BSIE TRACK ADJUSTMENT

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Prof. Chen Zhou, Associate Chair of Undergraduate Programs

After four years since the implementation of the track system, Industrial and Sytems Engineering (ISyE) has adjusted the tracks to better line up with market demand and ISyE capacity. Beginning Summer 2010, ISyE will implement the new track system. Students who are already in the prior track system and prefer to continue are permitted to do so. You can find the prior track definitions and flow chart here. The new system has a general track and four named tracks listed below. Each has depth and breadth requirements. The breadth requirements ensure that students acquire a broad Industrial Engineering education via courses in other tracks. The depth requirements allow students to achieve in-depth knowledge in one of the ISyE areas.

Economic & Financial Systems - The depth courses in this track incorporate economic and financial analysis courses. The economic courses provide broader perspectives than the typical cost focus in IE courses; such as using prices and lead-time to influence demand, coordination and competition. The financial courses include options, project selection, risk hedging, and break even analysis. Most organizations have need for knowledge in this track, including financial service firms such as banks.

Operations Research - This area is concerned with the methodology of Industrial Engineering modeling including optimization, stochastic modeling, and statistics. The depth courses include advanced courses in these areas. This area also prepares students for graduate school. Many companies employ students with good methodology training for operations research or statistical analysis.

Quality & Statistics – The depth courses in this track include statistical quality control, forecasting and regression, and statistics. Due to data proliferation in organizations, this area offers students in-depth knowledge in the use of statistical tools in wide areas of applications in manufacturing, logistics, service and government.

Supply Chain Engineering – The depth courses in this track include logistics, manufacturing (or operations) and advanced courses useful in the distribution of goods and services. Logistics deals with facility location, supply network design, transportation and vehicle routing. Manufacturing deals with operations within one facility such as planning and scheduling, inventory control, system dynamics and facility layout. All organizations related to supply chain of goods and services need knowledge in this area.

General Industrial Engineering – The depth course in this track is one advanced course in any of the above listed areas. The breath courses include the five all important required courses in Industrial Engineering. The generic nature of the General Track allows for students to be competent in any area in IE, but has less depth in other areas (other than the advanced course area). Graduates in this track can find job opportunities in all of the aforementioned organizations and consulting.

Track Name	Required track core [DEPTH]	Required ISyE electives [BREADTH]	Complementary engineering electives (not required)	Complementary free electives (not required)
(A) Supply Chain Engineering	A1. 3103 Logistics A2. 3104 Manufacturing A3. One of a. 4111 Adv Logistics* b. 4803 Adv Manufacturing*	Three courses taken from the core of at least two of tracks (B), (C), and (D).	1. CEE 4600 Trans Plan & Des 2. CEE 4610 Multimodal Trans 3. ME 4171 Env Con Des & Mfg 4. ME 4172 Sustain Engg Sys 5. ME 4210 Mfg Proc & Engg 6. ECE 4761 Industrial Ctrl & Mfg	1. Mgt 4360 Global Operations & Supply Chains 2. Mgt 3501 Operations Management 3. Econ 4430 Transportation Econ 4. 4803 General Elective**
(B) Quality and Statistics	B1. 3039 Quality Control B2. 4031 Regression & Forecasting B3. CS/ISyE 4245* or Math 4262*	Three courses taken from the core of at least two of tracks (A), (C), and (D).	1. ECE 3085 Sys & Ctrl Thry 2. ECE 4562 Neural Nets & Fuzzy Control	1. Math 4261 Math Stats I 2. Phys 4142 Statistcal Mech 3. CS 4245 Intro Data Mining & Anal 4. 4803 General Elective**
(C) Economic and Financial Systems	C1. 4301 Supply Chain Economics C2. 4803 Econ Decision Analysis C3. One of a. Econ 3150 Econ & Fin Mod b. Mgt 3078 Fin & Investments c. Econ 4340 Ind Org d. Econ 4350 Intl Econ	Three courses taken from the core of at least two of tracks (A), (B), and (D).	1. CHBE 4505 Proc Des & Econ 2. CHBE 4525 Bioproc Des & Econ 3. ECE 4823 Game Theory & Multiagent Sys	1. Mgt 3084 Derivative Securities 2. Mgt 4070 International Finance 3. Second course from menu C3. 4. 4803 General Elective**
(D) Operations Research	D1. 4133 Adv Optimization* D2. 4803 Adv Simulation* D3. 4803 Adv Stochastics*	Three courses taken from the core of at least two of tracks (A), (B), and (C).	1. BMED 4477 Bio Nets & Genom 2. ECE 4604 Net Design & Sim 3. ECE 4823 Game Theory & Multiagent Sys	1. Math 3012 Appl Combinatorics 2. Math 4022 Graph Theory 3. CS 3510 Design & Analysis of Algs 4. 4803 General Elective**
(E) General ISyE	One of a. 4111 Adv Logistics* b. 4803 Adv Manufacturing* c. 4803 Adv EDA* d. 4133 Adv Optimization* e. 4803 Adv Simulation* f. 4803 Adv Stochastics*	E1. 3103 Logistics E2. 3104 Manufacturing E3. 3039 Quality Control E4. 4031 Reg & Forecast* E5. 4301 Supply Chain Economics		1. 4803 General Elective**

ISyE Core Requirements (all tracks)

ISyE 2027 Probability	ISyE 3044 Simulation
ISyE 2028 Statistics	ISyE 3133 Eng Optimization
ISyE 3025 Eng Economy	ISyE 3232 Stoch Mfg & Svc Sys

Recommended Free Electives for Pre-PhD Students

Math 4305 Linear Algebra	Math 4360 Real Analysis

* Students with a 3.0 GPA or above may substitute Master's level courses for these. Allowable substitutions are: ISyE 6203 for Advanced Logistics, ISyE 6201 or ISyE 6202 for Advanced Manufacturing, ISyE 6669 for Advanced Optimization, ISyE 6644 for Advanced Simulation, ISyE 6650 for Advanced Stochastics, ISyE 6225 for Advanced EDA, and ISyE 6414 for Regression and Forecasting. The Associate Chair for Undergraduate Programs may allow additional substitutions as appropriate.

** 4803 General Elective refers to any special topics course that doesn't satisfy a track core requirement. Upon Associ Chair's recommendation, the UCC may allow a special 4803 offering to substitute for a track's depth or breadth requirement as appropriate.

ISyE 4009 Human-Integrated system can be used as an elective as a breadth in any tracks. We do not offer the course but students can take the course elsewhere to transfer back.