1st Semester

Department of Applied Sciences

8.4.2.1 Course Name: Applied Mathematics 1 (ETMA 101)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETMA 101.1	To understand the concept of integral calculus, n^{th} derivatives of a function and the expansion of standard function to acquire the knowledge for the convergence of sequence and series.	Understand
ETMA 101.2	To apply the knowledge of differential and integral calculus in various multidisciplinary domains.	Apply
ETMA 101.3	To analyze the diagonal form of a given matrix and reduces the quadratic form of a matrix in its canonical form with fundamental knowledge of matrix including Eigenvalues and Eigenvectors in research oriented problems.	Analyze
ETMA 101.4	To analyze different ways to find the solution of homogeneous and nonhomogeneous linear system of equations using matrix methods.	Understand, Analyze
ETMA 101.5	To find the area under the curve, length of curve, volume and surface area of solid revolution about the axis with the knowledge of curve tracing and Beta Gamma function.	Apply, Understand
ETMA 101.6	To apply the modern mathematical tools that model physical process to understand the concept of differential equations and differential calculus.	Apply, Remember

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETMA 101.1	-	-	-	-	-	2	3	-	-	-	-	-
ETMA 101.2	3	-	-	-	-	2	-	-	-	-	3	-
ETMA 101.3	-	2	-	3	-	-	-	-	-	-	-	-
ETMA 101.4	-	-	3	-	-	-	-	-	-	-	-	-
ETMA 101.5	-	-	-	2	-	-	-	-	-	-	-	2
ETMA 101.6	-	-	-	-	3	-	-	-	3	2	-	-

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETMA 101.1	3	-	3	-	3	-	3	-	-	3
ETMA 101.2	3	-	-	3	2	-	-	3	3	-
ETMA 101.3	3	-	-	3	-	3	-	3	3	-
ETMA 101.4	3	-	-	3	-	3	-	3	3	-
ETMA 101.5	3	-	-	3	3	-	-	3	3	-
ETMA 101.6	-	3	3	-	-	2	3	-	3	-

8.4.2.1 Course Name: Applied Physics 1 (ETPH 103)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETPH103.1	To understand the wave nature of light with various phenomenon viz. interference, diffraction etc.	Understand
ETPH103.2	Analyze the production & detection of different types of polarized lights.	Apply
ETPH103.3	Design the piezoelectric generator to study the production, properties and application of ultrasonic waves.	Analyze
ETPH103.4	Explain the basic principle of laser and propagation of light through optical fibre.	Understand, Analyze
ETPH103.5	Acquire knowledge of the basic concepts of Theory of Relativity.	Apply, Understand
ETPH103.6	Determine Q-value of nuclear reactions and describe working of particle detectors and accelerators	Apply, Remember

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETPH103.1	3	3	-	-	-	-	-	-	2	-	-	3
ETPH103.2	3	3	3	3	-	-	-	-	2	-	-	3
ETPH103.3	3	3	2	3	-	-	-	-	2	-	-	3
ETPH103.4	3	3	3	2	-	-	-	-	2	-	-	3
ETPH103.5	3	3	3	3	3	-	-	-	2	-	-	3
ETPH103.6	3	3	3	2	3	-	-	-	2	-	-	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETPH103.1	-	-	-	-	-	-	-	-	-	-
ETPH103.2	-	-	-	-	-	-	-	-	-	-
ETPH103.3	-	-	1	-	-	-	-	-	-	-
ETPH103.4	-	-	-	2	-	-	-	-	-	-
ETPH103.5	-	-	-	-	-	-	-	-	-	-
ETPH103.6	-	-	-	-	-	-	-	-	-	-

8.4.2.1 Course Name: Manufacturing Processes (ETME 105)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETME 105.1	Know appropriate Manufacturing Process and material to manufacture any component	Remember, Understand
ETME 105.2	Explain manufacturing process based on its principle and applications	Understand
ETME 105.3	Acquire knowledge about various tools and operations required for manufacturing processes	Apply
ETME 105.4	Inspect manufacturing defects in various manufacturing processes	Analyze

ETME 105.5	Compare various manufacturing processes such as casting, forming and joining processes based on applications and limitations	Evaluate
ETME 105.6	Elaborate process variables of the different manufacturing process.	Evaluate, Analyze

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETME 105.1	3	2	-	-	-	-	-	-	-	-	-	1
ETME 105.2	2	2	-	-	-	-	-	-	-	-	-	1
ETME 105.3	3	2	-	-	-	-	-	-	-	-	-	1
ETME 105.4	2	3	-	-	-	-	-	-	-	-	-	1
ETME 105.5	-	2	-	-	-	-	-	-	-	-	-	1
ETME105.6	2	3	-	-	-	-	-	-	-	-	-	1

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETME 105.1	-	-	-	-	-	-	-	-	-	-
ETME 105.2	-	-	-	-	-	-	-	-	-	1
ETME 105.3	-	-	-	-	-	-	-	-	-	-
ETME 105.4	-	-	-	-	-	-	-	-	-	-
ETME 105.5	-	-	-	-	-	-	-	-	-	-
ETME 105.6	-	-	-	-	-	-	-	-	-	2

8.4.2.1 Course Name: Electrical Technology (ETEE 107)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETEE 107.1	Remember fundamental principles and application of various Theorems of DC Circuits.	Remember
ETEE 107.2	Understand basic principle of Phasor Representation of AC Circuits.	Understand
ETEE 107.3	Analyze Steady State Response of Series and Parallel R-L, R-C and R-L-C circuits using j-notation	Analyze
ETEE 107.4	Understand construction methods and measurement of various types of instruments and equipments.	Understand
ETEE 107.5	Apply the principles of electrical technology to understand principle of operation and applications of measuring instruments.	Apply
ETEE 107.6	Understand Magnetic Circuits, Hysteresis, Eddy current losses, Single phase Transformer and Rotating Machines.	Understand

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETEE 107.1	3	3	-	2	-	1	-	-	-	-	-	2
ETEE 107.2	3	1	-	1	-	1	-	-	-	-	-	2
ETEE 107.3	3	3	2	2	-	-	-	-	-	-	-	2
ETEE 107.4	3	2	3	2	-	-	2	-	-	-	-	3
ETEE 107.5	3	2	-	-	-	2	2	-	-	-	-	-
ETEE 107.6	3	-	-	2	-	2	-	-	-	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETEE 107.1	3	-	1	-	-	2	1	-	1	-
ETEE 107.2	3	1	3	1	3	1	3	1	3	1
ETEE 107.3	3	2	3	2	3	2	3	2	3	2
ETEE 107.4	2	3	2	3	2	3	2	3	2	3
ETEE 107.5	3	-	3	3	3	-	3	3	-	-
ETEE 107.6	-	3	-	-	-	2	-	-	3	3

8.4.2.1 Course Name: Human Values & Professional Ethics – I (ETHS 109)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETHS – 109.1	To understand Universal Human Values and Ethical Human Conduct and its importance of practicing values in life.	Remember
ETHS – 109.2	To identify need and process of fundamentals of achieving Human Aspirations: Value based living for Sustained Prosperity, Health, Happiness and Harmony and living in Harmony.	Understand
ETHS – 109.3	To maintain (plan, prepare, prevent, practice and perform) concept of Holistic Health in all stages of life for right appraisal of physical needs for prosperity.	Apply
ETHS –109. 4	To maintain Human-to-Human relationship in terms of mutual trust and respect, and co-existence with others for sustained development.	Analyse
ETHS – 109.5	To identify and Analyze fundamentals of Professional Ethics and Morals, know ownership of Professional Roles and Responsibilities, accountability, collegiality, confidentiality, loyalty, conflict of interest and Image	Evaluate

ETHS – 109.6	To create an Engineering approach in industry, society, nation and world and practice in context to develop appropriate Technologies and Management patterns.	Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETHS 109.1	-	-	-	-	-	3	3	3	2	-	-	3
ETHS 109.2	-	-	2	-	-	3	3	2	-	-	-	3
ETHS 109.3	-	-	2	-	-	2	3	-	-	-	2	3
ETHS 109.4	-	-	-	2	-	3	3	3	2	-	-	3
ETHS 109.5	-	-	3	-	-	3	3	3	2	2	2	3
ETHS 109.6	-	-	2	-	-	3	2	3	3	-	2	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

	CSE		ECE		IT		EEE		ICE	
CO	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETHS 109.1	-	2	-	-	-	-	-	-	-	1
ETHS 109.2	-	-	-	-	-	-	-	-	-	-
ETHS 109.3	-	-	-	-	-	-	-	-	-	-
ETHS 109.4	-	-	-	-	-	-	-	2	-	-
ETHS 109.5	-	2	-	-	-	-	-	2	-	2
ETHS 109.6	-	1	-	-	-	-	-	2	-	1

8.4.2.1 Course Name: Fundamentals of Computing (ETCS 111)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETCS111.1	List various components of computers and its fundamentals.	Remember, Understand
ETCS111.2	Outline the basics of several computing peripherals such as programming, networking and related devices.	Apply, Analyze
ETCS111.3	Apply the knowledge of various internal and external DOS commands in day-to-day world.	Apply, Analyze
ETCS111.4	Inspect several architectures of diverse operating systems and software to examine their utilities with modern tools.	Analyze, Evaluate
ETCS111.5	Assess and compare different OpenOffice functionalities to measure their performance and effectiveness with modern innovations.	Apply, Analyze
ETCS111.6	Formulate the computing artefacts to solve complex problems and develop solutions to challenging computing problems.	Analyze, Design

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETCS111.1	3	-	-	-	-	-	-	-	-	-	-	3
ETCS111.2	3	2	-	-	-	-	-	-	-	-	-	3
ETCS111.3	3	2	3	-	2	-	-	-	-	-	-	2
ETCS111.4	-	-	3	3	3	-	-	-	-	-	-	-
ETCS111.5	2	3	-	3	-	-	-	-	-	-	-	3
ETCS111.6	-	3	3	3	-	-	-	-	-	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETCS111.1	2	-	-	2	-	-	-	-	-	2
ETCS111.2	-	1	-	1	-	-	-	-	-	1
ETCS111.3	1	-	-	1	-	-	-	-	-	2
ETCS111.4	2	-	-	1	1	-	-	1	-	2
ETCS111.5	-	2	-	-	-	2	-	-	-	2
ETCS111.6	-	3	-	1	-	1	-	-	2	-

8.4.2.1 Course Name: Applied Chemistry (ETCH 113)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETCH113.1	Recognize & Remember the analysis of Water, fuel, catalyst, phase rule, and corrosion in manufacturing industry	Remember/ Understand /Knowledge
ETCH113.2	Understand the concepts of applied chemistry (Water, fuel, catalyst, phase rule, and corrosion)	Understand (Application)
ETCH113.3	Ability to apply fundamental concepts of science behind common impurities, treatment and industrial methods in Water, fuel, catalyst, phase rule, and corrosion.	Apply
ETCH113.4	Analyze the performance of equipment and processes for Water, fuel, catalyst, phase rule, and corrosion.	Analyze (Analysis)
ETCH113.5	Identifies and evaluate engineering problems during production and solve with the fundamental theories of applied science (Water, fuel, catalyst, phase rule, and corrosion).	Investigations/ Evaluation
ETCH113.6	Create the innovative idea and execute, with modern engineering tools necessary for engineering practice.	Modern tools (Creation)

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETCH113.1	-	-	-	-	-	-	-	-	-	-	-	2

ETCH113.2	3	3	-	-	-	-	-	-	-	-	-	2
ETCH113.3	3	3	-	-	-	-	-	-	-	-	-	2
ETCH113.4	3	3	3	3	-	-	-	-	-	.	-	2
ETCH113.5	3	3	-	3	-	-	-	-	-	-	-	2
ETCH113.6	-	-	-	-	3	-	-	-	3	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETCH113.1	-	-	-	-	-	-	-	-	-	-
ETCH113.2	-	-	-	-	-	-	-	-	-	-
ETCH113.3	-	-	-	-	-	-	-	-	-	-
ETCH113.4	-	-	-	-	-	-	-	-	-	-
ETCH113.5	-	-	-	-	-	-	-	-	-	-
ETCH113.6	-	-	-	-	-	-	-	-	-	-

8.4.2.1 Course Name: Applied Physics Lab 1 (ETPH 151)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETPH151.1	Understand M.S.R, V.S.R & least count and their calculation for different equipment.	Remember, Understand
ETPH151.2	Analyze the intensity variation due to wave and particle nature of light viz. interference, polarization and photoelectric effect.	Apply, Analyze
ETPH151.3	Acquire the knowledge of dispersion of light, to determine the refractive index and dispersive power of prism.	Apply, Analyze
ETPH151.4	Investigate the phenomenon of diffraction using sodium lamp and He-Ne laser and evaluate wavelength of source.	Analyze, Evaluate

ETPH151.5	Using bar pendulum, obtains the numerical value of acceleration due to gravity & radius of gyration.	Apply, Analyze
ETPH151.6	Determine the numerical aperture of an optical fibre using diode laser.	Analyze, Design

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETPH151.1	3	3	-	-	2	-	-	-	-	-	-	3
ETPH 151.2	3	3	3	-	2	-	-	-	2	-	-	3
ETPH151.3	3	3	3	-	2	-	-	-	2	-	-	3
ETPH151.4	3	3	3	-	3	-	-	-	2	-	-	3
ETPH151.5	3	3	3	-	-	-	-	-	3	-	-	3
ETPH151.6	3	3	3	3	3	-	-	-	2	-	-	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE PSO 1	PSO2	ECE PSO 1	PSO2	IT PSO 1	PSO2	EEE PSO 1	PSO2	ICE PSO 1	PSO2
ETPH151.1	-	-	-	-	-	-	-	-	2	-
ETPH151.2	-	-	-	-	-	-	-	-	-	-
ETPH151.3	-	-	-	-	-	-	-	-	-	-
ETPH151.4	-	-	-	-	-	-	-	-	-	-
ETPH151.5	-	-	-	-	-	-	-	-	-	-
ETPH151.6	-	-	-	3	-	-	-	-	-	-

8.4.2.1 Course Name: Electrical Technology Lab (ETEE 153)

At the end of the course, students will be able to:

Department of Applied Sciences

CO	Course Outcome Statement	Bloom's Level
ETEE 153.1	Construct simple electrical circuits on breadboard, use different instruments to measure circuit parameters and, understand the concept of theorems and their applications.	Understand
ETEE153.2	Solve simple DC circuits and compute the circuit parameters using different theorems	Apply, Analyze
ETEE153.3	Solve simple AC circuits, compute the circuit parameters and draw phasor diagram	Apply, Analyze
ETEE153.4	Understand the concept of two-way switches and illumination performance of difference lighting schemes	Understand, Analyze
ETEE153.5	Understand and analyze two-wattmeter method for measuring power and power factor in a 3-phase star-connected load	Understand, Analyze
ETEE153.6	Understand the working and measure energy using an electronic-type single-phase energy meter.	Understand, Analyze

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETEE 153.1	3	3	2	-	2	-	-	-	-	-	-	2
ETEE 153.2	3	1	1	-	2	-	-	-	-	-	-	-
ETEE 153.3	3	3	2	2	-	-	-	-	-	-	-	2
ETEE 153.4	3	2	3	2	2	-	-	-	-	-	-	3
ETEE 153.5	3	2	-	-	2	2	-	-	-	-	-	-
ETEE 153.6	3	-	-	2	-	2	-	-	-	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE PSO 1	PSO2	ECE PSO 1	PSO2	IT PSO 1	PSO2	EEE PSO 1	PSO2	ICE PSO 1	PSO2
ETEE153.1	3	-	3	-	3	-	3	-	3	-
ETEE153.2	2	1	2	1	2	1	2	1	2	1
ETEE153.3	-	2	-	2	-	2	-	2	-	2
ETEE153.4	3	3	3	3	3	3	3	3	3	3
ETEE153.5	3	3	-	-	3	3	3	3	-	-
ETEE153.6	-	-	2	2	-	-	-	-	1	1

8.4.2.1 Course Name: Workshop Practice (ETME 155)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETME155.1	Recognize the importance of safety while dealing with workshop equipment and practices in welding and sheet metal shops.	**Remember**
ETME155.2	Study various tools and equipment used in sheet metal and welding.	**Understand**
ETME155.3	Demonstrate the knowledge of job materials in various shops	**Apply**
ETME155.4	Study and practice on hand tools and instruments and their operations in fitting, sheet metal and carpentry shops.	**Analyz**
ETME155.5	Acquire skills to make mould with the help of moulding sand.	**Evaluate**
ETME155.6	Implement the Knowledge of Gained Subject in Industry for production	**Create**

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETME155.1	-	-	3	-	-	2	1	2	-	-	-	2
ETME155.2	-	2	-	-	3	-	1	-	-	-	-	-
ETME155.3	-	-	2	-	-	-	2	-	-	-	2	-
ETME155.4	-	2	-	-	3	1	-	-	-	-	2	-

Department of Applied Sciences

ETME155.5	-	-	-	2	-	-	-	-	-	-	2	-
ETME155.6	-	-	3	-	3	-	1	-	3	-	2	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETME155.1	-	-	-	-	-	-	2	1	-	-
ETME155.2	-	-	-	-	-	-	2	-	-	-
ETME155.3	-	-	-	-	-	-	-	-	-	-
ETME155.4	-	-	-	-	-	-	-	-	-	-
ETME155.5	-	-	-	-	-	-	-	-	-	-
ETME155.6	-	-	-	-	-	-	2	2	-	-

8.4.2.1 Course Name: Engineering Graphics Lab (ETME 157)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETME157.1	Know about the dimensioning systems, conventions and uses of different line types.	Remember
ETME157.2	Demonstrate projection concepts and explain line and plane projection.	Understand
ETME157.3	Construct different scales to read upto two decimal places.	Apply
ETME157.4	Analyze 3-D objects and draw its 2D projections.	Analysis
ETME157.5	Assess the position of solid according to axis angle and generator to draw projection.	Evaluate
ETME157.6	Construct isometric projection for plane surfaces and bodies	Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETME157.1	2	1	-	-	-	-	-	-	-	3	-	-
ETME157.2	1	1	-	-	-	-	-	-	-	3	-	-
ETME157.3	2	1	-	-	-	-	-	-	-	3	-	-
ETME157.4	2	1	-	-	-	-	-	-	-	3	-	-
ETME157.5	2	1	-	-	-	-	-	-	-	3	-	-
ETME157.6	2	1	-	-	-	-	-	-	-	3	-	-

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETME155.1	-	-	1	-	-	-	-	-	-	-
ETME155.2	-	-	-	-	-	-	-	-	-	-
ETME155.3	-	-	-	-	-	-	-	-	-	-
ETME155.4	-	-	-	-	-	-	-	1	-	-
ETME155.5	-	2	-	-	-	1	-	-	-	-
ETME155.6	-	-	-	-	-	-	-	-	-	-

8.4.2.1 Course Name: Fundamentals of Computing Lab (ETCS 157)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETCS157.1	Recognize and understand functioning of various parts of computer system.	Remember, Understand
ETCS157.2	Understand Computer Registry and create system restore points	Understand
ETCS157.3	Experiment with various internal and external DOS commands	Apply
ETCS157.4	Analyse and Discuss working knowledge of Linux commands including installation of rpm and deb based packages.	Analyze

CO		Course Outcome Statement	Bloom's Level
ETCS157.5	Design documents using standard computing tools and applications like word processing, presentation software, spreadsheets using LibreOffice.		Create
ETCS157.6	Prove or defend his computing skills by creating innovative projects using current technologies.		Evaluate, Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETCS157.1	3	3	-	-	-	-	-	-	-	-	-	2
ETCS157.2	2	3	-	-	-	-	-	-	-	-	-	-
ETCS157.3	2	3	-	-	3	-	-	-	-	-	-	-
ETCS157.4	-	3	-	3	3	-	-	-	-	-	-	-
ETCS157.5	-	-	-	-	3	-	-	-	-	2	-	2
ETCS157.6	-	-	2	3	3	-	-	-	3	2	-	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE PSO 1	PSO2	ECE PSO 1	PSO2	IT PSO 1	PSO2	EEE PSO 1	PSO2	ICE PSO 1	PSO2
ETCS157.1	-	2	3	2	2	-	3	-	2	2
ETCS157.2	-	2	-	-	2	-	-	-	-	-
ETCS157.3	-	2	1	-	3	-	2	2	-	-
ETCS157.4	3	2	-	-	3	2	1	2	-	3
ETCS157.5	3	2	-	-	3	3	-	-	-	3
ETCS157.6	3	3	2	1	3	3	2	3	2	3

8.4.2.1 Course Name: Applied Chemistry Lab. (ETCH 161)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETCH161.1	Remember measurement technology, explaining phenomena, and real time application in engineering studies	Knowledge

ETCH161.2	Understand basic technical concept used in chemistry laboratory for preparation, purification & identification	Understand (Application)
ETCH161.3	Apply experimental approaches to solve chemical problems & explore new area of research	Apply
ETCH161.4	Analyze volumetric titrations	Analyze(Analysis)
ETCH161.5	Evaluate the experiments and techniques and explain the factors that affect the experimental outcome	Investigations/ Evaluation
ETCH161.6	Create innovative experiment using conventional equipment and techniques to analyze the real time problem.	Modern tools (Creation)

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETCH161.1	-	-	-	-	-	-	-	-	-	-	-	2
ETCH161.2	3	3	3	-	-	-	-	-	-	-	-	2
ETCH161.3	3	3	3	3	-	-	-	-	-	-	-	2
ETCH161.4	3	3	3	-	-	-	-	-	-	-	-	2
ETCH161.5	-	-	-	3	-	-	-	-	-	-	-	2
ETCH161.6	-	-	-	-	3	-	-	-	3	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETCH161.1	-	-	-	-	-	-	-	-	-	-
ETCH161.2	-	-	-	-	-	-	-	-	-	-
ETCH161.3	-	-	-	-	-	-	-	-	-	-
ETCH161.4	-	-	-	-	-	-	-	-	-	-
ETCH161.5	-	-	-	-	-	-	-	-	-	-
ETCH161.6	-	-	-	-	-	-	-	-	-	-

2nd Semester

8.4.2.1 Course Name: Applied Mathematics II (ETMA 102)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETMA 102.1	To understand the concept of differential calculus and differential equations for the functions with several variables in various engineering problems.	Understand
ETMA 102.2	To apply the vector calculus and multiple integrations for evaluate the line and surface integral related to different real life /Engineering problems.	Apply
ETMA 102.3	To Analyze the concept of Laplace Transformation for solving engineering problems.	Analyze
ETMA 102.4	To design problems related to complex analysis, vector calculus and Laplace transform in various engineering field.	Apply, Remember
ETMA 102.5	To investigate the physical meaning of engineering problems which uses the concept of gradient, divergence and curl.	Analyze, Remember
ETMA 102.6	To apply various methods of complex analysis to attain the solutions of engineering problems.	Apply

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETMA 102.1	-	-	-	-	-	3	2	-	-	-	-	-
ETMA 102.2	3	-	-	-	-	2	-	-	2	-	2	-
ETMA 102.3	-	3	-	2	-	-	-	-	-	-	-	-
ETMA 102.4	-	-	3	-	-	-	-	-	-	-	-	-
ETMA 102.5	-	-	-	3	-	-	2	-	-	-	-	-
ETMA 102.6	-	-	-	-	3	-	-	-	2	3	-	-

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETMA 102.1	3	-	3	-	3	-	3	-	-	3
ETMA 102.2	3	-	-	3	2	-	-	3	3	
ETMA 102.3	3	-	-	3	-	3	-	3	3	-
ETMA 102.4	3	-	-	3	-	3	-	3	3	-
ETMA 102.5	3	-	-	3	-	-	-	3	3	-
ETMA 102.6	3		3	-	-	2	3	-	3	

8.4.2.1 Course Name: Applied Physics II (ETPH 104)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETPH104.1	Apply various laws to study the motion of charge particle in electric & magnetic fields.	Understand, Apply
ETPH104.2	Analyze the propagation of EM wave in different media using Maxwell's equations.	Analyze
ETPH104.3	Develop Schrödinger wave equations and discuss its applications using concepts and postulates of Quantum Mechanics.	Create, Evaluate
ETPH104.4	Investigate the differences between Classical and Quantum Statistical Mechanics.	Evaluate
ETPH104.5	Acquire the knowledge about various types of solids, unit cell, crystal structures and defects.	Understand, Analyze
ETPH104.6	Discuss the semiconductor properties (i.e. carrier concentration, fermi level, effective mass etc.) based on energy bands theory in solids and discuss Hall effect also.	Create, Evaluate

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETPH104.1	3	3	-	-	-	-	-	-	2	-	-	3
ETPH104.2	3	3	3	3	-	-	-	-	2	-	-	3
ETPH104.3	3	3	3	3	-	-	-	-	2	-	-	3
ETPH104.4	3	3	3	2	-	-	-	-	2	-	-	3
ETPH104.5	3	3	3	3	3	-	-	-	2	-	-	3
ETPH104.6	3	3	3	2	3	-	-	-	2	-	-	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETPH104.1	-	-	-	-	-	-	-	-	-	-
ETPH104.2	-	-	-	-	-	-	-	-	-	-
ETPH104.3	-	-	-	-	-	-	-	-	-	-
ETPH104.4	-	-	-	-	-	-	-	-	-	-
ETPH104.5	-	-	-	-	-	-	-	-	-	-
ETPH104.6	-	-	-	-	-	-	2	2	-	-

8.3.1 Course Name: Electronic Devices (ETEC 106)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETEC 106.1	Understand fundamental principles and theory of semiconductors.	Understand
ETEC 106.2	Understand principle related to p-n junction Diode and special Diodes.	Understand
ETEC 106.3	Analyze Diodes based Rectifiers, Clippers and Clampers.	Analyze
ETEC 106.4	Understand the construction of Bipolar junction transistor (BJT) and evaluate its operations and characteristics.	Understand, Evaluate

ETEC 106.5	Examine different configurations of BJT.	Apply
ETEC 106.6	Remember and understand the basics of digital number systems and Boolean algebra.	Remember, Understand

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETEC 106.1	3	2	-	-	-	-	-	-	-	-	-	3
ETEC 106.2	3	3	3	-	-	-	-	-	-	-	-	3
ETEC 106.3	3	3	3	2	-	2	-	-	-	-	-	3
ETEC 106.4	3	3	2	-	-	2	-	-	-	-	-	3
ETEC 106.5	3	2	1	-	-	2	-	-	-	-	-	3
ETEC 106.6	3	3	1	-	-	2	-	1	-	-	-	3

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE PSO 1	PSO2	ECE PSO 1	PSO2	IT PSO 1	PSO2	EEE PSO 1	PSO2	ICE PSO 1	PSO2
ETEC106.1	-	-	2		-	-	-	-	-	-
ETEC106.2	-	-	2		-	-	2	-	2	-
ETEC106.3	-	-	2	1	-	-	-	-	-	-
ETEC106.4	-	-	3		-	-	2	-	2	-
ETEC106.5	-	-		1	-	-	-	-	-	-
ETEC106.6	-	-	3	1	-	-	-	-	-	-

8.4.2.1 Course Name: Introduction to Programming (ETCS 108)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETCS108.1	Demonstrate understanding of the basic concepts of algorithms, compilation process and basic features of C language like data types, operators, loops and arrays.	Remember, Understand
ETCS108.2	Build in C efficient solutions to various problems by utilizing the features of the language and its different libraries.	Create
ETCS108.3	Examine features of C I/O library to design clean and intuitive interfaces for the user through functions.	Analyze
ETCS108.4	Make use of arrays to represent data of same type and utilize its integral relationship with pointers	Apply
ETCS108.5	Justify the use of user defined types like structures and unions to support real world use-cases.	Evaluate
ETCS108.6	Develop programs in C that can read/write to files and perform sequential or random access.	Apply

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETCS108.1	3	3	-	-	-	-	-	-	-	-	-	-
ETCS108.2	1	-	3	-	-	-	-	-	-	-	-	2
ETCS108.3	1	3	3	-	-	-	-	-	-	-	-	1
ETCS108.4	3	-	-	-	-	-	-	-	-	-	-	2
ETCS108.5	1	-	2	3	-	-	-	-	-	-	-	3
ETCS108.6	2	-	2	-	-	-	-	-	-	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETCS 108.1	3	-	-	-	-	-	-	-	1	-
ETCS 108.2	1	-	-	-	2	-	1	-	2	1
ETCS 108.3	1	2	2	-	1	-	1	2	1	-
ETCS 108.4	1	-	-	-	1	-	-	-	1	-
ETCS 108.5	2	1	1	-	-	-	1	-	2	-
ETCS 108.6	1	-	-	-	-	-	2	-	1	

8.4.2.1 Course Name: Engineering Mechanics (ETME 110)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETME110.1	Show the free body diagram and find unknown forces using principles of mechanics.	Understand, Apply
ETME110.2	Understand planar truss and determine the forces in members by joint or section method.	Understand, Evaluate
ETME110.3	Locate the centroid and calculate the moment of inertia about an axis.	Apply
ETME110.4	Apply the concepts of kinematics and kinetics of particles to analyze simple practical problems	Analyze
ETME110.5	Assess different kinematic parameters of rigid bodies performing general plane motion.	Evaluate
ETME110.6	Construct shear force and bending moment diagram of various beam under different load conditions.	Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETME110.1	3	2	2	-	-	-	-	-	-	-	-	2

ETME110.2	3	2	3	-	-	-	-	-	-	-	-	2
ETME110.3	2	2	3	-	-	-	-	-	-	-	-	1
ETME110.4	2	2	2	-	-	-	-	-	-	-	-	1
ETME110.5	3	3	2	-	-	-	-	-	-	-	-	2
ETME110.6	3	2	3	-	-	-	-	-	-	-	-	1

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETME 110.1	-	-	-	-	-	-	-	-	-	1
ETME 110.2	-	-	-	-	-	-	-	-	-	-
ETME 110.3	-	-	-	-	-	-	-	-	-	-
ETME 110.4	-	-	-	-	-	-	-	-	-	-
ETME 110.5	-	-	-	-	-	-	-	-	-	-
ETME 110.6	-	-	-	-	-	-	-	-	-	2

8.4.2.1 Course Name: Communication Skill (ETHS 112)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETHS112.1	Define role of communication in personal and professional success.	Remember
ETHS112.2	Demonstrate basic fundamental principles of English grammar.	Understand
ETHS112.3	Apply charts, diagrams, and other graphics in business messages and presentations.	Apply
ETHS112.4	Analyse business communication given for a specific audience and purpose	Analyze
ETHS112.5	Evaluate Writing Skills through Controlled and Guided Activities.	Evaluate

ETHS112.6	Develop reading Skills through Controlled and Guided Activities	Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETHS112.1	-	-	-	-	-	-	-	-	-	3	-	-
ETHS112.2	-	-	-	-	-	-	-	-	-	2	-	-
ETHS112.3	-	-	-	-	-	-	-	-	-	2	-	-
ETHS112.4	-	-	-	-	-	-	-	-	2	3	-	-
ETHS112.5	-	-	-	-	-	-	-	-	-	3	-	-
ETHS112.6	-	-	-	-	-	-	-	-	-	2	-	-

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETHS112.1	-	-	-	-	-	-	-	-	-	-
ETHS112.2	-	-	-	-	-	-	-	-	-	-
ETHS112.3	-	-	-	-	-	-	-	-	-	-
ETHS112.4	-	-	-	-	-	-	-	-	-	-
ETHS112.5	-	-	-	-	-	-	-	-	-	-
ETHS112.6	-	-	-	-	-	-	-	-	-	-

8.4.2.1 Course Name: Environmental Studies (ETEN 114)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETEN 114.1	Students will develop understanding of interdisciplinary nature of environmental problems and the science behind those problems and their potential solutions	Remember/ Understand
ETEN 114.2	Students will be able to apply scientific concepts and methods to understand interactions between different components of environment.	Apply

ETEN 114.3	Students will acquire skills required to analyze various environmental issues and learn how to use those skills in various situations	Analyze
ETEN 114.4	Students will be able to formulate new and innovative sustainable solutions for the environmental problems	Design
ETEN 114.5	Students will be able to conduct independent research and handle complex, real world problems in the lab, field, workplace etc.	Investigations
ETEN 114.6	Students will learn about the latest advancements in science and technology for combating global environmental problems	Modern tools (Creation)

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETEN114.1	-	-	-	-	-	-	-	-	-	-	-	2
ETEN114.2	3	3	-	-	2	3	3	-	2	-	-	2
ETEN 114.3	3	3	2	2	-	3	3	-	2	-	-	2
ETEN114.4	2	3	3	2	2	3	3	-	2	-	-	2
ETEN114.5	2	3	-	3	2	-	3	-	3	2	-	2
ETEN114.6	-	3	2	3	3	-	3	-	-	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETEN114.1	-	-	-	-	-	-	-	-	-	-
ETEN114.2	-	-	-	-	-	-	-	-	-	-
ETEN 114.3	-	-	-	-	-	-	-	-	-	-
ETEN114.4	-	-	-	-	-	-	-	-	-	-
ETEN114.5	-	-	-	-	-	-	-	-	-	-
ETEN114.6	-	-	-	-	-	-	-	-	-	-

8.4.2.1 Course Name: Applied Physics Lab II (ETPH 152)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETPH152.1	Understand basic concepts of electric and magnetic fields, resonance, thermal conductivity and electric and electronic circuits.	Understand
ETPH152.2	Apply Four probe method to obtain the value of energy band gap of a Semiconductor.	Apply
ETPH152.3	Apply J.J. Thomson method to determine the e/m ratio of electron and Lee's method to determine coefficient of thermal conductivity.	Apply
ETPH152.4	Analyze Stefan's law by electrical method.	Analyse
ETPH152.5	Determine the frequency of A.C mains and a given tuning fork.	Evaluate
ETPH152.6	Design circuits for time constant of R-C circuit and V-I characteristics of Zener diode.	Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETPH152.1	2	2	-	-	-	-	-	-	-	-	-	2
ETPH152.2	2	3	2	.-	-	-	-	-	-	-	-	2
ETPH152.3	2	2	2	-	-	-	-	-	-	-	-	2
ETPH152.4	2	2	2	-	-	-	-	-	-	-	-	2
ETPH152.5	2	2	2	-	-	-	-	-	-	-	-	2
ETPH152.6	3	3	3	3	3	-	-	-	3	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE PSO 1	PSO2	ECE PSO 1	PSO2	IT PSO 1	PSO2	EEE PSO 1	PSO2	ICE PSO 1	PSO2
ETPH152.1	-	1	3	2	-	1	3	1	2	2
ETPH152.2	-	-	3	2	-	-	2	1	2	-
ETPH152.3	-	-	3	2	-	-	2	1	2	-
ETPH152.4	-	-	3	2	-	-	2	1	2	-
ETPH152.5	-	-	3	2	-	-	2	1	2	-
ETPH152.6	-	2	3	2	-	2	3	2	2	2

8.4.2.1 Course Name: Programming Lab (ETCS 154)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETCS154.1	Understand and use basic C programming constructs like data types, operators, loops and functions.	Remember, Understand
ETCS154.2	Apply composite types like arrays, structures or unions in appropriate settings like in defining matrices or student records.	Apply
ETCS154.3	Analyze the recursive nature of various algorithms and subsequently implement them in C.	Analyze
ETCS154.4	Evaluate program structure and decompose the code into proper logical boundaries called functions.	Evaluate
ETCS154.5	Develop their own implementations of various library functions, such as those for string handling.	Create
ETCS154.6	Design and develop solutions for simple algorithms like searching and sorting.	Create

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETCS 154.1	3	-	-	-	-	-	-	-	-	-	-	2
ETCS154.2	3	-	2	-	-	-	-	-	-	-	-	2
ETCS154.3	-	3	-	-	3	-	-	-	-	-	-	2
ETCS154.4	-	2	-	3	-	-	-	-	-	-	-	2

ETCS154.5	2	-	3	-	-	-	-	-	-	-	-	2
ETCS154.6	-	-	3	-	2	-	-	-	-	-	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

	CSE		ECE		IT		EEE		ICE	
CO	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETCS 154.1	-	-	2	-	-	-	-	-	2	-
ETCS154.2	3	3	-	-	2	3	3	-	2	3
ETCS154.3	2	3	2	-	3	2	3	3	-	2
ETCS154.4	-	3	-	-	3	-	-	-	-	-
ETCS154.5	3	-	1	-	-	3	-	3	-	3
ETCS154.6	3	3	1	-	3	3	2	3	-	3

8.4.2.1 Course Name: Electronic Devices Lab (ETEC 156)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETEC 156.1	Understand and remember the working of CRO, function generator and bread board.	Remember, Understand
ETEC 156.2	Understand the use of active and passive components.	Understand
ETEC 156.3	Analyze the VI characteristics of diodes.	Analyze
ETEC 156.4	Design and evaluate rectifier circuits using diodes.	Create, Evaluate
ETEC 156.5	Evaluate the input and output characteristics of BJT in CB/CE configuration.	Evaluate
ETEC 156.6	Understand and remember the concepts of basic digital gates.	Remember, Understand

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETEC 156.1	3	1	-	-	2	2	-	-	-	2	-	2

ETEC 156.2	3	2	-	-	-	-	-	-	3	2	-	2
ETEC 156.3	3	-	-	-	3	1	-	-	3	2	-	3
ETEC 156.4	3	3	3	3	3	2	-	-	2	-	-	-
ETEC 156.5	3	3	2	-	3	2	-	-	2	2	-	2
ETEC 156.6	3	3	-	-	2	-	-	1	2	2	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETEC156.1	-	-	1	-	-	-	-	-	-	-
ETEC156.2	-	-	1	-	-	-	-	-	-	-
ETEC156.3	-	-	3	-	-	-	2	-	2	-
ETEC156.4	-	-	2	2	-	-	-	-	-	-
ETEC156.5	-	-	2	1	-	-	2	-	2	-
ETEC156.6	-	-	-	1	-	-	-	-	-	-

8.4.2.1 Course Name: Engineering Mechanics Lab (ETME 158)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETME158.1	Demonstrate the law of Moments using bell crank apparatus.	Remember
ETME158.2	Calculate coefficient of friction between wood and various surfaces (like Leather, Wood, Aluminium) on an inclined plane.	Understand
ETME158.3	Determine Mechanical advantage, Velocity Ratio and efficiency of different lifting machines.	Apply
ETME158.4	Verify force transmitted to different members of a given truss.	Analyze
ETME158.5	Prove law of polygon force using universal force table.	Evaluate
ETME158.6	Measure support reactions of simply supported beam using parallel force apparatus.	Design

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETME158.1	2	3	-	-	-	-	-	-	-	-	-	2
ETME158.2	2	-	-	-	-	-	-	-	-	-	-	2
ETME158.3	2	3	3	1	2	-	-	-	-	-	-	3
ETME158.4	3	3	3	1	-	-	-	-	-	-	-	-
ETME158.5	2	2	-	-	-	-	-	-	-	-	-	2
ETME158.6	2	2	3	-	-	-	-	-	-	-	-	1

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

	CSE		ECE		IT		EEE		ICE	
CO	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETME1518.1	-	-	-	-	-	-	-	-	-	-
ETME158.2	-	-	-	-	-	-	-	-	-	2
ETME158.3	-	-	-	-	-	-	-	-	-	2
ETME158.4	-	-	-	-	-	-	-	-	-	-
ETME158.5	-	-	-	-	-	-	-	-	-	-
ETME158.6	-	-	-	-	-	-	-	-	-	2

8.4.2.1 Course Name: Environmental Studies Lab (ETEN 160)

At the end of the course, students will be able to:

CO	Course Outcome Statement	Bloom's Level
ETEN160.1	Understand chemical processes to a variety of environmental related problems for sustainable development.	Remember/ Understand
ETEN160.2	Independently able to apply chemical processes in the environment and their applications.	Apply
ETEN160.3	Analyze and report on a range of chemical methods used to study environmental processes.	Analyze
ETEN160.4	Design solution based on environmental problems.	Design

ETEN160.5	Investigate the environmental problem, characterization, including laboratory testing, and operational analysis of treatment processes.	Evaluate
ETEN160.6	Contribute in team and group work for scientific investigation and reporting.	Modern tools /Creation

8.4.2.2 CO-PO matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ETEN160.1	-	-	-	-	-	-	-	-	-	-	-	2
ETEN160.2	3	3	3	3	3	2	3	-	-	-	-	2
ETEN160.3	3	3	3	-	-	2	3	-	-	-	-	2
ETEN160.4	3	3	3	3	3	2	-	2	-	-	-	2
ETEN160.5	3	3	3	3	-	-	-	-	-	-	-	2
ETEN160.6	-	-	-	-	3	-	-	2	3	2	-	2

1=Slightly, 2=moderately, 3=substantially

8.4.2.3 CO-PSO matrix

CO	CSE		ECE		IT		EEE		ICE	
	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2	PSO 1	PSO2
ETEN 160.1	-	-	-	-	-	-	-	-	-	-
ETEN 160.2	-	-	-	-	-	-	-	-	-	-
ETEN 160.3	-	-	-	-	-	-	-	-	-	-
ETEN 160.4	-	-	-	-	-	-	-	-	-	-
ETEN 160.5	-	-	-	-	-	-	-	-	-	-
ETEN 160.6	-	-	-	-	-	-	-	-	-	-