

Industrial & Systems Engineering Technical Elective Policy

Approved 10/18/13

All B.I.Sy.E. students are required to take a core set of Industrial & Systems Engineering courses to ensure they have a strong foundation in the fundamentals of Industrial & Systems Engineering. Depending on your desired career path and the industry you expect to work in, you will then choose a set of technical electives to deepen your knowledge in an area that complements your Industrial & Systems Engineering knowledge base.

The B.I.Sy.E. requires 15 credits of technical electives. *Many Engineering, Mathematics, Statistics, Management, Supply Chain & Operations, Information & Decision Sciences, Public Healthcare, and Economics courses at the 3000+ level will be approved to receive technical elective credit. You must submit an ISyE Technical Elective Approval Form during Spring semester of your Junior year listing your intended technical electives to an ISyE Adviser. Any changes must also be submitted for approval.

Below are some sample technical electives for certain Areas of Concentration. You are not required to select from one of these packages, but all of these courses are pre-approved as technical electives.

Advanced Industrial & Systems Engineering

Course Title	# Credits
IE 5111: Systems Engineering I	2
IE 5113: Systems Engineering II	4
IE 5441: Financial Decision Making	4
IE 5545: Decision Analysis	4

Biomedical Engineering

Course Title	# Credits
BMEN 3011&3015: Biomechanics & Lab	4
BMEN 3111&3115: Biomedical Transport Processes & Lab	4
BMEN 3211 & 3215: Bioelectricity and Bioinstrumentation & Lab	4
BMEN 3411&3415: Biomedical Systems Analysis & Lab	4

Algorithm Design & Analysis

Course Title	# Credits
CSCI 4011: Formal Languages and Automata Theory	4
CSCI 4041: Algorithms and Data Structures	4
CSCI 5302: Analysis of Numerical Algorithms	3
CSCI 5304: Computational Aspects of Matrix Theory	3
CSCI 5403: Computational Complexity	3

Data Analytics

Course Title	# Credits
CSCI 5523: Introduction to Data Mining	3
IDSC 3103: Data Modeling and Databases	2
STAT 3022: Data Analysis	4
IDSC 4444: Business Analytics	2
STAT 5303: Designing Experiments	4

Design and Manufacturing

Course Title	# Credits
AEM 3031: Deformable Body Mechanics	3
ME 3221: Design and Manufacturing I: Engineering Materials and Manufacturing Processes	4
ME 3222: Design and Manufacturing II	4
ME 3281: System Dynamics and Control	4
ME 5221: Computer-Assisted Product Realization	4

Management Minor

Course Title	# Credits
ACCT 3001: Introduction to Managerial Accounting	3
FINA 3001: Finance Fundamentals	3
MGMT 3001: Principles of Management	3
MGMT 3010: Introduction to Entrepreneurship	4
SCO 3001: Introduction to Operations Management	3

Economics

Course Title	# Credits
ECON 3101: Intermediate Microeconomics	4
ECON 3102: Intermediate Macroeconomics	4
ECON 4108: Advanced Game Theory and Applications	4
ECON 4113: Introduction to Mathematical Economics	4

Statistics

Course Title	# Credits
STAT 3022: Data Analysis	4
STAT 4101: Theory of Statistics I	4
STAT 5302: Applied Regression Analysis	4
STAT 5303: Designing Experiments	4

Mathematics

Course Title	# Credits
MATH 3283W: Sequences, Series, and Foundations	4
MATH 4242: Applied Linear Algebra	4
MATH 4603: Advanced Calculus I	4
MATH 4707: Introduction to Combinatorics & Graph Theory	4

Supply Chain & Operations

Course Title	# Credits
SCO 3001: Introduction to Operations Management	3
SCO 3045: Sourcing and Supply Management	2
SCO 3048: Transportation and Logistics Management	2
SCO 3051: Service Management	2
SCO 3056: Supply Chain Planning and Control	4
SCO 3061: Lean Thinking	2

*The following courses will *not* be approved for technical elective credit: IE 3041, IE 5112, IE 5511, IE 5512, IE 5513, IE 5522, IE 5531, IE 5541, IE 5551, IE 5553, SCO 3041. Other courses will require review by the ISyE DUGS for approval.