Engineering Courses

ENGR 510 - Advanced Probability and Statistics for Engineers
Hours: 3
Topics in probability and statistics with an emphasis on solving engineering problems. Following this course, students will be able to analyze data, design and analyze statistically valid experiments, and draw statistically valid conclusions. Topics include probability, sampling distributions, probability distributions, confidence intervals, hypothesis testing, regression and correlation, analysis of variance (ANOVA), design of experiments, statistical process control, classification, and computer software for basic statistical analysis. Prerequisites: Departmental Approval.

ENGR 520 - Design of Experiments
Hours: 3
This course introduces the principles and methodologies of designing and analyzing experiments to optimize processes and improve decision-making in engineering and scientific research. Topics include factorial and fractional factorial designs, response surface methodology, Taguchi methods, randomized block designs, and statistical analysis of experimental data. Students will learn how to plan experiments efficiently, minimize variability, and interpret results to drive innovation and process improvements. Emphasis is placed on practical applications in engineering, manufacturing, and quality control, with hands-on exercises using statistical software. By the end of the course, students will be equipped with the skills to design robust experiments and make data-driven decisions. Prerequisites: Departmental approval.

ENGR 530 - Project Management
Hours: 3
This graduate-level course provides an in-depth exploration of project management principles, methodologies, and best practices essential for leading complex projects in engineering, technology, and business environments. Topics include project initiation, planning, scheduling, risk management, cost estimation, resource allocation, stakeholder communication, and performance evaluation. The course also covers advanced concepts such as Agile and Lean project management, strategic portfolio management, and the impact of emerging technologies on project execution. Through case studies, simulations, and hands-on applications, students will develop critical thinking and leadership skills necessary for successfully managing projects from inception to completion. Prerequisites: Departmental Approval.

ENGR 540 - Engineering Management
Hours: 3
An exploration of management principles within engineering organizations. Topics include decision-making models, financial analysis, strategic planning, organizational behavior, technology innovation, and leadership in technical teams. Case studies highlight successful engineering management practices and the challenges of integrating technical expertise with business operations. Prerequisites: Departmental Approval.

ENGR 595 - Research Methods for Engineers
Hours: 3
This course provides an introduction to research methodologies and techniques essential for engineering studies and professional practice. Students will learn how to design experiments, conduct literature reviews, analyze data, and effectively communicate research findings. Topics covered include research design, hypothesis formulation, qualitative and quantitative data analysis, statistical methods, ethical considerations, and technical report writing. The course emphasizes practical applications of research principles in engineering problem-solving and innovation. By the end of the course, students will be equipped with the skills necessary to conduct independent research and contribute to advancements in engineering fields. Prerequisites: Departmental Approval.