BACHELOR OF SCIENCE
# Mechanical Engineering

The Bachelor of Science in Mechanical Engineering (BS ME) begins with the study of the behavior of materials upon the application of forces and/or heat manifested by moving things. Anything that is mechanical or interacts with another machine or human being is within the broad scope of mechanical engineering.

The core and professional courses enable students to acquire useful skills that can gain national or international certifications. These help students go through capstone courses of Power Plant Design, Industrial Plant Design, and Machine Design. To give the students a culminating experience, community-based research is required prior to a whole semester of on-the-job training before graduation.

Graduates of the program are capable of designing and operating space vehicles, power plants, intelligent machines and robots, automobiles, trains, airplanes, furnaces, and air-conditioners. They can work on jet engine design, submarines, hot air balloons, advanced materials, hospital equipment, refrigerators, air-conditioners, and other machineries.

UNIVERSITY of SAN CARLOS
SCIENTIA • VIRTUS • DEVOTIO

## The Program in Mechanical Engineering builds competencies for these jobs:

First four years of mechanical engineering practice
- Automotive Design Engineer
- Ship Building Mechanical Engineer
- Aerospace engineer
- Building Ventilation Engineer
- Mining Engineer
- Product Development Engineer
- Project Engineer
- Facilities and Maintenance Engineer
- Instrumentation and Control Engineer
- Robotics and Automation Engineer
- Building Management System Engineer
- Research and Development Engineer
- Process Manufacturing Engineer
- University Instructor

Four years and beyond
- Designer and Maker of Machineries
- Inventor of Machines
- Patent Attorney
- Production Manager
- University Professor
- Power Plant Consultant
- Acoustic Consultant
- Contractor

## CORE COURSES

- Differential and Integral Calculus
- Chemistry for Engineers
- Physics for Engineers
- Physics 2
- Engineering Data Analysis
- Computer-Aided Drafting
- Engineering Economics
- Environmental Science and Engineering
- Material Science and Engineering
- Technopreneurship
- Circuits
- Basic Occupational Safety and Health
- Methods of Research

## PROFESSIONAL COURSES

- Machine Design
- Power Plant Design with Renewable Energy
- Industrial Plant Engineering
- Mechanical Engineering Laws, Ethics, Codes and Standards
- Mechanical Engineering Thesis
- Vibration Engineering
- Air Conditioning and Ventilation Systems
- Refrigeration Systems
- Fluid Machineries
- Control Engineering
- Machine Shop Theory and Practice
- Manufacturing and Industrial Processes with Plant Visits
- Heat Transfer
- Combustion Engineering
- Thermodynamics
- Machine Elements
- Computer Aided Mechanical Drafting

## ELECTIVE COURSES

- Safety of Motor Vehicles
- Automotive Engine Control
- Solar and Wind Energy Utilization
- Micro-Hydro-Electric Power Generation
- Energy Management in Buildings
- Indoor Environment Quality in Buildings
- Gas Compressors and Gas Turbines
- Computational Fluid Dynamics
- Industrial and Residential Piping System
- Mechatronics and Industrial Robotics

## TESDA NATIONAL CERTIFICATION

- Mechatronics Servicing NC IV
- Machining NC III
- CNC Milling Machine Operation NC III
- CAD CAM Operation NC III
- Shielded Metal Arc Welding NC II
- Mechanical Drafting NC II
- Refrigeration and Air Conditioning NC II

## INTERNATIONAL CERTIFICATION

- SOLIDWORKS Certification (Dassault Systèmes SolidWorks Corporation)
- Autodesk Certified Professional (Certiport, NCS Pearson Inc.)

BS MECHANICAL ENGINEERING

rev 0 | 2 September 2019