

 FLORIDA ATLANTIC UNIVERSITY	NEW/CHANGE PROGRAM REQUEST Undergraduate Programs	UUPC Approval _____ UFS Approval _____ Banner Posted _____ Catalog _____
	Department CEGE College CoE&CS	
Program Name BSCV, BSEV, BSGE	<input type="checkbox"/> New Program <input checked="" type="checkbox"/> Change Program	Effective Date <i>(TERM & YEAR)</i> Fall 2020
Please explain the requested change(s) and offer rationale below or on an attachment 1. Add EEL2161-C for Engineers 3 credits to our list of courses that satisfy the computer programming elective in the Engineering fundamentals core of all 3 programs. 2. Revise technical elective list for BSCV and BSEV 3. For BSCV: Remove CES4711 from Structural Engineering Design Core		
Faculty Contact/Email/Phone Yan Yong/yongy@fau.edu/7-3445	Consult and list departments that may be affected by the change(s) and attach documentation	
Approved by Department Chair <u>DM for Yan Yong</u> College Curriculum Chair <u>Daniel E. Meeroff</u> College Dean <u>Fred Bloetscher (via email confirmation)</u> UUPC Chair <u>Jerry Haky (via email confirmation)</u> Undergraduate Studies Dean <u>Edward Pratt (via email confirmation)</u> UFS President _____ Provost _____	Date <u>3-25-20</u> <u>3-27-20</u> <u>3-27-20</u> <u>3-30-20</u> <u>3-31-20</u> _____ _____	

Email this form and attachments to mjenning@fau.edu one week before the UUPC meeting so that materials may be viewed on the UUPC website prior to the meeting.

Bachelor of Science in Civil Engineering

Curriculum

The Bachelor of Science in Civil Engineering degree requires 128 credits. For credit toward the degree, a grade of "C" or better must be received in each course listed. In addition, all prerequisites for each mathematics, science or engineering course must be completed with a grade of "C" or better before enrollment is permitted. The degree components are listed below.

Intellectual Foundations Program		
College Writing 1 (1), (2)	ENC 1101	3
College Writing 2 (1), (2)	ENC 1102	3
Intellectual Foundations Program : Society and Human Behavior Courses (1), (3)		6
Intellectual Foundations Program : Global Citizenship Courses (1), (3)		6
Intellectual Foundations Program : Humanities Courses (1), (3)		6

Foundations of Math and Quantitative Reasoning		
Calculus with Analytic Geometry 1 (1), (4)	MAC 2311	4
Calculus with Analytic Geometry 2 (1), (4)	MAC 2312	4
Foundations of Science and the Natural World		
General Chemistry 1 (1)	CHM 2045	3 and
General Chemistry Lab 1 (1)	CHM 2045L	1
General Physics for Engineers 1 (1)	PHY 2048	3 and
General Physics 1 Lab	PHY 2048L	1
Total		40
Basic Mathematics and Sciences		
Engineering Mathematics 1	MAP 3305	3 or
Differential Equations 1	MAP 2302	3
Statistics Restricted Elective		3
Physical and Natural Science Restricted Elective 1		4
Physical and Natural Science Restricted Elective 2		4
Total		14

Statistics Restricted Elective: Probability and Statistics for Engineers (STA 4032), Stochastic Models for Computer Science (STA 4821), Probability and Statistics 1 (STA 4442) or equivalent.

Physical and Natural Science Restricted Elective 1: includes but is not limited to Physical Geology/Evolution of the Earth with Lab (GLY 2010C), Biological Science with Lab, Earth Science, or equivalent.

Physical and Natural Science Restricted Elective 2: includes but is not limited to Physics for Engineers 2 (PHY 2044) with lab (PHY 2049L), General Chemistry 2 (CHM 2046) with lab (CHM 2046L), or other physical or natural science course approved by the department.

Engineering Fundamentals		
<i>Engineering Graphics Elective</i>		
Engineering Graphics	EGN 1111C	3 or
Computer-Aided Design	CGN 2327	3
Fundamentals of Engineering	EGN 1002	3
<i>Computer Programming Elective</i>		
Introduction to Programming in C	COP 2220	3 or

Computer Applications in Engineering 1	EGN 2213	3 or
C for Engineers	EEL 2161	3
Statics	EGN 3311	3
Dynamics	EGN 3321	3
Strength of Materials	EGN 3331	3
Geomatics	SUR 3103	2
Geomatics Lab	SUR 3103L	1
Construction Project Management	CCE 4031	3
Total		24

Civil Engineering Technical Core		
Soil Mechanics (5)	CEG 3011C	3
Analysis of Structures (5)	CES 3102C	3
Civil Engineering Materials (5)	CGN 3501C	3
Applied Hydraulics (5)	CWR 3201C	3
Environmental Science and Engineering (5)	ENV 3001C	3
Introduction to Transportation Engineering (5)	TTE 3004C	3
Total		18

Civil Engineering Design Core. Students must take four courses, one course in each of the four core areas to meet ABET criteria (6)		
<i>Geotechnical Engineering Design Core (Select one)</i>		
Foundation Engineering	CEG 4012	3 or
Ground Improvement Design	CEG 4122	3 or
Pavement Design	CEG 4126	3
<i>Structural Engineering Design Core (Select one)</i>		
Reinforced Concrete Design	CES 4702	3 or
Structural Steel Design	CES 4605	3 or
Prestressed Concrete Design	CES 4711	3
<i>Transportation Engineering Design Core (Select one)</i>		
Transportation Planning and Logistics (5)	TTE 4005C	3 or
Transportation Operations and Logistics Management	TTE 4105	3 or
Highway Engineering	TTE 4810	3
<i>Water Resources Engineering Design Core (Select one)</i>		
Hydrologic Engineering	CWR 4202	3 or
Advanced Hydraulic Systems	CWR 4223	3 or
Stormwater Modeling and Management	CWR 4307	3
Total		12

Additional Engineering Design Core		
Water and Wastewater Treatment Systems	ENV 4514	3
Subdivision Design	SUR 4463	2

Total	5
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Capstone Design Core		
RI: Civil, Environmental and Geomatics Engineering Design 1 (2), (5)	CGN 4803C	3
RI: Civil, Environmental and Geomatics Engineering Design 2 (2), (5)	CGN 4804C	3
Total		6

Technical Electives (Select 9 credits from the list)		
Any approved 3000- or 4000-level course offered by the department		
Any graduate course approved by the department (7)		
For students in the Engineering Innovation Leadership Honors Program:		
Nonlinear Behavior of Structures	CEC 4526	3
Innovation and Entrepreneurship	EGN 4641	3
Leadership Development Workshop 1	EGS 3030	1 and
Leadership Development Workshop 2	EGS 4031	1 and
Innovation Leadership Internship	EGS 4942	1
Honors Directed Independent Study	EGN 4906	3
Engineering Professional Internship	EGN 3941	0-4
Professional Internship	IDS 3949	0-4
Directed Independent Research in Engineering and Computer Science (8)	EGN 4911	0-3
Directed Independent Research in Engineering and Computer Science	EGN 4915	1-3
Total		9

Notes:

- (1) Contributes to University Core Curriculum requirements.
- (2) Contributes to Writing Across Curriculum (Gordon Rule) writing requirement.
- (3) Intellectual Foundations Program courses, totaling 6 credits, -must be selected to satisfy Writing Across Curriculum (Gordon Rule) writing requirements.
- (4) Contributes to Gordon Rule mathematics requirement.
- (5) Includes a 1-credit laboratory.
- (6) All design professional core courses contain a communications component (writing or speaking).
- (7) 9 credits may be taken from Department of Civil, Environmental and Geomatics Engineering graduate courses—this is highly recommended for students planning to pursue the B.S./M.S.
- (8) This course has grading S/U

Environmental Engineering

Curriculum

The Bachelor of Science in Environmental Engineering degree requires 120 credits. For credit toward the degree, a grade of "C" or better must be received in each course listed. In addition, all prerequisites for each mathematics, science or engineering course must be completed with a grade of "C" or better before enrollment is permitted. The degree components are listed below.

Intellectual Foundations Program		
College Writing 1 (1), (2)	ENC 1101	3
College Writing 2 (1), (2)	ENC 1102	3
Intellectual Foundations Program : Society and Human Behavior Courses (1), (3)		6
Intellectual Foundations Program : Global Citizenship Courses (1), (3)		6
Intellectual Foundations Program : Humanities Courses (1), (3)		6

Foundations of Math and Quantitative Reasoning		
Calculus with Analytic Geometry 1 (1), (4)	MAC 2311	4
Calculus with Analytic Geometry 2 (1), (4)	MAC 2312	4
Foundations of Science and the Natural World		
General Chemistry 1 or Engineering Chemistry (1)	CHM 2045 or EGN 2095	3 and
General Chemistry Lab 1 or Engineering Chemistry Lab (1)	CHM 2045L or EGN 2095L	1
General Physics for Engineers 1 (1)	PHY 2048	3 and
General Physics 1 Lab	PHY 2048L	1
Total		40
Basic Mathematics and Sciences		
General Chemistry 2 (1)	CHM 2046	3 and
General Chemistry 2 Lab (1)	CHM 2046L	1
Engineering Mathematics 1	MAP 3305	3 or
Differential Equations	MAP 3302	3
Earth Science Elective (1)		3
Biological Science Elective (1)		4
Statistics Restricted Elective		3
Total		17

Statistics Restricted Elective: Probability and Statistics for Engineers (STA 4032), Stochastic Models for Computer Science (STA 4821), Probability and Statistics 1 (STA 4442) or equivalent.

Engineering Fundamentals		
<i>Engineering Graphics Elective</i>		
Engineering Graphics	EGN 1111C	3 or
Computer-Aided Design	CGN 2327	3
Fundamentals of Engineering	EGN 1002	3
<i>Computer Programming Elective</i>		

Introduction to Programming in C	COP 2220	3 or
Computer Applications in Engineering 1	EGN 2213	3 or
C for Engineers	EEL 2161	3
Statics	EGN 3311	3
Strength of Materials	EGN 3331	3
Engineering Thermodynamics	EGN 3343	3
Total		18

Environmental Engineering Technical Core		
Soil Mechanics (5)	CEG 3011C	3
Applied Hydraulics (5)	CWR 3201C	3
Environmental Science and Engineering (5)	ENV 3001C	3
Environmental Fate and Transport	ENV 4053	3
Introduction to Pollution Prevention and Sustainability	ENV 4072	3
Total		15

Environmental Engineering Design Core		
Hydrologic Engineering	CWR 4202	3
Air Pollution and Control Systems	ENV 4112	3
Air Pollution Lab	ENV 4112L	1
Solid and Hazardous Waste and Site Remediation	ENV 4341	3
Water and Wastewater Treatment Systems	ENV 4514	3
Subdivision Design	SUR 4463	2
Total		15

Capstone Design Core		
RI: Civil, Environmental and Geomatics Engineering Design 1 (2), (5)	CGN 4803C	3
RI: Civil, Environmental and Geomatics Engineering Design 2 (2), (5)	CGN 4804C	3
Total		6

Technical Electives (Select 9 credits from the list) (6)		
Any CEGE graduate course offering approved by the department (7)		
Other approved 3000- or 4000-level course offered by the department		
Environmental Geochemistry	GLY 4241	3
Hydrogeology	GLY 4822	3
Oceanography	OCE 3008	3
Sustainable Cities	URP 4403	3

Environmental Planning Methods	URP 4420	3
Environment and Disease	ANT 4463	3
Environmental Ethics	PHI 3640	3
Global Environmental Politics and Policies	INR 4350	3
Environmental Economics	ECP 4302	3
Entrepreneurship	ENT 4024	3
For students in the Engineering Innovation Leadership Honors program:		
Innovation and Entrepreneurship	EGN 4641	3
Leadership Development Workshop 1 and	EGS 3030	4
Leadership Development Workshop 2 and	EGS 4034	4
Innovation Leadership Internship	EGS 4942	4
Honors Directed Independent Study	EGN 4906	3
Engineering Professional Internship	EGN 3941	0-4
Professional Internship	IDS 3949	0-4
Directed Independent Research in Engineering and Computer Science (8)	EGN 4911	0-3
Directed Independent Research in Engineering and Computer Science	EGN 4915	1-3
Total		9

Notes:

- (1) Contributes to University Core Curriculum requirements.
- (2) Contributes to Writing Across Curriculum (Gordon Rule) writing requirement.
- (3) Intellectual Foundations Program courses, totaling 6 credits, must be selected to satisfy Writing Across Curriculum (Gordon Rule) writing requirements.
- (4) Contributes to Gordon Rule mathematics requirement.
- (5) Includes a 1-credit laboratory.
- (6) All design core courses contain a communications component (writing or speaking).
- (7) 9 credits may be taken from Department of Civil, Environmental and Geomatics Engineering graduate courses—this is highly recommended for students planning to pursue the B.S./M.S.
- (8) This course has grading S/U

Geomatics Engineering

Curriculum (Changes effective fall 2020.)

The Bachelor of Science in Geomatics Engineering degree requires 120 credits. For credit toward the degree, a grade of "C" or better must be received in each course listed, except for humanities and social science courses not applied toward Writing Across Curriculum (Gordon Rule) writing requirements. In addition, all prerequisites for each mathematics, science or engineering course must be completed with a grade of "C" or better before enrollment is permitted. The degree components are listed below.

Intellectual Foundations Program -- 39 credits		
Foundations of Written Communication Courses - 6 credits		
College Writing 1 (1), (2)	ENC 1101	3
College Writing 2 (1), (2)	ENC 1102	3
Foundations of Mathematics and Quantitative Reasoning Courses - 6 credits		
Calculus with Analytic Geometry 1 (1), (4)	MAC 2311	4
Introductory Statistics	STA 2023	3
Foundations of Science and the Natural World Courses - 6 credits		
General Physics for Engineers 1 (1)	PHY 2048 and	3
General Physics 1 Lab	PHY 2048L	1
Students must take one additional course from the list below:		
General Chemistry 1	CHM 2045 and	3
General Chemistry 1 Lab	CHM 2045L	1
Physical Geology/Evolution of the Earth	GLY 2010C	4
Foundations of Society and Human Behavior Courses - 6 credits (1), (3)		
Foundations of Global Citizenship Courses - 6 credits (1), (3)		
Foundations of Humanities Courses - 6 credits (1), (3)		
Total		39

Additional Basic Mathematics and Sciences Electives - 15 credits		
Introduction to Calculus with Applications	MAC 2210 or	4
Calculus with Analytic Geometry 2	MAC 2312	4
Or any mathematics course for which one of the math courses is a direct prerequisite		
Introduction to Physical Geography	GEO 2200C	3
Select any two courses from Foundations of Science and the Natural World Group A or B not already taken for credit		8

Business Electives - Select one course - 3 credits		
Principles of Accounting 1	ACG 2021	3
Entrepreneurship	ENT 4024	3
Entrepreneurial Assistance Project	ENT 4934	3
Introduction to Business	GEB 2011	3
Information Systems Fundamentals	ISM 2000	3

Introduction to Management and Organizational Behavior	MAN 3025	3
Principles of Real Estate	REE 3043	3

Engineering Fundamentals - 15 credits		
Fundamentals of Engineering	EGN 1002	3
Introduction to Mapping and GIS (5)	GIS 3015C or	3
GIS for Civil Engineering Applications	CGN 4321	3
Geomatics	SUR 3103 and	2
Geomatics Lab	SUR 3103L	1
Engineering Graphics Elective		
Computer-Aided Design	CGN 2327 or	3
Engineering Graphics	EGN 1111C	3
Computer Programming Elective		
Introduction to Programming in C	COP 2220 or	3
Computer Applications in Engineering 1	EGN 2213	3

Construction Engineering Core - 6 credits		
Engineering and Construction Surveying	SUR 3205	2
Engineering and Construction Surveying Lab	SUR 3205L	1
Construction Project Management	CCE 4031 or	3
Introduction to Transportation Engineering (5)	TTE 3004C	3

Surveying Engineering Core - 12 credits		
Automated Surveying and Mapping	SUR 3141 and	2
Automated Surveying and Mapping Lab	SUR 3141L	1
Measurement Theory and Data Analysis	SUR 3520	3
Cadastral Principles and Legal Aspects	SUR 4403	3
Geodesy and Geodetic Positioning	SUR 4530 and	2
Geodesy and Geodetic Positioning Lab	SUR 4530L	1

Reality Capture core - 6 credits		
Introduction to Laser Mapping Technology	CCE 4514C	3
Digital Photogrammetry Principles and Applications	SUR 4331	2
Digital Photogrammetry Principles and Applications Lab	SUR 4331L	1
Thermal Infrared Remote Sensing and Applications	SUR 4384	3

Capstone Design - 6 credits		
Subdivision Design	SUR 4463 and	2
Land Subdivision and Platting Lab	SUR 3463L	1

Capstone Elective - Select one		
RI: Civil, Environmental and Geomatics Engineering Design 1	CGN 4803C or	3
Engineering Technology Capstone	ETG 4951	3

Technical Electives - Select 18 credits from the list		
Any approved College of Engineering and Computer Science course 3000-level and above		
Remote Sensing of the Environment (5) (6)	GIS 4035C	3
Principles of Geographic Information Systems (5) (6)	GIS 4043C	3
Digital Image Analysis (5) (6)	GIS 4037C	3
Engineering Professional Internship	EGN 3971	0-4
Directed Independent Research in Engineering and Computer Science (7)	EGN 4911	0-3
Directed Independent Research in Engineering and Computer Science	EGN 4915	1-3
New Venture Launch	ENT 4015	3
Advanced Business Planning	ENT 4114	3
Entrepreneurship Internship	ENT 4940	1-4
Environmental Issues in Atmospheric and Earth Science	ESC 3704	3
Principles of Financial Management	FIN 3403	3
Sea-Level Rise: Impacts and Responses	GEO 3342	3
Quantitative Methods	GEO 4022	3
Spatial Data Analysis	GEO 4167C	3
Water Resources	GEO 4280C	3
Biogeography	GEO 4300	3
Urban Geography	GEO 4602	3
Transportation and Spatial Organization	GEO 4760	3
Introduction to Mapping and GIS	GIS 3015C	3
Digital Image Analysis (5)	GIS 4037C	3
Applications of GIS (5)	GIS 4048C	3
Programming in GIS (5)	GIS 4102C	3
Geovisualization and GIS (5)	GIS 4138C	3
Coastal and Marine Science	GLY 3730	3
Field Methods	GLY 4750C	3
Hydrogeology	GLY 4822	3
Engineering Geology	GLY 4830	3
Introduction to Hydrogeology Modeling and Aquifer Test (5)	GLY 4832C	3
Professional Internship	IDS 3949	0-4
Leadership, Supervisory Skills and Team Development	MAN 4046	3
Marketing Management	MAR 3023	3

Planning Methods	URP 4011	3
City Structure and Change	URP 4055	3
Planning Implementation Strategies	URP 4120	3
Introduction to Visual Planning Technology	URP 4254	3
Plan Making and Design	URP 4343	3
Sustainable Cities	URP 4403	3
Environmental Planning Methods	URP 4420	3
Urban Development Planning Methods	URP 4546	3
Capital Facilities Planning	URP 4730	3
Site Planning	URP 4870	3

Notes:

(1) Contributes to University Core Curriculum requirements.

(2) Contributes to Writing Across Curriculum (Gordon Rule) writing requirement.

(3) Intellectual Foundations Program courses, totaling 6 credits, must be selected to satisfy Writing Across Curriculum (Gordon Rule) writing requirements.

(4) Contributes to Gordon Rule mathematics requirement.

(5) Includes a 1-credit laboratory.

(6) Students pursuing the GIS certificate should consider taking these courses.

(7) This course has grading S/U