERING LABORATORY

On completion of this course the students will be able to

FD8512.1	To sterilize a bioreactor
FD8512.2	To operate a bioreactor
FD8512.3	To design experiments to evaluate the performance of the bioreactor.
FD8512.4	To develop enzyme immobilized processes.

Course Code: HS8581

Course: PROFESSIONAL COMMUNICATION

On completion of this course the students will be able to

HS8581.1	Make effective presentations
HS8581.2	Participate confidently in Group Discussions.
HS8581.3	Attend job interviews and be successful in them.
HS8581.4	Develop adequate Soft Skills required for the workplace

Course Code: FD8601

Course: FOOD PROCESS ENGINEERING AND ECONOMICS

On completion of this course the students will be able to

FD8601.1	Students will understand the importance of quality control and food packaging in shelf life of foods.
FD8601.2	Understand thermal processing of food and hygiene practices in food industry.

Course Code: FD8602

Course: BAKING AND CONFECTIONERY TECHNOLOGY

On completion of this course the students will be able to

FD8602.1	Better understanding of process technology of bakery and confectionery products
FD8602.2	Complete learning - use of sanitation and safety practices in bakery and confectionery production

Course Code: FD8603

Course: FRUITS AND VEGETABLE PROCESSING TECHNOLOGY

On completion of this course the students will be able to

FD8603.1	Better understanding of the concepts of physiological characteristics of fruits and vegetables Better insight about fruit losses during storage and ways to prevent it.
FD8603.2	Thorough Knowledge and understandings of the specific processing technologies used for different foods and the various products derived from these materials.

Course Code: FD8006

Course: FOOD TOXICOLOGY AND ALLERGY

On completion of this course the students will be able to

FD8006.1	Familiarize with hazards, and toxicity associated with food and their implications for health.
FD8006.2	Know the various kinds of allergens and basis of allergic reactions
FD8006.3	Be familiar with various natural toxins in food.
FD8006.4	Awareness about the different types of allergens and Natural toxins associated with food

Course Code: GE8076

Course: PROFESSIONAL ETHICS IN ENGINEERING

On completion of this course the students will be able to

GE8076.1	apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
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Course Code: FD8010

Course: MEAT, FISH AND POULTRY PROCESSING TECHNOLOGY

On completion of this course the students will be able to

FD8010.1	Be able to understand and identify the specific processing technologies used for meat and such foods and the various products derived from these materials.
FD8010.2	Grasp the changes in the composition of foods with respect to the type of processing technology used.

Course Code: FD8611**Course: FRUITS AND VEGETABLE PROCESSING TECHNOLOGY LABORATORY****On completion of this course the students will be able to**

FD8611.1	Use of various techniques and additives for fruit and vegetable processing and quality analysis
FD8611.2	On the completion of the course, the students will be able to get experience on fruit and vegetable process technology.

Course Code: FD8612**Course: BAKING AND CONFECTIONERY TECHNOLOGY LABORATORY****On completion of this course the students will be able to**

FD8612.1	This course will enable the student to acquaint with the preparation of various bakery products and perform quality analysis for the same
FD8612.2	Study of ingredients (major and minor): characteristics of flour, yeast, shortening, sugar, egg and salts.
FD8612.3	Determination sedimentation value of flour

Course Code: FD8701**Course: DAIRY PROCESS TECHNOLOGY****On completion of this course the students will be able to**

FD8701.1	The students will gain knowledge about dairy processing and understand the manufacturing processes of various dairy products
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Course Code: FD8702**Course: FOOD SAFETY, QUALITY AND REGULATION****On completion of this course the students will be able to**

FD8702.1	Thorough Knowledge of food hazards, physical, chemical and biological in the industry and food service establishments
FD8702.2	Awareness on regulatory and statutory bodies in India and the world

Course Code: FD8703**Course: FOOD PACKAGING TECHNOLOGY****On completion of this course the students will be able to**

FD8703.1	The different types of materials and media used for packaging foods.
FD8703.2	Hazards and toxicity associated with packaging materials and laws, regulations and the

	monitoring agencies involved food safety, labelling of foods
FD8703.3	Methods of packaging, shelf life and food factors affecting packaging

Course Code: BT8751

Course: DOWNSTREAM PROCESSING

On completion of this course the students will be able to

BT8751.1	Define the fundamentals of downstream processing for product recovery
BT8751.2	Understand the requirements for successful operations of downstream processing
BT8751.3	Describe the components of downstream equipment and explain the purpose of each
BT8751.4	Apply principles of various unit operations used in downstream processing and enhance problem solving techniques

Course Code: FD8018

Course: MANAGEMENT OF FOOD WASTE

On completion of this course the students will be able to

FD8018.1	Awareness of Importance in treating waste product from food industry.
FD8018.2	Acquire Knowledge of Treatment methods and recycling of waste product from food industry

Course Code: OME754

Course: INDUSTRIAL SAFETY

On completion of this course the students will be able to

OME754.1	understand engineering fundamentals and safety management practices.
OME754.2	Students must be able to identify and prevent chemical, environmental mechanical, fire hazard through analysis and apply proper safety techniques on safety engineering and management.

Course Code: FD8711

Course: TESTING OF PACKAGING MATERIALS LABORATORY

On completion of this course the students will be able to

FD8711.1	get experience on testing food packaging materials to assure quality of foods.
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Course Code: FD8712

Course: DAIRY PROCESS TECHNOLOGY LABORATORY

On completion of this course the students will be able to

FD8712.1	get experience on dairy process technology.
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