

Unofficial Guide (not endorsed by IESE)  
Official Information is available at  
[http://www.iese.illinois.edu/ugrad/advising/secondary\\_fields.html](http://www.iese.illinois.edu/ugrad/advising/secondary_fields.html)

# Secondary Field Guide 2008 - 2009

Department of General Engineering  
University of Illinois  
Revised Fall 2008

While the General Engineering curriculum offers a variety of courses that cover many engineering fields, GE students are given the opportunity to delve more deeply into a single area through the Secondary Field of Concentration. Each student is required to take at least 12 credit hours in a particular field. These courses make up the Secondary Field of Concentration.

This booklet is intended to help in the choice of a Secondary Field of Concentration. It is compiled from information taken from a survey given to seniors in the General Engineering curriculum. Although the secondary fields listed are not the only ones available, this guide is a good summary of what some GE students have taken in the past. A computer file summarizing option 3, 4, and 5 Secondary Field of Concentration petitions exists in the chief advisor's office, room 209 Transportation building. This file can be found in the student folder on the computer, under secondary fields. Students interested in seeing what course sets have constituted successful petitions in the past may view this. Caveat, each case is individual and weighed on the merits of the petition's justification statement. Included in the handbook is a list of "special problems" classes that must be petitioned to be included in one's Secondary Field of Concentration.

A major caveat with this document is that some courses no longer exist or have had changes in content, credit, title, etc. This is true of the data in this handbook as well, containing information dating from 1996 to the present. **However several changes have been instituted to improve the quality of the info:**

- Course numbers were changed to the Banner system.
- While changing over, cancelled classes were deleted from the document.
- Dates have been added:
  - Student Comments: "Pre" means the comment was added before Spring 2004. Starting S04 comments on specific classes and general comments on the secondary are labeled with the semester the comment was made.

The courses for each Secondary Field of Concentration (SFC) have been included (where available) along with the evaluations of these courses as surveyed in a class of GE490 students. They were asked to rate their courses on the following scale:

E	=	Excellent
G	=	Good
F	=	Fair
P	=	Poor
H	=	Horrible

In addition to this rating scheme, the students were also asked to make comments that they felt might be useful to future students. These remarks are presented as *Student Comments*. These comments are the opinions of individual students, and do not necessarily represent the opinions of the Industrial and Enterprise Systems Engineering Department. Students are encouraged to consider these comments, but should also seek out advisors and professors specializing in these fields. Some pre-approved SFCs have a faculty advisor in the department of General Engineering that has been included with the comments and classes for each field. Students deciding upon a Secondary Field of Concentration should consult these contacts or make an appointment with an advisor.

Thanks to all the seniors, juniors, and graduate students who participated in the survey and good luck to those choosing a Secondary Field of Concentration.

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Fall 2008

## **Department of General Engineering Secondary Fields of Concentration For the Undergraduate Curriculum**

[http://www.iese.uiuc.edu/ugrad/advising/secondary\\_fields.html](http://www.iese.uiuc.edu/ugrad/advising/secondary_fields.html)

The Secondary Field of Concentration provides virtually unlimited opportunity and flexibility to tailor the General Engineering curriculum to one's interests and career goals. Secondary fields are of two types, pre-approved and customized, as described below. Secondary fields may be technically or non-technically oriented. Each requires a minimum of 12 hours of coursework.

Pre-approved Secondary Fields of Concentration consist of related courses in the areas of study listed below. For Option 2, any 12 hours of credit may be selected from the course list given for the field of concentration. For Option 3, 12 hours still applies, but a request for the substitution of a course not in the list for Option 2 may be made via a petition form. Petitions are available in the chief advisor's office or can be downloaded from the General Engineering web-site. Generally speaking, one course substitution is reasonable. Two or more suggest that a Customized choice be made. Petition approval by the General Engineering Department is based on the coherence of the complete set of courses chosen. Approved courses that appear on prior lists, but are not listed here, apply if already taken.

### **Pre-Approved Secondary Fields of Concentration**

**{see also the extended list of Pre-Approved Secondary Fields of Concentration}**

Automotive Engineering	Engineering Administration
Bioengineering (Engineering Option)	Engineering Marketing
Business Systems Integration and Consulting	Environmental Quality
Civil Engineering Structures	Manufacturing Engineering
Communications and Computer Systems	Nondestructive Testing and Evaluation
Computer-Aided Design and Manufacturing (CAD/CAM)	Operations Research
Computer Science	Quality Control
Construction	Rehabilitation Engineering
Control Systems	Robotics
	Theoretical and Applied Mechanics

For each of these fields, courses may be chosen without further approval to complete the secondary field of study. Approval for other courses not listed may be sought by petition. Courses that have previously been petitioned are listed within the student rankings.

## Customized Secondary Fields of Concentration

Customized Secondary Fields of Concentration can be created to achieve specific career goals not addressed by Pre-approved Secondary Fields of Concentration. Customized Secondary Fields of Concentration differ from Preapproved ones in that no sets of specified courses to choose from have been predefined. For all Customized Secondary Fields of Concentration, a course list must be constructed and submitted for approval by the department. To do so, a petition form stating the title and courses for the secondary field of concentration must accompany the Course Planning Consultant Information Survey declaration. A sample petition can be found at the end of this handbook. Petitions are available in the chief advisor's office or can be downloaded from the IESE website. Petition approval by the Department of Industrial and Enterprise Systems Engineering is based on the merit of the secondary field of concentration and the coherence of the courses within it relative to the student's goals. For Option 4, established titles exist, but not course lists. For Option 5, established titles do not already exist. The following list contains examples of customized secondary fields of concentration that can or have been petitioned.

Accountancy	Insurance and Actuarial Science
Acoustics	Integrated Engineering and Industrial Design
Agricultural Engineering (or any other engineering discipline)	International Business
Agronomy	Japanese (or any other language)
Animal Science	Landscape Architecture
Applied Mathematics	Machine Design
Applied Statistics	Mechatronics
Astronomy	Meteorology
Audio Engineering	MicroElectroMechanical Systems (MEMS)
Aviation	Mining and Geological Engineering
Biology	Philosophy
Chemistry	Political Science
Cinematography	Power Systems
Circuit Analysis and Design	Pre-Dentistry
Economics	Pre-Law
Energy	Pre-Medicine
Entrepreneurship	Pre-Veterinary Science
Finance	Product Development
Finite Element Analysis	Railroad Engineering
Fluid Dynamics	Solar Energy
Food Science	Technical Journalism
Geography	Technology and Management
Heat Transfer	Telecommunications
History of Engineering, Science and Technology	Thermal Science
Human Factors	Thermodynamics
Industrial Design	Vehicle Dynamics
Industrial Psychology and Organizational Behavior	

Beginning Fall 2001, all “special problems” courses must be petitioned. The most likely candidates are non-permanent and experimental offerings relevant to the various fields. This list is provided below or can be found at [http://www.iese.uiuc.edu/ugrad/advising/secondary\\_fields.html](http://www.iese.uiuc.edu/ugrad/advising/secondary_fields.html).

PRE-APPROVED STATUS OF ‘SPECIAL PROBLEMS’ COURSES FOR INCLUSION IN VARIOUS PRE-APPROVED SECONDARY FIELDS OF CONCENTRATION IN GE												
Effective August 2001	See Course Title Below											
	199	293	293	393	393	393	393	393	393	393	393	393
	RLP	LH	MHM	BPL	G	HEC	MJL	MWS	MSX	RLP	RSL	WJD
Automotive Engineering						X						
Bioengineering												
Bus Sys Integ & Consulting						X	X			X	X	
CE Structures												
Comm & Comp Systems											X	
CADCAM												
CS												
Construction												
Control Systems					X			X	X			
Engin Admin						X	X					
Engin Mkg				X		X	X			X		
Environ Quality												
Manuf Engin				X		X						X
NDTE												
Operations Res												
Quality Control												
Rehab Eng			X									
Robotics					X			X	X			
Theo & Appl Mechanics												

- GE 299 RLP – Engineering Emotional Intelligence (3 hours)
- GE 293 LH – Introduction to Entrepreneurship (3)
- GE 293 MHM – Biomechanics Special Topics (1)
- GE 393 BPL – Product Development for Entrepreneurial Ventures (3)
- GE 393 G – Introduction to Mechatronics (3)
- GE 393 HEC – Valuation and Planning of New Products (3)
- GE 393 MJL – Technology Opportunity Assessment (3)
- GE 393 MWS – Introduction to Robotics (4)
- GE 393 MSX – Robot Dynamics and Control (4)
- GE 393 RSL – Network Design Laboratory (3)
- GE 393 RLP – Business Plan Workshop (3)
- GE 393 WJD – Design and Management of Manufacturing Systems (3)

## Pre-Approved Secondary Fields of Concentration

Note: Petitioned courses are listed below pre-approved courses.

### Secondary Field of Concentration: Automotive Engineering

Faculty Mentor: A. Yassine

#### Preapproved Courses

			# Hrs	E	G	F	P	H
ECE	470	Introduction to Robotics	4	0	0	0	0	0
GE	421	Same as ECE 470						
CS	443	Same as ECE 470						
ECE	486	Control Systems	2	0	1	0	0	0
GE	422	Robot Dynamics & Control	2	0	0	0	0	0
ME	310	Introductory Gas Dynamics <sup>1</sup>	3	0	0	0	0	0
ME	320	Heat Transfer <sup>1</sup>	3	0	0	0	0	0
ME	360	Signal Proc, Inst and Control <sup>1</sup>	4	0	1	0	1	0
ME	400	Energy Conversion Systems <sup>1</sup>	3	0	3	1	0	0
ME	462	Modern Control Theory	4	0	0	0	0	0
ME	461	Computer Ctrl of Mechani Sys	3	0	0	0	0	0
ME	403	Internal Combustions/Engines	3	0	1	1	0	0
ME	441	Automotive Vehicle Dynamics	3-4	5	1	1	0	0
ME	460	Industrial Control Systems	3	0	0	2	0	0
TAM	412	Intermediate Dynamics	4	1	1	1	0	0

<sup>1</sup> recommended only if a prerequisite to another listed course

#### Petitioned Courses

			# Hrs	E	G	F	P	H
ECE	498	Special Topics in ECE	0-4	1	0	0	0	0
ENG	491	Interdisciplinary Design Project	1-4	1	0	0	0	0
GE	420	Digital Control of Dynm System <sup>2</sup>	4	1	1	0	0	0
GE	412	Fund of Nondestructive Eval	3-4	1	0	0	0	0
GE	497	Independent Study	1-4	1	0	0	0	0
IE	330	Industrial Quality Control	3	0	1	0	0	0
ME	199	Independent Study	1-5	1	0	0	0	0
ME	330	Engineering Materials	4	1	0	0	0	0
ME	497	Independent Study	1-4	1	0	0	0	0

<sup>2</sup> one credit hour allowed if taken as GE Design Elective; four hours if not.

Student Comments: (SP07) All courses are difficult but for the most part worthwhile.

(Pre) GE 420 can be a very difficult course.

ME 340 is the prerequisite to ME 360.

ME 400 is basically a second thermodynamics course with more real-world applications.

The choices of classes are limited and the field is a lot of work.

ENG 491 was great real world experience but tough

## Secondary Field of Concentration: Bioengineering

Faculty Mentor: M. Moeinzadeh

### Preapproved Courses

			# Hrs	E	G	F	P	H
BIOE	120	Introduction to Bioengineering	1	12	12	1	1	0
BIOE	406	Veterinary Ortho Biomechanics	3	3	0	1	0	0
VB	406	Same as BIOEN 406						
BIOE	498	Special Topics	3	1	1	0	0	0
MCB	150	Molec and Cellular Basis of Life <sup>1</sup>	4	0	3	0	0	0
MCB	250	Molecular Genetics <sup>1</sup>	4	0	0	1	0	0
MCB	251	Exp Techniqs in Molecular Biol <sup>1</sup>	2	1	0	0	0	0
MCB	252	Tissues, Cells & Development	3	0	0	1	0	0
BIOP	401	Introduction to Biophysics	3	0	0	4	1	1
CHEM	232	Elementary Organic Chemistry I	3	2	7	12	2	1
CHEM	233	Elementary Organic Chem Lab I	2	3	2	5	0	0
ECE	414	Biomedical Instrumentation	3	5	2	4	0	0
BIOE	414	Same as ECE 414						
ECE	415	Biomedical Instrumentation Lab	2	3	0	1	0	0
BIOE	415	Same as ECE 415						
ECE	475	Modeling of Bio-Systems	3-4	1	0	0	0	0
BIOE	475	Same as ECE 475						
KIN	355	Biomechanics of Human Movement	3	1	2	0	1	0
IB	150	Intro to Integrative Biology	3	0	1	0	0	0
MCB	103	Intro to Human Physiology	4	18	8	3	0	0
MCB	401	Cell & Membrane Physiology	3	4	8	4	2	0
MCB	402	Sys & Integrative Physiology	3	4	2	3	5	0
MCB	403	Cell & Membrane Physiology Lab	2	3	7	3	0	0
MCB	404	Sys & Integrative Physiol Lab	2	3	6	2	2	0

<sup>1</sup> recommended only if a prerequisite to another listed course

### Petitioned Courses

			# Hrs	E	G	F	P	H
ABE	485	Food and Process Eng Design	2	1	0	0	0	0
BIOE	199	Undergraduate Open Seminar	1-5	0	0	0	1	0
BIOE	397	Individual Study	0-4	1	0	0	0	0
BIOE	280	Biomedical Imaging	3	1	0	0	0	0
BIOE	498	Ethics		0	0	1	0	0
CHEM	332	Elementary Organic Chem II	3	1	0	0	0	0
MCB	334	Functional Human Anatomy	5	0	1	0	0	0
GE	397	Independent Study	0-4	0	0	3	0	0
MCB	450	Introductory Biochemistry	3	1	0	0	0	0
IE	340	Human Factors	4	1	2	0	0	0

Student Comments: (SP07) BIOE 414/415 Prof was ok. Learned a lot but he wan't a great motivator for the class. Didn't teach it super well.

(S05) CHEM 232 is hard but there are lots of resources to help you.

MCB 103 with Meisami was good.

MCB103 is a great class. Prof. Meisami is very entertaining. There's a lot of material, so don't take it unless you're really interested.

BIOE 120 was an easy class, you just sit there and listen to people.

I really enjoyed BIOE 406, Professor Pajonowski is a great guy.

MCB150 was a good class, lots of material but very interesting. Prof. Mehrters is awesome.

Comments for Bioengineering continued:

(S04) A very interesting and diverse secondary field. Do the college of engineering minor if more interested since it counts for the secondary field and James Scholar honors contract.

(Pre) BIOE 120 is easy.

BIOE 120 is a good one hour overview of many of the subtopics of bioengineering. It is an easy class with not much work. The class requires you to become involved in a bioengineering E.O.H. project.

BIOE 406 is a great course. It treats bones, tendons, and cartilage as materials of engineering. Professor Pijanowski is very good and it is not a major time commitment.

BIOE 414 has a group project which is intense, but a good learning experience.

BIOEN 414 is a very good class. It requires basic ECE circuit analysis ability. GE students are at a disadvantage versus the ECE students because of some of the circuits, but the grading is easy so it's not hard to do a good job. There is a lot of reading, quizzes, Mallard, and a design project.

BIOE 475 is awesome, lots of control systems.

BIOEN 498 deals with fascinating material.

CHEM 232 is not a bad class. It is helpful in some later classes such as biochemistry and is essential if medical school is in the future. This class is just a lecture. The lecture is high paced and it requires a lot of reading.

CHEM 233 is the lab class that goes along with lecture.

Take CHEM 232 after CHEM 102 or 104. Do not sell back any books and keep all notes.

MCB 103 is a good introductory class that gives a student a good background in physiology.

MCB 401 and 402 are lecture classes that are taught by different professors with each teaching a specific topic for two and a half weeks. Most professors explain very well, but engineers are at a disadvantage without a biology background.

MCB 401 and 402 are team taught.

MCB 403 is a very intense lab, not easy, but you learn a lot.

MCB 403 and 404 are both two-hour lab classes that require a lot of work.

The suggested order of classes is: MCB 103 or MCB 402 and MCB 404, then MCB 403 and 401.

KINES 355 is the easiest class I've taken at U of I ever. I can't believe it actually counted towards my secondary Field of Bioengineering. It's like retaking an easier version of Physics 211.

## Secondary Field of Concentration: Business Systems Integration and Consulting

Faculty Mentor: D.E. Goldberg

At least one course must be chosen from Group I and Group II respectively.

### Preapproved Courses

			# Hrs	E	G	F	P	H
Group I								
ACCY	200	Fundamentals of Accounting <sup>1</sup>	3	7	12	10	7	0
ACCY	201	Accounting and Accountancy, I <sup>1</sup>	3	6	20	17	2	3
ACCY	202	Accounting and Accountancy, II <sup>1</sup>	3	0	1	0	0	0
ADV	300	Introduction to Advertising	3	9	6	9	3	0
BADM	320	Principles of Marketing	3	17	19	6	1	1
BADM	310	Mgmt and Organizational Beh	3	42	52	29	10	0
BADM	311	Individual Behavior in Orgs	3	5	9	2	2	0
BADM	312	Org Design & Environment	3	4	3	1	1	1
BADM	445	Small Business Consulting	4	3	2	0	0	0
BADM	446	Entrepreneurship Sm Bus Form	4	0	2	0	0	0
BTW	250	Principles Bus Comm	3	1	1	0	0	0
BTW	261	Principles Tech Comm	3	0	2	0	0	0
FIN	221	Corporate Finance	3	9	4	0	0	0

<sup>1</sup> A basic accounting course is highly recommended

			# Hrs	E	G	F	P	H
Group II								
BADM	432	Intro to Mgt Info Systems	3	0	11	9	7	0
ACCY	432	Same as BADM 432						
BADM	352	Database Design and Management	3	0	3	2	3	0
ACCY	352	Same as BADM 352						
BADM	353	Info Sys Analysis and Design	3	1	0	1	0	0
ACCY	353	Same as BADM 353						
BADM	459	Mgt Info and Control Systems	3	0	0	0	0	0
ACCY	455	Same as BADM 459						
CS	225	Data Structures & Softw Prin	4	0	1	1	0	0
CS	257	Numerical Methods	3	0	0	1	0	0
CS	400	Data Structures, Non-CS Majors	4	3	10	10	5	2
CSE	400	Same as CS 400						
All other 200 and 300 level CS classes								

#### Petitioned Courses

			# Hrs	E	G	F	P	H
CS	110	Programming Lab (Java)	1	0	0	0	1	0
GE	393	Evaluation and Planning of New Products	3	0	0	0	1	0
GE	393	Feasibility Plan and Opportunity Assessment	3	1	0	0	0	0
ENG	491	Independent Study	1-4	0	0	1	0	0
ECE	290	Computer Engineering I	3	0	1	0	0	0
GE	393RSL	RSL Network Design Lab	3	4	2	1	0	0
GE	498	Computer-Aided Product Realization	3	1	0	0	0	0

#### Student Comments:

(S05) ACCY 200 was a good course; lots of material covered, but it was taught well.

ADV 300 was way too easy.

ADV 300 was an easy A.

If you want to get an easy A, take ADV 300. However, you don't learn anything practical.

FIN 221 is a very useful class for an engineering major. Money=Business.

FIN 221 is a must if you're pursuing a career in business or the financial industry.

ACCY 200 and ACCY 432 were rated fair because of the bad teacher, Prof. Silhan.

ACCY200 and BA352 are hard to get motivated. Don't take Prof. Silhan.

Prof. Peter Silhan for ACCY200 and ACCY 432 was questionable at times in what he expected. His teaching ways are very different. I would recommend a different teacher.

All I got out of BADM 432 was practice at writing formal reports - didn't actually learn anything useful.

ACCY 432 consists of a large group project (9 people) that takes all semester but it isn't too bad. There are three exams which are mostly vocab and conceptual but there's no final, which is always a plus.

CS400 - Chad Pipier is fun and enthusiastic.

BA 310 is easy and Prof. Love is really funny

BA 445 looks good if you're going into consulting, course includes free-range small consulting projects

(F03) FIN 221 is useful for the business world to come. Even for an engineer, some studying is necessary, but you'll benefit from the course without bending over backwards.

(Pre) ACCY 201 is a fairly easy A.  
 ADV 300 was interesting, but not particularly relevant.  
 ADV 300 is very interesting and little to no time commitment.  
 ACCY 200 and ADV 300 are very easy. ACCY 200 was very easy, good for basics.  
 ACCY 200 is just vocabulary and ACCY 432 has no programming.  
 ACCY 200 has good general info on balance sheet analysis and financial reports of companies.

Comments for Business Systems Integration & Consulting, continued

(Pre) All the BA classes are pretty easy.  
 BA 310 is very useful and explains the organization of a company really well.  
 BA310 was good, with a good perspective on management, G-Love was good.  
 BA320 should be titled marketing jargon.  
 BA 320 and FIN 221 were excellent overall. Although the time commitment was high when approaching exam times, the material was interesting enough to actually want to learn it.  
 B ADM 320 has good marketing and general business information. However, there are probably other classes that would be more applicable to this secondary field of concentration.  
 BA 445 is a must for the BSI secondary field since you do exactly that: consult for a small business for an entire semester.  
 BADM 445 is educational because the students get a real consulting project to complete, from start to finish, with a project team. The lectures here do not discuss consulting as much as expected.  
 All the MIS classes are fairly simple, except for BA 312, but it's worth it.  
 BA432 is relevant, but the Prof isn't "on the ball"  
 B ADM 352 was a useful MIS course where skills were learned that can be used in your future career.

CS225 was a fair class in that I hated it and did poorly, but I believe that it was probably possibly for me to have done better. Either way, the class is very difficult w/o previous programming experience.  
 GE 497 (the networking section) is recommended for use as a topic of conversation at an interview and taking the class helps to get a job.  
 GE497RSL has good hands on experience and no lecture, but students must research out of class.

**Secondary Field of Concentration: Civil Engineering Structures**

Faculty Mentor: S. A. Burns

Preapproved Courses

			# Hrs	E	G	F	P	H
CEE	460	Steel Structures, I	3	8	6	0	0	0
CEE	461	Reinforced Concrete, I	3	4	6	3	0	0
CEE	380	Geotechnical Engineering	3	3	6	4	0	0
CEE	462	Steel Structures, II	3	1	0	0	0	0
CEE	463	Reinforced Concrete, II	3	0	0	1	0	0
CEE	465	Design of Structural Systems	3	2	0	0	0	0
MATH	380	Advanced Calculus	3	1	2	2	1	0
MATH	415	Linear Algebra	3	0	0	0	0	0

Petitioned Courses

			# Hrs	E	G	F	P	H
CEE	312	Route Surveying	3	1	0	0	0	0
CEE	320	Construction Engineering	3	1	0	0	0	0
CEE	310	Transportation Engineering	3	0	1	0	0	0
CEE	360	Structural Engineering	3	0	0	1	0	0
CEE	422	Construction Cost Analysis	3	0	1	0	0	0
CEE	415	Geometric Design of Roads	4	0	1	0	0	0
CEE	498	Special Topics	1-4	0	0	1	0	0
GE	412	Fund of Nondestructive Eval	3-4	0	0	0	0	1

Student Comments:

(Pre) CEE 460 is a good course to learn about the connections and design of large structures.  
 This secondary field supplements CEE design/analysis structural courses very well.  
 CEE construction management courses are great if interested in construction.  
 CEE380 deals with geotechnics / soil mechanics so it might not be of interest to everyone.  
 MATH 380 is just matrix math – useful for solving stiffness matrix problems, but that is all.

**Secondary Field of Concentration: CAD/CAM**

Faculty Mentor: J. M. Leake

Preapproved Courses

			# Hrs	E	G	F	P	H
CS	173	Discrete Structures	2	0	0	1	1	0
CS	225	Data Structures & Softw Prin <sup>1</sup>	4	0	1	0	0	0
CS	400	Data Structures, Non-CS Majors	4	1	1	0	0	0
CSE	400	Same as CS 400						
CS	418	Computer Graphics <sup>1</sup>	3	1	0	0	0	0
CSE	427	Same as CS 418						
CS	440	Intro Artificial Intelligence	3	0	0	0	0	0
ECE	448	Same as CS 440						
IE	450	Computer-Aided Mfg Systems	3	0	0	0	0	0
MFGE	310	Intro to Mfg Systems	3	0	0	1	1	0
ME	350	Design for Manufacturability <sup>1</sup>	3	0	3	0	0	1

<sup>1</sup> Recommended Course

Petitioned Courses

			# Hrs	E	G	F	P	H
AAE	497	Independent Study: Flight Simulator Design	1-4	1	0	0	0	0

Student Comments:

(Pre) This field should be called Computer Science. ME 350 had no structure.  
 CS 400 is very high tech, tablet PC's are used to take notes instead of paper

**Secondary Field of Concentration: Computer Science**

Faculty Mentor: R. S. Sreenivas

Students fulfilling the College of Engineering minor in computer science may simultaneously complete the requirements of the secondary field of concentration. Students with a strong interest in courses other than CS 300-304 are encouraged to take CS 125 in place of CS 101.

Preapproved Courses

			# Hrs	E	G	F	P	H
CS	173	Discrete Structures	2	5	8	11	5	0
CS	225	Data Structures & Softw Prin <sup>1</sup>	4	10	12	5	0	1
CS	231	Computer Architecture I	3	5	9	3	1	0
CS	232	Computer Architecture II	3	3	1	4	0	0
CS	257	Numerical Methods	3	2	2	2	4	0
CS	273	Intro to Theory of Computation	3	0	1	1	1	0
CS	397	Individual Study	1-3	1	0	0	0	0
CS	400	Data Structures, Non-CS Majors <sup>1</sup>	4	3	9	9	4	2
CSE	400	Same as CS 400						
CS	411	Database Systems	3	2	1	2	2	0
CS	413	Intro to Combinatorics	3	0	0	2	1	1
CS	417	Computer-Assisted Instruction	4	0	1	0	0	0

CS	418	Computer Graphics	3	2	3	1	0	0
CS	419	Advanced Comp Graphics	3	1	0	0	0	0
CS	420	Intro to Parallel Programming	3	0	0	0	1	0
CS	421	Compilers	3-4	1	0	0	0	0
CS	423	Operating Systems Design	3	0	1	0	0	0
CS	438	Communication Networks	3	1	1	0	0	0
CS	440	Intro Artificial Intelligence	3	1	2	1	0	0
All other 200 and 300 level CS classes								

<sup>1</sup> Recommended Course

#### Petitioned Courses

			# Hrs	E	G	F	P	H
CS	110	Programming Lab (Java)	1	0	2	1	0	0
CS	125	Intro to Computer Science	4	6	6	1	3	0
CS	465	Principles of User Interface Design	3-4	1	0	0	0	0
ECE	290	Computer Engineering, I	3	1	1	0	0	0
GE	420	Digital Control (not taken as elective)	4	0	1	0	0	0
GE	393 RSL	RSL Network Design Lab	3	2	0	0	0	0
LAW	692	Current Legal Problems: Law/Reg. of Cyberspace		1	1	0	0	0

#### Student Comments:

(S04) All the classes that I took for my secondary field contributed directly toward getting a minor in computer science. I think that it was a worthwhile experience because I learned a lot about computer architecture and programming. This has helped me in my other classes and has directly resulted in me getting a job. Taking CS as a secondary field of concentration, I personally believe, is not that useful since you are limited to only 12 hours (you're pretty much just touching among the basics and not really gaining much to help you out in the real world) and understanding the field of computer science requires a lot more than 12 hours. It's better to minor in it since you get a lot more choices and an expansion of knowledge and experience.

(F02) CS 173 is horrible. A lot of logic involved and a lot of proving and theories. I would suggest taking this class if only want to pursue a minor in this field (it's a requirement). I believe there are other possibilities to replace this class.

CS 125 is Java programming and CS 225 is C++ programming.

CS 125 and 225 are useful in a way they are programming-related. To be warned, both of these classes are extremely fast-paced. Both classes were taught by the same instructor when I took them and I believe will still be in the near future so an advice for taking these classes would be make sure you understand everything from the first day of class. MP's due about every other week and exams consist of writing short methods/functions given a problem statement. Lectures are pretty boring but helpful in a way the instructor goes through sample problems. I would suggest CS 300 (I heard it's easier) instead of CS 225 if you're not so into CS as actual CS majors.

(Pre) Start with CS 110 and learn C, C++, and Java. It's easy to get a secondary field in computer science without knowing any CS ahead of time.

CS 173, 231, and 232 aren't especially useful unless you're interested in hardware.

CS 318 is interesting but difficult.

CS 125 and CS 225 are both hard classes, but not impossible. You have to keep up with the work in order to do well.

In CS125, you learn JAVA and in CS225 you learn C++. Both are very useful languages if you want to do CS work.

CS173 was interesting and relatively easy.

CS231 and CS232 are taught by Howard Huang. Great class notes and his lectures are easy to follow. Overall, he is a good teacher.

CS232 is slightly easier and less work than CS231.

CS 225 is one of the more useful courses and is much better than CS 400.

CS 400 with Professor Reingold was a tough course. The discreet mathematical portion of CS 400 was the hardest, but the MP's were really easy.

Professor Skeel is another bad professor to watch out for.

**Secondary Field of Concentration: Construction**

Faculty Mentor: W.B. Hall

Preapproved Courses

			# Hrs	E	G	F	P	H
CEE	320	Construction Engineering <sup>1</sup>	3	4	7	1	2	2
CEE	300	Behavior of Materials	4	1	1	0	0	0
TAM	324	Same as CEE 300						
CEE	310	Transportation Engineering	3	2	3	0	0	0
CEE	460	Steel Structures, I <sup>2</sup>	3	1	1	0	0	0
CEE	461	Reinforced Concrete, I	3	4	1	1	0	0
CEE	380	Geotechnical Engineering	3	3	11	3	0	0
CEE	420	Construction Productivity <sup>1</sup>	3	5	3	2	0	0
CEE	421	Construction Planning <sup>1</sup>	3	0	1	4	0	0
CEE	422	Construction Cost Analysis <sup>1</sup>	3	1	4	2	1	0
CEE	465	Design of Structural Systems	3	0	0	0	1	0
CEE	498	Special Topics-Methods of Structural Analysis	4	0	0	0	0	0
MSE	406	Thermal-Mech Behavior of Matls	3	0	0	0	0	0
ME	330	Engineering Materials	4	0	0	0	0	0

<sup>1</sup> At least two of these courses must be chosen

<sup>2</sup> Not recommended if GE 410 is chosen as design elective, GE 310 is a prerequisite, do not take CEE 360

Petitioned Courses

			# Hrs	E	G	F	P	H
CEE	311	Engineering Surveying	4	1	0	0	0	0
CEE	401	Concrete Materials	3	0	1	0	0	0
CEE	469	Wood Structures	3	1	0	0	0	0
CEE	400	Welding & Joining Process	3	1	0	0	0	0
TAM	424	Mechanics of Structural Metals	3	0	1	0	0	0

Student Comments:

(Pre) CEE 320 is not very hard and very informative. Another student claims CEE 320 is very general and boring to no end.

CEE 461 covers material that is interesting. For this class, GE 311 and GE 312 are a good preparation.

CEE 420 is a bit dry.

This secondary field of concentration is rated highly by students. These courses allow students to get involved in either building or facilities construction or to apply their knowledge to project management.

**Secondary Field of Concentration: Control Systems**

Faculty Mentor: D. Stipanovic

Preapproved Courses

			# Hrs	E	G	F	P	H
CS	225	Data Structures & Softw Prin <sup>1</sup>	4	0	2	0	0	0
ECE	470	Introduction to Robotics	4	6	1	1	1	0
GE	421	Same as ECE 470						
ECE	486	Control Systems	4	4	7	2	0	0
ECE	490	Introduction to Optimization	3	0	0	0	0	0
GE	422	Robot Dynamics & Control	2	2	1	0	0	0
MFGE	430	Introduction to Mechatronics	3	0	0	0	0	0
MATH	380	Advanced Calculus <sup>1</sup>	3	0	0	0	3	1
MATH	461	Probability Theory I	3	0	1	0	2	1
STAT	451	Same as MATH 461						

MATH	464	Statistics & Probability II	3	0	0	0	0	0
STAT	410	Same as MATH 464						
MATH	466	Probability Theory II	3	0	0	0	0	0
STAT	456	Same as MATH 466						
ME	360	Signal Proc, Inst and Control	4	0	0	1	1	0
ME	462	Modern Control Theory	4	0	0	0	0	0
ME	461	Computer Ctrl of Mechanl Sys	3	0	2	1	0	0
ME	460	Industrial Control Systems	3	0	0	0	0	0

<sup>1</sup> recommended only if a prerequisite to another listed course

#### Petitioned Courses

			# Hrs	E	G	F	P	H
AAE	481	Wind Power Technology	3	0	0	1	0	0
GE	420	Digital Control of Dynm System	4	3	2	0	0	0
GE	423	Intro to Mechatronics	3	4	2	0	0	0
MFGE	430							
GE	420	Digital Control of Dynm System	4	0	1	0	0	0
GE	494	Project Design, I	3	1	0	1	0	0
GE	497	Independent Study	1-4	3	2	0	0	0
GE	541	Engineering Design Project Mgt	4	1	0	0	0	0
ECE	210	Analog Signal Processing	4	0	1	0	0	0
ECE	290/1	Computer Engineering I	3	1	0	0	0	0
ECE	475	Modeling of Bio-Systems	3-4	0	1	0	0	0
MATH	415	Linear Algebra	3	0	2	1	0	0
MATH	444	Elementary Real Analysis	3-4	0	0	1	0	0
MATH	446	Applied Complex Variables	3	0	0	1	0	0
ME	403	Internal Combustions/Engines	3	0	0	0	0	1
NPRE	402	Nuclear Power Engineering	3	0	0	2	0	0

#### Student Comments:

(Pre) The math courses here aren't that good, but the GE courses are taught with more enthusiasm.

ECE 486 reviews the material in GE 320 and GE 424 but it goes beyond and actually applies it in a lab.

It is recommended that ECE 486 is taken after GE 320.

ECE 470 is a good course. The lab is fun and the subject matter is not too tough.

MATH 461 can be very hard, but the material is very useful for many classes in many subjects.

CS 225 is a lot of work, but it is a good class. Lecturer Jason Zych is very good.

CS 101 is a decent preparation for this course.

GE 320 and 424 provide comprehensive background for this secondary field of concentration.

GE497 (Mechatronics) is a design course as well and has a lot of the learning responsibility placed on the student. I would definitely recommend this class.

GE 422 is taught by Spong and he is a great teacher. The additional exposure of linear algebra in Math 415 is very beneficial, the course however, is much more of a time commitment and is very proof oriented.

GE 423 was an awesome project course that let's you make any robotic system you want.

ME 360 was a waste of time – the majority of the class is review, the rest irrelevant.

Advanced calculus has nothing to do with controls.

ECE486 should be required for control secondary. Sean Meyn is an excellent teacher.

The overall quality of this secondary field of concentration is rated well. This secondary has a large emphasis on matrix math and differential equations. The control systems field is expanding fast.

GE has one of the best and most comprehensive control systems fields available.

**Secondary Field of Concentration: Engineering Administration**

Faculty Mentor: R.L. Price

Preapproved Courses

			# Hrs	E	G	F	P	H
ACCY	200	Fundamentals of Accounting	3	4	18	14	12	0
ACCY	201	Accounting and Accountancy, I	3	6	28	13	3	3
ACCY	202	Accounting and Accountancy, II	3	2	9	2	1	1
ADV	300	Introduction to Advertising	3	26	8	10	1	1
BADM	205	Business Location Decisions	3	0	0	4	0	0
GEOG	205	Same as BADM 205						
BADM	310	Mgmt and Organizational Beh	3	49	65	37	10	0
BADM	303	Principles of Public Policy	3	0	0	0	0	0
PS	321	Same as BADM 303						
ACCY	321	Same as BADM 303						
BADM	375	Business Process Management	3	3	1	4	0	0
BADM	376	Enterprise Proc Integr & Dynm	3	2	1	0	0	0
BADM	311	Individual Behavior in Orgs	3	9	12	2	2	0
BADM	312	Org Design & Environment	3	6	4	3	1	0
BADM	313	Human Resource Management	3	1	1	0	0	0
BADM	380	International Business	3	2	3	0	1	0
BADM	381	Multinational Management	3	0	0	0	0	0
BTW	250	Principles Bus Comm	3	4	5	0	0	0
BTW	261	Principles Tech Comm	3	6	4	1	0	0
ECON	302	Inter Microeconomic Theory	3	4	14	3	1	0
ECON	303	Inter Macroeconomic Theory	3	1	4	4	0	0
FIN	221	Corporate Finance	3	14	25	3	2	1
GE	411	Intro to Reliability Eng	3-4	2	3	0	0	0
IE	435	Same as GE 411						
IE	330	Industrial Quality Control	3	1	1	0	0	0
IE	361	Production Planning & Ctrl	3	0	2	2	0	1
MFGE	310	Intro to Mfg Systems	3	0	4	4	3	1
MFGE	420	Dec-Making & Cntrl Appl in Mfg	3	1	1	0	0	0
MFGE	450	Info Mgmt for Mfg Systems	3	0	0	3	0	0
PSYC	358	Same as IE 340	4	1	2	5	0	0
AVI	358	Same as IE 340						
IE	340	Human Factors						
PSYC	456	Same as IE 445	3	0	4	4	0	0
AVI	456	Same as IE 445						
IE	445	Human Perf & Eng Psych						

Petitioned Courses

			# Hrs	E	G	F	P	H
ABE	430	Project Management	2	0	0	1	0	0
BADM	320	Principles of Marketing	3	17	20	5	1	0
BADM	395	Senior Research	1-4	0	1	0	0	0
BADM	395	Senior Research	1-4	1	0	0	0	0
BADM	395	Senior Research	1-4	0	0	0	0	1
BADM	323	Marketing Communications	3	0	1	0	0	0
BADM	325	Consumer Behavior	3	2	1	0	0	0
BADM	326	Pricing Policies	3	0	1	0	0	0
CSE	400	Same as CS 400	4	0	0	0	1	0

ECON	420	International Economics	2-4	0	1	0	0	0
ECON	452	The Latin American Economies	2-4	0	1	0	0	0
ECE	316	Engineering Ethics	3	0	0	1	0	0
ECE	428	Distributed Systems	3	0	0	1	0	0
FIN	300	Financial Markets	3	0	1	0	0	0
GE	498	Decision Analysis	1-4	0	2	0	0	0
GE	393 HEC	Evaluation and Planning of New Products	3	0	2	3	2	0
IE	300	Analysis of Data	3	1	4	1	0	0
MSE	450	Intro to Polymer Sci & Eng	3	1	0	0	0	0
TMGT	365	New Product Marketing	3	0	1	0	0	0
TMGT	367	Management of Innovation & Technology	3	1	0	0	0	0

Student Comments: (SP07) BADM310 is a prereq. for a lot of other BADM courses, so you may have to take it to get into what you really wanted. I feel the course has good insights, but it may be too common sensical in most topics- not a necessary course.

BADM375 is good for most anyone interested in a future in management, especially, but not only, if you're interested in manufacturing.

BADM376 is beneficial if you are interested in quality control, six sigma, etc.

ECE316 sounds like something employers would like, but in reality it's a topic that they expect- without taking a class on it. The class is crosslisted as a philosophy course & that is primarily how it is taught.

(S05) Prof. Love is great for BA 310.

ADV 300 is a blow off course, which is good in a way, but you will learn absolutely NOTHING, to the extent that you will feel that you wasted a lot of tuition money.

ADV 300 is easy and a fun class.

ACCY 201 is simple, you need to study for exams.

Professor Silhan (ACCY 200) is boring and dull.

FIN221 is an easy and useful class and Professor Dyer is hilarious.

ADV300 lectures are boring, there is no need to go to class and the assignments are easy.

BA310 exams are are basically memorizing terms.

FIN 221 is too hard and just uses the same principles as all the prerequisites of the class. The material isn't hard, it's just the professor that makes it harder than it should be.

ECON 302 does not teach much, it's pretty boring, but relatively easy.

BADM 310 is fun in the summer..

MFGE 310 was one of the worst classes I have taken

BADM 312 Prof. Kraatz was one of the most effective instructors I have had

(Pre) Students in this secondary field of concentration can focus on technical/ manufacturing courses, business course, or a combination of both.

Professor Feller, for ACCY 201, is a poor lecturer and there is a lot of reading for the class.

ACCY 201 is a walk in the park, don't bother coming to lecture. The discussion is the only important thing.

BADM 320 was a good interactive lecture and that's why I enjoyed it.

BADM 310 is a prerequisite for nearly all other B ADM 300 level courses. It deals with interesting . management material.

B ADM 310 just seems to put labels on everything you know.

B ADM 375 and 376 are very helpful and are recommended.

B ADM 311 has a lot of reading required but is very applicable and covers a wide range of management issues.

B ADM 312 is a fun class that tells about organizational structures. This class has a lot of reading and it helps you develop management skill and strategy. Professor Broschek is excellent for BA 312.

The group projects in the B ADM field are rated highly in terms of fun and interest.

B ADM 325 is very interesting and one of the professors is great so ask around to find out who they are.

GE 411 deals with interesting material. The textbooks are optional; you do not need them.

IE 340 has a terrific professor, Prof. Wickens, and the material in the class is fascinating.

The grades in ME 497 are based on case studies of different corporations.

MFG E 420 is relevant to "real world" manufacturing decisions.

MFG E 310 is too much work for a three-hour credit course.

Finance 300 is a lot of work, and several group projects.

Overall, the Engineering Administration secondary field of concentration is a good choice for students interested in

consulting. This choice of secondary field of concentration will familiarize students with many important aspects of the business world. The combination of engineering and business makes this secondary field of concentration very marketable. This is one of the most popular secondary fields.

### Secondary Field of Concentration: Engineering Marketing

Faculty Mentor: D.E. Goldberg

#### Preapproved Courses

			# Hrs	E	G	F	P	H
ACCY	200	Fundamentals of Accounting	3	1	3	8	0	1
ACCY	201	Accounting and Accountancy, I	3	4	4	6	1	1
ACCY	202	Accounting and Accountancy, II	3	0	0	0	0	0
ADV	300	Introduction to Advertising	3	12	12	3	0	0
BADM	320	Principles of Marketing	3	17	27	6	1	0
BADM	310	Mgmt and Organizational Beh	3	0	17	8	0	0
BADM	322	Marketing Research	3	0	5	4	0	0
BADM	323	Marketing Communications	3	1	1	0	0	0
BADM	325	Consumer Behavior	3	1	3	2	0	0
BADM	327	Marketing to Business & Govt	3	0	1	0	0	0
BADM	382	International Marketing	3	0	0	0	0	0
BADM	420	Advanced Marketing Management	3	0	0	0	0	0
BADM	380	International Business	3	2	2	0	0	0
BTW	250	Principles Bus Comm	3	2	0	1	0	0
BTW	261	Principles Tech Comm	3	8	5	2	0	0
PSYC	245	Industrial Org Psych	3	0	2	2	0	0

#### Petitioned Courses

			# Hrs	E	G	F	P	H
BADM	311	Individual Behavior in Orgs	3	0	0	0	1	0
BADM	312	Org Design & Environment	3	0	1	0	0	0
ECON	101	Introduction to Economics	4	0	1	0	0	0
ECON	103	Macroeconomic Principles	3	0	2	0	0	0
FIN	221	Corporate Finance	3	1	2	1	0	0
GE	497	Independent Study	1-4	0	0	3	0	0
IE	300	Analysis of Data	3	0	0	1	0	0

Student Comments. (S04) This secondary field is the reason I got my internship and future job. My employers loved the idea that I was an engineer with marketing and business experience. It matched perfectly to my position as a sales engineer/product management. (S04) For both BA classes, going to class was required and necessary for doing well in the class. Ooops! (F03) ACCY 200 was boring but easy. The professor goes off on random topics, but the tests are directly from material covered in class. The questions and problems on the test were almost exactly the same as the stuff on the review done the day before the test. No final required. (Pre) ACCY 201 is an easy class if you don't fall behind. BADM 320 is an "easy A."

BADM 325 has difficult tests. You have to work hard for a B. B&TW 253 is a great class to take junior year. There was a lot of work in this class. BA 311 is not recommended unless you are planning to go into business administration. Choose your classes carefully. Some feel that there are many "flaky" classes that can be avoided with a little research into the course material. B&TW 261 is a great way to get more experience with writing but there isn't much new info. ACCY 201 is boring, and time consuming. ADV 300 is an easy "A". B&TW 250 and 253 are very useful and relevant. BA322 is a very interesting class and you get to use the computer program called SPSS.

The job market for this field is very good. Some students consider this field to be similar to business administration. There is a wide range of opportunities in this field especially for those who wish to consult or be more business oriented. This is a good secondary field of concentration if you are interested in engineering sales. ADV 300 is a great class. It is a very interesting class, but is easy and the workload is light.

## Secondary Field of Concentration: Environmental Quality

Faculty Mentor: D. Thurston

### Preapproved Courses

			# Hrs	E	G	F	P	H
ACE	310	Natural Resource Economics	3	0	0	0	0	0
NRES	310	Same as ACE 310						
ENVS	310	Same as ACE 310						
CEE	330	Environmental Engineering	3	7	9	3	0	0
CEE	440	Solid and Hazardous Waste	3	2	0	0	0	0
CEE	430	Ecological Quality Engineering	2	1	0	0	0	0
CEE	431	Biomonitoring	3	0	0	0	0	0
CEE	437	Water Quality Engineering	3	3	4	1	0	0
CEE	443	Env Eng Principles, Chemical	2-4	0	0	0	0	0
CEE	445	Air Quality Modeling	3	0	3	0	0	0
CEE	444	Env Eng Principles, Biological	3	0	0	0	0	0
CEE	432	Stream Ecology	3	0	0	0	0	0
CEE	446	Air Quality Engineering	3	0	1	4	0	0
IB	105	Environmental Biology	3	0	1	2	1	0
ENVS	336	Tomorrow's Environment	3	2	4	3	1	0
CPSC	336	Same as ENVS 336						
CHLH	336	Same as ENVS 336						
ENVS	431	Environmental Toxic Substances	3	1	1	1	0	0
CPSC	435	Same as ENVS 431						
NRES	472	Environmental Psychology	3	0	0	1	0	0
PSYC	472	Same as NRES 472						
NRES	419	Env & Plant Ecosystems	3	0	0	0	0	0
NPRE	241	Intro to Radiation Protection	2	0	0	0	0	0
ENVS	241	Same as NPRE 241						

### Petitioned Courses

			# Hrs	E	G	F	P	H
CEE	434	Environmental Systems Modeling	3	0	1	0	0	0
CEE	398FM	Field Methods for Hydrological and Environmental Studies	1-4	0	0	1	0	0
ENVS	210	Environmental Economics	3	0	0	1	0	0
ENVS	447	Environmental Sociology	3	0	1	1	0	0
MCB	300	Microbiology	3	0	1	0	0	0

Student Comments: (Pre) CEE 330 is a low-keyed class about water and air quality in which the work is not overly difficult. This class helps you determine the areas of environmental engineering that you want to study. CEE 330 needs knowledge of CHEM 104. CEE 330 is supposed to be an introduction to environmental engineering and the only prerequisite in CHEM 104, but I found it to be a surprisingly challenging class. There was a lot of chemistry and calculus. The topics covered in this class were air pollution, water treatment, and water supply analysis. CEE 430 emphasizes the biological/ ecological perspective of wastewater. CEE 437 is very challenging and it involves a lot of chemistry. It may be boring if you know you don't like the subject material-water quality. CEE 445 has slow and boring lectures, but I have learned about dispersion modeling software used by the EPA. The CEE classes are informative and well structured. ENVST 336 is not a difficult class. ENVST 336 isn't a bad class, but it is qualitative. There are several interesting guest lecturers. The topics covered are population, pollution, and environmental policy, history, politics, and sociology. It is considered too broad. The guest speakers in this class are experts on topics. CEE 498FM is a field methods class taught by Illinois State Geological Survey. It's interesting, but frustrating because it is not taught very well.

## Secondary Field of Concentration: Manufacturing Engineering

Faculty Mentor: A. Abbas

Students fulfilling the College of Engineering minor in Manufacturing Engineering may simultaneously complete the requirements of the secondary field of concentration. Other courses must be chosen from the approved lists for the Computer-Aided Design and Manufacturing (CAD/CAM), Operations Research, and Control Systems secondary fields of concentration.

### Preapproved Courses

			# Hrs	E	G	F	P	H
ME	330	Engineering Materials	4	0	0	0	0	0
CEE	300	Behavior of Materials	4	0	0	0	0	0
TAM	324	Same as CEE 300						
MSE	406	Thermal-Mech Behavior of Matls	3	0	0	0	0	0
GE	411	Intro to Reliability Eng	3	0	2	0	0	0
MFGE	310	Intro to Mfg Systems <sup>1</sup>	3	2	7	5	3	1
MFGE	420	Dec-Making & Cntrl Appl in Mfg <sup>1</sup>	3	1	3	2	0	0
MFGE	430	Introduction to Mechatronics <sup>1</sup>	3	1	0	1	0	0
MFGE	450	Info Mgmt for Mfg Systems <sup>1</sup>	3	0	2	4	3	1

<sup>1</sup> At least two of the MFG E courses must be taken

### Petitioned Courses

			# Hrs	E	G	F	P	H
MFGE	498	Environmentally Conscience Manufacturing and Pollution Prevention		1	0	0	0	0
ARTD	423	Computer Applications I	3	0	0	1	0	0
CEE	320	Construction Engineering	3	0	0	0	1	0
CEE	202	Engineering Risk & Uncertainty	3	0	1	0	0	0
ECE	290	Computer Engineering, I	3	1	0	0	0	0
GE	393YSK	Integrated Engineering and Industrial Design	1-4	2	1	0	0	0
GE	393 JML	Computer Aided Design, Analysis, and Prototyping	0	0	2	0	0	0
GE	498	Leading Sustainable Change		0	1	0	0	0
IE	300	Analysis of Data	3	0	0	1	0	0
IE	330	Industrial Quality Control	3	1	3	0	0	0
IE	340	Human Factors	4	1	1	0	0	0
IE	450	Computer-Aided Mfg Systems	3	0	1	0	0	0
MATH	461	Probability Theory I	3	1	1	1	0	0
MSE	450	Intro to Polymer Sci & Eng	3	1	0	0	0	0
ME	350	Design for Manufacturability	3	5	1	2	0	0
ME	460	Industrial Control Systems	4	1	1	0	0	0
ME	497	Independent Study	1-4	3	0	0	0	0

Student Comments: (F02) MFGE 310 was a good course in that it gave a good overview of different manufacturing systems and what resources were available on campus for further exploration. However, it is always taught by a TA from the mechanical engineering department and that was just horrible. On several occasions it was clear that the information was being presented by somebody that had never worked in a manufacturing setting and thus the class had little practical thrust. In class we just reviewed notes given to the TA by a professor and often the TA wasn't even very familiar with the material or understand how various techniques were used in the work world. (S03) MFGE 498 was great! It was taught by a group of consultants that are associated with the state. This class had a much more practical approach to manufacturing problem solving (as apposed to 310 that was almost entirely theoretical and impractical). In addition the class emphasized how to sell/package your ideas in a plant setting – some handy tips to use when working in manufacturing.

Comments for Manufacturing Engineering continued:

(Pre) The professor for GE 411 is very knowledgeable although the lectures tend to get long. GE 497 is a new course with all the bugs still being worked out of it but it is still very relevant to the business world and is taught by the head of the department. IE 330 was a good class; everyone in manufacturing should take it. ME 350 is a good course that applies to the "real world." ME 460 is an excellent second controls class that is easier than GE 420 ME 497 is very interesting and challenging. MFG E 310 is a required class that gives a good overview of manufacturing with lots of hands on experience. The homework in MFG E 420 doesn't prepare you for exams. MFG E 430 is a good course for control system students. MFG E 450 teaches some basic computer knowledge and it slightly boring. Currently, the job market for this secondary field of concentration is quite good. Students have mentioned that their skills in this field draw employer interest. GE 397 was offered for the first time in Spring 2003 when I took it. It was very time consuming but you learn a lot of software. IE240 Human factors is really interesting and beneficial.

### Secondary Field of Concentration: Nondestructive Testing and Evaluation

Faculty Mentor: H.L.M dos Reis

#### Preapproved Courses

			# Hrs	E	G	F	P	H
CEE	300	Behavior of Materials <sup>3</sup>	4	0	0	1	0	0
TAM	324	Same as CEE 300						
CS	225	Data Structures & Softw Prin <sup>1</sup>	4	0	0	0	0	0
CS	273	Intro to Theory of Computation <sup>1</sup>	3	0	0	0	0	0
CS	446	Machine Learning & Pattern Rec	3	0	0	0	0	0
CS	440	Intro Artificial Intelligence	3	0	0	0	0	0
ECE	448	Same as CS 440						
ECE	470	Introduction to Robotics	4	0	0	0	0	0
GE	421	Same as ECE 470						
ECE	473	Fund of Engrg Acoustics	3	0	0	0	0	0
TAM	413	Same as ECE 473						
ECE	474	Ultrasonic Techniques	3	0	0	0	0	0
GE	411	Intro to Reliability Eng <sup>3</sup>	3	0	1	0	0	0
IE	435	Same as GE 411						
GE	412	Fund of Nondestructive Eval <sup>2</sup>	3-4	0	1	0	1	0
GE	422	Robot Dynamics & Control	2	0	0	0	0	0
ME	330	Engineering Materials	4	0	0	0	0	0
ME	350	Design for Manufacturability	3	0	0	0	0	0
ME	471	Intro to Finite Element Anlys	3	0	0	0	0	0
CSE	451	Same as ME 471						
MSE	406	Thermal-Mech Behavior of Matls	3	0	0	0	0	0
TAM	412	Intermediate Dynamics	4	0	0	0	0	0
TAM	456	Experimental Stress Analysis	3	0	0	0	0	0

<sup>1</sup> Recommended only if it is a prerequisite to another listed course

<sup>2</sup> Required Course

<sup>3</sup> Recommended Course

Student Comments: (Pre) CEE 300 is a good structures class, but two instructors teach it so the test formats vary a great deal. It is also a Comp II class, so there is a lot of writing. GE 411 can be taken even if you have never had a statistics class.

**Secondary Field of Concentration: Operations Research**

Faculty Mentor: A. Abbas

Preapproved Courses

			# Hrs	E	G	F	P	H
GE	411	Intro to Reliability Eng	3	0	4	0	0	0
IE	435	Same as GE 411						
IE	360	Facilities Planning & Design	3	1	1	0	1	1
IE	361	Production Planning & Ctrl	3	0	1	2	0	0
IE	450	Computer-Aided Mfg Systems	3	0	0	0	0	0
MFGE	420	Dec-Making & Cntrl Appl in Mfg	3	0	1	0	0	0
MFGE	450	Info Mgmt for Mfg Systems	3	1	0	1	0	0
MATH	461	Probability Theory I	3	1	0	1	0	0
STAT	451	Same as MATH 461						
MATH	464	Statistics & Probability II	3	0	0	0	0	0
STAT	410	Same as MATH 464						
MATH	466	Probability Theory II	3	0	0	0	0	0
STAT	456	Same as MATH 466						
ME	350	Design for Manufacturability	3	0	0	0	0	0

Petitioned Courses

			# Hrs	E	G	F	P	H
GE	393 WJD	Design and Management of Manufacturing Systems	1-4	0	1	0	0	0
IE	300	Analysis of Data	3	5	0	0	0	0
IE	412	OR Models of Mfg Systems	3	0	1	1	0	0
IE	413	Simulation	3	0	1	0	0	0
IE	430	Economic Found of Quality Sys	3	1	0	0	0	0
MATH	484	Non-Linear Programming	3	1	0	0	0	0

Student Comments: (Pre) IE 300 very useful if planning to take any other statistic courses. GE 411 is a very interesting and helpful course and is taught very well. This field is interesting but it seems as if there is not really enough time to become involved in the field and get a good feel for it. The professor for IE 360 was very lazy and reluctant to help. He made everyone feel stupid and would ignore your concerns. IE 430 is a great course for people interested in product development and manufacturing. It is taught by Harry Cook (M&IE) who used to work at Chrysler. He has a lot of interesting things to say. The course material for MFG E 450 is excellent and awesome, and the professor started out great but is getting lazy.

**Secondary Field of Concentration: Quality Control**

Faculty Mentor: A. Yassine

Preapproved Courses

			# Hrs	E	G	F	P	H
BADM	375	Business Process Management	3	0	0	0	0	0
BADM	376	Enterprise Proc Integr & Dynm	3	0	0	0	0	0
GE	411	Intro to Reliability Eng	3	3	1	0	0	0
IE	435	Same as GE 411						
IE	330	Industrial Quality Control	3	1	0	1	0	0
IE	361	Production Planning & Ctrl	3	0	0	0	1	1
IE	400	Des and Anlys of Experiments	3	2	0	0	0	0
MATH	461	Probability Theory I	3	0	0	0	0	0
STAT	451	Same as MATH 461						

MATH	464	Statistics & Probability II	3	0	0	0	0	0
STAT	410	Same as MATH 464						
MATH	466	Probability Theory II	3	0	0	0	0	0
STAT	456	Same as MATH 466						
ME	350	Design for Manufacturability	3	0	3	0	0	0

#### Petitioned Courses

			# Hrs	E	G	F	P	H
GE	412	Fund of Nondestructive Eval	3-4	1	0	0	0	0
GE	493HEC	Design for Six Sigma	4	1	0	0	0	0
IE	430	Economic Found of Quality Sys	3	1	0	0	0	0
CS	225	Data Structures and Software Principles	4	0	0	1	0	0

Student Comments:(Pre) The instructor for IE 361, Professor Wen Zhao, was not liked. GE 413 is another class one can take to compliment the quality control coursework. IE 361 is a waste of time. IE 330 moves very slowly; if you understand GE 331 well you shouldn't waste your time with this course. IE 400 is a good course – If your secondary is Quality Control you should understand Design of Experiments and Kapoor gives a good lecture. Cook teaches Six Sigma and it retiring after Spring 2004 so if you want to take the class you need to do so soon. IE 330 teaches very useful knowledge of quality control. IE 400 is challenging, you should take IE 330 first to get the concept down.

#### Secondary Field of Concentration: Rehabilitation Engineering

Faculty Mentor: M. Moeinzadeh

#### Preapproved Courses

			# Hrs	E	G	F	P	H
MCB	150	Molec and Cellular Basis of Life <sup>1</sup>	4	1	0	0	0	0
MCB	250	Molecular Genetics <sup>1</sup>	4	0	0	0	0	0
MCB	251	Exp Techniqs in Molecular Biol <sup>1</sup>	2	0	0	0	0	0
MCB	334	Functional Human Anatomy	5	2	0	0	0	0
MCB	522	Human Extremities	2	0	0	0	0	0
CHEM	232	Elementary Organic Chemistry I	3	0	0	1	0	0
ECE	414	Biomedical Instrumentation	3	0	0	0	1	0
BIOE	414	Same as ECE 414						
ECE	415	Biomedical Instrumentation Lab	2	0	0	0	0	0
BIOE	415	Same as ECE 415						
MCB	103	Intro to Human Physiology	4	3	1	0	0	0
REHB	401	Intro to Rehabilitation	4	0	2	1	0	0
REHB	402	Medical Aspects of Disabilities	4	1	0	0	0	0
REHB	440	Sensory Impairments	4	1	0	0	0	0
REHB	444	Adaptive Technologies	4	0	0	0	0	0

<sup>1</sup> recommended only if a prerequisite to another listed course

#### Petitioned Courses

			# Hrs	E	G	F	P	H
BIOE	120	Introduction to Bioengineering	1	0	1	0	0	0
GE	397	Independent Study	0-4	1	0	0	0	0
GE	497	Independent Study	1-4	0	1	2	0	0

Student Comment:

(S04) Rehab is a great secondary field! I chose it because I was interested in sportsmedicine and kinesiology, and I wanted to find a way to relate that to engineering. I would recommend choosing this as your secondary field because its so interesting and different from our engineering classes. And you're not locked into a career in rehab - basically you get to learn about how humans function.

Human Anatomy was fascinating. In lab we looked at cadavers and you can see all of the muscles, nerves, arteries, etc. It requires a lot of memorizing.

(F03) MCB 103/104 was a fun class. The professor was great and labs were like a social time because we worked in huge groups and did a lot of experiments on ourselves.

(Pre) BIOEN 120 is a great way to learn about different areas of bioengineering. GE 397 is a great class to actually apply engineering skills. You learn more in GE 397 than in other 3 years of courses. GE 497 has a lot of material to comprehend; it would help to have some background in anatomy. REHAB 401 goes on many field trips to rehab centers. REHAB 440 has many guest speakers who are very informative on sensory integratory dysfunctions.

**Secondary Field of Concentration: Robotics**

Faculty Mentor: D. Stipanovic

Preapproved Courses

			# Hrs	E	G	F	P	H
CS	225	Data Structures & Softw Prin <sup>1</sup>	4	0	0	0	0	0
CS	273	Intro to Theory of Computation <sup>1</sup>	3	0	0	0	0	0
CS	446	Machine Learning & Pattern Rec	3	0	0	0	0	0
CS	440	Intro Artificial Intelligence	3	0	0	0	0	0
ECE	448	Same as CS 440						
CS	475	Formal Models of Computation	3	0	0	0	0	0
MATH	475	Same as CS 475						
ECE	390	Computer Engineering, II	3	0	1	0	0	0
ECE	475	Modeling of Bio-Systems	3-4	0	0	0	0	0
BIOE	475	Same as ECE 475						
ECE	486	Control Systems	4	0	0	0	0	0
ECE	490	Introduction to Optimization	3	0	0	0	0	0
GE	421	Same as ECE 470	4	2	0	0	0	0
ECE	470	Introduction to Robotics						
GE	411	Intro to Reliability Eng	3	0	0	0	0	0
IE	435	Same as GE 411						
GE	422	Robot Dynamics & Control	4	2	2	0	0	0
ME	350	Design for Manufacturability	3	0	1	0	0	0
ME	461	Computer Ctrl of Mechanl Sys	3	0	0	0	0	0
MFGE	430	Introduction to Mechatronics	3	1	0	0	0	0

<sup>1</sup> recommended only if a prerequisite to another listed course

Petitioned Courses

			# Hrs	E	G	F	P	H
CS	400	Intro to Data Structures, Non-CS Majors	4	0	1	0	0	0
GE	420	Digital Control of Dynm System	4	2	1	0	0	0
GE	393RSL	Special Problems in Robotics	1-4	0	0	1	0	0
MFGE	310	Intro to Mfg Systems	3	1	1	0	0	0

Student Comment: (Pre) Students should be aware that they would have to wait to their senior year to get classes that relate to robotics

**Secondary Field of Concentration: Theoretical and Applied Mechanics**

Faculty Mentor: W. B. Hall

**Preapproved Courses**

			# Hrs	E	G	F	P	H
MATH	380	Advanced Calculus	3	0	2	0	0	0
ME	471	Intro to Finite Element Anlys	3	0	0	0	0	0
CSE	451	Same as ME 471						
TAM	324	Same as CEE 300	4	1	0	0	0	0
CEE	300	Behavior of Materials						
TAM	412	Intermediate Dynamics	4	0	0	1	0	0
T A M	451	Intermediate Solid Mechanics	4	1	1	1	0	0
TAM	424	Mechanics of Structural Metals	3	0	2	0	0	0
TAM	456	Experimental Stress Analysis	3	1	0	0	0	0
TAM	427	Mechanics of Polymers	3	0	0	0	0	0
AAE	427	Same as TAM 427						
TAM	428	Mechanics of Composites	3	0	2	0	0	0
AAE	428	Same as TAM 428						
TAM	435	Intermediate Fluid Mechanics	4	1	0	1	0	0
TAM	445	Continuum Mechanics	4	0	0	0	0	0
MSE	280	Intro to Materials	3	1	0	0	0	0
MSE	406	Thermal-Mech Behavior of Matls	3	0	0	0	0	0
ME	330	Engineering Materials	4	0	0	0	0	0

Student Comment: (SP07) TAM435- interesting material & Keane was fun as a prof.

TAM456- fun & interesting labs, difficult lab reports for Prof. Phillips.

TAM451- shares some material with required GE courses.

All courses involved advanced/difficult mat, small classes, informal atmosphere.

**Customized Secondary Fields of Concentration**

Note: Petition required for ALL courses in Option 4 and 5

**Secondary Field of Concentration: Acoustics (Option 4)**

			# Hrs	E	G	F	P	H
ECE	473	Fund of Engrg Acoustics	3	1	0	0	0	0
ECE	545	Advanced Physical Acoustics	4	0	1	0	0	0
MUS	103	Rudiments of Theory I	3	1	1	0	0	0
MUS	402	Musical Acoustics	3	1	0	0	0	0
SHS	240	Intro Sound & Hearing Science	3	0	1	1	0	0

Student Comments:

(Pre) ECE 473 is the foundation course for acoustics.

MUSIC 402 deals with the acoustics of strings, drums, etc.

MUSIC 103 deals with music theory and analysis.

There are lots of great demonstrations in MUSIC 402.

SPSHS 240 reviews basic acoustics and auditory theory/ physiology.

In general, the acoustic secondary field of concentration is very specific. It is interesting and not exactly what one would think "acoustics" would encompass.

**Secondary Field of Concentration: Aeronautical and Astronautical Engineering (option 5)**

			# Hrs	E	G	F	P	H
AAE	312	Compressible Flow	3	0	1	0	0	0
AAE	302	Aerospace Flight Mechanics	3	1	0	0	0	0

AAE	433	Aerospace Propulsion	3	0	0	1	0	0
AAE	352	Aerospace Dynamics	3	1	0	0	0	0

**Secondary Field of Concentration: Applied Controls (Option 5)**

			# Hrs	E	G	F	P	H
ME	441	Automotive Vehicle Dynamics	3-4	0	1	0	0	0
MFGE	310	Intro to Mfg Systems	3	0	0	0	1	0
GE	423	Intro to Mechatronics	3	1	0	0	0	0
MFGE	430							
GE	393WJD	Independent Study	1-4	1	0	0	0	0

**Secondary Field of Concentration: Audio Engineering (Option 4)**

			# Hrs	E	G	F	P	H
ECE	210	Analog Signal Processing	4	0	1	0	0	0
ECE	290	Computer Engineering, I	3	0	0	0	1	0
ECE	403	Audio Engineering	3	1	1	0	0	0
ECE	410	Digital Signal Processing, I	4	1	0	3	0	0
ECE	473	Fund of Engrg Acoustics	3	1	1	1	0	0
MUS	103	Rudiments of Theory I	3	0	1	0	0	0
THEA	453	Theater Sound Technology	3	0	0	0	0	1
THEA	454	Theater Sound Design	3	0	0	0	0	1
MUS	103	Rudiments of Theory I	3	0	0	1	0	0
PHYS	498	Independent Study	1-4	0	0	0	0	1

**Secondary Field of Concentration: Aviation (Option 4)**

			# Hrs	E	G	F	P	H
AVI	101	Private Pilot, I	3	4	0	0	0	0
AVI	120	Private Pilot, II	3	4	1	0	0	0
AVI	130	Commercial - Instrument, I	3	4	0	0	0	0
AVI	140	Commercial - Instrument, II	3	3	0	0	0	0
AVI	320	Flight Instructor – Airplane	3	1	1	0	0	0
AVI	322	Instrument Flight Instructor	1	0	1	0	0	0
AVI	350	Practice Teaching – Airplane	3	0	1	0	0	0
AVI	381	Cockpit Resource Management	3	1	0	0	0	0
AVI	455	Aviation Accident Investigation	3	0	1	0	0	0
AVI	456	Same as IE 445	3	0	0	1	0	0
IE	340	Human Factors	4	0	0	1	0	0
AVI	200	Commercial Pilot I	4	1	0	0	0	0
AVI	210	Commercial Pilot II	4	1	0	0	0	0

Student Comments: (Pre) AVI 140 is required for completion of instrument requirements. Great secondary field!

**Secondary Field of Concentration: Biology (Option 4)**

			# Hrs	E	G	F	P	H
MCB	150	Molec and Cellular Basis of Life <sup>1</sup>	4	0	0	0	0	0
MCB	250	Molecular Genetics <sup>1</sup>	4	0	0	0	0	0
MCB	251	Exp Techniqs in Molecular Biol <sup>1</sup>	2	0	0	0	0	0
CHEM	232	Elementary Organic Chemistry I	3	0	1	0	0	1
CHEM	233	Elementary Organic Chem Lab I	2	1	0	1	0	0
ECE	280	Biomedical Imaging	3	1	0	0	0	0
IB	104	Animal Biology	4	0	1	0	0	0
IB	105	Environmental Biology	3	1	0	0	0	0
MCB	401	Cell & Membrane Physiology	3	0	0	0	0	1

Student Comments: (Pre) Ideal for GE students who are also thinking about going to med school after graduation. Courses help to prepare students for the MCATS.

**Secondary Field of Concentration: Biomechanics (Option 5)**

			# Hrs	E	G	F	P	H
MCB	334	Functional Human Anatomy	2	0	1	0	0	0
KIN	355	Biomechanics of Human Movement	3	1	0	1	0	0
MCB	103	Intro to Human Physiology	4	0	1	1	0	0
BIOE	120	Intro to Bioengineering	1	0	0	1	0	0

Student Comments: (Pre) KINES 355 is very easy. MCB 334 was a ton of work, very time consuming, and involved work with cadavers. The class is very interesting.

MCB is nothing like engineering classes. Make sure to do the readings on your own. KIN 355 is very easy, very similar to PHYS 211.

**Secondary Field of Concentration: Business Administration (Option 5)**

			# Hrs	E	G	F	P	H
BADM	310	Mgmt and Organizational Beh	3	1	0	1	0	0
BADM	311	Individual Behavior in Orgs	3	0	1	0	0	0
BTW	261	Principles Tech Comm	3	2	0	0	0	0
IE	340	Human Factors	4	0	0	1	0	0

**Secondary Field of Concentration: Business Law (Option 5)**

			# Hrs	E	G	F	P	H
PHIL	102	Logic & Reasoning	3	0	1	0	0	0
BADM	300	Business Law	3	1	0	0	0	0
BADM	310	Management & Organizational Behavior	3	0	1	0	0	0
BTW	250	Principles Business Communication	3	0	0	0	0	1

**Secondary Field of Concentration: Business Management (Option 5)**

			# Hrs	E	G	F	P	H
ACCY	201	Accounting and Accountancy, I	3	0	0	0	0	1

**Secondary Field of Concentration: Business and Network Consulting (Option 5)**

			# Hrs	E	G	F	P	H
BADM	320	Principles of Marketing	3	0	1	0	0	0
BADM	310	Mgmt and Organizational Beh	3	0	1	0	0	0
CS	110	Programming Lab (Java)	1	0	0	1	0	0
GE	393RSL	RSL Networking Design Lab	3	1	0	0	0	0

**Secondary Field of Concentration: Business and Technical Writing (Option 5)**

			# Hrs	E	G	F	P	H
BTW	250	Principles Bus Comm	3	1	1	0	0	0
BTW	271	Persuasive Writing	3	0	1	0	0	0
BTW	272	Report Writing	3	1	1	0	0	0

Student Comments: (Pre) For this field you must enjoy writing and want to learn the basics. This is a great secondary field for engineers to learn writing fundamentals.

**Secondary Field of Concentration: Chemical Engineering (Option 4)**

			# Hrs	E	G	F	P	H
CHBE	221	Principles of CHE	3	0	1	0	0	0
CHBE	422	Mass Transfer Operations	4	1	0	0	0	0
CHBE	424	Chemical Reaction Engineering	3	0	1	0	0	0

Student Comments: (Pre) CH E 422 is a very design oriented course with much time needed. The material learned is

excellent and is a good foundation for other CH E classes needed. CH E 422 is a requirement. CH E 424 is a two-hour course that is good in reactor design.

**Secondary Field of Concentration: Chemistry (Option 4)**

			# Hrs	E	G	F	P	H
CHEM	232	Elementary Organic Chemistry I	3	1	0	1	0	0
CHEM	233	Elementary Organic Chem Lab I	2	0	0	1	0	0
CHEM	332	Elementary Organic Chemistry II	3	1	0	0	0	0
CHEM	442	Physical Chemistry I	4	0	0	1	0	0
CHEM	494	Laboratory Safety Fundamentals	1	0	0	1	0	0
MCB	450	Intro Biochemistry	3	1	0	0	0	0

**Secondary Field of Concentration: Communication Systems Design (Option 5)**

			# Hrs	E	G	F	P	H
ECE	459	Communications, I	3	0	1	0	0	0
CS	400	Data Structures	4	1	0	0	0	0
CS	498	Independent Study	0-4	0	0	1	0	0
CS	491	Special Topics	0-4	0	0	1	0	0
GE	424	Intro to Mechatronics	3	0	1	0	0	0
GE	393 RSL	Networking Design Lab	3	0	1	0	0	0

**Secondary Field of Concentration: Computational Nondestructive Evaluation (Option 5)**

			# Hrs	E	G	F	P	H
CS	173	Discrete Structures	2	0	1	0	0	0
CS	400	Data Structures, Non-CS Majors	4	0	1	0	0	0
GE	412	Fund of Nondestructive Eval	3-4	0	1	0	0	0

**Secondary Field of Concentration: Computer Applications in Consulting (Option 5)**

			# Hrs	E	G	F	P	H
BADM	395	Senior Research	1-4	0	2	0	0	0
CS	400	Data Structures, Non-CS Majors	4	0	1	0	0	0
GE	497	Independent Study	1-4	3	4	5	1	0

**Secondary Field of Concentration: Computer Graphics (Option 5)**

			# Hrs	E	G	F	P	H
CS	110	Programming Lab (Java)	1	0	0	0	1	0
CS	400	Data Structures, Non-CS Majors	4	0	1	0	0	0
CS	418	Computer Graphics	3	1	0	0	0	0

**Secondary Field of Concentration: Computer Integrated Product Engineering (Option 5)**

			# Hrs	E	G	F	P	H
ME	350	Design for Manufacturability	3	1	0	0	0	0
MFGE	450	Info Mgmt for Mfg Systems	3	0	1	0	0	0
GE	393 YSK	CAD/CAM and Solid Modeling	1-4	0	0	1	0	0

Student Comments: (Pre) ME 350 is a great survey of Design for Manufacturability, CAD/CAM, and Quality Function Deployment. MEG 450 is easy and it gives basics of Database design. GE 497 is disappointing but it's the only solid modeling class offered.

**Secondary Field of Concentration: Construction (Option 4)**

			# Hrs	E	G	F	P	H
CEE	320	Construction Engineering	3	1	1	0	0	0
CEE	420	Construction Productivity	3-4	0	1	1	0	0
CEE	421	Construction Planning	3-4	0	0	1	0	0

Student Comments: CEE 320 is very difficult, but is very helpful and you learn a lot.

**Secondary Field of Concentration: Construction Management (Option 5)**

			# Hrs	E	G	F	P	H
ACCY	200	Intro to Accounting	3	0	0	1	0	0
BADM	310	Management & Organizational Behavior	3	1	0	0	0	0
BADM	320	Intro to Marketing	3	0	1	0	0	0
CEE	320	Construction Engineering	3	1	0	0	0	0
CEE	420	Construction Productivity	3-4	2	0	0	0	0
CEE	421	Construction Planning	3-4	0	1	0	0	0

**Secondary Field of Concentration: Educational Communication (Option 5)**

			# Hrs	E	G	F	P	H
EPS	201	Fundamentals of Education	3	0	0	1	0	0
MATH	402	Non-Euclidean Geometry	3	0	1	0	0	0
SPCM	101	Public Speaking	3	1	0	0	0	0
SPCM	323	Argumentation	3	1	0	0	0	0

Student Comments: (SP07) At first I was going to do Education, but when I chose to go to law school, I decided speech classes would be better for me, so I altered my class track to include some speech communications classes.

**Secondary Field of Concentration: Finite Element Analysis (Option 5)**

			# Hrs	E	G	F	P	H
CS	450	Intro to Numerical Analysis	3-4	1	0	0	0	0
ME	471	Intro to Finite Element Analysis	3-4	1	0	1	0	0
TAM	412	Intermediate Dynamics	4	0	1	0	0	0
TAM	428	Mechanics of Composites	3	0	1	0	0	0
TAM	451	Intermediate Solid Mechanics	4	0	1	0	0	0

**Secondary Field of Concentration: Economics (Option 4)**

			# Hrs	E	G	F	P	H
ECON	302	Inter Microeconomic Theory	3	1	3	0	0	0
ECON	303	Inter Macroeconomic Theory	3	1	3	0	0	0
ECON	420	International Economics	3	2	0	0	0	0
ECON	421	Cont Issues in Intl Econ	3	2	0	0	0	0
ECON	452	The Latin American Economies	3	2	0	0	0	0
ECON	483	Econ of Innovation and Tech	3	1	0	0	0	0
BADM	320	Principles of Marketing	3	0	1	0	0	0
BADM	310	Management and Organizational Behavior	3	1	0	0	0	0
ECON	202	Economic Statistics I	3	1	0	1	0	0
ECON	203	Economic Statistics II	3	2	0	0	0	0

**Secondary Field of Concentration: Electrical and Computer Engineering (Option 4)**

			# Hrs	E	G	F	P	H
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ECE	210	Analog Signal Processing	4	0	1	1	0	0
ECE	290	Computer Engineering, I	3	0	1	0	1	1
ECE	390	Computer Engineering, II	3	1	1	0	0	0
ECE	307	Techniques for Engineering Decisions	3	0	1	0	0	0
ECE	410	Digital Signal Processing I	4	0	0	0	1	0
ECE	411	Comp Organization & Design	4	0	1	0	0	0

Student Comments: ECE 290 is lots of work. ECE 390 is extremely interesting, the final project is a video game

#### Secondary Field of Concentration: Electromechanics (Option 5)

			# Hrs	E	G	F	P	H
ECE	329	Intro Electromagnetic Fields	3	1	0	0	0	0
ECE	430	Power Ckts & Electromechanics	1	1	0	0	0	0
ME	400	Energy Conversion Systems	3	0	0	1	0	0
ME	403	Internal Combustions/Engines	3	0	1	0	0	0

Student Comments: (Pre) ECE 329 is not an easy class, but it is fundamental to the rest of the courses. In this class, there is tons of calculus. ECE 430 builds on ECE 329 in the beginning, but becomes similar to GE 320. ME 400 is recommended for this class but it is not required. ME 400 is basically accounting for engineers. It is a dry but useful class. ME 401 is basically an applied thermodynamics class with very little kinematics. In general, this student should plan on integrating his/her electrical and mechanical knowledge in a graduate control systems program.

#### Secondary Field of Concentration: English (Option 5)

			# Hrs	E	G	F	P	H
ENGL	442	British Lit Since 1930	3	1	0	0	0	0
ENGL	245	The Short Story	3	0	1	0	0	0
ENGL	251	The American Novel Since 1914	3	1	0	0	0	0

Student Comments: (Pre) ENGL as a SFC kept me well-rounded and maintained my writing skills. I've developed invaluable writing and analytical skills

#### Secondary Field of Concentration: Entrepreneurship (Option 4)

			# Hrs	E	G	F	P	H
ACCY	200	Fundamentals of Accounting	3	1	0	0	0	0
IE	300	Analysis of Data	3	0	1	0	0	0
ME	350	Design for Manufacturability	3	0	0	1	0	0
GE	498	Independent Study	1-4	4	0	0	0	0
ACE	231	Food and Agribusiness Management	3	0	1	0	0	0
ADV	300	Intro to Advertising	3	1	0	0	0	0
BADM	310	Management and Organizational Behavior	3	0	1	1	0	0
CS	173	Discrete Structures	3	0	0	0	0	1
FIN	221	Corporate Finance	3	0	0	1	0	0

#### Secondary Field of Concentration: Environmental Studies (Option 5)

			# Hrs	E	G	F	P	H
CEE	330	Environmental Engineering	3	1	0	0	0	0
CEE	440	Solid and Hazardous Waste	3	0	1	0	0	0
CEE	437	Water Quality Engineering	3	0	1	0	0	0
ENVS	431	Environmental Toxic Substances	3	1	0	0	0	0
GEOL	101	Intro Physical Geology	3	0	1	0	0	0
NPRE	241	Intro to Radiation Protection	2	0	1	0	0	0
IB	485	Environmental Toxicology	3	1	0	0	0	0

CPSC	336	Tomorrow's Environment	3	0	1	0	0	0
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Student Comments: (Pre) CEE 440 is very challenging.

#### Secondary Field of Concentration: Film and Media Studies (Option 5)

			# Hrs	E	G	F	P	H
ENGL	104	Intro to Film Studies	3	1	0	0	0	0
ENGL	273	Intermediate Film Studies	3	1	0	0	0	0
ARTS	442	Moving Image I	3-4	1	0	0	0	0
ARTS	443	Moving Image II	3-4	1	0	0	0	0

#### Secondary Field of Concentration: Finance (Option 4)

			# Hrs	E	G	F	P	H
ACCY	201	Accounting and Accountancy, I	3	1	1	1	0	0
ACCY	202	Accounting and Accountancy, II	3	1	1	0	0	0
BADM	320	Principles of Marketing	3	0	2	0	0	0
BADM	310	Mgmt and Organizational Beh	3	36	34	20	8	0
FIN	221	Corporate Finance	3	6	3	0	0	0
FIN	300	Financial Markets	3	3	1	1	0	0
FIN	311	Investments	3	1	1	0	0	0
FIN	321	Advanced Corporate Finance	3	0	0	1	0	0
FIN	412	Options and Futures Markets	3	1	1	0	0	0

Student Comments: (Pre) Great to see a truly different side of the engineering world.

FIN 300 and FIN 321 were basically reviews of FIN 221 with barely any new info. FIN 412 was interesting, it covers the world's largest market: derivatives.

#### Secondary Field of Concentration: French (Option 4)

			# Hrs	E	G	F	P	H
ECON	332	European Economic History	3	0	0	2	0	0
FR	133	Accel Intermediate French I	4	0	1	0	0	0
FR	134	Accel Intermed French II	4	1	0	0	0	0
FR	199	Undergraduate Open Seminar	1-5	0	0	1	0	0
FR	205	Oral French	2	2	0	0	0	0
FR	209	Intro to French Lit I	3	1	1	1	0	0

Student Comments: (Pre) This secondary field takes more planning than most but is definitely worth it.

#### Secondary Field of Concentration: Geography (Option 4)

			# Hrs	E	G	F	P	H
GEOG	403	Landform Studies	4	0	0	1	0	0
GEOG	405	Zoogeography	3	0	1	0	0	0
GEOG	415	Physical Climatology	3	1	0	0	0	0

#### Secondary Field of Concentration: Geology (Option 5)

			# Hrs	E	G	F	P	H
GEOL	104	Geology of the National Parks	3	1	0	0	0	0
GEOL	107	Physical Geology	4	1	0	0	0	0
GEOL	108	Historical Geology	4	0	1	0	0	0
GEOL	470	Introduction to Hydrogeology	4	0	1	0	0	0

Student Comments:(Pre) GEOL 104 is not counted for the secondary field of concentration but is a great class to take. GEOL 107 and 108 are good courses that are prerequisites for higher-level courses. GEOL 470 is a tough, but

interesting course.

The field is an interesting choice, but may not be the best path to take for a secondary field of concentration.

**Secondary Field of Concentration: German (Option 4)**

			# Hrs	E	G	F	P	H
GER	211	Conversations and Writing I	3	0	1	0	0	0
GER	212	Conversations and Writing II	3	1	0	0	0	0
GER	331	Intro to German Literature II	3	0	0	1	0	0
GER	332	Intro to German Literature II	3	0	0	1	0	0
GER	420	History of German Civilization	4	1	0	0	0	0

Student Comments: (Pre) GER 420 has lots of reading but is a very interesting course. It spans all aspects of civilization - literature, art, psychology, philosophy, music, and film.

**Secondary Field of Concentration: History of Engineering, Science and Technology (Option 4)**

			# Hrs	E	G	F	P	H
HIST	364	Technology in Western Society	3	0	1	0	0	0
HIST	265	Science in Western Civ I	3	1	1	0	0	0
HIST	266	Science in Western Civ II	3	2	1	0	0	0
HIST	363	Scientific Thought I	3	0	0	2	0	0
PHIL	317	Same as HIST 363						
PHYS	419	Space, Time, & Matter	3	1	1	0	0	0

Student Comments: (Pre) HIST 363 is really easy (Prof. Maher). Physics 419 is hard but very interesting. HIST 364 is a decent review of technology and is rather simple in its coursework, though there is a decent amount of reading involved. HIST 266 is an interesting study of some of the important people and ideas of science. The only homework is reading and an eight to ten page paper.

**Secondary Field of Concentration: Industrial Design (Option 5)**

			# Hrs	E	G	F	P	H
ARTF	199	Undergraduate Open Seminar	1 to 5	0	1	0	0	0
ARTD	220	Design Workshop I	3	2	1	1	0	0
ARTD	222	Design Workshop, II	3	1	1	1	0	0
ARTD	221	Model Making, I	3	3	0	1	0	0
ARTD	391	Special Problems in Design	1-4	0	0	1	0	0
ARTD	423	Computer Applications I	3	0	1	0	0	0
PSYC	358	Same as IE 340	4	0	0	0	1	0

**Secondary Field of Concentration: IE - Human Factors and Ergonomics (Option 4)**

			# Hrs	E	G	F	P	H
ARTD	391	Special Problems in Design	1-4	1	0	0	0	0
AVI	197	Independent Study	2	1	0	0	0	0
AVI	447	Human Error	3	1	0	0	0	0
IE	300	Analysis of Data	3	0	0	1	0	0
IE	340	Human Factors	4	7	3	0	0	0
IE	445	Human Perf & Eng Psych	3	2	3	0	1	0
PSYC	456							
IE	446	Human-Comp Interaction Lab	4	0	1	0	0	0
IE	497	Independent Study	1-4	2	0	0	0	0
IE	540	Analys and Des of Man-Mach Sys	4	0	1	0	0	0
IE	541	Mental Models in Complex Sys	4	0	1	0	0	0
MATH	461	Probability Theory I	3-4	0	0	1	0	0
ME	350	Design for Manufacturability	3	1	0	0	0	0
ME	497	Independent Study	1-4	1	0	0	0	0
MFGE	310	Intro to Mfg Systems	3	1	1	1	0	0

PSYC	100	Intro Psych	4	0	1	0	0	0
PSYC	216	Child Psych	3	0	0	1	0	0
PSYC	245	Industrial Org Psych	3	0	0	1	0	0
PSYC	358	Human Factors	4	0	0	1	0	0

Student Comments: (Pre) IE 340 is excellent in providing introductory information in human factors. It has a good lab so you can apply it. It is better to take it prior to IE 445. IE 445 is strictly lecture that is hard to sit through because it is a one and a half-hour lecture and it is all theory. IE 497 is an independent study course. ME 497 is a great class with a great instructor, Pete DeLisle. PSYCH 216 is a good course if you are interested in children. The subject material is not covered in other courses. MFGE 310 is not very helpful.

#### Secondary Field of Concentration: International Business (Option 4)

			# Hrs	E	G	F	P	H
ACCY	201	Accounting and Accountancy, I	3	0	1	0	0	0
BADM	380	International Business	3	1	0	0	0	0
ECON	332	European Economic History	3	0	1	0	0	0
ECON	420	International Economics	3	0	1	1	0	0

Student Comments: (Pre) ECON was kind of lame since the professor was difficult to understand, but the workload was definitely reasonable. ACCY was easy when I took it. BADM 380 has group papers, 2 midterms, a final group project, and no final exam.

#### Secondary Field of Concentration: International Marketing (Option 5)

			# Hrs	E	G	F	P	H
BADM	320	Principles of Marketing	3	3	1	0	0	0
BADM	310	Mgmt and Organizational Beh	3	0	1	0	0	0
BADM	322	Marketing Research	3	4	1	0	0	0
BADM	325	Consumer Behavior	3	0	2	0	0	0
FIN	221	Corporate Finance	3	0	1	0	0	0
ENG	299 A	Engineering Study Abroad – Culture Social and Cultural Aspects of Chile		2	0	0	0	0
ADV	300	Intro to Advertising	3	0	2	0	0	0

Student Comments: (S04) BADM 322 was really great because it is very project based and you get a true feel for the marketing research process. Madhu Viswanathan was a great professor, I have heard that other professors make the class much less project-based and more statistics based. It's also not too hard to get an A if you put in a little effort and show up to class. (F02) BADM 320 gives a good overview of marketing. The professor sometimes puts insignificant details on the exams, so make sure to actually read the chapters in the book. But overall, if you go to class and read the text you should get a good grade, and it's interesting. (S03) ADV 300 was probably the easiest class I've ever taken at U of I, but I thought that it was a good intro to advertising, and class was sort of fun. We watched lots of commercial clips and the professor shows other examples of advertising too. If you read the pages that Professor Dyer gives to you before each exam, you'll do fine. (Pre) BADM 320 and 310 requiring a lot of reading in preparation for the exams. There are two projects, but otherwise these courses are not a lot of work. BADM 322 can be boring, depending on the professor. Otherwise, this is a good course on how to market products. (S04) BADM 325 – Lan Nguyen is a tougher teacher (of the two that taught the course my semester), but she makes sure you learn the stuff. There is no homework, except one research project, that she stresses is TOUGH – but it's not. Her tests combine ideas from different chapters and have you give situational examples. I recommend her – but don't be scared of her. (F03) BADM 322 – Jooseop Lim was the professor when I took this course, and the project throughout the semester was to use the marketing research steps to actually study some market or compare to markets – from focus groups to collecting data to coming to a conclusion. I really liked the project – the stuff I learned in the course was very applicable to understanding marketing research. (S04) STUDY ABROAD – don't feel forced to do the International Minor – however, do feel forced to take AT LEAST one summer to study abroad. YOU WILL REGRET IT IF YOU DON'T... besides, IPENG makes it really cheap. You'd be surprised to add up the costs of staying in an apt, paying tuition and bills and groceries vs. studying abroad small fees. CHECK IT OUT– take 10 minutes to go ASK (210 Engineering Hall)

### Secondary Field of Concentration: Italian (Option 4)

			# Hrs	E	G	F	P	H
ITAL	101	Elementary Italian I	4	1	0	0	0	0
ITAL	102	Elementary Italian II	4	0	0	1	0	0
ITAL	103	Intermediate Italian I	4	1	0	0	0	0
ITAL	390	Enemies of Democracy	3	1	0	0	0	0
PS	280	International Relations	3	1	0	0	0	0
NPRE	201	Energy Systems	2 or 3	0	1	0	0	0

Student Comments: (SP07) These 6 used for International Minor- Italian. Ital 101, 102, 103 are all pretty straightforward language classes. Ital 390- special classes offered, very interesting topics, fairly easy. PS 280- great class if you like topics involving UN, nuclear arms, relations between states (Pre) This field is a good break from engineering courses.

### Secondary Field of Concentration: Japanese (Option 4)

			# Hrs	E	G	F	P	H
ECON	351	Economic Development in Japan	3	0	1	0	0	0
HIST	227	Modern Japanese History	3	0	1	0	0	0
JAPN	201	Elementary Japanese I	5	1	1	0	0	0
JAPN	202	Elementary Japanese II	5	1	2	0	0	0
JAPN	203	Intermediate Japanese I	5	2	1	0	0	0
JAPN	204	Intermediate Japanese II	5	2	0	1	0	0
JAPN	306	Advanced Japanese II	5	1	1	0	0	0

Student Comments: (Pre) Most of ECON 351 covers unique characteristics of the Japanese economy. This class is not difficult to get a good grade with very little economics background. HIST 227 involves a lot of writing. It is very thought provoking because the professor encourages students to develop their own evaluations of history. As for Japanese language courses in general, the program at the U of I is better than most other universities, based on experience with students at other universities.

Companies sometimes do not like this field due to its lack of "technical" classes, but many companies need representatives in other countries. Pushing this field to international companies is recommended. In general, an international perspective, language ability, knowledge of a foreign culture and living experience abroad is a huge plus for any type of career. JAPAN 199 moves very quickly, but it is not too difficult if you don't get behind in the class. The tests, however, are difficult. JAPAN 199 is taken before a student studies abroad in Japan. The Japanese living experience as well as additional history and economic courses give a balance to the highly technical background

### Secondary Field of Concentration: Leadership Studies (Option 5)

			# Hrs	E	G	F	P	H
AGED	260	Intro to Leadership Studies	3	1	0	0	0	0
BADM	310	Management and Organizational Behavior	3	0	1	0	0	0
GE	361	Emotional Intelligence	3	0	1	0	0	0

### Secondary Field of Concentration: Mathematics (Option 4)

			# Hrs	E	G	F	P	H
MATH	380	Advanced Calculus	3	1	2	1	0	0
MATH	402	Non Euclidean Geometry	3	3	0	1	0	0
MATH	415	Linear Algebra	3	0	1	0	0	0
MATH	461	Probability Theory I	3	1	0	0	0	0
MATH	482	Linear Programming	3-4	0	1	1	0	0
MATH	484	Nonlinear Programming	3	1	0	0	0	0
MATH	347	Fundamental Mathematics	3	0	0	1	0	0
MATH	413	Intro to Combinatorics	3-4	0	0	0	1	0

Student Comments: (Pre) MATH 380 is an excellent course for those seeking more than just the MATH 242 and below knowledge of calculus. MATH 415 is appropriate for those that did not understand MATH 225 very well – much of this class simply reviews MATH 225. MATH 461 is a very interesting course and, if possible, try and get Prof. Ash

of this class simply reviews MATH 225. MATH 461 is a very interesting course and, if possible, try and get Prof. Ash as a teacher. She does an excellent job with the course. MATH 484 is a tough course but is excellent for those interested in applied mathematics. Math 402 is interesting and helps with proofreading skills. There are many, many more classes available in all areas of math that can (and should) be pursued. MATH 402 is a very interesting class and very useful in proof writing skills.

#### Secondary Field of Concentration: Mechanical Design (Option 5)

			# Hrs	E	G	F	P	H
GE	393YSK	Integrated Engineering and Industrial Design	1-4	1	0	0	0	0
ME	330	Engineering Materials	4	0	1	0	0	0
ME	350	Design for Manufacturability	3	1	0	0	0	0
ME	497	Independent Study:Special Problems: Team Development Skills	1-4	1	0	0	0	0

Student Comments: (Pre) GE 497 introduces different drawing and modeling techniques. It also exposes the students to programs other than AutoCAD. ME 330 is helpful for the EIT exam. The first 4 labs are very similar to GE 312. ME 350 has good manufacturing labs and explains how design relates to manufacturing. ME 497 is a great class because Pete DeLisle is an excellent instructor. It is different from traditional engineering classes because there is active participation and interaction between the students. It is very good for learning team skills.

#### Secondary Field of Concentration: Meteorology (Option 4)

			# Hrs	E	G	F	P	H
ATMS	120	Severe and Hazardous Weather	3	1	0	0	0	0
ATMS	300	Weather Processes	3	0	0	1	0	0
ATMS	401	Atmospheric Physics	4	0	0	1	0	0
ATMS	421	Earth Systems Modeling	4	0	1	0	0	0

#### Secondary Field of Concentration: Military Science (Option 5)

			# Hrs	E	G	F	P	H
MILS	202	Leadership & Teamwork		1	0	0	0	0
MILS	301	Leadership & Problem Solving		1	0	0	0	0
MILS	302	Leadership & Ethics		1	0	0	0	0
MILS	341	Leadership & Management		1	0	0	0	0
MILS	342	Officership		1	0	0	0	0

#### Secondary Field of Concentration: Music and Hearing Science (Option 5)

			# Hrs	E	G	F	P	H
MUS	103	Rudiments of Theory I	3	1	0	0	0	0
MUS	104	Rudiments of Theory II	3	1	0	0	0	0
PSYC	230	Perception & Sensory Processes	3	0	0	1	0	0
SHS	240	Intro Sound & Hearing Science	3	0	1	0	0	0

#### Secondary Field of Concentration: Organic Chemistry (Option 5)

			# Hrs	E	G	F	P	H
CHEM	104	General Chemistry II	3	1	0	0	0	0
CHEM	232	Elementary Organic Chemistry I	3	0	1	0	0	0
CHEM	233	Elementary Organic Chem Lab I	2	1	0	0	0	0
CHEM	332	Elementary Organic Chem II	3	0	0	1	0	0

#### Secondary Field of Concentration: Political Science (Option 4)

			# Hrs	E	G	F	P	H
PS	201	U.S. Racial and Ethnic Politics	3	0	1	0	0	0

PS	220	Intro to Public Policy	3	1	0	0	0	0
PS	270	Intro to Political Theory	3	0	1	0	0	0
PS	280	Intro to International Relations	3	0	0	1	0	0
PS	230	Intro to Pol Research	3	0	1	1	0	0
PS	301	U.S. Constitution I	3	1	0	0	0	0
PS	240	Intro to Comparative Politics	3	0	1	0	0	0
PS	348	Government & Politics in Western Europe	3	0	0	0	1	0
PS	289	Politics of the Vietnam War	3	0	1	0	0	0

#### Secondary Field of Concentration: Pre-Dentistry (Option 5)

		# Hrs	E	G	F	P	H	
CHEM	232	Elementary Organic Chemistry I	3	0	1	0	0	0
CHEM	332	Elementary Organic Chemistry II	3	0	1	0	0	0
MCB	250	Molecular Genetics	3	0	0	1	0	0
MCB	253	Cellular Biology	2	0	1	0	0	0

#### Secondary Field of Concentration: Pre-Law (Option 4)

		# Hrs	E	G	F	P	H	
BADM	300	The Legal Environment of Bus	3	3	0	0	0	0
BTW	253	Bus Admin Comm	3	0	1	0	0	0
BTW	271	Persuasive Writing	3	0	0	0	0	0
LAW	692	Current Legal Problems	1-12	0	1	0	0	0
PHIL	102	Logic and Reasoning	3	1	2	0	0	0
PHIL	106	Ethics and Social Policy	3	0	0	1	0	0
PS	220	Intro to Public Policy	3	1	0	0	0	0
PS	230	Intro to Pol Research	3	2	1	0	0	0
SOC	477	Sociology of the Law	3	1	0	0	0	0
SPCM	101	Public Speaking	3	1	0	1	0	0
SPCM	323	Argumentation	3	1	1	0	0	0

Student Comments: (Pre) BADM 300 is a good introduction to law, and it supplements GE 400 well. B&TW 251 gives good practice in the form of business writing. PHIL 102 is a great preparation course for taking the LSAT. SPCOM 323 is an excellent course that gives excellent practice in how to write briefs, analyze arguments, and how to present and build strong arguments. In general, these are very important classes to take if a student is considering going to law school after getting a bachelors degree.

#### Secondary Field of Concentration: Pre-Medicine (Option 4)

		# Hrs	E	G	F	P	H	
MCB	150	Molec and Cellular Basis of Life	4	0	0	0	0	0
MCB	250	Molecular Genetics	4	0	0	0	0	0
MCB	251	Exp Techniqs in Molecular Biol	2	0	0	0	0	0
CHEM	232	Elementary Organic Chemistry I	3	0	0	0	1	0
CHEM	233	Elementary Organic Chem Lab I	2	0	0	0	1	0
MCB	103	Intro to Human Physiology	3	1	0	0	0	0

#### Secondary Field of Concentration: Product Development

		# Hrs	E	G	F	P	H	
BADM	320	Principles of Marketing	3	1	2	0	0	0
BTW	250	Principles Bus Comm	3	2	1	0	0	0
ME	350	Design for Manufacturability	3	0	2	0	0	0
GE	493HEC	Design for Six Sigma	4	2	0	0	0	0

Student Comments: (S04) This was a secondary field thrown together at the last minute. The classes are good, but they aren't really focused. I talked to a couple faculty members, and it was highly recommended that I take more CAD and industrial design to supplement this stuff, but I didn't have time. To do this, you really need to start planning early. (S03) BA320 is pretty much common sense and learning the vocabulary. It was really easy to get a B in class, but to get an A, plan on a lot of careful reading and memorizing vocabulary. (S04) Design for Manufacturability is interesting. It was a lot of reading, but labs and videos shown in class demonstrated all sorts of manufacturing processes and methods for design. Very applicable if you hope to design some day. (Pre) This is a very broad choice of coursework. Not sure how it will turnout. I would recommend an Industrial Design class or 2.

#### Secondary Field of Concentration: Psychology (Option 4)

			# Hrs	E	G	F	P	H
PSYC	100	Intro to Psych	4	0	1	0	0	0
PSYC	216	Child Psych	3	0	0	1	0	0
PSYC	238	Abnormal Psych	3	0	0	1	0	0
PSYC	322	Intro to Mental Retardation	3	0	0	1	0	0

#### Secondary Field of Concentration: Real Estate Management (Option 5)

			# Hrs	E	G	F	P	H
BADM	310	Management and Organizational Behavior	3	0	0	1	0	0
ACCY	200	Fundamentals of Accounting	3	0	0	0	1	0
ADV	300	Intro to Advertising	3	0	0	1	0	0
FIN	241	Fundamentals of Real Estate	3	1	0	0	0	0

Student Comments: FIN 341 is one of the most useful classes I took in college. It provided real world information that will be very helpful to moving forward in life

#### Secondary Field of Concentration: Renewable Energy (Option 5)

			# Hrs	E	G	F	P	H
		Energy Systems, at Lincoln University, New Zealand	4	1	0	0	0	0
		Wind Energy Converters, at UNSW, Australia	4	1	0	0	0	0
		Biomass Energy, at UNSW, Australia	4	1	0	0	0	0

#### Secondary Field of Concentration: Spanish (Option 4)

			# Hrs	E	G	F	P	H
SPAN	142	Intermed Spanish for Business	4	1	0	0	0	0
SPAN	199	Undergraduate Open Seminar	1-4	1	0	0	0	0
SPAN	204	Practical Review of Spanish	3	1	1	0	0	0
SPAN	208	Oral Spanish	3	1	1	0	0	0
SPAN	228	Spanish Composition	3	1	0	0	0	0

Student Comments: (Pre) This field is excellent if students plan to study abroad. "I'm glad to be one of the few, the proud, the Spanish students."

#### Secondary Field of Concentration: Strategic & Management Consulting (Option 5)

			# Hrs	E	G	F	P	H
GE	498 RLP	Leading Sustainable Change	3	1	0	0	0	0
BADM	310	Management and Organizational Behavior	3	0	0	1	0	0
ACCY	200	Fundamentals of Accounting	3	0	0	1	0	0

FIN	221	Corporate Finance	3	0	1	0	0	0
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Student Comments: (SP07) GE 498 was a great course, especially for people who are interested in going into consulting.

#### Secondary Field of Concentration: Structures and Materials (Option 5)

			# Hrs	E	G	F	P	H
CEE	460	Steel Structures, I	3	2	0	0	0	0
CEE	461	Reinforced Concrete, I	3	1	1	0	0	0
CEE	380	Geotechnical Engineering	3	0	2	0	0	0
CEE	463	Reinforced Concrete II	3	1	0	0	0	0
CEE	465	Design of structural systems	3	2	0	0	0	0
GE	412	Fund of Nondestructive Eval	3-4	1	0	0	0	0
MATH	380	Advanced Calculus	3	0	1	0	0	0
TAM	324	Same as CEE 300	4	1	0	0	0	0
TAM	424	Mechanics of Structural Metals	3	0	1	0	0	0
TAM	428	Mechanics of Composites	3	1	0	0	0	0

Student Comments: (SP07) CEE 465 was very rewarding!

#### Secondary Field of Concentration: Technology and Management (Option 4)

			# Hrs	E	G	F	P	H
ACCY	200	Fundamentals of Accounting	3	0	3	1	0	0
ACCY	201	Fundamentals of Accounting	3	0	1	0	0	0
ADV	300	Intro to Advertising	3	0	1	0	0	0
GE	498	Independent Study	1-4	0	1	0	0	0
IE	330	Industrial Quality Control	3	1	0	0	0	0
TMGT	365	New Product Marketing	3	5	0	0	0	0
TMGT	367	Mgmt of Innov and Technology	3	4	1	0	0	0
TMGT	366	Product Design and Development	3	1	2	1	0	0
TMGT	460	Business Process Modeling	3	3	2	1	0	0
TMGT	461	Integrated Capstone Project	2	3	0	0	0	0
FIN	221	Corporate Finance	3	0	3	0	0	0

Student Comments: (S04) The Technology & Management Program is a minor that satisfies the secondary field requirement for General Engineering. I highly recommend applying to this program for those who are interested in business and engineering. Also, this program thoroughly prepares you to smoothly enter the workforce upon graduation. There are many perks to being in the program including: a capstone project (similar to Senior Design Project) with a major company solving a problem for them, etiquette dinner, free T&M clothing, finals care packages, golf lessons, small group meetings with executives of Fortune 100 companies, etc. The classes you take in the T&M Program will be your most interesting classes. After being in the same classes for 2 years you will build a great network of friends.

(SP05) The T&M Program is a wonderful opportunity for engineers to learn more about business. In the T&M Program, you will be surrounded by hard-working students. I strongly encourage those interested in business topics and ideas to apply to this program.

#### Secondary Field of Concentration: Technical Marketing (Option 5)

			# Hrs	E	G	F	P	H
BADM	310	Management and Organizational Behavior	3	1	0	0	0	0
BADM	320	Principles of Marketing	3	0	1	0	0	0
GE	498	Independent Study	1-4	0	1	0	0	0

#### Secondary Field of Concentration: Thermodynamics (Option 4)

			# Hrs	E	G	F	P	H
ME	310	Introductory Gas Dynamics	4	0	1	0	0	0
ME	320	Heat Transfer	4	0	1	0	0	0
ME	404	Intermediate Thermodynamics	4	1	0	0	0	0
ME	400	Energy Conversion Systems	3	1	0	0	0	0

**Secondary Field of Concentration: Urban Planning (Option 4)**

			# Hrs	E	G	F	P	H
UP	420	Planning for Historical Preservation	4	1	0	0	0	0
UP	428	International Planning Studio	6	0	0	1	0	0
UP	316	Planning Analysis	3	1	0	0	0	0
CEE	310	Transportation Engineering	3	0	1	0	0	0