Integrated Business and Engineering Honors Program

INTEGRATED BUSINESS AND ENGINEERING HONORS PROGRAM

After four years and a minimum of 136 credits, students will receive a single Bachelor of Science Degree in Integrated Business and Engineering. The program meets the accreditation standards of AACSB International. Students are required to maintain a minimum GPA of 3.25 in order to remain in the program.

Students in the IBE Honors Program can major in any area of business or engineering that Lehigh offers. After freshman year, each student will elect a major in either the College of Business or the P. C. Rossin College of Engineering and Applied Science. Students wanting to major in an area of business can select from: accounting, business information systems, economics, finance, marketing, management or supply chain management.

DEGREE REQUIREMENTS (Minimum 136 credits)

English, Humanities, and Social Science

ENGL 001	Critical Reading and Composition	3
or ENGL 003	Composition and Literature I for Multilingual Writers	
BUS 003	Business Communication I	1.5
BUS 203	Business Communication II	1.5
HSS Electives		6
Total Credits		**12**

Math and Science Core

CHM 030	Introduction to Chemical Principles	4
PHY 011	Introductory Physics I	4
PHY 012	Introductory Physics Laboratory I	1
PHY 021	Introductory Physics II	4
PHY 022	Introductory Physics Laboratory II	1
MATH 021	Calculus I	4
MATH 022	Calculus II	4
MATH 023	Calculus III	4
Probability and Statistics		3-6
MATH 231 (3 credits)		
OR ISE 111 and ISE 121 (6 credits total)		
NOTE: IBE-FinE and ISE-ISE should take ISE 111/ISE 121		
ENGR 010	Applied Engineering Computer Methods	2
Total Credits		**31-34**

Business and Economics Core

ECO 001	Principles of Economics	4
ECO 146	Intermediate Microeconomic Analysis	3
or ECO 119	Intermediate Macroeconomic Analysis	
ACCT 151	Introduction to Financial Accounting	3
ACCT 152	Introduction to Managerial Accounting	3
FIN 125	Introduction to Finance	3
BIS 111	Introduction to Information Systems	3
or ISE 224	Information Systems Analysis and Design	
OR CSE 241		
MKT 111	Principles of Marketing	3
LAW 201	Legal Environment of Business	3
MGT 043	Organizational Behavior	3
MGT 243	Leadership in Organizations	3
BUAN 044	Business Analytics I	1.5
BUAN 244	Business Analytics II	1.5
Total Credits		**34**

Required IBE Courses

IBE 010	Integrated Business and Engineering Seminar	1
or ENGR 005	Introduction to Engineering Practice	
or BUS 001		
IBE 050	Integrated Business and Engineering Workshop	3
IBE 150	Integrated Business and Engineering Sophomore Laboratory	1
IBE 250	Integrated Business and Engineering Junior Laboratory	1
IBE 380	Integrated Business and Engineering Capstone Project I	3
IBE 385	Integrated Business and Engineering Capstone Project II	3
IBE Internship Req.		0
Total Credits		**12**

IBE Business Majors

Business Major Courses (credits vary by major) 15-21

19 credits of engineering courses

Courses must have one of the following prefixes: BIOC, BIOE, CHE, CEE, CREG, CSE, ECE, ISE, MAT, ME, MECH

Courses excluded:

Courses excluded		
CHE 171	Fundamentals of Environmental Technology	4
CEE 010	Engineering/Architectural Graphics and Design	3
CSE 012	Introduction to Programming with Python	3
CSE 042	Game Design	3
CSE 252	Computers, the Internet, and Society	3
ISE 224	Information Systems Analysis and Design	3
CSE 241	Database Systems and Applications	3
ME 010	Graphics for Engineering Design	3

The Business Core requires one of the following: BIS 111 or ISE 224 or CSE 241. Thus, ISE 224 and CSE 241 may not be taken in the engineering core for business majors.

Due to course similarity, students may take one of the courses in these groups: CSE 003 OR MECH 003 OR MECH 003; CEE 059 OR MECH 012; ISE 215 AND ISE 216 OR ME 240

IBE Engineering Majors

Combined Engineering Core and Major courses 36-40

(36-40 total engineering requirement that vary by major)

Free Electives 7-13

Total Credits Hours for Degree 136

ENGINEERING MAJORS

BIOCOMPUTATIONAL ENGINEERING

CSE 007	Introduction to Programming	4
CSE 017	Programming and Data Structures	3
MATH 205	Linear Methods	3
BIOS 041	Introduction to Cellular and Molecular Biology	3
BIOS 042	Introduction to Cellular and Molecular Biology Laboratory	1
BIOS 115	Genetics	3
PHY 380	Introduction to Computational Physics	3
or BIOE 363	Numerical Methods for Scientists and Engineers	

BIOE 210	Introduction to Engineering Physiology	4
BIOC 213	Fundamentals of Biomedical Signals	3
BIOC 214	Fundamentals of Biological Modeling	3
BIOC 237	Introductory Molecular Modeling and Simulation	3
Technical Elective		3
Total Credits		**36**

BIOENGINEERING - Biopharmaceutical Track

CHM 031	Chemical Equilibria in Aqueous Systems	4
CHM 110	Organic Chemistry I	3
BIOS 041	Introduction to Cellular and Molecular Biology	3
BIOS 042	Introduction to Cellular and Molecular Biology Laboratory	1
MATH 205	Linear Methods	3
CHE 031	Material and Energy Balances of Chemical Processes	3
BIOE 246	Bioengineering Thermodynamics	4
BIOE 247	Biological Fluid Mechanics	4
BIOE 110	Elements of Bioengineering	4
BIOE 210	Introduction to Engineering Physiology	4
List A Elective		3
Technical Elective		3
Total Credits		**39**

BIOENGINEERING - Bioelectronics & Biophotonics Track

CHM 031	Chemical Equilibria in Aqueous Systems	4
BIOS 041	Introduction to Cellular and Molecular Biology	3
BIOS 042	Introduction to Cellular and Molecular Biology Laboratory	1
MATH 205	Linear Methods	3
ECE 081	Principles of Electrical Engineering	4
ECE 108	Signals and Systems	4
ECE 123	Electronic Circuits	3
MAT 033	Engineering Materials and Processes	3
BIOE 110	Elements of Bioengineering	4
BIOE 210	Introduction to Engineering Physiology	4
List A Elective		3
Technical Elective		3
Total Credits		**39**

BIOENGINEERING - Biomechanics and Biomaterials Track

CHM 031	Chemical Equilibria in Aqueous Systems	4
BIOS 041	Introduction to Cellular and Molecular Biology	3
BIOS 042	Introduction to Cellular and Molecular Biology Laboratory	1
MATH 205	Linear Methods	3
MAT 033	Engineering Materials and Processes	3
MECH 003	Fundamentals of Engineering Mechanics	3
BIOE 110	Elements of Bioengineering	4
BIOE 210	Introduction to Engineering Physiology	4
BIOE 246	Bioengineering Thermodynamics	4
BIOE 247	Biological Fluid Mechanics	4
List A Elective		3
Technical Elective		3
Total Credits		**39**

For All Bioengineering Tracks -- List A Elective Options

CHE 341	Biotechnology I	3
ECE 337	Introduction to Micro- and Nanofabrication	3
ME 315	Bioengineering Statistics	3
BIOE 315	Bioengineering Statistics	3
BIOE 321	Biomolecular & Cellular Mechanics	3
BIOE 341	Biotechnology I	3
BIOE 345	Quantitative Biology	3
BIOE 349	Metabolic Engineering	3
BIOE 363	Numerical Methods for Scientists and Engineers	3

For All Bioengineering Tracks AND Biocomputational Engineering - Technical Elective Options

BIOE 308	Bioinformatics: Issues and Algorithms	3
BIOE 315	Bioengineering Statistics	3
BIOE 320	Biomedical Image Computing and Modeling	3
BIOE 321	Biomolecular & Cellular Mechanics	3
BIOE 324	Introduction to Organic Biomaterials	3
BIOE 326	Biomimetic and Bio-enabled Materials	3
BIOE 339	Neuronal Modeling and Computation	3
BIOE 341	Biotechnology I	3
BIOE 342	Biotechnology II	3
BIOE 349	Metabolic Engineering	3
BIOE 350	Special Topics	1-4
BIOS 277	Experimental Neuroscience Laboratory	2
BIOS 340	Molecular Basis of Disease	3
BIOS 345	Molecular Genetics	3
BIOS 367	Cell Biology	3
BIOS 371	Elements of Biochemistry I	3
BIOS 372	Elements of Biochemistry II	3
BIOS 381	Physical Biochemistry	3
BIOS 382	Endocrinology of Behavior	3
CHE 339	Neuronal Modeling and Computation	3
CHE 341	Biotechnology I	3
CHE 342	Biotechnology II	3
CHE 388	Polymer Characterization	3
CHE 391	Colloid and Surface Chemistry	3
CHM 332	Analytical Chemistry	3
CHM 341	Molecular Structure, Bonding and Dynamics	3
CHM 371	Elements of Biochemistry I	3
CHM 372	Elements of Biochemistry II	3
CHM 388	Polymer Characterization	3
CHM 391	Colloid and Surface Chemistry	3
CSE 308	Bioinformatics: Issues and Algorithms	3
CSE 320	Biomedical Image Computing and Modeling	3
ECE 202	Introduction to Electromagnetics	3
ECE 333	Medical Electronics	3
ECE 337	Introduction to Micro- and Nanofabrication	3
MAT 324	Introduction to Organic Biomaterials	3
MAT 326	Biomimetic and Bio-enabled Materials	3
MAT 356	Strategies for Nanocharacterization	3
MAT 388	Polymer Characterization	3
ME 315	Bioengineering Statistics	3

PHY 212	Electricity and Magnetism I	3
PHY 352	Modern Optics	3
MAT/BIOE 311	Introduction to Biomaterials	3
ME/BIOE 316	Introduction to Force Spectroscopy	3
CHE/BIOE 318	Soft Materials: Rheology and Characterization	3
CHE/BIOE 345	Quantitative Biology	3
BIOE 358	Biomechanics	3
BIOE/ECE 366	Neural Engineering	3
BIOE/CHE 367	Engineering in Medicine	3
BIOE/CHE 369	Advanced Topics in Regulatory Affairs	3
BIOC 213	Fundamentals of Biomedical Signals	3
PHY 120	Physics of Medical Imaging: Ultrasound and Radiography	2
PHY 121	Physics of Medical Imaging: Ultrasound and Radiography, Supplement	1
Other electives may also be accepted with approval from your advisor.		

CHEMICAL ENGINEERING

CHM 031	Chemical Equilibria in Aqueous Systems	4
CHM 110	Organic Chemistry I	3
CHM 343	Physical Chemistry Laboratory	2
BIOS 041	Introduction to Cellular and Molecular Biology	3
CHE 031	Material and Energy Balances of Chemical Processes	3
CHE 044	Fluid Mechanics	3
CHE 151	Heat and Mass Transfer	3
CHE 201	Methods of Analysis in Chemical Engineering	4
CHE 202	Chemical and Biomolecular Engineering Laboratory I	3
CHE 211	Chemical Reactor Design	3
CHE 203	Chemical and Biomolecular Engineering Laboratory II	3
CHE 210	Chemical Engineering Thermodynamics	3
CHE 244	Separation Processes	3
Total Credits		**40**

CIVIL ENGINEERING

MATH 205	Linear Methods	3
CEE 003	Engineering Statics	3
CEE 059	Strength of Materials	3
CEE 122	Fluid Mechanics	3
CEE 123	Civil Engineering Materials	3
CEE 142	Soil Mechanics	3
CEE 159	Structural Analysis I	4
CEE 170	Introduction to Environmental Engineering	4
CEE 222	Water Resources Engineering	3
CEE 242	Geotechnical Engineering	3
CEE 262	Fundamentals of Structural Steel Design	3
or CEE 264	Fundamentals of Structural Concrete Design	
Approved Elective		3
List Maintained by Civil and Environmental Engineering Department		
Total Credits		**38**

COMPUTER ENGINEERING

MATH 205	Linear Methods	3
ECE 033	Introduction to Computer Engineering	4
ECE 081	Principles of Electrical Engineering	4
ECE 123	Electronic Circuits	3
ECE 128	FPGA Laboratory	3
ECE 132	Microcontroller Laboratory	3
ECE 201	Computer Architecture	3
CSE 007	Introduction to Programming	4
CSE 017	Programming and Data Structures	3
CSE 109	Systems Software	4
CSE 216	Software Engineering	3
Total Credits		**37**

COMPUTER SCIENCE AND ENGINEERING

CSE 007	Introduction to Programming	4
CSE 017	Programming and Data Structures	3
CSE 109	Systems Software	4
CSE 140	Foundations of Discrete Structures and Algorithms	3
CSE 202	Computer Organization and Architecture	3
CSE 216	Software Engineering	3
CSE 252	Computers, the Internet, and Society	3
CSE 262	Programming Languages	3
CSE 303	Operating System Design	3
CSE 340	Design and Analysis of Algorithms	3
Technical Electives		6
List maintained by Computer Science and Engineering Department		
Total Credits		**38**

ELECTRICAL ENGINEERING

MATH 205	Linear Methods	3
ECE 205	C/C++ Programming	3
ECE 132	Microcontroller Laboratory	3
ECE 033	Introduction to Computer Engineering	4
ECE 081	Principles of Electrical Engineering	4
ECE 108	Signals and Systems	4
ECE 121	Electronic Circuits Laboratory	2
ECE 123	Electronic Circuits	3
ECE 126	Fundamentals of Semiconductor Devices	3
ECE 125	Random Signals and Learning	3
ECE 182	Junior Laboratory	1
ECE 257	Senior Lab I	3
ECE 258	Senior Lab II	2
Total Credits		**38**

ENVIRONMENTAL ENGINEERING

MATH 205	Linear Methods	3
CEE 003	Engineering Statics	3
CEE 122	Fluid Mechanics	3
CEE 142	Soil Mechanics	3
CEE 170	Introduction to Environmental Engineering	4
CEE 222	Water Resources Engineering	3
CEE 272	Environmental Risk Assessment	2
CEE 274	Environmental Water Chemistry	3
CEE 275	Environmental, Geotechnics and Hydraulics Laboratory	2
CEE 375	Environmental Engineering Processes	3
CEE 377	Environmental Engineering Design	3

CEE 378	Hazardous Waste Treatment and Management	3
Approved Elective		3
List Maintained by Civil and Environmental Engineering Department		
Total Credits		**38**

FINANCIAL ENGINEERING

MATH 205	Linear Methods	3
ISE 230	Introduction to Stochastic Models in Operations Research	3
ISE 240	Introduction to Deterministic Optimization Models in Operations Research	3
ISE 305	Simulation	3
FIN 323	Investments	3
FIN 328	Corporate Financial Policy	3
FIN Electives		6
Choose 2 from: FIN 324, FIN 330, FIN 333, FIN 334, FIN 335, FIN 336, or FIN 377		
FE Electives		6
Choose 2 from: ECO 357, ISE 316, ISE 339, ISE 347, ISE 358, or ECO 358		
Engineering Electives		6
Choose 2. Courses must have prefix CSE or ECE or CREG or ME or MECH or CEE or MAT or CHE or BIOE or BIOC. Excludes the following courses: CHE 171 (CEE 171, EMC 171, ES 171), CEE 010 (ARCH 010), CSE 012, CSE 042 (EMC 042), CSE 252 (EMC 252, GCP 252), ISE 224, CSE 241, CSE 379, ME 010.		
Students may take only one of the courses in the following groups: Statics (CEE 003 OR MECH 002 OR MECH 003); Strength of Materials (CEE 059 OR MECH 012); Manufacturing (ISE 215 AND ISE 216 OR ME 240)		
Total Credits		**36**

INDUSTRIAL AND SYSTEMS ENGINEERING

ISE 131	Work Systems and Operations Management	3
ISE 230	Introduction to Stochastic Models in Operations Research	3
ISE 240	Introduction to Deterministic Optimization Models in Operations Research	3
ISE 251	Production and Inventory Control	3
ISE 305	Simulation	3
Technical Electives		6
Choose from any 300 level ISE course except ISE 305. One technical elective may be a 200 or 300 level CSE class (excluding CSE 241 and CSE 252).		
Engineering Electives		6
Choose 2. Courses must have prefix CSE or ECE or CREG or ME or MECH or CEE or MAT or CHE or BIOE or BIOC. Excludes the following courses: CHE 171 (CEE 171, EMC 171, ES 171), CEE 010 (ARCH 010), CSE 012, CSE 042 (EMC 042), CSE 252 (EMC 252, GCP 252), ISE 224, CSE 241, CSE 379, ME 010.		
Students may take only one of the courses in the following groups: Statics (CEE 003 OR MECH 002 OR MECH 003); Strength of Materials (CEE 059 OR MECH 012); Manufacturing (ISE 215 AND ISE 216 OR ME 240)		
Choose one of the two options		8-9
CSE 003 and MAT 033 and ISE 215 and ISE 216		
OR		
CSE 007 and ISE 172		
Total Credits		**35-36**

MATERIALS SCIENCE AND ENGINEERING

MATH 205	Linear Methods	3
ECE 083	Introduction to Electrical Engineering	3
MECH 002	Elementary Engineering Mechanics	3
CHE 280	Unit Operations Survey	3
MAT 010	Materials Laboratory	3
MAT 033	Engineering Materials and Processes	3
MAT 201	Physical Properties of Materials	3
MAT 203	Materials Structure at the Nanoscale	3
MAT 205	Thermodynamics of Macro/Nanoscale Materials	3
MAT 216	Diffusion and Phase Transformations	3
MAT 218	Mechanical Behavior of Macro/ Nanoscale Materials	3
Approved Elective		3
List maintained by the Materials Science and Engineering Department		
Total Credits		**36**

MECHANICAL ENGINEERING

MATH 205	Linear Methods	3
ECE 083	Introduction to Electrical Engineering	3
MECH 003	Fundamentals of Engineering Mechanics	3
MECH 012	Strength of Materials	3
MECH 102	Dynamics	3
ME 010	Graphics for Engineering Design	3
ME 021	Mechanical Engineering Laboratory I	1
ME 104	Thermodynamics I	3
ME 121	Mechanical Engineering Laboratory II	1
ME 207	Mechanical Engineering Laboratory III	2
ME 231	Fluid Mechanics	3
ME 240	Manufacturing	3
ME 242	Mechanical Engineering Systems	3
or ME 245 or ME 252		
ME 321	Introduction to Heat Transfer	3
Total Credits		**37**

STRUCTURAL ENGINEERING

MATH 205	Linear Methods	3
CEE 003	Engineering Statics	3
CEE 059	Strength of Materials	3
CEE 117	Numerical Methods in Civil Engineering	2
CEE 123	Civil Engineering Materials	3
CEE 142	Soil Mechanics	3
CEE 159	Structural Analysis I	4
CEE 203	Professional Development	2
CEE 262	Fundamentals of Structural Steel Design	3
CEE 264	Fundamentals of Structural Concrete Design	3
CEE 361	Bridge Systems Design	3
or CEE 363	Building Systems Design	
Approved Electives		6
Approved Elective Options: CEE 207, CEE 259, CEE 266, CEE 365		
Total Credits		**38**

BUSINESS MAJORS

ACCOUNTING

ACCT 311	Accounting Information Systems	3
ACCT 315	Intermediate Accounting I	3

ACCT 316	Intermediate Accounting II	3
ACCT 324	Cost Accounting	3
Concentration, 3 courses - See below		9
Concentrations		
Public Accounting Assurance and Tax Services		
Complete the following courses: ACCT 307, ACCT 320, ACCT 317		
Financial Services and Corporate Accounting		
Complete the following courses: FIN 323, FIN 328, ACCT 318		
Information Technology		
Complete the following courses: ACCT 320, ACCT 330, and one 300-level BIS course (3 credits)		
Total Credits		**21**

BUSINESS ANALYTICS

BIS 342	e-Business Enterprise Applications	3
BUAN 348	Predictive Analytics in Business	3
BUAN 352	Business Analytics and Modelling	3
BUAN 357	Artificial Intelligence for Business	3
Business Analytics Electives		**6**
Choose 2 courses from BIS 335, BUAN 346, SCM 345, ACCT 330, ECO 301, ECO 357, ECO 367, MKT 325/ ECO 325, MKT 326, FIN 377		
Total Credits		**18**

BUSINESS INFORMATION SYSTEMS

Business Core		
BIS 311	Managing Information Systems Analysis and Design	3
BIS 324	Business Data Management	3
BIS 335	Application Development for Business	3
Business Information Systems Electives		**9**
Choose 3 courses from the following: ACCT 311, BIS 333, BIS 342, BIS 344, BUAN 348, BUAN 352, BIS 372, ENTP 304		
Total Credits		**18**

ECONOMICS

Common Economics Core		
ECO 119	Intermediate Macroeconomic Analysis	3
ECO 146	Intermediate Microeconomic Analysis	3
Quantitative Economics Core		
ECO 157	Statistical Methods II	3
Economics Electives		**12**
One course must be taken from each list, and at least two of the four courses must be at the 300 level.		
Electives - Field Courses		
Select from: ECO 209, ECO 229, ECO 235, ECO 303, ECO 311, ECO 312, ECO 322, ECO 338, ECO 353, ECO 358, ECO 365, ECO 368		
Electives - Applying Economics		
Select from: ECO 201, ECO 203, ECO 247, ECO 259, ECO 273, ECO 274, ECO 301, ECO 314, ECO 324, ECO 325, ECO 328, ECO 333, ECO 335, ECO 336, ECO 342, ECO 345, ECO 357, ECO 360, ECO 366, ECO 367, ECO 371, ECO 389		
Total Credits		**21**

FINANCE

Foundation Course Requirement		
FIN 323	Investments	3
FIN 328	Corporate Financial Policy	3
Elective Requirement - Choose 4 courses, at least two with a FIN prefix		**12**
Select from: FIN 324, FIN 330, FIN 333, FIN 334, FIN 335, FIN 336, FIN 337, FIN 377, IE 316, IE 339, MATH 205, MAT 231 (or ISE 121*), MATH 241, MATH 263, MATH 310, Any 300 level , 3 credit ACCT course (except ACCT 371 and ACCT 372), Any 200 level 3 credit ECO course (except ECO 201, ECO 259, ECO 273, ECO 274, ECO 300, ECO 362, ECO 371, and ECO 389), Any 300 level 3 credit Real Estate course (REAL) (Can only count 1 REAL course if also taking FIN 336) * All IBE students except ISE majors must take MATH 231. ISE majors take ISE 111 and ISE 121.		
Total Credits		**18**

MANAGEMENT

Choose one track (15 credits)		**15**
Managing Human Resources Track		
Required Courses: MGT 333, MGT 328 (SCM 328), MGT 342, MGT 363		
Plus one course chosen from the following list: ECO 235, MGT 306 (ENTP 306), MGT 302 (ENTP 302), MGT 346		
Management Consulting Track		
Required Courses: MGT 306 (ENTP 306), MGT 346, MGT 314		
Plus two courses chosen from the following list: MGT 328 (SCM 328), MGT 333, MGT 342, FIN 328, MKT 319 (ENTP 319), MKT 326, MGT 363, BIS 348, ACCT 330		
Entrepreneurship and Innovation Track		
Required Courses: ENTP 201 (MGT 201), MGT 302 (ENTP 302), MGT 346		
Plus two courses chosen from the following list: ENTP 311 (MGT 311), ENTP 312 (MGT 312), ENTP 306 (MGT 306), ENTP 319 (MKT 319), MGT 342		

MARKETING

Required Courses		
MKT 311	Consumer Behavior	3
MKT 312	Marketing Research	3
MKT 387	Marketing Strategy	3
Elective Courses: Select 3 of the following list:		**9**
MKT 313, MKT 314, MKT 319, MKT 320, MKT 325, MKT 326, MKT 327, MKT 347, MKT 330, MKT 332, MKT 366, MKT 371, MKT 372		
Total Credits		**18**

SUPPLY CHAIN MANAGEMENT

SCM 309	Supply, Cost, and Risk Managment	3
SCM 328	Negotiations and Conflict Management	3
SCM 340	Demand and Supply Chain Planning	3
SCM 342	e-Business Enterprise Applications	3
SCM 345	Analytical Approaches to Supply Chain Management	3
SCM 354	Integrated Logistics and Transportation Management	3
Total Credits		**18**

Admission to the Integrated Business and Engineering Honors Program is highly selective, with annual admission limited to approximately 50 students. The University's Office of Admissions (610-758-3100) can explain the procedure for applying to the program.

It is possible that a small number of exceptional students may be admitted to the program following the completion of their freshman year. Admission at this point would be highly competitive and based upon freshman year GPA, faculty recommendations, and space availability.

The co-directors of the IBE Honors Program are Richard J. Kish, Professor of Finance (rjk7@lehigh.edu) and Robert H. Storer, Professor of Industrial and Manufacturing Systems Engineering

(rhs2@lehigh.edu). For additional information, visit the IBE web site at www.lehigh.edu/ibe (http://www.lehigh.edu/ibe/).

Courses

IBE 010 Integrated Business and Engineering Seminar 1 Credit
Introduction to the various business and engineering professions through a series of presentations and demonstrations. Emphasis is on the diversity of business and engineering career opportunities and the associated curricular choices. Students also create their web page with four-year curriculum plan and an updated resume, learn Cad-Cam and presentation software, and explore career opportunities. Open only to first-year students in the Integrated Business and Engineering Honors Program.

IBE 050 Integrated Business and Engineering Workshop 3 Credits
The course introduces students to the interaction and interdependence of business planning and engineering design in the context of entrepreneurial new product development. Students develop skills in communication, teamwork and critical thinking while working in such areas as competitive strategy, financial modeling, marketing mix, prototyping, product testing, and the development of technical specifications. Open only to students in the Integrated Business & Engineering Honors Program.

IBE 150 Integrated Business and Engineering Sophomore Laboratory 1 Credit
A series of cases that integrate elements of business and engineering. Example topics include, but are not limited to, introduction to cost benefit analysis, introduction to modeling and optimization, team dynamics, and international negotiation and joint ventures. Oral presentations and written reports. Open only to students in the Integrated Business and Engineering Honors Program.

IBE 171 Integrated Business and Engineering Independent Study 1 Credit
Students address a technical issue in a business context from an entrepreneurial focus. Students pursue their own business start-up idea, either a product or a service, and develop a business plan that includes prototypes and testing (engineering) as well as a marketing plan and a base case financial model (business). The goal of the course is for students to enter a business plan or entrepreneurial competition in a local, regional or national level. Open only to students in the Integrated Business and Engineering Honors Program.
Prerequisites: IBE 050

IBE 250 Integrated Business and Engineering Junior Laboratory 1 Credit
A semester-long simulation game in which interdisciplinary teams of IBE students compete against each other. Topics include market analysis, working capital management, capital budgeting, raising long-term capital, plant location, and inventory control. Oral presentations and written reports. Open only to students in the Integrated Business and Engineering Honors Program.

IBE 271 Independent Study 1 Credit

IBE 380 Integrated Business and Engineering Capstone Project I 3 Credits
IBE students work in cross-disciplinary teams of 5 to 6 business and engineering majors with a faculty mentor on the marketing, financial and economic planning, and technical and economic feasibility of actual new product concepts initiated by the course's corporate sponsors. These sponsors are incubator start-up firms to ensure that the projects have both business and engineering elements. Written reports and oral presentations to sponsors and invited venture capitalists are required. Open only to students in the Integrated Business and Engineering Honors Program.

IBE 385 Integrated Business and Engineering Capstone Project II 3 Credits
IBE students continue to work with the detailed design including the fabrication and testing of working prototypes of their new products designed in IBE Capstone Project I course. In addition to the technical design of the products, detailed financial and marketing plans are required. Written reports and oral presentations to sponsors and invited venture capitalists are required. Open only to students in the Integrated Business and Engineering Honors Program.