

Department of Industrial Engineering

Memorandum

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To: College of Engineering Undergraduate Affairs Committee  
From: Hamid Parsaei  
Date: September 25, 2006  
Subject: Technical Elective Courses

W-DRAWN  
12/6/06

The departmental faculty has selected the MATH 3336 (Discrete Mathematics), MATH 3333 (Intermediate Analysis), MANA 3335 (Introduction to Organization Behavior and Management), and DISC 3370 (Information Systems Development Tools) as approved technical elective courses. Other technical course must approve in advance by Industrial Engineering departmental advisor. Detailed description of each course from the UH undergraduate category are attached.

The note <sup>11</sup> on the page 158 (see attachment) of the UH undergraduate category should change as the following:

<sup>11</sup>Approved technical courses are MATH 3336, MATH 3333, MANA 3335, and DISC 3370. Other technical course must approve in advance by Industrial Engineering departmental advisor.

approved

JFCh

10/5/06

**Proposed Technical Elective Courses**  
**For the IE Degree Plan**  
**(Effective Fall 2007)**

**MATH 3336: Discrete Mathematics**

Cr. 3. (3-0). Prerequisite: MATH 2431 or equivalent. Topics selected from logic, set theory, combinatorics, and graph theory.

**MATH 3333: Intermediate Analysis**

Cr. 3. (3-0). Prerequisite: MATH 2433. Properties of real number system, properties of continuous functions, and sequences of functions.

**MANA 3335: Introduction to Organizational Behavior and Management**

Cr. 3. (3-0). Prerequisite: junior standing. Credit for both MANA 3335 and 3333:3334 cannot be applied toward a degree. General management functions and the role of individual, group, and organizational behavior in the management process.

**DISC 3370: Information Systems Development Tools**

Cr. 3. (3-0). Prerequisites: DISC 2373 or COSC 2410 and major or minor in MIS or major in Computer Science (business option). Survey of development options in commercial application systems, including structured methods and programming tools.

Students must earn a 2.25 grade point average in all courses and in INDE major courses in order to enroll in 3000-level and above INDE courses. The major grade point average of 2.25 must be maintained at all times until the last semester before graduation. If a student does not meet this major grade point average criterion, he/she is placed on engineering major probation. If in a succeeding semester, while on probation, the student does not meet the 2.25 grade point average criterion, he/she is placed on engineering course suspension. Students on major suspension are not allowed to take engineering courses during the semester of suspension. The major grade point average is calculated using all INDE courses.

The number of attempts of an INDE course is limited to two. *Attempt* is defined as formal registration that results in a student receiving a letter grade, including grades of Q, U, W, and I.

### First Year

Fall Semester	Hours
CHEM 1372. Fundamentals of Chemistry for Engineers	3
CHEM 1117. Fundamentals of Chemistry for Engineers Laboratory I	1
ENGL 1303. Freshman Composition I	3
HIST 1376 or 1377. The United States to 1877 <sup>1</sup>	3
MATH 1431. Calculus I <sup>2</sup>	4
Humanities Core Course	3
<b>Total</b>	<b>17</b>

### Spring Semester

INDE 1331. Computing for Engineers	3
ENGL 1304. Freshman Composition II	3
HIST 1378 or 1379. The United States Since 1877 <sup>1</sup>	3
MATH 1432. Calculus II	4
PHYS 1321. University Physics I	3
<b>Total</b>	<b>16</b>

### Second Year

Fall Semester	Hours
INDE 2333. Engineering Statistics I	3
INDE 3330. Industrial Cost Systems	3
MATH 2433. Calculus III	4
PHYS 1322. University Physics II	3
POLS 1336. U.S. and Texas Constitutions and Politics <sup>1</sup>	3
<b>Total</b>	<b>16</b>

### Spring Semester

MECE 3400. Introduction to Mechanics <sup>3</sup>	4
INDE 2331. Computer Applications for Industrial Engineering	3
INDE 3333. Engineering Economy I	3
POLS 1337. U.S. Government: Congress, President and Courts <sup>1</sup>	3
MATH 3321. Engineering Math	3
<b>Total</b>	<b>16</b>

### Third Year

Fall Semester	Hours
INDE 3310. Statistical Process Quality Control and Improvement	3
INDE 3364. Engineering Statistics II	3
INDE 3382. Stochastic Models	3
INDE 3432. Manufacturing Processes	4
Visual and Performing Arts Course	3
<b>Total</b>	<b>16</b>

### Spring Semester

INDE 3315. Supply Chain Design and Management	3
INDE 3362. Computer Aided Design/Manufacturing	3
INDE 4331. Analysis of Industrial Activities	3
ECE 3336. Introduction to Circuits and Electronics	3
Social Sciences Core Course	3
<b>Total</b>	<b>15</b>

### Fourth Year

Fall Semester	Hours
INDE 3320. Computer-Integrated Manufacturing	3
INDE 3370. Discrete Event Simulation	3
INDE 4111. Industrial Engineering Seminar	1
INDE 4337. Human Factors and Ergonomics	3
ENGI 2334. Thermodynamics	3
Social Sciences Core Course (writing intensive)	3
<b>Total</b>	<b>16</b>

### Spring Semester

Hours	
INDE 3381. Linear Optimization	3
INDE 4334. Engineering Systems Design	3
INDE 4369. Facilities Planning and Design	3
INDE 4372. Operations Control	3
Technical Elective <sup>11</sup>	3
<b>Total</b>	<b>15</b>
<b>Degree Total</b>	<b>127</b>

### Industrial Engineering Degree Program for Other UH Engineering Graduates

Students who have completed a Bachelor of Science at the University of Houston in another field of engineering may obtain a Bachelor of Science in Industrial Engineering degree by completing, at the University of Houston, the additional year of course work shown below. Required prerequisites for this program are INDE 2333 and 3333, in addition to those courses required for the first degree.

INDE 3330. Industrial Cost Systems	3
INDE 3362. Computer Aided Design/Manufacturing	3
INDE 3364. Engineering Statistics II	3
INDE 3382. Stochastic Models	3
INDE 3381. Linear Optimization	3
INDE 3432. Manufacturing Processes	4
INDE 4331. Analysis of Industrial Activities	3
INDE 4369. Facilities Planning and Design	3
INDE 4372. Operations Control	3
Technical Elective <sup>11</sup>	3
<b>Total for Degree</b>	<b>31</b>

### Courses: Industrial Engineering (INDE)

**1331: Computing for Engineers** (also CHEE 1331, CIVE 1331) Cr. 3. (2-2). Prerequisite: MATH 1431. Credit may not be received for more than one of CHEE 1331, CIVE 1331 and INDE 1331. Introduction to the computing environment; matrix arithmetic; programming essentials; spreadsheets; symbolic algebra tools; solution of typical engineering problems using computer tools.

**2331: Computer Applications for Industrial Engineering** Cr. 3. (3-0). Prerequisite: INDE 1331. Structured programming in Visual Basic with numerical analysis applications in industrial engineering. Introduction to computer aided drafting software.

**2333: Engineering Statistics I** Cr. 3. (3-0). Prerequisite: MATH 1432. Probability and statistical inference for engineering applications; probability distributions, estimation, statistical tests, and reliability theory.

<sup>1</sup>Refer to the Academic Regulations and Degree Requirements section for information on equivalents and substitutions and to the Admission, Advising, Orientation, and Registration section for information on advanced placement examinations.

<sup>2</sup>Students not qualified to enter MATH 1431 must complete MATH 1300, 1310 and/or 1330, as indicated by results of the Mathematics placement examination, prior to enrolling in MATH 1431.

<sup>11</sup>Technical Elective course must be 3000-level and above. Courses must be approved in advance by the Industrial Engineering departmental advisor.