



St. Francis Institute of Technology

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Information Technology and Electronics & Telecommunication Engineering are NBA Accredited

Department of Mechanical Engineering

COURSE OUTCOMES (COs)

A.Y. 2022-23

Term - EVEN

Semester – VI

MEC601/MEL601 – Machine Design

MEC601.1	The students will be able to demonstrate the understanding of various considerations like aesthetic, ergonomic, manufacturing, etc. required for design of mechanical components and design thick cylinders.
MEC601.2	The students will be able to analyse stresses in components under static tensile loads like Socket and Spigot Cotter joint, Knuckle joint; Power Screws and Screw Jack under compressive loading and bolted and welded joints under eccentric loading.
MEC601.3	The students will be able to explain the importance of various design concepts, like Fatigue failure, Soderberg and Goodman design criteria, etc. for components under fluctuating loads and combined stresses and design shafts, keys and couplings.
MEC601.4	The students will be able to select different rolling contact bearings for different loading and speed conditions and design hydrodynamically lubricated bearings.
MEC601.5	The students will be able to select and or design Flat or V Belts, Roller Chains and Flywheel for various loading conditions.
MEC601.6	The students will be able to design dimensions of different types of springs like Helical, Tension and Leaf springs, under various loading conditions and clutches and brakes for various applications.

MEC602/MEL602 – Turbo Machinery

MEC602.1	The students will be able to define various parameters associated with steam generators and turbo machines and identify various components and mountings of steam generators with their significance.
MEC602.2	The students will be able to define various parameters associated with hydraulic turbines and analyze performance parameters based on work done and efficiency along with velocity triangles of impulse / reaction turbine.
MEC602.3	The students will be able to demonstrate basic working of pumps and apply principles of thermodynamics and fluid mechanics to estimate various parameters like mass flow rate power, torque, efficiency, temperature, etc. for different types of pumps and explain its application.
MEC602.4	The students will be able to analyze performance of air compressor and apply various techniques to enhance performance.
MEC602.5	The students will be able to analyze steam turbine performance using velocity triangle diagram and apply various techniques to enhance performance.
MEC602.6	The students will be able to analyze methods to improve efficiency of Gas turbines using intercooling, reheat, and regeneration methods and determine efficiencies of jet propulsion engines.

MEC603/MEL603 – Heating, Ventilation, Air conditioning and Refrigeration

MEC603.1	The students will be able to explain various aircraft air cooling systems.
MEC603.2	The students will be able to evaluate the performance of various refrigeration systems.
MEC603.3	The students will be able to estimate the cooling and heating loads for air-conditioning system and illustrate air conditioning processes using psychometric chart.
MEC603.4	The students will be able to select air handling unit & design air distribution system.
MEC603.5	The students will be able to identify various HVAC&R components.
MEC603.6	The students will be able to illustrate the fundamental principles and applications of refrigeration and air-conditioning systems.

MEC604 - Automation and Artificial Intelligence

MEC604.1	The students will be able to demonstrate understanding of fundamentals of industrial automation and Artificial Intelligence.
MEC604.2	The students will be able to design & develop pneumatic and hydraulic circuits.
MEC604.3	The students will be able to design and develop electro-pneumatic circuits and PLC ladder logic circuits.
MEC604.4	The students will be able to demonstrate understanding of robotic control systems and their applications.
MEC604.5	The students will be able to demonstrate understanding of various problem-solving approach in AI and machine learning technologies.
MEC604.6	The students will be able to demonstrate understanding of Artificial Neural Network and various AI technologies in the realm of Automation.

MEDLO6021 – Press Tool Design

MEDLO6021.1	The students will be able to demonstrate various press working operations for mass production of sheet metal parts.
MEDLO6021.2	The students will be able to Explain Design Progressive die Press tool elements.
MEDLO6021.3	The students will be able to design bending and drawing dies
MEDLO6021.4	The students will be able to Explain basic construction and working of miscellaneous dies.
MEDLO6021.5	The students will be able to classify, select suitable press with setting.
MEDLO6021.6	The students will be able to understand safety aspects and automation in press working.

MEDLO6023 – Metal Forming Technology

MEDLO6023.1	The students will be able to understand the concept of different metal forming process
MEDLO6023.2	The students will be design Rolling process both analytically and numerically and understand the associated problems and flaws with Process.
MEDLO6023.3	The students will be design Forging process both analytically and numerically and understand the associated problems and flaws with Process.
MEDLO6023.4	The students will be design Extrusion process both analytically and numerically and understand the associated problems and flaws with Process.
MEDLO6023.5	The students will be design Drawing process both analytically and numerically and understand the associated problems and flaws with Process.
MEDLO6023.6	The students will be able to understand concept of Sheet metal Forming with different forming process.

MESBL601 – Measurement and Automation (Skill based Lab)

MESBL601.1	The students will be able to apply inspection gauge to check or measure surface parameters.
MESBL601.2	The students will be able to measure surface parameters using precision measurement tools and equipment.
MESBL601.3	The students will be able to measure different mechanical parameters by using sensors.
MESBL601.4	The students will be able to illustrate different hydraulic and pneumatic systems.
MESBL601.5	The students will be able to demonstrate various design principles of robotics through kinematic analysis, workspace analysis and trajectory planning.