COURSE OUTCOMES OF ALL THE SUBJECTS B. TECH 1st YEAR (ODD AND EVEN SEMESTER)

Session: 2017-18

Punjab Technical University

PTU/ DA/ 17th May 2011
B. Tech. 1st & 2nd Semester Batch-2011

Physics Group **B. Tech. First Semester** **Contact Hours: 32 Hrs.**

Course Code	Course Name	Load Allocation			Marks Distribution			Credits
		L	T	P	Internal	External	Total	
BTPH101	Engineering Physics	3	1	-	40	60	100	4
BTAM101	Engineering Mathematics-I	4	1	-	40	60	100	5
BTHU101	Communicative English	3	0	-	40	60	100	3
BTEE 101	Basic Electrical and Electronics Engineering	4	1	-	40	60	100	5
HVPE101	Human Values and Professional Ethics	3	-	-	40	60	100	3
BTPH102	Engineering Physics Laboratory	-	-	2	30	20	50	1
BTHU102	Communicative English Laboratory	-	-	2	30	20	50	1
BTEE102	Basic Electrical and Electronics Engineering Laboratory	-	-	2	30	20	50	1
BTMP101	Manufacturing Practice	-	-	6	60	40	100	3
Total	5Theory Courses + 4 Laboratory Courses	17	3	12	350	400	750	26

Chemistry Group **B. Tech. First Semester** **Contact Hours: 34 Hrs**

Course Code	Course Name	Load Allocation			Marks Distribution			Credits
		L	T	P	Internal	External	Total	
BTCH 101	Engineering Chemistry	3	1	-	40	60	100	4
BTAM101	Engineering Mathematics-I	4	1	-	40	60	100	5
BTME101	Elements of Mechanical Engineering	4	1	-	40	60	100	5
BTCS 101	Fundamentals of Computer Programming and IT	3	-	-	40	60	100	3
EVSC 101	Environmental Science	2	0	-	40	60	100	2
BTCH102	Engineering Chemistry Laboratory	-	-	2	30	20	50	1
BTME102	Engineering Drawing	1	-	6	40	60	100	4
BTCS 102	Fundamentals of Computer Programming and IT Laboratory	-	-	4	30	20	50	2
BTME103	Engineering Computer Graphics Laboratory	-	-	2	30	20	50	1
Total	6Theory Courses + 3 Laboratory Courses	17	3	14	330	420	750	27

Physics Group **B. Tech. Second Semester** **Contact Hours: 32 Hrs.**

Course Code	Course Name	Load Allocation			Marks Distribution			Credits
		L	T	P	Internal	External	Total	
BTPH101	Engineering Physics	3	1	-	40	60	100	4
BTAM102	Engineering Mathematics-II	4	1	-	40	60	100	5
BTHU101	Communicative English	3	0	-	40	60	100	3
BTEE 101	Basic Electrical and Electronics Engineering	4	1	-	40	60	100	5
HVPE101	Human Values and Professional Ethics	3	-	-	40	60	100	3
BTPH102	Engineering Physics Laboratory	-	-	2	30	20	50	1
BTHU102	Communicative English Laboratory	-	-	2	30	20	50	1
BTEE102	Basic Electrical and Electronics Engineering Laboratory	-	-	2	30	20	50	1
BTMP101	Manufacturing Practice	-	-	6	60	40	100	3
Total	5Theory Courses + 4 Laboratory Courses	17	3	12	350	400	750	26

Chemistry Group **B. Tech. Second Semester** **Contact Hours: 34 Hrs.**

Course Code	Course Name	Load Allocation			Marks Distribution			Credits
		L	T	P	Internal	External	Total	
BTCH 101	Engineering Chemistry	3	1	-	40	60	100	4
BTAM102	Engineering Mathematics-II	4	1	-	40	60	100	5
BTME101	Elements of Mechanical Engineering	4	1	-	40	60	100	5
BTCS 101	Fundamentals of Computer Programming and IT	3	-	-	40	60	100	3
EVSC 101	Environmental Science	2	0	-	40	60	100	2
BTCH102	Engineering Chemistry Laboratory	-	-	2	30	20	50	1
BTME102	Engineering Drawing	1	-	6	40	60	100	4
BTCS 102	Fundamentals of Computer Programming and IT Laboratory	-	-	4	30	20	50	2
BTME103	Engineering Computer Graphics Laboratory	-	-	2	30	20	50	1
Total	6Theory Courses + 3 Laboratory Courses	17	3	14	330	420	750	27

First Semester + Second Semester + General Fitness= 750 +750+100= 1600 Marks

Engineering Physics
BTPH 101 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: understand the importance of Applied Physics in describing the physical phenomena.
CO2: employ the knowledge of crystallography and X-Rays to understand the structure-property relationship of materials.
CO3: implement the concept of Theory of relativity and Quantum mechanics for research applications.
CO4: recognize the use of Laser, Magnetic materials, Superconductors and optical fibers in various fields.
CO5: acquire Basic knowledge of EMFT in communication and Nanophysics for its applications in the field of medicine, data storage devices and electronics.

Engineering Mathematics-I
BTAM 101 COURSE OUTCOMES

After Successful completion of the course the students are expected to:

CO1: apply differential and integral calculus to evaluate definite, improper, multiple integrals and its applications.
CO2: deal with functions of several variables that are essential in most branches of engineering.
CO3: develop their attitude towards problem solving.
CO4: enhance multi-dimensional skills namely problem defining analysis, logic development, path making for solutions and selecting appropriate techniques of solution..
CO5: introduce basics of curve tracing and fitting which is helpful for students for making forecasts in the data based on theoretical distributions.

Communicative English
BTHU 101 COURSE OUTCOMES

After Successful completion of the course the students are expected to:

CO1: become the independent users of English language.
CO2: acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
CO3: understand spoken and written English language, particularly the language of their chosen technical field.
CO4: able to converse fluently.
CO5: produce on their own clear and coherent texts.

Basic Electrical and Electronics Engineering
BTEE 101 COURSE OUTCOMES

After Successful completion of the course the students are expected to:

CO1: predict the behavior of any electrical and magnetic circuits.
CO2: identify the type of electrical machine used for that particular application.
CO3: acquire knowledge about basics of digital electronics.
CO4: understand various methods of electrical generation.
CO5: identify schematic symbols and understand the working principles of electronic devices.

Environmental Science
EVSC 101 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: develop critical thinking skills in relation to environmental affairs.
CO2: acquire knowledge about natural resources and their effective management**.**
CO3: expand awareness of self in a global society and effectively engage diverse perspectives, values, and cultures, ranging from local to global, in dealing with environmental and social issues.
CO4: interpret and propose solutions to various environmental pollution.
CO5: formulate an action plan for sustainable alternatives that integrate science, humanist, and social perspectives.

Engineering Physics Laboratory
BTPH 102 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: develop skills to impart practical knowledge in real time solutions.
CO2: understand principle, concept, working and application of new technology and comparison of results with theoretical calculations.
CO3: design new experiments/instruments with practical knowledge.
CO4: gain knowledge of new concept in the solution of practical oriented problems and to understand more deep knowledge about the solution to theoretical problems.
CO5: understand measurement technology, usage of new instruments and real time applications in engineering studies.

Communication Skills Laboratory
BTHU 102 COURSE OUTCOMES

After Successful completion of the course the students are expected to:

CO1: become the independent users of English language.
CO2: acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
CO3: understand spoken and written English language, particularly the language of their chosen technical field.

CO4: able to converse fluently.
CO5: produce on their own clear and coherent texts.

Basic Electrical and Electronics Engineering Laboratory
BTEE 102 COURSE OUTCOMES

After Successful completion of the course the students are expected to:

CO1: get an exposure to common electrical components and their ratings.

CO2: make electrical connections by wires of appropriate ratings.

CO3: understand the usage of common electrical measuring instruments.

CO4: understand the basic characteristics of transformers and electrical machines.

CO5: get an exposure to the working of power electronic converters.

Manufacturing Practice
BTMP 101 COURSE OUTCOMES

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials

Engineering Chemistry
BTCH 101 COURSE OUTCOMES

After the completion of the course, the learner will be able to:

CO1: analyze the need, design and perform a set of experiments.
CO2: identify the structure of unknown/new compounds with the help of spectroscopy.
CO3: differentiate hard and soft water, solve the related numerical problems on water purification and its significance in industry and daily life.
CO4: apply the principles of green chemistry in designing alternative reaction methodologies to minimize hazards and environmental degradation.
CO5: understand the causes of corrosion, its consequences and methods to minimize corrosion to improve industrial designs.
CO6: explain the properties, separation techniques of natural gas and crude oil along with potential applications and role of petrochemicals in national economy.
CO7: acquire Basic knowledge of Nano chemistry to appreciate its applications in the field of medicine, data storage devices and electronics.
CO8: equipped with basic knowledge of polymer reinforced composites, applications of semiconductor photochemistry in energy harnessing and optical sensors.

Engineering Mathematics-II
BTAM 102 COURSE OUTCOMES

After Successful completion of the course the students will be able to:

CO1: study the convergence of sequence and series and to apply different tests of convergence.
CO2: study the essential tool of matrices and linear algebra in a comprehensive manner.
CO3: develop their attitude towards problem solving.
CO4: understand the tools of solving functions of complex variables that are used in various techniques dealing with engineering problems.
CO5: understand the effective mathematical tools for the solutions of differential equations that model physical processes.

Elements of Mechanical Engineering
BTME 101 COURSE OUTCOMES

In the vast spectrum of Mechanical Engineering, this subject gives a very primitive but general information finding vide application in day to day life with emphasis upon the principles and fundamentals involved in the inter-conversion of thermal energy into mechanical energy and vice versa, viz. all Automobile, Air-Craft, Generator and other stationary Heat Engines besides cooling machinery like Refrigerators, Air-Conditioners and water-coolers etc. The subject also offers a birds eye-view to all students about the common engineering materials finding vide application in Mechanical Engineering. Industry and about their strength and other related vital aspects. Since every student of engineering is already exposed to all afore-said machinery, he/she would feel very much self-satisfied and self-confident after learning the basic intricacies and whys and how related with the fundamentals of the aforesaid machinery.

Fundamentals of Computer Programming and IT
BTCS 101 COURSE OUTCOMES

After Successful completion of the course the students will be able to:

CO1: understand the basic building blocks of general purpose digital computer system like computer hardware/software, memory and peripheral devices, internet applications and services.
CO2: understand the program development life cycle using various tools like flowcharts and algorithms and pseudo-code.
CO3: classify operators, expressions, character set, data types and control structures.
CO4: understand the concept of modular programming and code reusability using library functions.
CO5: write programs using object oriented concepts like classes and objects, file handling.

Human values and Professional ethics
HVPE 101 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: recognize what is valuable to human being and what are the basic aspirations of life.
CO2: understand the importance of mutually satisfying human behavior and enriching interaction with nature.
CO3:develop appropriate technologies and management patterns to create harmony in Nature/Existence
CO4: implement the understanding of value education in solving the various practical problems of professional and personal life.
CO5: acquire basic knowledge of harmony in existence and to understand existence as coexistence.

Engineering Chemistry Laboratory

BTCH 102 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: analyze & generate experimental skills.

CO2: enhance the thinking capabilities in the modern trends in Engineering & Technology.

CO3: learn and apply basic techniques used in chemistry laboratory for preparation, purification and identification

CO4: employ the basic techniques used in chemistry laboratory for analyses such as Chromatography, Spectroscopy, Volumetric titrations, Conductometric, Pensky-Martens apparatus and Stalagmometer.

CO5: learn safety rules in the practice of laboratory investigations.

Engineering Drawing

BTME 102 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: prepare and understand drawings.

CO2: use the principles of orthographic projections.

CO3: by studying about projections of solids, students will be able to visualize three dimensional objects and that will enable them to design new products.

CO4: design and fabricate surfaces of different shapes.

CO5: represent the objects in three dimensional appearances.

Fundamentals of Computer Programming and IT
BTCS 102 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: explain basic operations performed by the computer system along with its internal /external structure and input /output devices.

CO2: operate various types of OS specifically GUI.

CO3: examine and categorize various types of memories.

CO4: use utility programs such as MS office, internet explorer etc.

CO5: understand and implement high-level programming in c concepts such as control structure , structures ,union and file systems.

Engineering Computer Graphics Laboratory
BTME 103 COURSE OUTCOMES

After the completion of the course the student will be able to:

CO1: prepare and understand drawings.

CO2: use the principles of orthographic projections.

CO3: by studying about projections of solids, students will be able to visualize three dimensional objects and that will enable them to design new products.

CO4: design and fabricate surfaces of different shapes.

CO5: represent the objects in three dimensional appearances.

COURSE OUTCOMES OF ALL THE SUBJECTS B. TECH 1st YEAR (ODD AND EVEN SEMESTER)

Batch 2018 onwards

Bachelors of Technology 1st and 2nd semester

First Semester **Physics Group** **Contact Hrs.: 24**

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
BTPHXX-18	Basic Science Course	Physics	3	1	0	40	60	100	4
BTPHXX-18	Basic Science Course	Physics (Lab)	0	0	3	30	20	50	1.5
BTAMXX-18	Basic Science Course	Maths-I	3*	1	0	40	60	100	4
BTEE101-18	Engineering Science Course	Basic Electrical Engineering	3	1	0	40	60	100	4
BTEE102-18	Engineering Science Course	Basic Electrical Engineering (Lab)	0	0	2	30	20	50	1
BTME101-18	Engineering Science Courses	Engineering Graphics	1	0	4	60	40	100	3
BMPD101-18		Mentoring and Professional Development	0	0	2	Satisfactory/Un-Satisfactory			Non-Credit
TOTAL			**10**	**3**	**11**	**220**	**280**	**500**	**17.5**

First Semester **Chemistry Group** **Contact Hrs.: 29**

Course Code	Course Type	Course Title	Load Allocations			Marks Distributio		Total Marks	Credits
			L	T	P	Internal	External		

BTCH101-18	Basic Science Course	Chemistry-I	3	1	0	40	60	100	4
BTCH102-18	Basic Science Course	Chemistry-I (Lab)	0	0	3	30	20	50	1.5
BTAMXX-18	Basic Science Course	Maths-I	3*	1	0	40	60	100	4
BTPS101-18	Engineering Science Course	Programming for Problem Solving	3	0	0	40	60	100	3
BTPS102-18	Engineering Science Course	Programming for Problem Solving (Lab)	0	0	4	30	20	50	2
BTMP101-18	Engineering Science Courses	Workshop/ Manufacturing Practices	1	0	4	60	40	100	3
BTHU101-18	Humanities and Social Sciences including Management courses	English	2	0	0	40	60	100	2
BTHU102-18	Humanities and Social Sciences including Management courses	English(Lab)	0	0	2	30	20	50	1
BMPD101-18		Mentoring and Professional Development	0	0	2	Satisfactory/U n-Satisfactory			Non-Credit
	TOTAL		**12**	**2**	**15**	**290**	**360**	**650**	**20.5**

Second Semester **Physics Group** **Contact Hrs.: 29**

Course Code	Course Type	Course Title	Load Allocations			Marks Distributio		Total Marks	Credits
			L	T	P	Internal	External		
BTCH101-18	Basic Science Course	Chemistry-I	3	1	0	40	60	100	4
BTCH102-18	Basic Science Course	Chemistry-I(Lab)	0	0	3	30	20	50	1.5
BTAMXX-18	Basic Science Course	Maths-II	3*	1	0	40	60	100	4
BTPS101-18	Engineering Science Course	Programming for Problem Solving	3	0	0	40	60	100	3
BTPS102-18	Engineering Science Course	Programming for Problem Solving (Lab)	0	0	4	30	20	50	2
BTMP101-18	Engineering Science Courses	Workshop/ Manufacturing Practices	1	0	4	60	40	100	3
BTHU101-18	Humanities and Social Sciences including	English	2	0	0	40	60	100	2
BTHU102-18	Humanities and Social Sciences including	English(Lab)	0	0	2	30	20	50	1
BMPD201-18		Mentoring and Professional Development	0	0	2	Satisfactory/U n-Satisfactory			Non-Credit
	TOTAL		**12**	**2**	**15**	**290**	**360**	**650**	**20.5**

Second Semester **Chemistry Group** **Contact Hrs.: 24**

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		

BTPHXX-18	Basic Science Course	Physics	3	1	0	40	60	100	4
BTPHXX-18	Basic Science Course	Physics(Lab)	0	0	3	30	20	50	1.5
BTAMXX-18	Basic Science Course	Maths-II	3*	1	0	40	60	100	4
BTEE101-18	Engineering Science Course	Basic Electrical Engineering	3	1	0	40	60	100	4
BTEE102-18	Engineering Science Course	Basic Electrical Engineering (Lab)	0	0	2	30	20	50	1
BTME101-18	Engineering Science Courses	Engineering Graphics	1	0	4	60	40	100	3
BMPD201-18		Mentoring and Professional Development	0	0	2	Satisfactory/Un-Satisfactory			Non-Credit
TOTAL			**10**	**3**	**11**	**220**	**280**	**500**	**17.5**

***These are the minimum contact hrs. allocated. The contact hrs. may be increased by institute as per the need based on the content of subject.**

BTPH 101-18
Mechanics of Solids (Civil Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: understand the vector mechanics for a classical system.
CO2: identify various types of forces in nature, frames of references, and conservation laws.
CO3: know the simple harmonic, damped, and forced simple harmonic oscillator for a mechanical system.
CO4: analyze the planar rigid body dynamics for a mechanical system.
CO5: apply the knowledge obtained in this course to the related problems.

BTPH 111-18
Mechanics of Solids Lab (Civil Engineering-I)

Course Outcomes: At the end of the course, the student will be
CO1: able to understand the concepts learned in the mechanics of solids.
CO2: learning the skills needed to verify some of the concepts of theory courses.
CO3: trained in carrying out precise measurements and handling sensitive equipment.
CO4: able to understand the principles of error analysis and develop skills in experimental design.
CO5: able to document a technical report which communicates scientific information in a clear and concise manner.

BTPH 102-18
Optics and Modern Physics (Electrical Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: identify and illustrate physical concepts and terminology used in optics and other wave phenomena.
CO2: understand optical phenomenon, such as, interference, diffraction etc. in terms of wave model.

CO3: understand the importance of wave equation in nature and appreciate the mathematical formulation of the same.
CO4: appreciate the need for quantum mechanics, wave particle duality, uncertainty principle etc. and their applications.
CO5: understand some of the basic concepts in the physics of solids and semiconductors.

BTPH 112-18
Optics and Modern Physics Lab (Electrical Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: verify some of the theoretical concepts learnt in the theory courses.
CO2: trained in carrying out precise measurements and handling sensitive equipment.
CO3: introduce to the methods used for estimating and dealing with experimental uncertainties and systematic errors.
CO4: learn to draw conclusions from data and develop skills in experimental design.
CO5: write a technical report which communicates scientific information in a clear and concise manner.

BTPH 103-18
Electromagnetism (Mecanical Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: specify the constitutive relationships for fields and understand their important.
CO2: describe the static and dynamic electric and magnetic fields for technologically important structures.
CO3: measure the voltage induced by time varying magnetic flux.
CO4:acquire the knowledge of Maxwell equation and electromagnetic field theory and propagation and reception of electro-magnetic wave systems.
CO5: have a solid foundation in engineering fundamentals required to solve problems and also pursue higher studies.

BTPH 113-18
Electromagnetism Lab (Mecanical Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: able to verify some of the theoretical concepts learnt in the theory courses.
CO2: train in carrying out precise measurements and handling sensitive equipment.
CO3: understand the methods used for estimating and dealing with experimental uncertainties and systematic "errors."
CO4: learn to draw conclusions from data and develop skills in experimental design.
CO5: write a technical report which communicates scientific information in a clear and concise manner.

BTPH 104-18
Semiconductor Physics (Computer Science Engineering/ Information Technology-I)

Course Outcomes: At the end of the course, the student will be able to

CO1: understand and explain the fundamental principles and properties of electronic materials and semiconductors
CO2: understand and describe the interaction of light with semiconductors in terms of fermi golden rule.
CO3: understand and describe the impact of solid-state device capabilities and limitations on electronic circuit performance.
CO4: understand the design, fabrication, and characterization techniques of engineered semiconductor materials.
CO5: develop the basic tools with which they can study and test the newly developed devices and other semiconductor applications.

BTPH 114-18
Semiconductor Physics Lab (Computer Science Engineering/ Information Technology-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: able to verify some of the theoretical concepts learnt in the theory courses.
CO2: train in carrying out precise measurements and handling sensitive equipment.
CO3: introduce to the methods used for estimating and dealing with experimental uncertainties and systematic "errors."
CO4: learn to draw conclusions from data and develop skills in experimental design.
CO5: write a technical report which communicates scientific information in a clear and concise manner.

BTPH 105-18
Semiconductor and Optoelectronics Physics (Electronics and communication Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: understand and explain the fundamental principles and properties of electronic materials and semiconductors.
CO2: understand and describe the interaction of light with semiconductors in terms of fermi golden rule.
CO3: understand and describe the impact of solid-state device capabilities and limitations on electronic circuit performance.
CO4: understand the design, fabrication, characterization techniques, and measurements of Engineered semiconductor materials.
CO5: learn the basics of the optoelectronic devices, LEDs, semiconductor lasers, and photo detectors.

BTPH 115-18
Semiconductor and Optoelectronics Physics Lab (Electronics and communication Engineering-I)

Course Outcomes: At the end of the course, the student will be able to
CO1: able to verify some of the theoretical concepts learnt in the theory courses.
CO2: train in carrying out precise measurements and handling sensitive equipment.
CO3: introduced to the methods used for estimating and dealing with experimental uncertainties

and systematic "errors."
CO4: learn to draw conclusions from data and develop skills in experimental design.
CO5: write a technical report which communicates scientific information in a clear and concise manner.

BTAM 101-18
Mathematics-I (Calculus & Linear Algebra) (Civil Engineering /Electrical Engineering/ Mechanical Engineering/ Electronics and communication Engineering-I)

Course Outcomes: The students will learn:
CO1: The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
CO2: To apply differential and integral calculus to evaluate definite, improper integrals and its applications.
CO3: The convergence of sequence and series and to apply different tests of convergence
CO4: To deal with functions of several variables that are essential in most branches of engineering.
CO5: The essential tool of matrices and linear algebra in a comprehensive manner.

BTAM 104-18
Mathematics Paper-I (Computer Science Engineering/ Information Technology-I)

Course Outcomes: The students will be able
CO1: to apply differential and integral calculus to notions of curvature and to improper integrals.
CO2: to have a basic understanding of Beta and Gamma functions.
CO3: to have the understanding of essential tools of matrices and linear algebra including linear transformations, eigen values, diagonalization and orthogonalization.

BTAM 201-18
Mathematics-II (Differential equations) (Civil Engineering-I)

Course Outcomes: The students will learn:
CO1: the mathematical tools needed in evaluating multiple integrals and their usage.
CO2: the effective mathematical tools for the solutions of differential equations that model physical processes.
CO3: the tools of differentiation and integration of functions that are used in various techniques dealing engineering problems.

BTAM 202-18

Mathematics-II (Differential Equations & Numerical Methods) (Electronics and communication Engineering /Electrical Engineering-I)

Course Outcomes: Students will be able to:
CO1: understand the methods which can be used to solve a variety of ordinary and partial differential equations
CO2: demonstrate knowledge of a range of applications of analytical and numerical methods
CO3: develop their attitude towards problem solving.
CO4: understand how to apply numerical methods to solve the mathematical models.

BTAM 203-18
MATHEMATICS II (Ordinary Differential Equations and Complex Variable) (Mechanical Engineering-I)

Course Outcomes: The students will learn:
CO1: the effective mathematical tools for the solutions of differential equations that model physical processes.
CO2: the tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.

BTAM 204-18
Mathematics Paper-II (Probability & Statistics) (Computer Science Engineering/ Information Technology-I)

Course Outcomes: The students will learn:
The ideas of probability and random variables and various discrete and continuous probability distributions and their properties. The basic ideas of statistics including measures of central tendency, correlation and regression and the statistical methods of studying data samples.

BTEE-101-18
Basic Electrical Engineering (Common for all branches)

Course Outcomes: Students will be able to:
CO1: understand and analyze basic electric and magnetic circuits
CO2: study the working principles of electrical machines and power converters.
CO3: introduce the components of low voltage electrical installations

BTEE-102-18
Basic Electrical Engineering Laboratory (Common for all branches)

Course Outcomes: Students will be able to:
CO1: get an exposure to common electrical components and their ratings.
CO2: make electrical connections by wires of appropriate ratings.

CO3: understand the usage of common electrical measuring instruments.
CO4: understand the basic characteristics of transformers and electrical machines.
CO5: get an exposure to the working of power electronic converters.

BTME101-18
Engineering Graphics & Design (Theory & Lab.) (Common for all branches)

Course Outcomes

All phases of manufacturing or construction require the conversion of new ideas and design concepts into the basic line language of graphics. Therefore, there are many areas (civil, mechanical, electrical, architectural and industrial) in which the skills of the CAD technicians play major roles in the design and development of new products or construction. Students prepare for actual work situations through practical training in a new state-of-the-art computer designed CAD laboratory using engineering software.

This course is designed to address:

CO1: to prepare you to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

CO2: to prepare you to communicate effectively

CO3: to prepare you to use the techniques, skills, and modern engineering tools necessary for engineering practice

BTCH101-18
Chemistry-I (Common for all branches)

Course Outcomes: The course will enable the student to:

CO1: analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.

CO2: rationalise bulk properties and processes using the thermodynamic considerations.

CO3: distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.

CO4: rationalize periodic properties such as ionization potential, electronegativity, oxidation states and electro negativity.

CO5: list major chemical reactions that are used in the synthesis of molecules.

BTCH 102-18
Chemistry Lab (Common for all branches)

Course Outcomes: After the completion of the course the student will be able to:

CO1: estimate rate constants of reactions from concentration of reactants/products as a function of time.

CO2: measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc.
CO3: synthesize a small drug molecule and analyze as alt sample

BTPS101-18
Programming for Problem Solving (Common for all branches)

Course Outcomes: The student will learn
CO1: to formulate simple algorithms for arithmetic and logical problems.
CO2: to translate the algorithms to programs (in C language).
CO3: to test and execute the programs and correct syntax and logical errors.
CO4: to implement conditional branching, iteration and recursion.
CO5: to decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO6: to use arrays, pointers and structures to formulate algorithms and programs.
CO7: to apply programming to solve matrix addition and multiplication problems and searching and sorting problems.
CO8: to apply programming to solve simple numerical method problems, namely rot finding of function, differentiation of function and simple integration.

BTPS102-18
Programming for Problem Solving (Lab) (Common for all branches)

Laboratory Outcomes: The student will learn
CO1: to formulate the algorithms for simple problems
CO2: to translate given algorithms to a working and correct program
CO3: to be able to correct syntax errors as reported by the compilers
CO4: to be able to identify and correct logical errors encountered at run time
CO5: to be able to write iterative as well as recursive programs
CO6: to be able to represent data in arrays, strings and structures and manipulate them through a program
CO7: to be able to declare pointers of different types and use them in defining self referential structures.
CO8: to be able to create, read and write to and from simple text files.

BTMP101-18 (Theory and Lab)
Workshop/Manufacturing Practices (Common for all branches)

Course Outcomes

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

Laboratory Outcomes

CO1: upon completion of this laboratory course, students will be able to fabricate components with their own hands.

CO2: they will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.

CO3: by assembling different components, they will be able to produce small devices of their interest.

BTHU-101-18
English (Common for all branches)

After Successful completion of the course the students are expected to:

CO1: become the independent users of English language.
CO2: acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
CO3: to understand spoken and written English language, particularly the language of their chosen technical field.
CO4: able to converse fluently.
CO5: produce on their own clear and coherent texts.

BTHU-102-18
English Laboratory (Common for all branches)

Course Outcomes:

CO1: The objective of the course is to help the students become the independent users of English language.

CO2: Students will acquire basic proficiency in listening and speaking skills.

CO3: Students will be able to understand spoken English language, particularly the language of their chosen technical field.
CO4: They will be able to converse fluently
CO5: They will be able to produce on their own clear and coherent texts.