DEPARTMENT OF BME

2021 REGULATION

HS3151PROFESSIONAL ENGLISH – I

C101.1	**To use appropriate words in a professional context.**
C101.2	**To understand the basic grammatical structures and use them in right context.**
C101.3	**To read and infer the denotative and connotative meanings of technical texts**
C101.4	**To write definitions, descriptions, narrations and essays on various topics**
C101.5	**Interpret different genres of texts adopting various reading strategies and to write comprehensively.**

MA3151 MATRICES AND CALCULUS

C102.1	**To develop matrix algebra methods for solving practical problems**
C102.2	**Apply differential calculus tools in solving various application problems**
C102.3	**Able to use differential calculus ideas on several variable functions.**
C102.4	**Apply different methods of integration in solving practical problems.**
C102.5	**Apply multiple integral ideas in solving areas, volumes and other practical problems**

PH3151 ENGINEERING PHYSICS

C103.1	**Understand the importance of mechanics**
C103.2	**Express their knowledge in electromagnetic waves.**

C103.3	**Demonstrate a strong foundational knowledge in oscillations, optics and lasers.**
C103.4	**Understand the importance of quantum physics.**
C103.5	**Comprehend and apply quantum mechanical principles towards the formation of energy bands.**

CY3151 ENGINEERING CHEMISTRY

C104.1	**To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.**
C104.2	**To identify and apply basic concepts of nano science and nanotechnology in designing the synthesis of nano materials for engineering and technology applications.**
C104.3	**To apply the knowledge of phase rule and composites for material selection requirements.**
C104.4	**To recommend suitable fuels for engineering processes and applications**
C104.5	**To recognize different forms of energy resources and apply them for suitable applications in energy sectors.**

GE3151 PROBLEM SOLVING AND PYTHON PROGRAMMING

C105.1	**Develop algorithmic solutions to simple computational problems**
C105.2	**Develop and execute simple Python programs**
C105.3	**Ability to Write simple Python programs using conditionals and loops for solving problems**
C105.4	**Decompose a Python program into functions.**
C105.5	**Explain compound data using Python lists, tuples, dictionaries etc.**

GE3171-PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

C106.1	**Develop algorithmic solutions to simple computational problems**
C106.2	**Develop and execute simple Python programs.**
C106.3	**Implement programs in Python using conditionals and loops for solving problems**
C106.4	**Explain Deploy functions to decompose a Python program**
C106.5	**Explain Process compound data using Python data structures**

BS3171 PHYSICS AND CHEMISTRY LABORATORY

C107.1	**To analyse the quality of water samples with respect to their acidity, alkalinity, hardness.**
C107.2	**To determine the amount of metal ions through volumetric and spectroscopic techniques.**
C107.3	**Apply mathematical models as a medium for quantitative reasoning and describing physical reality.**
C107.4	**To learn simple method of synthesis of nano particles.**
C107.5	**Ability to Access, process and analyze scientific information.**

GE3172ENGLISH LABORATORY

C108.1	**To listen and comprehend complex academic texts.**
C108.2	**To speak fluently and accurately in formal and informal communicative contexts.**
C108.3	**To express their opinions effectively in both oral and written medium of communication.**
C108.4	**Ability to listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings and write reports and winning job applications.**
C108.5	**Ability to identify, define and express the different components of grammar and Speak appropriately and effectively in varied formal and informal contexts.**

HS3251 PROFESSIONAL ENGLISH -II

C109.1	**To compare and contrast products and ideas in technical texts.**
C109.2	**To identify cause and effects in events, industrial processes through technical texts**
C109.3	**To analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format.**
C109.4	**To report events and the processes of technical and industrial nature.**
C109.5	**To present their opinions in a planned and logical manner, and draft effective resumes in context of job search.**

MA3251 STATISTICS AND NUMERICAL METHODS

C110.1	**Apply the concept of testing of hypothesis for small and large samples in real life problems.**
C110.2	**Apply the basic concepts of classifications of design of experiments in the field of agriculture.**
C110.3	**Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.**
C110.4	**Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations**
C110.5	**Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.**

BM3251BIOSCIENCES FOR MEDICAL ENGINEERING

C111.1	**Explain the fundamentals of biochemistry.**
C111.2	**Analyze structural and functional aspects of living organisms**
C111.3	**Explain the function of microscope**
C111.4	**Describe methods involved in treating the pathological diseases**
C111.5	**Apply knowledge on structural and functional aspects of living organisms**

BE3251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

C112.1	Compute the electric circuit parameters for simple problems.
C112.2	Explain the working principle and applications of electrical machines.
C112.3	Analyze the characteristics of analog electronic devices.
C112.4	Explain the basic concepts of digital electronics.
C112.5	Explain operating principles of measuring instruments

BM3252 MEDICAL PHYSICS

C113.1	Interpret the properties of electromagnetic radiations and its effect on human
C113.2	Apply the principles and understand the production of radioactive nuclides.
C113.3	Explain the interaction of radiation with matter
C113.4	Identify and Analyse the radiation quantities and its effects
C113.5	Demonstrate the knowledge on the properties of sound and its application in medicine.

GE3251 ENGINEERING GRAPHICS

C114.1	Use BIS conventions and specifications for engineering drawing
C114.2	Construct the conic curves, involutes and cycloid
C114.3	Solve practical problems involving projection of lines
C114.4	Draw the orthographic, isometric and perspective projections of simple solids
C114.5	Ability to develop a simple solids

GE3271 ENGINEERING PRACTICES LABORATORY

C115.1	Construct a pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work

C115.2	**Explain various electrical joints in common household electrical wire work.**
C115.3	**Explain various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments**
C115.4	**Ability to make a tray out of metal sheet using sheet metal work.**
C115.5	**Ability to Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.**

BM3271 BIOSCIENCES LABORATORY

C116.1	**Ability to understand the Biochemistry laboratory functional components**
C116.2	**Apply knowledge of qualitative test of different biomolecules.**
C116.3	**Ability to Understand the basics knowledge of Biochemical parameter and their interpretation in Blood sample.**
C116.4	**Apply knowledge of separation technology of proteins and amino acids.**
C116.5	**Student can perform practical experiments on staining Processes**

GE3272 Communication Laboratory / Foreign Language

C117.1	**Ability to speak effectively in group discussions held in a formal/semi formal contexts.**
C117.2	**Able to write emails and effective job applications**
C117.3	**Identify varied group discussion skills and apply them to take part in effective discussions in a professional context**
C117.4	**Able to communicate effectively through writing**
C117.5	**Able to use appropriate words in a professional context**

MA3351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

C201.1	**Ability to understand how to solve the given standard partial differential equations..**
C201.2	**Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.**
C201.3	**Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations**
C201.4	**Explain 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.**
C201.5	**Explain the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems**

BM3353 FUNDAMENTALS OF ELECTRONIC DEVICES AND CIRCUITS

C202.1	**Analyze the characteristics of semiconductor diodes..**
C202.2	**Analyze and solve problems of Transistor circuits using model parameters.**
C202.3	**Identify and characterize diodes and various types of transistors.**
C202.4	**Analyze the characteristics of special semiconductor devices.**
C202.5	**Analyze the characteristics of Power and Display Devices.**

BM3301SENSORS AND MEASUREMENTS

C203.1	**Measure various electrical parameters with accuracy, precision, resolution.**
C203.2	**Explain appropriate passive or active transducers for measurement of physical phenomenon.**
C203.3	**Explain appropriate light sensors for measurement of physical phenomenon**

C203.4	**Ability to use AC and DC bridges for relevant parameter measurement.**
C203.5	**Employ multimeter, CRO and different types of recorders for appropriate measurement**

BM3352 ELECTRIC CIRCUIT ANALYSIS

C204.1	**Comprehend and design ac/dc circuits.**
C204.2	**Apply circuit theorems in real time.**
C204.3	**Evaluate ac/dc circuits.**
C204.4	**Analyse the electrical circuits**
C204.5	**Develop and understand ac/dc circuits**

BM3351 ANATOMY AND HUMAN PHYSIOLOGY

C205.1	**Identify and explain basic elements of human body**
C205.2	**Explain the functions of skeletal and muscular system**
C205.3	**Describe the structure, function of cardiovascular system and respiratory system**
C205.4	**Discuss the structure of digestive and excretory system**
C205.5	**Describe the physiological process of Nervous and sensory system**

CS3391 OBJECT ORIENTED PROGRAMMING

C206.1	**Apply the concepts of classes and objects to solve simple problems**
C206.2	**Develop programs using inheritance, packages and interfaces**
C206.3	**Apply the exception handling mechanisms and multithreaded model to solve real world problems**
C206.4	**Develop Java applications with I/O packages, string classes, Collections and generics concepts**
C206.5	**Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications**

CS3381 OBJECT ORIENTED PROGRAMMING LABORATORY

C207.1	**Design and develop java programs using object oriented programming concepts**
C207.2	**Develop simple applications using object oriented concepts such as package, exceptions**
C207.3	**Implement multithreading, and generics concepts.**
C207.4	**Create GUIs and event driven programming applications for real world problems**
C207.5	**Implement and deploy web applications using Java**

BM3361FUNDAMENTALS OF ELECTRONIC DEVICES AND CIRCUITS LABORATORY

C208.1	**Develop the VI characteristics of given PN junction diode, Zener diode, Photo diode and Silicon Controlled Rectifier.**
C208.2	**Develop and determine the Input & output characteristics of BJT**
C208.3	**Develop and test half wave and full wave rectifier circuit using PN Junction diode and obtain the ripple factor, rectifier efficiency and experiment and test voltage regulation characteristics using Zener diode voltage regulator circuit.**
C208.4	**Develop and test the given electric circuit using Kirchhoff's laws and obtain the mesh current & node voltage and obtain the load current for the given circuit using Superposition, Thevenin's, and Norton's and Reciprocity theorems**
C208.5	**Design and test RLC series and parallel circuits to compute the resonant frequency and bandwidth by plotting the frequency response**

GE3361 PROFESSIONAL DEVELOPMENT

C209.1	**Create quality documents, by structuring and organizing content for their day to day technical and academic requirements by using MS WORD.**

C209.2	**To perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding BY USING MS EXCEL.**
C209.3	**To create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects BY USING MS PowerPoint.**
C209.4	**Ability to organize the content for their day to day technical and academic requirements by using Ms WORD.**
C209.5	**To create common tables, charts and using media objects by using Ms PowerPoint.**

BM3311 SENSORS AND MEASUREMENTS LABORATORY

C210.1	**Design and understand characteristics and calibration of various transducers.**
C210.2	**Design and develop bridge circuits to find unknown variables.**
C210.3	**Ability to select proper transducer for various applications.**
C210.4	**Ability to understand various read out and display devices.**
C210.5	**Design a measurement system for various applications**

MA3355 RANDOM PROCESSES AND LINEAR ALGEBRA

C211.1	**Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.**
C211.2	**Demonstrate accurate and efficient use of advanced algebraic techniques.**
C211.3	**Apply the concept of random processes in engineering disciplines**
C211.4	**Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.**
C211.5	**Explain basic concepts of one and two dimensional random variables**

	and apply them to model engineering problems.

BM3491 BIOMEDICAL INSTRUMENTATION

C212.1	**Illustrate the origin of various biological signals and their characteristics.**
C212.2	**Ability to use knowledge on characteristics of bio signals.**
C212.3	**Explain various amplifiers involved in monitoring and transmission of biosignals.**
C212.4	**Explain the different measurement techniques for non-electrical bio-parameters**
C212.5	**Explain the biochemical measurement techniques as applicable for diagnosis and further treatment**

BM3402 ANALOG AND DIGITAL INTEGRATED CIRCUITS

C213.1	**Design new analog linear circuits and develop linear IC based Systems.**
C213.2	**Apply the concept of ADC and DAC in real time systems and Phase Locked Loop with applications**
C213.3	**Ability to use Boolean algebra and apply it to digital systems.**
C213.4	**Design various combinational digital circuits using logic gates.**
C213.5	**Develop the analysis and design procedures for synchronous and asynchronous sequential circuits.**

BM3451 BIO CONTROL SYSTEMS

C214.1	**Interpret the need for mathematical modeling of various systems, representation of systems in block diagrams and signal flow graphs and are introduced to biological control systems**
C214.2	**Determine the time response of various systems**

C214.3	**Discuss the concept of system stability**
C214.4	**Examine the frequency response characteristics of various systems using different charts**
C214.5	**Appraise the concept of modeling basic physiological systems**

BM3401 SIGNAL PROCESSING

C215.1	**To classify the continuous time and discrete time signals and systems.**
C215.2	**To analyze the signals in both continuous time and discrete time**
C215.3	**To apply DFT for the analysis of digital signals & systems**
C215.4	**To design IIR filter to process real world signals.**
C215.5	**To design FIR filter to process real world signals.**

GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

C216.1	**Create public awareness of environmental is at infant stage**
C216.2	**Understand the problem posed by Environmental Pollution which cannot be solved by mere laws**
C216.3	**Comprehend the natural resources available to us**
C216.4	**Analyze and provide judgmental solutions to prevailing social issues in the environment**
C216.5	**Develop and improve standard of living**

BM3411 BIOMEDICAL INSTRUMENTATION LABORATORY

C217.1	**Design the amplifier for Bio signal measurements**
C217.2	**Explain how to Measure heart rate and heart sounds.**
C217.3	**Implement and analyze pulse rate and respiration rate**
C217.4	**Explain how to Measure blood pressure and blood flow**

C217.5	**Design isolation amplifier**

BM3412 ANALOG AND DIGITAL INTEGRATED CIRCUITS LABORATORY

C218.1	**Design Combinational Circuits using logic gates**
C218.2	**Design and implement arithmetic circuits for different applications using opamp**
C218.3	**Design Sequential Circuits using logic gates**
C218.4	**Design wave form generators and analyse their characteristics**
C218.5	**Simulate and analyse circuits using ICs**