

## ISyE Engineering Electives Page One - Sorted by Pre-Requisites (Effective Fall 2013)

**Important Notes:**

1. Take 2 courses from Page One.
2. Course offering change - to have a course evaluated, see your advisor.
3. All Special Topics courses (4801/4803/4823, etc.) **MUST** be approved by your advisor. No **SEMINARS** may be used.
4. You must meet the pre-requisite requirements.
5. Some departments may only allow you to register during Phase II.

### Section 1: Engineering Electives: You DO NOT have Chemistry nor any other Non-IE Curriculum

Course	Description	Credit	Pre-reqs	Notes
CEE 3000	Civil Engr Systems	3	MATH 1501	Occasional summer availability
CEE 4100	Construction Engr & Mgt	3	None	Occasional summer availability
ChBE/ME 4763	Pulping and Chemical Recovery	3	No pre-reqs but CHEM 1310 is helpful, min. 2.8 GPA	ME or CHBE class is acceptable
ChBE/ME 4764	Bleaching and Papermaking	3	No pre-reqs but CHEM 1310 is helpful, min. 2.8 GPA	ME or CHBE class is acceptable
ChBE 4803	Biofuels, Bleaching and Paper making	3	None	
COE 2001	Statics	2	MATH 1502 & PHYS 2211	
CS/PSYC 3750	User Interface Design	3	None	
CX 4010	Computational Problem Solving for Sci & Engr.	3	None	
CX 4240	Computing for Data Analysis	3	CS 1371 or CS 1301	
CX 4242	Data and Visual Analytics	3	MATH: 2605 or 2401 or 24X1, AND ISYE 2027 AND CS 1371 or CS 1301	
ECE 2020	Digital System Desgin	3	CS 1371 or CS 1301	
ECE 3710	Circuits and Electronics	2	PHYS 2212	
MSE 4020	Design with Materials I	1	None	Must have Senior hours
NRE 3301	Radiation Physics	3	MATH 1502 & PHYS 2211	

### Section 2: Engineering Electives: You DO have Chemistry but no other Non-IE Curriculum

Course	Description	Credit	Pre-reqs	Notes
CEE 2300	Environmental Engineering Principles	3	CHEM 1310, MATH 1502, PHYS 2211	Occasional summer availability
ChBE 2100	Chemical Process Principles	3	CHEM 1310 & MATH 1502	
MSE 2001	Principles & Applications of Engineering Materials	3	CHEM 1310	Occasional summer availability

### Section 3: Engineering Electives: You NEED Chemistry AND other Non-IE Curriculum

Course	Description	Credit	Pre-reqs	Notes
BMED 2210	Conservation Principles in BME	3	CHEM 1310, BMED 1300, PHYS 2211	
BMED 3100	Systems Physiology	3	CHEM 1315	
ME 3720	Introduction to Fluid and Thermal Engineering3	3	CHEM 1310, PHYS 2211, MATH2403	Occasional Summer Availability
PTFE 2200	Structure and Properties of Fibers and Polymers	3	CHEM 1315	

**ISyE Engineering Electives Page One - Sorted by Pre-Requisites (Effective Fall 2013) -- Continued**

**Section 4: Engineering Electives: You DO NOT NEED Chemistry BUT need other Non-IE Curriculum**

Course	Description	Credit	Pre-reqs	Notes
AE 2020	Low-Speed Aerodynamics	3	AE 1350, MATH 2401, & PHYS 2211	Occasional summer availability
AE 2220	Dynamics	3	MATH 2403 & COE 2001	Occasional summer availability
AE 3450	Thermodynamics & Comp Flow	3	MATH 2403, PHYS 2212	
CEE 2040	Dynamics	2	COE 2001	Occasional summer availability
CEE 3010	Geomatics	3	AE/CEE/ME 1770	Occasional summer availability
CEE 4300	Environmental Engineering Systems	3	CEE 2300	Occasional summer availability
CEE 4600	Transportation Planning & Design	3	AE/CEE/ME 1770	Occasional summer availability
ChBE 2110	Chemical Engineering Therodynamics I	3	ChBE 2100 & BIOL 1510	
COE 3001	Deformable Bodies	3	MATH 2403 & COE 2001	
CS 2110	Computer Organization and Programming	4	CS 1331	Only counts as EE for those who are not using this course for a minor
ECE 2026	Introduction to Signal Processing	3	MATH 1502 & CS 1371 or CS 1372	Used to be ECE 2025 (4 credits hours)
ECE 2040	Circuit Analysis	3	ECE 2025, PHYS2212, & MATH 2403/2413	
ECE 3035	Mechanisms for Computing Systems	4	ECE 2030 & CS 1372	
ECE 3076	Computer Communications	3	ECE 2025 & ECE 2030	
ECE 3090	Software for Engineering Systems	4	ECE 2025(2026) & ECE 2030(2020) & ECE 2040	
ECE 3741	Instrumentation and Electronic Lab	1	ECE 3710	
ECE 4606	Wireless Communication	3	ECE 2025, ECE 3040/3710, ISYE/MATH 3770/ISYE 2027	
ECE 4823	Game Theory and Multiagent Systems	3	COE 2001/ME 2211/AE2120	
ME 2202	Dynamics of Rigid Bodies	3	COE 2001/ME 2211/AE 2120	
MSE 3015	Elc, Optical&Magnet Properties	3	PHYS 2212 & MSE 2001	
PTFE 3200	Yarn and Fabric Formation	3	PTFE 2200/3720	
MSE 3012	Thermal & Transport Props	3	PHYS 2212 & MSE 2001	
ME 3322	Thermodynamics	3	MATH 3403 & PHYS 2211	
ME 3015	System Dynamics & Control	4	MATH 2403, ME 2202/AE 2220, ME 2016, ECE 2040	
CS 4641	Machine Learning	3	CS 1331	

## Engineering Electives Page II (Effective Fall 2013)

**Important Notes:**

- If you take 2 courses from page one, you can take the 3rd course from this list.

Course	Description	Credit	Pre-reqs	Notes:
AE 2801	Special Topics w/ COE 2001*	1		*Only Oxford Study Abroad Program
AE 3310	Introduction to Aerospace Vehicle Performance	3	Math 2403, AE 2020 & AE 2220	
AE 4701	Wind Engineering	3		Lab centric APPROVE
AE 4370	Life Cycle Cost, Schrage	3		Multi disciplinary APPROVE
ARCH 6271	Healthcare Design of the Future	3		
BIOL 2400	Mathematical Models in Biology	3	Math 1502, Biol 1510	
BIOL/MATH 4755	Mathematical Biology	3	Math 2403	
BMED 3400	Intro to Biomechanics	4	COE 2001, MATH 2403	Multidisciplinary, project, APPROVE
BME 2300	Problems-Biomed Engr II	3	BMED 1300	
BME 4803	Global Health Engineering	3		Writing proposal, APPROVE
BMED/MSE 4751	Introduction to Biomaterials	3	MSE 2001	Multi disciplinary, APPROVE, can be common
CEE 4225	Coastal Engineering	3		Has NTU syllabus, APPROVE
CEE 4330	Air Pollution Control Eng	3		Has NTU syllabus APPROVE
CEE 4803	Freight Transportation Systems and Airport Plan	3		Projects, APPROVE
CEE 4803	Transportation Policy & Analysis	3		syllabus?
ChBE/MSE 4751	Intro to Biomaterials	3	MSE 2001	
COE 3002	Intro to Microelec & Nano Revolution	3		Interdisciplinary, APPROVE
CP 4310	Urban Transportation	3		
CP 4510	Introduction to Geographic Information Systems	3		
CS 2801	Digital Design Lab for CS	1	CS 2110	Lab centric, APPROVE
ECE 2803	Grand Achievements and Grand Challenges	3		
ECE 2811	Vertically-Integrated Projects (VIP) program	1 or 2	VIP and ISyE approval	Student can earn 1 or 2 credits per semester. First 3 credits = Engineering Elective, Page II, last 4 can be considered for Senior Design (ISyE 4106) must be approved by senior design coordinator BEFORE and AFTER. Please see: <a href="http://vip.gatech.edu">http://vip.gatech.edu</a>
ECE 3811				
ECE 3812				
ECE 4811				
ECE 4812				
ECE 2031	Digital Design laboratory	2		Lab centric, APPROVE
ECE/MSE 4755	Substrate Fabrication	3	CHEM 1310 and PHYS 2112	Lab, multi, APPROVE
ECE 2893/ME 2803		1 towards Engineering Elective		<b>1 hour Engineering Elective, and 1 hour free elective</b>
ISYE/ME/BIO/PTFE 4740	Bioinspired Design	3		Multi-disciplinary, APPROVE
ISYE 4803	System Modeling with SysML	3		Multidisciplinary, project, APPROVE
ISYE 4803	Model Based Systems Engineering	3		Multi-disciplinary, project - APPROVE
ME 2110	Creative Design & Decision Making	3	ME 1770, AE 2120/COE 200	
ME 2813 - GLE	Engineering & International Development	3		

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ME 3057	Experimental Methodology	3	ME 3015, COE 3001, ME 3340, 3322, 3345, ISYE 3770	syllabus?
ME 4803	Energy Systems Engineering	3		Project, APPROVE
AE,CEE,ChBE,ME,MSE,PTFE 4793	Composite Mtl Pros	3	CHEM 1310 and PHYS 2112	Project centric, APPROVE
MSE 2021	Characterization of Materials	3,3,4	MSE 2001	Lab centric, APPROVE (Used to be MSE 2020)
MSE 2803	Lab for Fundamental Concepts of Mtls	3		
MSE 3801		1		
MSE 3803	Optics and Soft Materials	2-3-3		
MSE/BIOM 4751	Intro to Biomaterials	3	MSE 2001	
MSE 4801	Materials Entrepreneurship	1		
MSE 4803	Soft Nano Materials	3	MSE 2001	Prloject and Lab, APPROVE
MSE 4803/ 8803	Fundamentals of Nanomaterials & Energy	3		
PHYS 4803	Nanoscale Physical Properties and Characterization	3		
PHYS 2021	Solar Systems	3		
PTFE 3720, MSE3720	Introduction to Fiber Enterprise	3		
PTFE 4043	Safety & Ethics	1		ONLY allowable if taking with COE 2001
PTFE 4801	Title may vary each semester	1	Varies	ONLY allowable if taking with COE 2001
CP 4020	Introduction to Urban Regional Planning	3		