

PROFESSIONAL ELECTIVE, FREE ELECTIVE(†), AND GRADUATE COURSES(‡), SPRING 2022

ININ 4046. INDUSTRIAL ENGINEERING PRACTICE.‡ Three credit hours. Thirty five hours per week for seven (7) or more weeks during the summer or its equivalent during the semester. *Prerequisite:* Authorization of the Director of the Department.

ININ 4090. INTERDISCIPLINARY APPROACHES TO PROJECT MANAGEMENT.†† Three credit hours. Three hours of lecture per week. Study and application of the fundamental techniques of project management. Participation in the management of an actual public or private project using and interdisciplinary approach. Field work required. *Prerequisite:* ADMI 4085 - Fundamentals of Project Management.

ININ 4995. ENGINEERING PRACTICE FOR CO-OP STUDENTS.† Three to nine credit hours. Be registered in the Industrial Engineering program. Practical experience in industrial engineering in cooperation with private industry or government to be jointly supervised by the academic department, the co-op program coordinator, and an official from the cooperating organization. A written report will be required upon completion of each period of work. *Prerequisite:* Have approved at least 48 credits and have received orientation about the Coop plan.

ININ 4996. SPECIAL PROBLEMS. One to three credit hours. Investigations and special problems in industrial engineering or related fields. Open only to outstanding students in the field of industrial engineering. *Prerequisite:* authorization of the Director of the Department.

ININ 4998. UNDERGRADUATE RESEARCH. One to six credit hours. Participation, under the supervision of a faculty member acting as an investigator, in a research project. *Prerequisite:* Authorization of the Director of the Department and be a fourth- or fifth-year student.

ININ 5997. INTRODUCTION TO ENGINEERING MANAGEMENT. Three credit hours. Three hours of lecture per week. This course will provide an overview of the essential skills relevant to managing cross-disciplinary engineering teams in industries. Such teams are typically responsible for new product development, getting innovations to market, developing new technologies, implementing product improvement, or establishing or improving organizational infrastructure. Students will focus on the fundamental skills and applications of engineering management and will be introduced to relevant business and engineering topics related to management. Topics include specific areas of finance and accounting, project management, marketing, communication and leadership, management of innovation, science and technology, ethics, and entrepreneurship that apply to the management of cross disciplinary engineering teams. *Prerequisite:* ININ 4007, ININ 4015, or equivalent.

ININ 6019. ADVANCED PRODUCTION CONTROL.‡ Three credit hours. Three hours of lecture per week. Assessment of production control systems and examination for improvements in the systems performance and supply chains, where the techniques of optimization, mathematical modeling simulation and case studies are employed. *Prerequisite:* Authorization of the Director of the Department.

ININ 6045. MATERIAL HANDLING SYSTEMS. ‡ Three credit hours. Three hours of lecture per week. Fundamentals of material handling systems including types of equipment and their applications, relationship between material handling and design of facilities, computer control, and automation. A project will be required. *Prerequisite:* Authorization of the Director of the Department.

ININ 6046. ADVANCED INDUSTRIAL EXPERIMENTATION. ‡ Three credit hours. Three hours of lecture per week. Applications, analogies, and differences among confidence intervals, prediction intervals, and tolerance intervals. Fundamental concepts and applications of response surface methodology and evolutionary operations to manufacturing processes. Case study of manufacturing experiments with dichotomous or polytomous response variables. Use of logistic regression for modeling the relationship between a categorical variable and a set of covariates. Effective modeling strategies and the interpretation of results are emphasized. Fundamental concepts in design and analysis of experiments with mixtures. Statistical techniques and methods for designing, modeling, and analyzing mixture data. Extensive use of software packages for statistical data analysis. *Prerequisite:* ININ 6005 or authorization of the Director of the Department.

