

2008-09 Course Requirements for BSE Degree – Courses Common to All Option Areas

All courses in this table must be included in calculations used to check the 2.35 GPA program entrance requirement

Crds	Sem/Yr Taken	Grade	Requirement	Course Taken to Meet Requirement
			MATH 221 (5) Calculus and Analytic Geometry	
			MATH 222 (5) Calculus and Analytic Geometry	
			MATH 234 (3) Calculus—Functions of Several Variables	
			Intro Statistics for Engineers (STAT 224 (3) or 324 (3))	
			Chemistry (Chem 109 (5) or Chem 103 (4) and Chem 104 (5))	
			Comp Sci 310 (3) Problem Solving.	
			Agr. and Life Science Course (min. of 3 crds from required list)	
			Biological Sciences (min. 3 crds from required list)	
			E M A 201 (3 crds) Statics	
			Physics 202 (5) General Physics	
			Engineering Graphics Course (M E 170 (2) or M E 231 (2))	
			Thermodynamics (M E 361 (3) or CBE 211(3))	
			Engineering Economics Course (ISYE 313 (3) or M E 314(3))	
			BSE 249 (3) Engr. Principles for Biological Systems or CBE 250 (3)	
			BSE 364 (3) Engr. Properties of Food and Biological Materials	
			BSE 365 (3) Measurements and Instrumentation for Biol Systems	
			BSE 375 (3) Biological Concepts for Engineers	
			BSE 409 (1) Career Management for Engineers	
			BSE 509 (3) BSE Senior Design	

2008-09 Course Requirements for BSE Degree – *Natural Resources and Environment Engineering Specialization*

All courses in this table must be included in calculations used to check the 2.35 GPA program entrance requirement

Crds	Sem/Yr Taken	Grade	Requirement	Course Taken to Meet Requirement
			BSE 372 (2) On-Site Waste Water Treatment	
			BSE 472 (3) Sediment & Bio-Nutrient Engr. & Mgmt.	
			BSE 473 (2) Irrigation and Drainage System Design	
			BSE 571 (3) Small Watershed Engineering	
			Fluid Mechanics Course (CIV ENGR 310 (3) or M E 363 (3))	
			Surveying Course (BSE 201 (1) or CIV ENGR 251 (2))	
			Mechanics of Materials Course: EMA 303 (3), 304 (3), 306 (4), or M E 306 (3)	
			BSE Breadth Course (351(3), 356(3), 367 (3), 441 (3), 460 (3), 475 (3), 476 (3), 542 (3) or 642 (2))	
			Technical Elective	
			Technical Elective	
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			Technical Elective	
			TOTAL– <i>Minimum 44 Credits Required</i>	

2008-09 Course Requirements for BSE Degree – *Natural Resources and Environment Engineering Technical Electives*

The following courses can be used to meet technical elective requirements for the Natural Resources and Environment Engineering specialization

Area	Course	Area	Course
Land Information and Surveying	CIV ENGR 301 (1) Intro to Aerial Photographic Systems	General	INTEREGR 160 (3) Intro to Engr. Design (for Freshman only)
	CIV ENGR 302 (1) Intro to Electro-optical and Microwave Remote Sensing Systems		BSE 299 (3 max) Independent Study (requires approval of BSE Undergraduate Instruction and Program Committee)
	CIV ENGR 303 (1) Intro to Remote Sensing Digital Image Processing		BSE 399 (2 max per semester, 3 total) Coordinative Internship/Cooperative Education
	CIV ENGR 304 (1) Remote Sensing Visual Image Interpretation and GIS Integration		Up to 6 credits of math, science, statistics or computer science courses that are designated "advanced", or engineering courses with a 300 or greater course number
	CIV ENGR 307 (1) Fund. Computations for Land Information Systems (LIS)	Geotechnical Engineering	CIV ENGR 330 (4) Soil Mechanics
	CIV ENGR 308 (1) Spatial Frameworks for LIS		CIV ENGR 530 (3) Seepage and Slopes
	CIV ENGR 357 (4) Intro to Geographic Info Systems		CIV ENGR 531 (3) Retaining Structures
Hydrology	CIV ENGR 315 (3) Hydrology	Soil Science	CIV ENGR 532 (3) Foundations
	CIV ENGR 316 (3) Hydraulic Engineering		SOIL SCI 532 (3) Environmental Biophysics
	CIV ENGR 411 (3) Open Channel Hydraulics		SOIL SCI 622 (3) Soil Physics
	CIV ENGR 412 (3) Groundwater Hydraulics	Biological Systems Engineering	BSE 351 (3) Structural Design for Agricultural Facilities
	CIV ENGR 414 (3) Hydrologic Design		BSE 356 (3) Sustainable Residential Construction
	GEOLOGY 627 (3 to 4) Hydrogeology		BSE 367 (3) Renewable Energy Systems
	GEOLOGY 629 (3) Contaminant Hydrogeology		BSE 441 (3) Rheology of Foods & Biomaterials
Environmental Engineering	CIV ENGR 320 (3) Environmental Engineering	BSE 460 (3) Biorefining: Energy & Prod. from Renewable Res.	
	CIV ENGR 423 (3) Air Pollution Effects, Measurement and Control	BSE 475 (3) Engr Principles-of Ag Machinery	
	CIV ENGR 426 (3) Wastewater Treatment Plant Design	BSE 476 (3) Engr Principles of Off-Road Vehicles	
	CIV ENGR 427 (3) Solid and Hazardous Wastes Engr.	BSE 542 (3) Food Engineering Operations	
	CIV ENGR 429 (3) Environmental Systems Optimization	BSE 642 (2 or 3) Food and Pharmaceutical Separations	
Environmental Sciences	Up to a total of 6 credits from the following list can be counted for technical elective: BACT 303, 304, 425, 523; ENVIR ST 361; GEOG 320, 325, 326; SOIL SCI 301, 322, 323, 324, 325, 523, 622		

Four Year Road Map: Natural Resources and Environmental Engineering Specialization

This Road Map is a tool to assist you and your advisor in planning your academic career. Use it along with the Curriculum Sheet for your major, your DARS report, the appropriate checklist in the back of this document, and the Timetable. Your specific program of study could, and probably will, look different. You need to customize the Road Map to fit your situation, and consult with your advisor about the best path for you.

Year 1 – Fall Semester Course	Credits
Math 221 - Calculus and Analytic Geometry	5
Chemistry 109 - Advanced General Chemistry	5
Social Science (See I.E.4)	3
EPD 155 – Basic Communication (See I.C.)	2
	15

Year 2 – Fall Semester Courses	Credits
Math 234 – Calculus - - Functions of Several Variables	3
Computer Science 310 - Problem Solving Using Computers	3
BSE 201 – Surveying	1
Statistics 224 – Introductory Statistics for Engineers	3
BSE 249 – Engineering Principles for Biological Systems	3
Ethnic Studies/International (See I.E. & I.H.)	3
	16

Year 3– Fall Semester Courses	Credits
BSE 473 – Irrigation and Drainage Systems Design	2
BSE 364 – Engineering Properties of Food and Biological Materials	3
CEE 310 – Fluid Mechanics	3
Technical Elective (See VI.D.)	3
Technical Elective (See VI.D.)	3
Technical Elective (See VI.D.)	3
	17

Year 4– Fall Semester Courses	Credits
BSE 509 – Biological Systems Engineering Senior Design	3
BSE 372 – On-Site Wastewater Treatment and Dispersal	2
ISYE 313 – Engineering Economic Analysis	3
Humanities (See I.E.3)	3
Breadth Requirement (See VI.D.)	3
BSE 409-Career Management for Engineers	1
	15

Year 1 – Spring Semester Courses	Credits
Math 222 - Calculus and Analytic Geometry	5
Biological Science (See I.F.)	3
EMA 201-Statics	3
Economics Course	4
M E 170 – Civil Engineering Graphics	2
	17

Year 2 – Spring Semester Courses	Credits
M E 361 - Thermodynamics	3
BSE 375 Biological Concepts for Engineers	3
EMA 303 – Mechanics of Materials	3
Physics 202 – General Physics	5
Ag & Life Sciences (See VI.C.)	3
	17

Year 3 – Spring Semester Courses	Credits
BSE 472 – Sediment and Bio-Nutrient Engineering and Management	3
BSE 365 – Measurements and Inst. for Biological Systems	3
EPD 397 – Technical Communications (See I.C.)	3
Technical Elective (See VI.D.)	3
Technical Elective (See VI.D.)	3
	15

Year 4 – Spring Semester Courses	Credits
BSE 571 – Small Watershed Engineering	3
Humanities (See I.E. 3)	3
Technical Elective (See VI.D.)	3
Technical Elective (See VI.D.)	3
Technical Elective (See VI.D.)	4
	16

Notes: Need 128 credits to complete degree. If Chemistry 103 & 104 is taken in place of Chemistry 109, it is suggested to take Chemistry 103 in Fall semester and Chemistry 104 in Spring semester of year 1.