

SYSTEMS ENGINEERING CONCENTRATION

Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, proceeding with design synthesis and system validation while considering the complete problem that includes – operations, cost & schedule, performance, training & support, test, disposal, and manufacturing. Systems Engineering integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation. Systems Engineering considers both the business and the technical needs of all customers with the goal of providing a quality product that meets the user needs. In addition, Systems Engineering incorporates concepts of “balanced design” – achieving a product design that meets requirements but does not exceed them, and does so within the constraints of cost, schedule & performance, including life cycle costs; and “risk assessment & management” – understanding the technical and other risks that may be involved and managing the design to effectively mitigate the risks.

Required courses (5)

ECE.09.402 Topics in ECE: Introduction to Systems Engineering – 3-credits

MKT.09.375 Business Logistics – 3-credits

CS.06.3xx Modeling and Simulation – 3-credits

Any two of the following –

ENGR.01.301 Junior Engineering Clinic I – 2-credits

ENGR.01.302 Junior Engineering Clinic II – 2-credits

ENGR.01.401 Senior Engineering Clinic I – 2-credits

ENGR.01.402 Senior Engineering Clinic II – 2-credits

TOTAL Required course credits – 13-credits

Elective courses (any 2)

ECE.09.321 Systems & Control – 3-credits

ECE.09.331 Electrical Communications Systems – 4-credits

ECE.09.402 Topics in ECE: Technology Focus Elective – 3-credits

CS.07.340 Design and Analysis of Algorithms

CS.07.321 Software Engineering I

CS.04.380 Object Oriented Design

ME.10. 342: Quality & Reliability in Design and Manufacture

ME.10.343: Mechanical System Dynamics and Control

CE.08.305: Civil Engineering Systems

CHE.06.405: Process Dynamics and Control

EM .01.511: Strategic Risk Management

EM.01.512: Quality in Engineering Management

EM.01.513: Engineering Decision Making

MGT.06.677 Management Skills for Engineers

(Additional elective courses will be added to the concentration)

TOTAL Elective course credits – 6-7-credits

TOTAL credits in the Systems Engineering Concentration – 19-20-credits
--