

Program outcomes and program skills by the course

Program outcomes

Program Outcome Code	Program Outcome Name
1a-ISE	The ability to apply appropriate industrial engineering methods and techniques to complex systems
1b-STEM	The ability to apply concepts of engineering science, mathematics, physics and chemistry
1c-SOFTWARE	The ability to utilize and apply software relevant to industrial and manufacturing systems engineering
1d-DOE	The ability to design, conduct and analyze statistically valid experiments
1e-COM	Interpersonal and professional communication
1f-LEAD	Teamwork and leadership
2a-LIFE	The identification and recognition of the need to continue learning by both formal and informal means
2b-SERVICE	Appreciation of the relevance of industrial engineering fundamentals and practice to non-manufacturing areas
2c-ETHICS	Integrity, cultural awareness, and ethical behavior

ISE200 Introduction to Computers and IE

Program outcome	Skill
1b-STEM	Recognize basic manufacturing processes
1c-SOFTWARE	Develop a spreadsheet to solve mathematical problems and analyze data
1c-SOFTWARE	Use computational logic in a current computer language or software application
1e-COM	Prepare technical report according to prescribed standard

ISE201 Data Management and Display

Program outcome	Skill
1c-SOFTWARE	Build a basic database using a database management software program
1c-SOFTWARE	Use computational logic in a current computer language or software application

ISE306 Engineering Statistics

Program outcome	Skill
1d-DOE	Calculate and interpret confidence intervals for a sample or experiment
1d-DOE	Conduct hypothesis tests using point estimates and determine confidence intervals
1d-DOE	Develop a regression model and interpret its results
1d-DOE	Formulate the hypothesis for an experiment
1d-DOE	Identify treatment effects with ANOVA

ISE316 Engineering Probability

Program outcome	Skill
1a-ISE	Perform statistical inference for model parameters
1b-STEM	Apply common discrete and continuous probability distributions
1b-STEM	Apply stochastic models to make decisions

ISE334 Work Design

Program outcome	Skill
1a-ISE	Develop and analyze product flow through facility
1a-ISE	Develop efficient operation methods
1a-ISE	Develop time standards for operations
1a-ISE	Evaluate the ergonomics of a manual operation or a system
2c-ETHICS	Recognize the need to consider worker health and safety in the design of tasks and systems

ISE412 Principles of Six Sigma

Program outcome	Skill
1a-ISE	Develop and analyze control charts to evaluate a process
1a-ISE	Perform stages of the DMAIC process
2c-ETHICS	Recognize the need for maintaining the integrity of collected data

ISE 2010 ASSESSMENT AND ACCREDITATION

ISE432 Inventory and Manufacturing Control I

Program outcome	Skill
1a-ISE	Apply basic inventory models
1a-ISE	Apply basic scheduling models
1a-ISE	Develop efficient operation methods
1a-ISE	Develop visual tools (Gantt chart, CPM, PERT or similar) for a project schedule
1b-STEM	Apply mathematical programming to make decisions
2c-ETHICS	Recognize the need to treat workers fairly

ISE433 Industrial Computer Simulation

Program outcome	Skill
1a-ISE	Perform statistical inference for model parameters
1c-SOFTWARE	Develop a model of a system using discrete event simulation software
1c-SOFTWARE	Use computational logic in a current computer language or software application
1d-DOE	Perform and analyze replications with a simulation model
1e-COM	Prepare technical report according to prescribed standard
2a-LIFE	Efficiently use publications and on-line resources to obtain technical information
2b-SERVICE	Apply discrete event simulation in service industries

ISE435 Quality Control and Reliability

Program outcome	Skill
1a-ISE	Develop and analyze control charts to evaluate a process
1d-DOE	Construct and use sampling plans
2c-ETHICS	Recognize the need to treat customers fairly

ISE436 Project Management

Program outcome	Skill
1a-ISE	Develop visual tools (Gantt chart, cpm, pert or similar) for a project schedule
1a-ISE	Develop and analyze product flow through facility
2c-ETHICS	Recognize the need to fulfill obligations to the employer

ISE 2010 ASSESSMENT AND ACCREDITATION

ISE441 Introduction to Operations Research

Program outcome	Skill
1a-ISE	Perform economic analysis and analyze effects of proposed design solutions
1b-STEM	Apply mathematical programming to make decisions
1c-SOFTWARE	Develop a spreadsheet to solve mathematical problems and analyze data
1c-SOFTWARE	Use software tools to solve optimization problems
2b-SERVICE	Apply math programming in service industries
2c-ETHICS	Identify the ethical issues in a given situation and decide on an appropriate course of action

ISE445A/B Systems Design I and II

Program outcome	Skill
1a-ISE	Perform economic analysis and analyze effects of proposed design solutions
1c-STEM	Interpret and create drawings using a CAD package
1e-COM	Give an oral presentation of a proposal or a project
1e-COM	Prepare technical report according to prescribed standard
1e-COM	Use a presentation program
1f-LEAD	Lead project meetings
1f-LEAD	Prepare action items from a meeting
2c-ETHICS	Use work of others in ethical manner in technical reports

ISE455 Information Systems Engineering

Program outcome	Skill
1a-ISE	Develop and analyze information flow and business processes for decision making
1c-SOFTWARE	Build a basic database using a database management software program
1e-COM	Use a presentation program
2a-LIFE	Efficiently use publications and on-line resources to obtain technical information
2c-ETHICS	Identify the ethical issues in a given situation and decide on an appropriate course of action
2c-ETHICS	Recognize the need for maintaining the integrity of collected data