



## **INTERDISCIPLINARY BUSINESS WITH ENGINEERING STUDIES MAJOR (IBE)**

The IBE major provides students with an interdisciplinary program having both business and engineering course content. The major includes a set of core courses in both business and engineering/engineering technology that will enable a graduate to function effectively in a technical business environment. In addition, a student will be able to choose courses from one of a selection of “skill” modules, each designed to enable a student to function in a specific technically related business area. The modules provide an entry-level set of tools that will help graduates provide immediate value to their employer. Modules include Accounting/Finance, Supply Chain Management, Quality Control & Six Sigma, Technical Sales, and Product Design & Manufacture.

Entry into the Interdisciplinary Business with Engineering Studies major requires the completion of the following entry-to-major courses: ACCTG 211, ECON 102 GS, ENGL 015 GWS or ENGL 030 GWS; MATH 110 GQ or MATH 140 GQ; STAT 200 GQ or SCM 200 GQ and a 2.00 or higher cumulative grade-point average.

For the B.S. degree in Interdisciplinary Business with Engineering Studies, a minimum of 127 credits is required. Each student must earn at least a grade of C in each 300- and 400-level course in both the Business and the Engineering Core as well as in ACCTG 211, B A 241 and B A 242 (or B A 243), ECON 102 GS, ECON 104 GS, MIS 204, SCM 200 GQ, MATH 140, MATH 141, MCH T 111 OR E MCH 211, MCH T 213 OR E MCH 213, EET 101 OR E E 211, CMPET 117 OR CMPEN 271, CMPSC 201, EG T 120.

### **CAREER OPPORTUNITIES**

The Academic and Career Planning Center (ACPC) assists students with the process of career and life planning through a full range of programs and services. You may schedule appointments with the ACPC staff to discuss issues including interests, skills, values, and goal setting, as well as how to find career information, internships, full-time jobs, and graduate schools. You are encouraged to utilize the services of the ACPC every year from your first semester to graduation.

The breadth offered by the IBE major is reflected in the diverse career paths of graduates possible in the industrial, retail, financial, and academic sectors.

IBE graduates will typically enter the business side of technical companies. The types of jobs that may be appropriate for graduates from this program might be:

1. Technical /industrial sales
2. Technical business /product development
3. Technical support
4. Junior level product or brand management
5. Production planners
6. Operations analysts
7. Purchasing agent in technical firm
8. Operations/production manager
9. Plant accountant in technical firm
10. Project Manager

**Recommended Academic Plan – Interdisciplinary Business with Engineering Studies (IBE at Penn State Erie, The Behrend College)  
Effective Fall 2008**

Semester 1	Credits	Semester 2	Credits
<i>ENGL 015 or 030 (GWS) Rhetoric &amp; Composition or Honors *</i>	3	<b>MATH 141 (GQ) Calculus with Analytic Geometry II *</b>	4
<b>MATH 140 Calculus with Analytic Geometry (GQ)</b>	4	Humanities (GH)	3
<i>CHEM 110 (GN) Chemical Principles I</i>	3	<b>EG T 120 Introduction to Graphics and Solid Modeling</b>	3
Arts (GA)	3	<b>ECON 102 (GS) Introduction to Microeconomics *</b>	3
EDSGN 100S First-Year Seminar	3	<b>CMPS C 201 (GQ) Programming for Engineers with C++</b>	3
Total Credits:	16	Total Credits:	16
Semester 3	Credits	Semester 4	Credits
<i>CAS 100 (GWS) Effective Speech</i>	3	<b>ACCTG 211 Financial &amp; Managerial Accounting *</b>	4
<b>ECON 104 (GS) Introduction to Macroeconomics</b>	3	<i>PHYS 212 (GN) General Physics: Electricity and Magnetism</i>	4
<b>B A 241-Legal Environment of Business (2) and B A 242-Social &amp; Ethical Environment of Business (2) [or B A 243 (4) ]</b>	4	<i>ENGL 202C (GWS) Effective Writing: Technical Writing</i>	3
<b>MIS 204 Introduction to Management Info Systems</b>	3	<b>MCH T 111 or E MCH 211 Mechanics for Technology: Statics or Statics</b>	3
<i>PHYS 211 (GN) General Physics: Mechanics</i>	4	<b>SCM 200 Introduction to Stats for Business or Elementary Statistics *</b>	4
Health and Physical Activity (GHA)	1.5		
Total Credits:	18.5	Total Credits:	18
Semester 5	Credits	Semester 6	Credits
<b>MGMT 301 Basic Management Concepts</b>	3	<b>FIN 301 Corporation Finance</b>	3
<b>EET 101 or E E 211 Electrical Circuits I or Electrical Circuits and Power Distribution</b>	3	<b>CMPET 117 or CMPEN 271 Digital Electronics or Introduction to Digital Systems</b>	3
<b>MCH T 213 or E MCH 213 Strength and Properties of Materials or Strength of Materials</b>	3	<b>ME 300 or MET 330 Engineering Thermodynamics I or Thermodynamics</b>	3
<b>SCM 301 Introduction to Operations Management</b>	3	<b>International Business Course (IL)</b>	3
<b>MKTG 301 Principles of Marketing</b>	3	Module Elective	3
Total Credits:	15	Total Credits:	15
Semester 7	Credits	Semester 8	Credits
<b>MGMT 475W Strategic Product Development</b>	3	<b>MGMT 476 Product Realization Capstone</b>	3
<b>MGMT 410 Project Management</b>	3	Humanities (GH)	3
Module Elective	3	Arts (GA)	3
Module Elective	3	Module Elective	3
Health and Physical Activity (GHA)	1.5	Module Elective	3
Total Credits:	13.5	Total Credits:	15

- An asterisk (\*) indicates an entrance to major requirement.
- **Bold type** indicates courses requiring a quality grade of C or better.
- *Italic* indicates courses that satisfy both major and General Education requirements.
- ***Bold italics*** indicates courses requiring a quality grade of C or better and that satisfy both major and General Education requirements.
- GWS, GHA, GQ, GN, GA, GH, and GS are codes used to identify General Education requirements.
- W is the code used to designate courses that satisfy University Writing Across the Curriculum requirements.
- If you have not completed two years of high school study of one foreign language and graduated in the year 2001 or later, you must also schedule 3-4 credits of college level foreign language (in addition to your program requirements).
- General education requirements include 6 credits of arts (GA), 6 credits of humanities (GH), 6 credits of social and behavioral sciences (GS), 3 credits of health and physical activity (GHA), 9 credits of natural sciences (GN), 9 credits of writing/speaking (GWS), and 6 credits of quantification (GQ).
- Also required are 3 credits of United States cultures (US), 3 credits of International Cultures (IL) which can be used to satisfy part of the general education requirements. A (USI) may count for either category, but not both.

# INTERDISCIPLINARY BUSINESS WITH ENGINEERING STUDIES MAJOR

(B.S., 127 credits)

NAME: \_\_\_\_\_

PSU ID \_\_\_\_\_

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<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><b>PREREQUISITE COURSES:</b> Depending on the results of university placement tests, additional credits <u>beyond</u> the minimum degree requirements may be needed to meet the prerequisites for certain courses (for example, ENGL 004 for ENGL 015).</p> </div> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>_____</td> <td style="text-align: center;">1-2</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>_____</td> <td style="text-align: center;">1-2</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>_____</td> <td style="text-align: center;">1-2</td> <td style="text-align: center;">_____</td> </tr> </tbody> </table>	_____	1-2	_____	_____	1-2	_____	_____	1-2	_____																																																																																																																																																																									
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# BUSINESS COURSE LIST FOR THE INTERDISCIPLINARY BUSINESS WITH ENGINEERING STUDIES MAJOR

## MODULES

### Module 1

#### ACCOUNTING/FINANCE (16 credits)

ACCTG 305(4) Financial Statements and  
Management Decisions  
ACCTG 340(3) Cost Accounting  
FIN 451(3) Intermediate Financial Management  
Select six (6) credits in ACCTG or FIN at the 400 level

### Module 2

#### QUALITY CONTROL (15credits)

Q C 450 (3) Intro. to Quality Control Engineering  
Select 12 credits from the following:  
STAT 461 (3) Analysis of Variance  
MATH 482/ (3) Mathematical Methods of  
Operations Research  
STAT 460 (3) Intermediate Applied Statistics  
STAT 462 (3) Applied Regression Analysis  
STAT 464 (3) Applied Nonparametric Statistics

### Module 3

#### OPERATIONS & SUPPLY CHAIN (15 credits)

SCM 445(3) Operations Planning & Control  
SCM 455(3) Logistics Systems Analysis & Design  
SCM 460(3) Purchasing & Material Management  
Plus two of the following:  
ECON 485(3) Econometric Techniques  
MKTG 485(3) Business to Business Marketing  
MIS 404(3) Introduction to ERP  
MIS 336(3) Database Management Systems

### Module 4

#### TECHNICAL SALES (15 credits)

SCM 465(3) E-Commerce  
SCM 460(3) Purchasing & Material Management  
MKTG 410(3) Personal Selling  
Plus two of the following:  
MIS 404(3) Introduction to ERP  
MKTG 440(3) Services Marketing  
MKTG 485(3) Business to Business Marketing  
SCM 455 (3) Logistics Systems Analysis & Design

### Module 5

#### PRODUCT DESIGN & MANUFACTURE (16 credits)

IET 101 (3) Manufacturing Materials & Processes  
IET 215 (2) Production Design  
IET 216 (2) Production Design Lab  
EG T 121 (3) Applied Solids Modeling  
MET 306 (3) Computer Aided Design  
QC 450 (3) Intro. To Quality Control Engineering