



BETHLAHEM INSTITUTE OF ENGINEERING

KARUNGAL - 629 157, KANYAKUMARI DIST., TAMIL NADU.

(Approved by AICTE Vide : FNo. 06/05/TN/E&T/2007/25 dt. 02-06-2008 &

Affiliated to Anna University, Chennai)

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E-mail : mail@bethlahem.org, Website : www.bethlahem.org

BETHLAHEM INSTITUTE OF ENGINEERING



DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOMES

AND

CO-PO MAPPING



BETHLAHEM INSTITUTE OF ENGINEERING

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DEPARTMENT OF MECHANICAL ENGINEERING

Anna University Regulation 2017

List of Course Names

Sl. No	Course Code	Course Title	L	T	P	C
SEMESTER-I						
1	HS8151	Communicative English	4	0	0	4
2	MA8151	Engineering Mathematics - I	4	0	0	4
3	PH8151	Engineering Physics	3	0	0	3
4	CY8151	Engineering Chemistry	3	0	0	3
5	GE8151	Problem Solving and Python Programming	3	0	0	3
6	GE8152	Engineering Graphics	2	0	4	4
7	BS8161	Physics and Chemistry laboratory	0	0	4	2
8	GE8161	Problem Solving and Python Programming Laboratory	0	0	4	2
SEMESTER-II						
1	HS8251	Technical English	4	0	0	4
2	MA8251	Engineering Mathematics - II	4	0	0	4
3	PH8251	Materials Science	3	0	0	3
4	BE8253	Basic Electrical, Electronics and Instrumentation Engineering	3	0	0	3
5	GE8291	Environmental Science and Engineering	3	0	0	3
6	GE8292	Engineering Mechanics	3	2	0	4
7	GE8261	Engineering Practices Laboratory	0	0	4	2
8	BE8261	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	0	0	4	2
SEMESTER-III						
1	MA8353	Transforms and Partial Differential Equations	4	0	0	4
2	ME8391	Engineering Thermodynamics	3	2	0	4
3	CE8394	Fluid Mechanics and Machinery	4	0	0	4



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4	ME8351	Manufacturing Technology - I	3	0	0	3
5	EE8353	Electrical Drives and Controls	3	0	0	3
6	ME8361	Manufacturing Technology Laboratory - I	0	0	4	2
7	ME8381	Computer Aided Machine Drawing	0	0	4	2
8	EE8361	Electrical Engineering Laboratory	0	0	4	3
9	HS8381	Interpersonal Skills / Listening & Speaking	0	0	2	1
SEMESTER-IV						
1	MA8452	Statistics and Numerical Methods	4	0	0	4
2	ME8492	Kinematics of Machinery	3	0	0	3
3	ME8451	Manufacturing Technology - II	3	0	0	3
4	ME8491	Engineering Metallurgy	3	0	0	3
5	CE8395	Strength of Materials for Mechanical Engineers	3	0	0	3
6	ME8493	Thermal Engineering- I	3	0	0	3
7	ME8462	Manufacturing Technology Laboratory - II	0	0	4	2
8	CE8381	Strength of Materials and Fluid Mechanics and Machinery Laboratory	0	0	4	2
9	HS8461	Advanced Reading and Writing	0	0	2	1
SEMESTER-V						
1	ME8595	Thermal Engineering- II	4	0	0	4
2	ME8593	Design of Machine Elements	3	0	0	3
3	ME8501	Metrology and Measurements	3	0	0	3
4	ME8594	Dynamics of Machines	3	0	0	3
5	OR0551	Renewable Energy	3	0	0	3
6	ME8511	Kinematics and Dynamics Laboratory	3	0	0	3
7	ME8512	Thermal Engineering Laboratory	0	0	4	2
8	ME8513	Metrology and Measurements Laboratory	0	0	4	2



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SEMESTER-VI						
1	ME8651	Design of Transmission Systems	3	0	0	3
2	ME8691	Computer Aided Design and Manufacturing	3	0	0	3
3	ME8693	Heat and Mass Transfer	3	2	0	4
4	ME8692	Finite Element Analysis	3	0	0	3
5	ME8694	Hydraulics and Pneumatics	3	0	2	4
6	PR8592	Welding Technology	3	0	0	3
7	ME8681	CAD / CAM Laboratory	0	0	4	2
8	ME8682	Design and Fabrication Project	0	0	4	2
9	HS8581	Professional Communication	0	0	2	1
SEMESTER-VII						
1	ME8792	Power Plant Engineering	3	0	0	3
2	ME8793	Process Planning and Cost estimation	3	0	0	3
3	ME8791	Mechatronics	3	0	0	3
4	OIE751	Robotics	3	0	0	3
5	ME8073	Unconventional Machining processes	3	0	0	3
6	ME8097	Non Destructive Testing and Evaluation	3	0	0	3
7	ME8711	Simulation and Analysis Laboratory	0	0	4	2
8	ME8781	Mechatronics Laboratory	0	0	4	2
9	ME8712	Technical Seminar	0	0	2	1
SEMESTER-VIII						
1	MG8591	Principles of Management	3	0	0	3
2	IE8693	Production Planning and Control	3	0	0	3
3	ME8811	Project Work	0	0	20	10



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DEPARTMENT OF MECHANICAL ENGINEERING

Anna university regulation 2017

Course outcomes and CO-PO mapping

YEAR	I	SEM	01	SUBJECT CODE	HS8151
SUBJECT	COMMUNICATIVE ENGLISH				

The students will be able to:

C01	Share and collect personal information.
C02	Read and write general articles.
C03	Acquire basic grammar and apply in language usage.
C04	Participate in intensive reading and formal writing.
C05	Develop fragments to short essays/group conversations.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	-	-	-	-	-	-	-	3	3	-	-	-	-	1
C02	-	2	-	2	-	-	-	-	-	3	-	-	-	-	1
C03	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1
C04	-	2	-	1	-	-	-	-	-	3	-	-	-	-	1
C05	-	-	-	-	-	-	-	-	2	3	-	-	-	-	1
AVG	0.0	0.8	0.0	0.6	0.0	0.0	0.0	0.0	1	3	0.0	0.0	0.0	0.0	1



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YEAR	I	SEM	01	SUBJECT CODE	MA8151
SUBJECT	ENGINEERING MATHEMATICS I				

The students will be able to:

C01	Explain the different types of Matrices, properties of matrices and Cayley-Hamilton.
C02	Identify the partial differentiation and Lagrange calculation.
C03	Examine the different techniques of integral calculus.
C04	Examine the different kinds of integrals. understand how to find area and volume by using double and triple integrals.
C05	Analyze the different kinds of Linear differential equations by various methods.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	1	1	-	-	1	3	1	-	1	2	1	-
C02	3	3	2	2	-	1	1	-	2	1	-	3	1	-	2
C03	3	2	1	2	2	-	-	2	2	1	1	1	3	-	-
C04	3	3	2	3	-	2	1	-	1	1	-	2	2	2	-
C05	3	2	3	2	1	-	-	1	2	-	-	3	2	-	2
AVG	3	2.4	2	2	0.8	0.6	0.4	0.8	2	0.8	0.2	2	2	0.6	0.8



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YEAR	I	SEM	01	SUBJECT CODE	PH8151
SUBJECT	ENGINEERING PHYSICS				

The students will be able to:

C01	Develop knowledge on the basics of properties of matter and its applications.
C02	Build knowledge on the concepts of waves and optical devices and their applications in fiber optics.
C03	Apply knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
C04	Develop knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.
C05	Illustrate the basics of crystals, their structures and different crystal growth techniques.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	2	2	1	-	-	1	-	-	2	3	-	-
C02	3	3	2	-	2	1	-	-	-	-	-	2	2	-	2
C03	3	2	3	2	2	2	3	-	-	-	-	2	2	1	-
C04	3	2	2	-	2	2	-	-	-	-	-	2	-	1	2
C05	2	3	3	2	2	1	1	-	-	-	-	3	2	-	1
AVG	2.8	2.4	2.4	1.2	2	1.4	0.8	0	0.2	0	0	2.2	1.8	0.4	1



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YEAR	I	SEM	01	SUBJECT CODE	CY8151
SUBJECT	ENGINEERING CHEMISTRY				

The students will be able to:

C01	Illustrate the various water quality parameters and propose suitable methods for water treatment.
C02	Identify and apply the basic concepts of nanoscience and nanotechnology for the production of nanomaterials to be applied for engineering and technological needs.
C03	Adapt sound knowledge about phase rule and composites for the selection of materials.
C04	Analyze and classify the available fuels for their appropriate use in industry.
C05	Recognize the available forms of energy resources and their judicious use in energy sectors by providing due emphasis for attaining sustainable energy.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	1	2	-	2	2	2	-	-	-	-	2	2	-	2
C02	3	-	2	-	3	2	2	-	-	2	-	-	2	-	-
C03	3	-	2	-	3	2	1	-	-	2	-	-	1	-	3
C04	2	-	3	-	-	2	3	-	-	-	-	2	-	-	2
C05	3	-	3	-	2	2	3	-	-	-	-	3	2	-	2
AVG	2.4	0.2	2.4	-	2	2	2.2	-	-	0.8	-	1.4	1.4	-	1.8



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YEAR	I	SEM	01	SUBJECT CODE	GE8151
SUBJECT	PROBLEM SOLVING AND PYTHON PROGRAMMING				

The students will be able to:

C01	Explain the principles of problem solving techniques.
C02	Develop simple python programs.
C03	Develop programs based on control flow.
C04	Analyze compound data using lists, tuples, dictionaries.
C05	Design files, modules & packages.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	3	-	-	-	-	3	1	3	-	-	3	2
C02	3	3	3	3	-	-	-	-	3	1	3	-	-	1	2
C03	3	3	3	3	2	-	-	-	3	1	3	-	-	3	2
C04	3	3	3	3	2	-	-	-	3	1	3	-	-	3	2
C05	3	3	3	3	2	-	-	-	3	1	3	-	-	3	2
AVG	3	3	3	3	1.2	-	-	-	3	1	3	-	-	2.6	2



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YEAR	I	SEM	01	SUBJECT CODE	GE8152
SUBJECT	ENGINEERING GRAPHICS				

The students will be able to:

C01	Construct the conic curves, involutes and cycloid.
C02	Design the projection of points, lines and planes located in different quadrants.
C03	Design the projection of sectioned solids and develop surfaces of a given objects.
C04	Design the projection of solids and Produce orthographic projection of engineering components.
C05	Create pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	-	2	-	-	-	-	-	-	1	-	-	1	-	-
C02	1	-	2	-	-	-	-	-	-	1	-	-	1	-	-
C03	1	-	2	-	-	-	-	-	-	1	-	-	1	2	-
C04	1	-	2	-	-	-	-	-	-	1	-	-	1	2	-
C05	1	-	2	-	-	-	-	-	-	1	-	-	1	2	-
AVG	1	-	2	-	-	-	-	-	-	1	-	-	1	1.2	-



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YEAR	I	SEM	01	SUBJECT CODE	BS8161
SUBJECT	PHYSICS AND CHEMISTRY LABORATORY				

The students will be able to:

C01	Demonstrate different experiments to test basic understanding of physics concepts applied in optics.
C02	Relate different experiments to test basic understanding of physics concepts applied in thermal physics.
C03	Demonstrate different experiments to test basic understanding of physics concepts in properties of matter.
C04	Develop practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
C05	Examine the determination of molecular weight of a polymer by viscometer.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	3	3	-	-	-	-	2	-	1	3	1	-
C02	3	3	3	1	3	2	-	2	-	-	-	1	1	-	1
C03	3	3	3	1	3	-	-	-	1	-	-	1	-	1	-
C04	3	3	3	-	-	2	-	-	-	-	-	-	-	-	-
C05	3	3	3	-	-	-	-	-	1	-	-	1	-	1	1
AVG	3	3	3	1	1.8	0.8	-	0.4	0.4	0.4	-	0.8	0.8	0.6	0.4



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YEAR	I	SEM	01	SUBJECT CODE	GE8161
SUBJECT	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY				

The students will be able to:

C01	Develop simple algorithms, Pseudo code, flowchart for simple problems.
C02	Develop and execute simple Python programs.
C03	Build programs in Python using conditionals statement and loop statement.
C04	Develop simple programs using functions and use Python data structures to implement programs.
C05	Create files, packages and modules in python.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	3	-	-	-	-	3	1	3	-	3	3	2
C02	3	3	3	3	-	-	-	-	3	1	3	-	1	1	2
C03	3	3	3	3	2	-	-	-	3	1	3	-	3	3	2
C04	3	3	3	3	2	-	-	-	3	1	3	-	3	3	2
C05	3	3	3	3	2	-	-	-	3	1	3	-	3	2	2
AVG	3	3	3	3	1.2	-	-	-	3	1	3	-	2.6	2.4	2



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YEAR	I	SEM	02	SUBJECT CODE	HS8251
SUBJECT	TECHNICAL ENGLISH				

The students will be able to:

C01	Develop the ability to comprehend and respond to scientific and technical talks.
C02	Develop proficiency in reading and interpreting longer technical texts and graphs
C03	Build the skills required for effective technical writing, including process descriptions and sequence words.
C04	Demonstrate proficiency in composing various professional documents such as emails, job applications, and analytical essays.
C05	Build competence in participating in group discussions and writing reports for different purposes in professional contexts.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
C02	-	-	-	2	-	-	-	-	-	3	-	-	1	-	-
C03	-	-	-	2	-	-	-	-	-	3	-	-	1	-	-
C04	-	2	-	-	-	-	-	-	-	3	-	-	1	-	-
C05	-	-	-	-	-	-	-	-	3	3	-	-	-	-	2
AVG	-	0.4	-	0.8	-	-	-	-	0.6	3	-	-	0.8	-	0.4



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YEAR	I	SEM	02	SUBJECT CODE	MA8251
SUBJECT	ENGINEERING MATHEMATICS II				

The students will be able to:

C01	Solve the Eigen values and eigenvectors diagonalization of a matrix, symmetric matrices, Positive definite matrices and similar matrices.
C02	Solve the gradient divergence and curl of a vector point function and related identities.
C03	Analyze the standard techniques of complex variable theory in particular analytic function and its property.
C04	Apply the complex integration techniques and contour integration techniques which can be used in real integrals.
C05	Relate Laplace transform and inverse transform of simple functions with constant coefficients.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	3	2	2	-	-	1	1	1	-	-	2	1	-
C02	3	3	2	2	-	1	-	2	-	2	2	-	1	-	2
C03	3	2	1	2	2	-	-	2	2	1	2	1	2	-	-
C04	3	3	2	3	-	1	2	-	1	2	-	2	1	2	-
C05	3	2	3	2	2	-	-	1	2	-	-	3	2	-	1
AVG	3	2.4	2.2	2.2	1.2	0.6	0.6	0.8	1.6	0.4	2.2	1.6	1.6	0.6	0.6



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YEAR	I	SEM	02	SUBJECT CODE	PH8251
SUBJECT	MATERIALS SCIENCE				

The students will be able to:

C01	Develop the knowledge on the various phase diagrams and their applications.
C02	Build knowledge on Fe-Fe ₃ C phase diagram, various microstructures and alloys.
C03	Construct the knowledge on mechanical properties of materials and their measurement.
C04	Summarize the magnetic, dielectric and superconducting properties of materials.
C05	Summarize the basics of ceramics, composites and Nano-materials.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	2	2	2	2	-	-	1	-	-	2	3	-	-
C02	3	3	2	-	2	2	-	-	-	-	-	2	2	-	2
C03	3	2	3	2	2	2	3	-	-	-	-	3	3	1	-
C04	3	3	2	-	2	2	-	-	-	-	-	2	-	1	2
C05	2	3	3	2	2	2	1	-	-	-	-	3	2	-	1
AVG	2.8	2.8	2.4	1.2	2	2	0.8	-	0.2	-	-	2.4	2	0.4	1



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YEAR	I	SEM	02	SUBJECT CODE	BE8253
SUBJECT	BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING				

The students will be able to:

C01	Compute the electric circuit parameters for simple problems..
C02	Explain the concepts of domestics wiring and protective devices.
C03	Explain the working principle and applications of electrical machines.
C04	Analyze the characteristics of analog electronic devices.
C05	Explain the types and operating principles of sensors and transducers.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	2	3	2	-	-	2	-	3	2	2	-	2
C02	3	3	3	2	-	2	-	-	2	-	-	2	2	-	2
C03	3	3	2	2	2	-	-	-	1	-	-	2	2	-	2
C04	3	3	3	3	3	2	-	-	3	-	3	3	2	-	2
C05	3	3	2	1	1	-	-	-	1	-	-	2	2	1	-
AVG	3	3	2.6	2	1.8	1.2	-	-	1.8	-	1.2	2.2	2	0.2	1.6



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YEAR	I	SEM	02	SUBJECT CODE	GE291
SUBJECT	ENVIRONMENTAL SCIENCE AND ENGINEERING				

The students will be able to:

C01	Extend knowledge to protect environment.
C02	Determine the value of environment at infant stage.
C03	Identify ignorance and misconceptions about environment.
C04	Build a lifestyle that would reduce environmental disasters.
C05	Analyze the importance of clean environment and healthy society.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	-	2	-	-	2	3	-	2	3	-	2	3	-	-
C02	2	-	2	-	2	-	2	-	3	-	-	-	2	-	2
C03	-	-	-	2	-	-	2	-	1	2	-	1	3	1	-
C04	1	-	2	3	2	2	2	-	-	2	-	-	-	1	2
C05	-	-	-	2	3	3	-	1	-	-	-	-	2	-	1
AVG	0.6	0	1.2	1.4	1.4	1.4	1.8	0.2	1.2	1.4	0	0.2	2	0.4	1



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YEAR	I	SEM	02	SUBJECT CODE	GE8292
SUBJECT	ENGINEERING MECHANICS				

The students will be able to:

C01	Illustrate the vectorial and scalar representation of forces and moments.
C02	Analyze the rigid body in equilibrium.
C03	Evaluate the properties of surfaces and solids.
C04	Calculate dynamic forces exerted in rigid body.
C05	Determine the friction and the effects by the laws of friction.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	1	2	-	-	-	-	-	-	2	3	1	1
C02	3	2	2	1	2	-	-	-	-	-	-	2	3	1	1
C03	3	2	3	1	2	-	-	-	-	-	-	2	3	1	2
C04	3	2	3	1	2	-	-	-	-	-	-	2	3	1	2
C05	3	2	3	1	2	-	-	-	-	-	-	2	3	1	2
AVG	3	2	2.4	1	2	0.0	0.0	0.0	0.0	0.0	0.0	2	3	1	1.6



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YEAR	I	SEM		02	SUBJECT CODE	GE8261
SUBJECT	ENGINEERINGB PRACTICES LABORATORY					

The students will be able to:

C01	Explain all the fundamental concepts involving Electrical Engineering.
C02	Create various electrical joints in common household electrical wire work.
C03	Construct simple common household equipment.
C04	Test simple electronic circuits.
C05	Develop simple electronic components on PCB.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	2	3	2	-	-	2	-	3	2	2	-	2
C02	3	-	3	2	-	2	-	-	2	-	-	2	2	-	2
C03	3	3	2	2	2	-	-	-	1	-	-	2	2	-	-
C04	3	3	3	3	3	2	-	-	3	-	3	3	2	-	-
C05	-	3	2	1	1	-	-	-	1	-	-	2	2	-	-
AVG	2.4	2.4	2.6	2	1.8	1.2	-	-	1.8	-	1.2	2.2	2	-	0.8



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YEAR	I	SEM	02	SUBJECT CODE	BE8261
SUBJECT	BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY				

The students will be able to:

CO1	Illustrate the methods to verify the Ohm's law and Kirchhoff's Law and to measure three phase power
CO2	Analyze experimentally the load characteristics of electrical machine
CO3	Analyze the characteristics of basic electronic devices
CO4	Develop simple LVDT to measure displacement.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	3	-	-	2	-	-	-	-	-	-	-	3	-	-
CO3	3	3	-	-	2	-	-	-	1	-	-	-	3	2	-
CO4	3	3	-	-	-	-	-	-	-	-	-	-	-	2	-
AVG	3	3	0.0	0.0	1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	2.2	1	0.0



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YEAR	II	SEM	03	SUBJECT CODE	MA8353
SUBJECT	TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS				

The students will be able to:

C01	Recognize to solve the given standard partial differential equations.
C02	Evaluate the differential equations using Fourier series analysis which plays a vital role in engineering applications
C03	Analyze the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C04	Analyze 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.
C05	Evaluate the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	3	-	2	-	-	1	3	1	-	2	-	1	-
C02	2	2	2	2	-	2	1	-	3	2	-	2	-	-	2
C03	3	2	-	2	2	-	-	2	2	1	2	1	2	-	-
C04	2	3	2	3	-	1	2	-	1	-	-	2	1	2	-
C05	3	-	3	-	2	-	-	1	-	-	-	2	-	-	1
AVG	2.6	1.4	2	1.4	1.2	0.6	0.6	0.8	1.8	0.8	0.4	1.8	0.6	0.6	0.6



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YEAR	II	SEM	03	SUBJECT CODE	ME8391
SUBJECT	ENGINEERING THERMODYNAMICS				

The students will be able to:

C01	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions
C02	Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.
C03	Apply Rankine cycle to steam power plant and compare few cycle improvement methods.
C04	Derive simple thermodynamic relations of ideal and real gases.
C05	Calculate the properties of gas mixtures and moist air and its use in psychometric processes

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	2	2	-	-	-	-	-	-	1	-	3	-	-
C02	3	3	2	2	-	-	-	-	-	-	1	-	3	-	-
C03	3	3	2	-	-	-	-	-	-	-	1	-	3	-	-
C04	3	3	2	-	-	-	-	-	-	-	-	2	3	-	-
C05	3	3	2	2	-	-	-	-	-	-	1	-	3	-	-
AVG	3	3	2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1	0.4	3	0.0	0.0



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YEAR	II	SEM	03	SUBJECT CODE	CE8394
SUBJECT	FLUID MECHANICS AND MACHINERY				

The students will be able to:

C01	Realize Understand the properties and behaviour in static conditions. Also, to understand the conservation laws applicable to fluids and its application through fluid kinematics and dynamics
C02	Estimate losses in pipelines for both laminar and turbulent conditions and analysis of pipes connected in series and parallel. Also, to understand the concept of boundary layer and its thickness on the flat solid surface.
C03	Formulate the relationship among the parameters involved in the given fluid phenomenon and to predict the performances of prototype by model studies
C04	Explain the working principles of various turbines and design the various types of turbines
C05	Explain the working principles of centrifugal, reciprocating and rotary pumps and design the centrifugal and reciprocating pumps

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	2	2	2	-	-	-	-	-	1	2	2	2	-
C02	3	3	2	3	3	3	-	-	-	-	-	2	3	2	-
C03	3	2	3	3	3	-	-	-	-	-	-	2	2	-	-
C04	3	2	2	2	-	-	-	-	-	-	-	3	3	-	2
C05	3	2	2	3	3	-	-	-	-	2	-	-	2	-	2
AVG	3	2.4	2.2	2.6	2.2	0.6	0.0	0.0	0.0	0.4	0.2	1.8	2.4	0.8	0.8



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YEAR	II	SEM	03	SUBJECT CODE	ME8351
SUBJECT	MANUFACTURING TECHNOLOGY - I				

The students will be able to:

C01	Explain different metal casting processes, associated defects, merits and demerits.
C02	Compare different metal joining processes
C03	Summarize various hot working and cold working methods of metals
C04	Explain various sheet metal making processes.
C05	Distinguish various methods of manufacturing plastic components.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
C02	2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
C03	3	2	3	-	-	-	-	-	-	-	-	-	3	-	-
C04	3	2	3	-	-	-	-	-	-	-	-	-	3	-	-
C05	2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
AVG	2.4	2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0



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YEAR	II	SEM	03	SUBJECT CODE	EE8353
SUBJECT	ELECTRICAL DRIVES AND CONTROLS				

The students will be able to:

C01	Explain the basic concepts of Electric drives and the loading conditions with selection of rating for drive motors
C02	Summarize the different characteristics of DC shunt motors with braking mechanisms and type of loads
C03	Describe the different starting methods of DC motors and three phase motors
C04	Contrast with the conventional and solid-state control of DC drives and their applications
C05	Discuss the speed control of AC machines and the using of converters in their applications

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	1	2	-	-	3	3	-	-	-	-	2	2	2	1
C02	3	1	2	-	-	2	2	-	-	-	-	2	2	-	2
C03	3	1	3	-	-	2	2	-	-	-	-	1	2	2	-
C04	3	1	3	-	-	2	2	-	-	-	-	2	2	2	-
C05	3	1	3	-	-	3	2	-	-	-	-	1	2	2	1
AVG	3	1	2.6	0.0	0.0	2.4	2.2	0.0	0.0	0.0	0.0	1.6	2	1.6	0.8



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YEAR	II	SEM	03	SUBJECT CODE	ME8361
SUBJECT	MANUFACTURING TECHNOLOGY LABORATORY - I				

The students will be able to:

C01	Demonstrate the safety precautions exercised in the mechanical workshop.
C02	Illustrate the workpiece as per given shape and size using Lathe.
C03	Demonstrate two metals using arc welding
C04	Apply sheet metal fabrication tools and make simple tray and funnel.
C05	Analyze various different moulding tools, patterns and prepare sand moulds.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
C02	2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
C03	3	2	3	-	-	-	-	-	-	-	-	-	3	-	-
C04	3	2	3	-	-	-	-	-	-	-	-	-	3	-	-
C05	2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
AVG	2.4	2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0



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YEAR	II	SEM	03	SUBJECT CODE	ME8381
SUBJECT	COMPUTER AIDED MACHINE DRAWING				

The students will be able to:

C01	Apply standard drawing layout for modelled assemblies with BoM.
C02	Apply orthogonal views of machine components.
C03	Apply standard drawing layout for modelled parts.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
C02	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
C03	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
AVG	1	2	0.0	0.0	3	0.0	0.0	0.0	3	2	0.0	3	2	2	2



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YEAR	II	SEM	03	SUBJECT CODE	EE8361
SUBJECT	ELECTRICAL ENGINEERING LABORATORY				

The students will be able to:

C01	Build load test O.C.C and Load characteristics of DC Shunt and DC Series generator
C02	Develop load test, O.C & S.C on a single phase transformer.
C03	Construct regulation of an alternator by EMF & MMF methods.
C04	Differentiate V curves and inverted V curves of synchronous motor.
C05	Create load test and speed control on single phase and three phase induction motor.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	3	-	-	-	-	-	-	-	3	3	2	-
C02	3	3	3	3	2	-	-	-	3	-	-	3	3	-	-
C03	3	3	3	3	2	-	-	-	-	-	-	3	3	1	-
C04	3	3	3	3	2	-	-	-	-	-	-	3	3	-	-
C05	3	3	3	3	-	-	-	-	-	-	-	3	3	1	-
AVG	3	3	3	3	1.2	0.0	0.0	0.0	0.6	0.0	0.0	3	3	0.8	0.0



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YEAR	II	SEM	03	SUBJECT CODE	HS8381
SUBJECT	INTERPERSONAL SKILLS/LISTENING AND SPEAKING				

The students will be able to:

C01	Listen and respond appropriately.
C02	Participate in group discussions.
C03	Make effective presentations.
C04	Participate confidently and appropriately in conversations both formal and informal.
C05	Develop the tonal modulation.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C02	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C03	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C04	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C05	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
AVG	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-



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YEAR	II	SEM	04	SUBJECT CODE	ME8492
SUBJECT	KINEMATICS OF MACHINERY				

The students will be able to:

C01	Discuss the basics of mechanism.
C02	Calculate velocity and acceleration in simple mechanisms.
C03	Develop CAM profiles.
C04	Solve problems on gears and gear trains
C05	Examine friction in machine elements.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	2	2	2	-	-	-	-	-	1	2	2	2	-
C02	3	3	2	3	3	3	-	-	-	-	-	2	3	2	-
C03	3	2	3	3	3	-	-	-	-	-	-	2	2	-	-
C04	3	2	2	2	-	-	-	-	-	-	-	3	3	-	2
C05	3	2	2	3	3	-	-	-	-	2	-	-	2	-	2
AVG	3	2.4	2.2	2.6	2.2	0.6	0.0	0.0	0.0	0.4	0.2	1.8	2.4	0.8	0.8



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YEAR	II	SEM	04	SUBJECT CODE	ME8451
SUBJECT	MANUFACTURING TECHNOLOGY - II				

The students will be able to:

C01	Explain the mechanism of material removal processes
C02	Describe the constructional and operational features of centre lathe and other special purpose lathes
C03	Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines
C04	Explain the types of grinding and other super finishing processes apart from gear manufacturing processes
C05	Summarize numerical control of machine tools and write a part program

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	2	-	-	-	-	1	-	-	1	3	2	1
C02	3	2	2	2	-	-	-	-	1	-	-	1	3	2	1
C03	3	2	2	2	-	-	-	-	1	-	-	1	3	2	1
C04	3	2	2	2	-	-	-	-	1	-	-	1	3	2	1
C05	3	2	2	2	-	-	-	-	1	-	-	1	3	2	1
AVG	3	2	2	2	0.0	0.0	0.0	0.0	1	0.0	0.0	1	3	2	1



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YEAR	II	SEM	04	SUBJECT CODE	ME8491
SUBJECT	ENGINEERING METALLURGY				

The students will be able to:

C01	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.
C02	Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes
C03	Clarify the effect of alloying elements on ferrous and non-ferrous metals
C04	Summarize the properties and applications of non-metallic materials
C05	Explain the testing of mechanical properties

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	1	3	2	-	-	-	-	-	-	1	2	2	1	2
C02	3	1	3	1	-	2	-	-	-	-	-	2	2	1	2
C03	3	1	3	-	-	-	-	-	-	-	-	2	2	1	2
C04	3	1	3	-	-	-	2	-	-	-	-	2	2	1	2
C05	3	1	3	3	2	-	-	-	-	-	-	2	2	1	2
AVG	3	1	3	1.2	0.4	0.4	0.4	0.0	0.0	0.0	0.2	2	2	1	2



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YEAR	II	SEM	04	SUBJECT CODE	CE8395
SUBJECT	STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS				

The students will be able to:

C01	Interpret the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
C02	Analyze the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
C03	Apply basic equation of simple torsion in designing of shafts and helical spring.
C04	Calculate the slope and deflection in beams using different methods
C05	Analyze and design thin and thick shells for the applied internal and external pressures

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	2	1	2	1	1	.	.	1	.	.	1	3	1	.
C02	3	2	2	1	1	1	.	.	1	.	.	1	2	3	.
C03	2	2	2	1	2	2	.	.	1	.	.	1	2	2	.
C04	3	2	2	1	2	2	.	.	1	.	.	1	2	2	.
C05	3	2	2	1	1	1	.	.	1	.	.	1	2	2	.
AVG	2.6	2	1.8	1.2	1.6	1.4	0.0	0.0	1	0.0	0.0	1	2.2	2	0.0



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YEAR	II	SEM	04	SUBJECT CODE	ME8493
SUBJECT	THERMAL ENGINEERING - I				

The students will be able to:

C01	Apply thermodynamic concepts to different air standard cycles and solve problems
C02	Solve problems in single stage and multistage air compressors
C03	Explain the functioning and features of IC engines, components and auxiliaries
C04	Calculate performance parameters of IC Engines
C05	Explain the flow in Gas turbines and solve problems

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	1	-	-	-	-	-	-	1	-	1	2	-	-
C02	1	3	3	2	-	-	-	-	-	-	-	-	1	-	-
C03	1	2	3	1	2	-	1	1	-	2	-	1	2	2	-
C04	1	1	2	1	2	-	1	1	-	2	-	1	2	2	-
C05	2	1	1	2	-	-	-	-	-	-	-	-	1	-	-
AVG	1.6	1.8	2	1.2	0.8	0.0	0.4	0.4	0.0	1	0.0	0.6	1.6	0.8	0.0



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YEAR	II	SEM	04	SUBJECT CODE	ME8462
SUBJECT	MANUFACTURING TECHNOLOGY LABORATORY - II				

The students will be able to:

C01	Apply the different machine tools to manufacturing gears.
C02	Develop the different machine tools to manufacturing gears.
C03	Analyze the different machine tools for finishing operations.
C04	Analyze manufacture tools using cutter grinder.
C05	Develop CNC part programming.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
C02	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
C03	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
C04	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
C05	1	2	-	-	3	-	-	-	3	2	-	3	2	2	2
AVG	1	2	0.0	0.0	3	0.0	0.0	0.0	3	2	0.0	3	2	2	2



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YEAR	II	SEM	04	SUBJECT CODE	CE8381
SUBJECT	STRENGTH OF MATERIALS AND FLUID MECHANICS AND MACHINERY LABORATORY				

The students will be able to:

CO1	Determine the tensile, torsion and hardness properties of metals by testing.
CO2	Determine the stiffness properties of helical and carriage spring.
CO3	Apply the conservation laws to determine the coefficient of discharge of a venturimeter and finding the friction factor of given pipe.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
CO1	3	2	1	3	3	1	1	1	3	1	1	2	2	2	1
CO2	3	2	1	3	3	1	1	1	3	1	1	2	3	2	1
CO3	3	3	2	3	2	1	1	1	3	1	1	2	3	2	1
AVG	3	2.3	1.3	3	2.6	1	1	1	3	1	1	2	2.6	2	1



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YEAR	II	SEM	04	SUBJECT CODE	HS8461
SUBJECT	ADVANCED READING AND WRITING				

The students will be able to:

C01	Write different types of essays.
C02	Write winning job applications.
C03	Read and evaluate texts critically.
C04	Display critical thinking in various professional contexts.
C05	Learn to write projects.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	-	-	2	-	-	-	-	2	3	1	-	-	-	-
C02	-	-	-	2	-	-	-	-	2	3	1	-	-	-	-
C03	-	-	-	2	-	-	-	-	2	3	1	-	-	-	-
C04	-	-	-	2	-	-	-	-	2	3	1	-	-	-	-
C05	-	-	-	2	-	-	-	-	2	3	1	-	-	-	-
AVG	0.0	0.0	0.0	2	0.0	0.0	0.0	0.0	2	3	1	0.0	0.0	0.0	0.0



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YEAR	III	SEM	05	SUBJECT CODE	ME8595
SUBJECT	THERMAL ENGINEERING - II				

The students will be able to:

C01	Solve problems in Steam Nozzle
C02	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters
C03	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems
C04	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers.
C05	Solve problems using refrigerant table / charts and psychrometric charts.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	1	-	-	-	-	-	-	-	1	2	1	-
C02	3	2	2	1	-	-	-	-	-	-	-	1	2	1	-
C03	3	2	2	1	-	-	-	-	-	-	-	1	2	1	-
C04	3	2	2	1	-	-	-	-	-	-	-	1	2	1	-
C05	3	2	2	1	-	-	-	-	-	-	-	1	2	1	-
AVG	3	2	2	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	2	1	0.0



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YEAR	III	SEM	05	SUBJECT CODE	ME8593
SUBJECT	DESIGN OF MACHINE ELEMENTS				

The students will be able to:

C01	Explain the influence of steady and variable stresses in machine component design
C02	Apply the concepts of design to shafts, keys and couplings
C03	Apply the concepts of design to temporary and permanent joints
C04	Apply the concepts of design to energy absorbing members, connecting rod and crankshaft.
C05	Apply the concepts of design to bearings

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	2	-	-	-	-	-	2	1	-	3	-	2
C02	3	3	3	2	-	-	-	-	-	2	1	-	3	-	2
C03	3	3	3	2	-	-	-	-	-	2	1	-	3	-	2
C04	3	3	3	2	-	-	-	-	-	2	1	-	3	-	2
C05	3	3	3	2	-	-	-	-	-	2	1	-	3	-	2
AVG	3	3	3	2	0.0	0.0	0.0	0.0	0.0	2	1	0.0	3	0.0	2



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YEAR	III	SEM	05	SUBJECT CODE	ME8501
SUBJECT	METROLOGY AND MEASUREMENTS				

The students will be able to:

C01	Describe the concepts of measurements to apply in various metrological instruments
C02	Outline the principles of linear and angular measurement tools used for industrial applications
C03	Explain the procedure for conducting computer aided inspection
C04	Demonstrate the techniques of form measurement used for industrial components
C05	Discuss various measuring techniques of mechanical properties in industrial applications

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	2	-	-	-	2	-	-	-	-	-	-	2	-
C02	3	3	2	-	-	-	-	-	-	-	-	-	-	1	-
C03	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
C04	3	2	-	-	2	-	-	-	-	-	-	-	-	-	1
C05	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
AVG	3	1	0.8	0.0	0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	1	0.2



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YEAR	III	SEM	05	SUBJECT CODE	ME8594
SUBJECT	DYNAMICS OF MACHINES				

The students will be able to:

C01	Calculate static and dynamic forces of mechanisms
C02	Calculate the balancing masses and their locations of reciprocating and rotating masses
C03	Compute the frequency of free vibration
C04	Compute the frequency of forced vibration and damping coefficient
C05	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	2	3	3	2	1	1	2	-	1	2	3	-	1
C02	3	3	1	1	3	-	-	-	1	-	-	2	3	2	-
C03	3	2	3	-	-	-	-	1	-	1	-	2	-	2	-
C04	3	2	-	-	-	3	-	3	-	-	-	3	3	-	2
C05	3	2	2	3	3	-	2	-	-	3	-	-	-	3	2
AVG	3	1.8	1.6	1.4	1.8	1	0.6	1	0.6	0.8	0.2	1.8	1.8	1.6	1



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YEAR	III	SEM	05	SUBJECT CODE	OR0551
SUBJECT	RENEWABLE ENERGY SOURCES				

The students will be able to:

C01	Analyze the physics of solar radiation.
C02	Analyze the solar energy collectors and methodologies of storing solar energy.
C03	Applying solar energy in a useful way.
C04	Analyze the wind energy and biomass with its economic aspects.
C05	Analyze capturing and applying other forms of energy sources like wind, biogas and geothermal energies.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	2	-	-	-	-	1	-	-	-	-	-	-	1	-
C02	2	2	-	-	-	-	1	-	-	-	-	-	-	1	-
C03	3	2	-	-	-	-	1	-	-	-	-	-	-	1	-
C04	3	2	-	-	-	-	3	-	-	-	-	1	-	-	1
C05	3	1	-	-	-	-	3	-	-	-	-	1	1	-	-
AVG	2.4	1.8	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.4	0.2	0.6	0.2



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YEAR	III	SEM	05	SUBJECT CODE	ME8511
SUBJECT	KINEMATICS AND DYNAMICS LABORATORY				

The students will be able to:

CO1	Design experience in handling 2D drafting and 3D modelling software systems
CO2	Design 3 Dimensional geometric model of parts, sub-assemblies, assemblies and export it to drawing
CO3	Demonstrate manual part programming and simulate the CNC program and Generate part programming using G and M code through CAM software.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
CO1	2	2	2	2	3	-	-	-	2	-	-	1	3	3	1
CO2	2	2	2	2	3	-	-	-	2	-	-	1	3	3	1
CO3	2	2	2	2	3	-	-	-	2	-	-	1	3	3	1
AVG	2	2	2	2	3	0.0	0.0	0.0	2	0.0	0.0	1	3	3	1



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YEAR	III	SEM	05	SUBJECT CODE	ME8512
SUBJECT	THERMAL ENGINEERING LABORATORY				

The students will be able to:

C01	Apply the tests on heat conduction apparatus and evaluate thermal conductivity of materials.
C02	Familiarize the tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.
C03	Familiarize the tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.
C04	Develop the various tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.
C05	Develop the various tests to evaluate the performance of refrigeration and air conditioning test rigs.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	2	1	1	-	-	-	-	1	-	-	1	1	1	1
C02	2	2	1	1	-	-	-	-	1	-	-	1	1	1	1
C03	2	2	1	1	-	-	-	-	1	-	-	1	1	1	1
C04	1	1	3	2	-	-	-	-	1	-	-	1	2	2	3
C05	1	1	3	2	-	-	-	-	1	-	-	1	2	2	3
AVG	1.6	1.6	1.8	1.4	0.0	0.0	0.0	0.0	1	0.0	0.0	1	1.4	1.4	1.6



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YEAR	III	SEM	05	SUBJECT CODE	ME8513
SUBJECT	METROLOGY AND MEASUREMENTS LABORATORY				

The students will be able to:

C01	Calibrate and Understand application of different linear and angular measuring devices.
C02	Compare the application of slip gauges, limit gauges and comparators.
C03	Analyze the application of floating carriage micrometer and gear tooth vernier caliper to measure screw thread and gear tooth parameters respectively.
C04	Analyze the application of optical flat, optical projector / toolmaker microscope.
C05	Identify the different temperature measuring instruments and its applications.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	-	-	-	-	-	-	-	-	-	2	1	-	-
C02	3	2	-	-	-	-	-	-	-	-	-	2	1	-	-
C03	3	2	-	-	-	-	-	-	-	-	-	2	1	-	-
C04	3	-	-	-	-	-	-	-	-	-	-	2	1	-	-
C05	3	-	-	-	-	-	-	-	-	-	-	2	1	-	-
AVG	3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2	1	0.0	0.0



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YEAR	III	SEM	06	SUBJECT CODE	ME8651
SUBJECT	DESIGN OF TRANSMISSION SYSTEMS				

The students will be able to:

C01	Apply the concepts of design to belts, chains and rope drives.
C02	Apply the concepts of design to spur, helical gears.
C03	Apply the concepts of design to worm and bevel gears.
C04	Apply the concepts of design to gear boxes.
C05	Apply the concepts of design to cams, brakes and clutches

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	3	1	-	-	-	-	1	-	-	1	2	3	2
C02	3	2	3	1	-	-	-	-	1	-	-	1	2	3	2
C03	3	2	3	1	-	-	-	-	1	-	-	1	2	3	2
C04	3	2	3	1	-	-	-	-	1	-	-	1	2	3	2
C05	3	2	3	1	-	-	-	-	1	-	-	1	2	3	2
AVG	3	2	3	1	0.0	0.0	0.0	0.0	1	0.0	0.0	1	2	3	2



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E-mail : mail@bethlahem.org, Website : www.bethlahem.org

YEAR	III	SEM	06	SUBJECT CODE	ME8691
SUBJECT	COMPUTER AIDED DESIGN AND MANUFACTURING				

The students will be able to:

C01	Develop the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics.
C02	Create the fundamentals of parametric curves, surfaces and Solids..
C03	Develop the different types of Standard systems used in CAD.
C04	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines.
C05	Create the different types of techniques used in Cellular Manufacturing and FMS.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	-	-	-	1	-	-	1	-	1	-	1	1	-	1
C02	-	-	3	-	2	-	-	-	-	1	-	1	1	2	-
C03	2	3	-	-	-	-	-	1	-	-	-	-	-	2	1
C04	-	2	-	-	2	-	1	-	-	-	1	-	1	1	2
C05	-	-	2	-	-	2	-	2	-	1	-	2	-	2	3
AVG	0.6	1	1	0.0	1	0.4	0.2	0.8	0.0	0.6	0.2	0.8	0.6	1.4	1.4



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YEAR	III	SEM	06	SUBJECT CODE	ME8693
SUBJECT	HEAT AND MASS TRANSFER				

The students will be able to:

C01	Explain about the real time applications of solid medium heat transfer.
C02	Describe the real time applications of fluid medium heat transfer
C03	Express the knowledge of design skills of heat exchangers.
C04	Compute the rate of radiation heat exchange between the surfaces.
C05	Calculate the rate of mass diffusion and mass transfer coefficient.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	2	1	-	-	-	-	-	-	-	1	3	2	1
C02	3	3	3	2	-	-	-	-	-	-	-	1	3	2	1
C03	3	3	2	2	-	-	-	-	-	3	-	1	3	2	1
C04	3	3	2	2	-	-	-	-	-	-	-	1	3	2	1
C05	3	3	2	2	-	-	-	-	-	2	-	1	3	2	1
AVG	3	3	2.2	1.8	0.0	0.0	0.0	0.0	0.0	1	0.0	1	3	2	1



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YEAR	III	SEM	06	SUBJECT CODE	ME8692
SUBJECT	FINITE ELEMENT ANALYSIS				

The students will be able to:

C01	Summarize the basics of finite element formulation.
C02	Apply finite element formulations to solve one dimensional Problems.
C03	Apply finite element formulations to solve two dimensional Problems.
C04	Apply finite element method to solve heat transfer and fluid mechanics problems.
C05	Apply finite element method to solve problems on dynamic analysis.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	3	3	3	-	2	2	1	-	-	1	1	1	1	-
C02	3	3	3	3	-	2	2	1	-	-	2	2	3	3	-
C03	3	3	3	3	-	2	2	1	-	-	2	2	3	3	-
C04	3	3	3	3	-	2	2	1	-	-	2	2	2	2	2
C05	3	3	3	3	-	2	2	2	-	-	2	2	1	1	3
AVG	3	3	3	3	0.0	2	2	1.2	0.0	0.0	1.8	1.8	2	2	1



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YEAR	III	SEM	06	SUBJECT CODE	ME8694
SUBJECT	HYDRAULICS AND PNEUMATICS				

The students will be able to:

C01	Examine the fundamentals of fluids and their qualities in terms of their ability to do Work.
C02	Comprehend the fundamental components and systems of hydraulics.
C03	Have a better understanding of the circuits used in hydraulic systems for varied Applications.
C04	Comprehend the fundamental components and systems of pneumatics.
C05	Interpret the hydraulics and pneumatics, design circuits for diverse applications.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	1	1	1	-	-	-	-	-	-	-	1	2	1	1
C02	2	1	1	1	-	-	-	-	-	-	-	1	2	1	1
C03	2	1	1	1	-	-	-	-	-	-	-	1	2	1	1
C04	2	1	1	1	-	-	-	-	-	-	-	1	2	1	1
C05	2	1	1	1	-	-	-	-	-	-	-	1	2	1	1
AVG	2	1	1	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	2	1	1



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YEAR	III	SEM	06	SUBJECT CODE	PR8592
SUBJECT	WELDING TECHNOLOGY				

The students will be able to:

C01	Analyze the construction and working principles of gas and arc welding process.
C02	Apply the construction and working principles of resistance welding process.
C03	Discuss the construction and working principles of various solid state welding process.
C04	Discuss the construction and working principles of various special welding processes
C05	Evaluate the concepts on weld joint design, weldability and testing of weldments.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	-	-	-	-	2	-	2	-	-	-	1	1	-	-
C02	1	-	-	-	-	2	-	2	-	-	-	1	1	-	-
C03	1	-	-	-	-	2	-	2	-	-	-	1	1	-	-
C04	1	-	-	-	-	2	-	2	-	-	-	1	1	-	-
C05	1	-	-	-	-	2	-	2	-	-	-	1	-	1	-
AVG	1	0.0	0.0	0.0	0.0	2	0.0	2	0.0	0.0	0.0	1	0.8	0.2	0.0



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YEAR	III	SEM	06	SUBJECT CODE	ME8681
SUBJECT	CAD / CAM LABORATORY				

The students will be able to:

C01	Discuss the basics of mechanism
C02	Calculate velocity and acceleration in simple mechanisms
C03	Develop CAM profiles
C04	Solve problems on gears and gear trains
C05	Examine friction in machine elements

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	-	-	-	-	-	-	-	1	2	-	-	-	2
C02	3	-	3	-	-	-	-	-	-	1	2	-	-	-	2
C03	3	-	3	-	-	-	-	-	-	1	2	-	-	-	2
C04	3	-	3	-	-	-	-	-	-	1	2	-	-	-	2
C05	3	-	-	-	-	-	-	-	-	1	2	-	-	-	2
AVG	3	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	1	2	0.0	0.0	0.0	2



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YEAR	III	SEM	06	SUBJECT CODE	ME8682
SUBJECT	DESIGN AND FABRICATION PROJECT				

The students will be able to:

C01	Design and fabricate the machine element or the mechanical product.
C02	Demonstrate the working model of the machine element or the mechanical product.
C03	Express the Engineering activities with effective presentation and report.
C04	Interpret the findings with appropriate technological / research citation.
C05	Elaborate the completed task and compose the project report.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
C02	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
C03	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
C04	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
C05	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
AVG	3	2	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3	0.0	0.0



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YEAR	III	SEM	06	SUBJECT CODE	HS8581
SUBJECT	PROFESSIONAL COMMUNICATION				

The students will be able to:

C01	Create effective presentations.
C02	Participate confidently in Group Discussions.
C03	Attend job interviews and be successful in them.
C04	Develop adequate Soft Skills required for the workplace.
C05	Manage stress in the workplace.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C02	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C03	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C04	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
C05	-	2	-	-	-	-	-	-	2	3	-	-	-	-	-
AVG	0.0	2	0.0	0.0	0.0	0.0	0.0	0.0	2	3	0.0	0.0	0.0	0.0	0.0



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YEAR	IV	SEM	07	SUBJECT CODE	ME8792
SUBJECT	POWER PLANT ENGINEERING				

The students will be able to:

C01	Draw the layout of modern coal power plant and list the various components used in thermal power plant.
C02	Identify the components of diesel and gas turbine power plants and construct the integrated gasifier based combined cycle systems.
C03	Describe the layout of subsystems of various nuclear power plants and express safety measures for nuclear power plants..
C04	Distinguish different hydroelectric power plants and construct various renewable energy power plants such as wind, tidal, spv, solar thermal, geo thermal, biogas and fuel cell.
C05	Calculate the unit cost of electrical energy based on Power tariff, load factor, demand factor, diversity factor and plant safety factor.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	-	3	-	-	1	-	1	-	-	-	-	2	-	-
C02	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
C03	-	1	3	-	-	3	3	-	-	-	-	-	-	-	2
C04	-	-	-	-	2	2	3	3	-	-	-	2	-	1	2
C05	3	-	3	-	-	2	3	2	-	-	-	2	2	-	2
AVG	1.2	0.2	1.8	0.0	1.4	1.6	1.8	1.2	0.0	0.0	0.0	0.8	1.4	0.2	1.2



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YEAR	IV	SEM	07	SUBJECT CODE	ME8793
SUBJECT	PROCESS PLANNING AND COST ESTIMATION				

The students will be able to:

C01	Select the process, equipment and tools for various industrial products.
C02	Prepare process planning activity chart.
C03	Explain the concept of cost estimation.
C04	Compute the job order cost for different type of shop floor.
C05	Calculate the machining time for various machining operations.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	1	2	-	-	-	-	-	-	2	-	-	2	-	1
C02	2	1	3	-	-	-	2	-	-	-	-	-	2	-	-
C03	2	2	3	1	-	-	-	-	-	1	-	-	2	-	-
C04	3	3	2	-	-	-	-	-	-	2	-	-	1	-	-
C05	2	2	2	-	1	-	-	-	-	-	-	-	2	-	-
AVG	2.2	1.8	2.4	0.2	0.2	0.0	0.4	0.0	0.0	1	0.0	0.0	1.8	0.0	0.2



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YEAR	IV	SEM	07	SUBJECT CODE	ME8791
SUBJECT	MECHATRONICS				

The students will be able to:

C01	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology.
C02	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.
C03	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various devices interfacing.
C04	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.
C05	Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	-	-	-	-	-	-	-	-	-	-	-	3	-
C02	2	2	-	-	-	-	-	-	-	-	-	-	-	3	-
C03	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-
C04	-	-	3	-	-	-	-	-	-	-	-	-	-	-	1
C05	-	1	-	-	3	-	-	-	-	-	-	-	3	-	-
AVG	1	1.6	0.6	0.0	0.6	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.6	1.4	0.2



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YEAR	IV	SEM	07	SUBJECT CODE	OIE751
SUBJECT	ROBOTICS				

The students will be able to:

C01	Explain the functions of the basic components of a Robot.
C02	Explain the use of various types of End of Effectors and Sensors.
C03	Explain the knowledge in Robot Kinematics and Programming.
C04	Illustrate knowledge in Reverse Kinematics and Programming.
C05	Analyze the Robot safety issues and economics.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	1	2	2	-	1	1	2	-	1	2	1	2	1
C02	3	3	1	1	3	3	-	-	1	-	-	2	3	2	-
C03	3	2	3	3	3	-	-	1	-	1	-	2	2	-	-
C04	3	2	2	2	-	-	-	-	1	-	-	3	3	-	2
C05	3	2	2	3	3	-	-	1	-	2	-	-	3	-	2
AVG	3	2.2	1.8	2.2	2.2	0.6	0.2	0.6	0.8	0.6	0.2	1.8	2.4	0.8	1



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YEAR	IV	SEM	07	SUBJECT CODE	ME8073
SUBJECT	UNCONVENTIONAL MACHINING PROCESSES				

The students will be able to:

C01	Discuss the the classification of unconventional machining processes and their need.
C02	Explain the number of unconventional machining technologies that use thermal and electrical energy.
C03	Summarize the numerous energy-based chemical and electrochemical unconventional machining methods.
C04	Explain the different novel machining techniques based on nano abrasives.
C05	Explain the distinction between several current trends based on unconventional machining techniques.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	2	-	-	-	-	1	-	-	-	-	-	-	1	-
C02	2	2	-	-	-	-	1	-	-	-	-	-	-	1	-
C03	3	2	-	-	-	-	1	-	-	-	-	-	-	1	-
C04	3	2	-	-	-	-	3	-	-	-	-	1	-	-	1
C05	3	1	-	-	-	-	3	-	-	-	-	1	1	-	-
AVG	2.4	1.8	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.4	0.2	0.6	0.2



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YEAR	IV	SEM	07	SUBJECT CODE	ME8097
SUBJECT	NON DESTRUCTIVE TESTING AND EVALUATION				

The students will be able to:

C01	Relate the importance of various NDT Techniques.
C02	Extend to have hands on experience on all types of NDT techniques.
C03	Analyze appropriate technique for testing.
C04	Analyze the merits of various NDT Techniques.
C05	Analyze the flaws and defects and provide solutions.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	-	-	2	-	-	-	-	-	-	2	3	1	1
C02	3	-	2	-	-	-	-	-	-	-	-	2	3	1	1
C03	3	2	3	1	2	-	-	-	-	-	-	2	3	1	2
C04	3	2	3	1	2	-	-	-	-	-	-	2	3	1	2
C05	3	2	3	1	2	-	-	-	-	-	-	2	3	1	2
AVG	3	1.2	2.2	0.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0	2	3	1	1.6



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YEAR	IV	SEM	07	SUBJECT CODE	ME8711
SUBJECT	SIMULATION AND ANALYSIS LABORATORY				

The students will be able to:

C01	Simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB.
C02	Analyze the stresses and strains induced in plates, brackets and beams and heat transfer problems.
C03	Calculate the natural frequency and mode shape analysis of 2D components and beams.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	-	-	-	-	-	-	-	-	1	2	-	-	-	2
C02	3	-	3	-	-	-	-	-	-	1	2	-	-	-	2
C03	3	-	3	-	-	-	-	-	-	1	2	-	-	-	2
AVG	3	0.0	2	0.0	0.0	0.0	0.0	0.0	0.0	1	2	0.0	0.0	0.0	2



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Phone : 04651 - 268466, 268655, Fax : 04651 - 268466

E-mail : mail@bethlahem.org, Website : www.bethlahem.org

YEAR	IV	SEM	07	SUBJECT CODE	ME8781
SUBJECT	MECHATRONICS LABORATORY				

The students will be able to:

C01	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.
C02	Demonstrate the functioning of control systems with the help of PLC and microcontrollers.
C03	Compare the Basic hydraulic and Pneumatic Trainer Kit with manual and electrical Controls and PLC Control
C04	Develop the Image processing system with hardware & software
C05	Construct the traffic light control system

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	1	1	2	3	1	2	2	-	1	1	-	2	-	1	3
C02	1	1	2	3	1	2	2	-	1	1	-	2	-	1	3
C03	1	1	2	3	1	2	2	-	1	1	-	2	-	1	3
C04	1	1	2	3	1	2	2	-	1	1	-	2	-	1	3
C05	1	1	2	3	1	2	2	-	1	1	-	2	-	1	3
AVG	1	1	2	3	1	2	2	0.0	1	1	0.0	2	0.0	1	3



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YEAR	IV	SEM	07	SUBJECT CODE	ME8712
SUBJECT	TECHNICAL SEMINAR				

The students will be able to:

C01	Summarize the basic skills for performing literature survey and paper presentation
C02	Create better communication skills
C03	Demonstrate the current topics in Mechanical and related areas based on current publications.
C04	Fosters interview skills so as to be successful in them.
C05	Promotes the power point presentation report.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
C02	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
C03	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
C04	1	1	-	-	-	-	-	-	-	-	-	-	-	1	1
C05	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
AVG	1.8	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.2



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YEAR	IV	SEM	08	SUBJECT CODE	MG8591
SUBJECT	PRINCIPLES OF MANAGEMENT				

The students will be able to:

C01	Describe the basic of management and its types, skills, management roles, types of business organization and current trends in business.
C02	Explain the nature and purpose of planning, types, objectives of planning and decision process.
C03	Compare the different organization structures, authorities and responsibilities, human resource management and training and development.
C04	Estimate the individual and group behavior, motivation, job satisfaction types and theories of leadership, communication and IT.
C05	Apply the knowledge using the various system and process of controlling, budgetary and non-budgetary control techniques, use of computer and IT in management control, reporting.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	-	-	-	-	-	-	-	2	2	1	3	1	-	3	-
C02	-	-	-	-	-	2	-	2	2	-	2	1	-	3	-
C03	-	-	-	-	-	2	-	2	2	-	-	1	-	3	-
C04	-	-	-	-	-	2	-	2	2	3	2	1	-	3	-
C05	-	-	-	-	-	2	-	2	2	-	-	1	-	3	-
AVG	0.0	0.0	0.0	0.0	0.0	1.6	0.0	2	2	0.8	1.4	1	0.0	3	0.0



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YEAR	IV	SEM	08	SUBJECT CODE	IE8693
SUBJECT	PRODUCTION PLANNING AND CONTROL				

The students will be able to:

C01	Apply green computing practices to minimize negative impacts on the environment.
C02	Analyze the skill in energy saving practices in their use of hardware.
C03	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
C04	Analyze the ways to minimize equipment disposal requirements.
C05	Compare and analyse different case studies.

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	2	-	-	-	-	1	3	-	-	-	-	-	1	1	1
C02	2	-	-	-	-	-	2	-	-	-	-	1	1	1	1
C03	3	2	3	-	-	2	-	-	-	-	-	-	3	3	-
C04	-	-	-	2	3	-	-	2	-	-	-	-	1	1	-
C05	-	1	1	1	-	-	-	-	-	3	-	-	1	1	-
AVG	1.4	0.6	0.8	0.6	0.6	0.6	1	0.4	0.0	0.6	0.0	0.2	1.4	1.4	0.4



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YEAR	IV	SEM	08	SUBJECT CODE	ME8811
SUBJECT	PROJECT WORK				

The students will be able to:

C01	Summarize the literature of previous research works and relate them to present project
C02	Formulate an work plan and methodology
C03	Explain the project outlining the approach and expected results using good oral and written presentation skills
C04	Develop a prototype/model or experimental set-up necessary to meet the objectives
C05	Compile the work done throughout the project and suggest the scope

CO-PO MAPPING

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	2	-	-	-	-	-	-	-	-	-	2	2	2
C02	3	2	2	-	3	3	3	-	-	-	-	-	2	2	2
C03	3	-	3	3	-	-	-	-	-	-	3	3	-	3	3
C04	2	1		3	-	2	-	-	-	2	-	3	-	-	-
C05	3	3		-	-	-	-	-	-	3	-	3	-	-	-
AVG	2.8	1.6	1.4	1.2	0.6	1	0.6	0.0	0.0	1	0.6	1.8	0.8	1.4	1.4