

PROGRAM CIP CHANGE REQUEST FORM
Board of Governors, State University System of Florida

UNIVERSITY: Florida Atlantic University, Boca campus
(If applicable, please include the campus)

PROGRAM NAME: B.S. Geomatics Engineering --> B.S. Engineering Technology

DEGREE LEVEL(S): B.S.E.T.
(B, M, Ed.D., Ph.D., etc)

OLD/CURRENT CIP CODE: 14.3801

NEW/REQUESTED CIP CODE: 15.9999

NEW CIP CODE EFFECTIVE TERM: Fall 2018
(First term for students in the program using the new CIP code)

Please use this form to notify the Board of Governors, State University System of Florida that an institution intends to change the CIP code for an already existing degree program and begin reporting enrollments and degrees data under the new CIP code. This action will allow for more accurate data analysis of enrollment and degree productivity as well as it will initiate any necessary changes to the articulation manuals and online search tools.

1. Provide a short background and rationale for the CIP change request.

The Department of Civil, Environmental & Geomatics Engineering currently offers undergraduate degree programs in Civil Engineering, Environmental Engineering, and Geomatics Engineering. Low degree productivity for the B.S. Geomatics Engineering (BSGE), recent changes to the Florida statute requirements for surveying licensure eligibility, retention/pipeline issues, and ABET accreditation changes have prompted the Department to make minor changes to the current curriculum and request a change in the program CIP code to Engineering Technology, which is better suited to the current curriculum. There is an enormous pressure from industry to produce graduates with training in surveying. The current BSGE program produces graduates with highly sought after skills but the number of graduates is very low compared to the industry demand. The major objective of this CIP code change is to broaden the number of students from the College of Engineering and Computer Science that can graduate with surveying skills to support the demand, and the Florida Surveying and Mapping Society has fully endorsed the revised curriculum.

The revised curriculum largely uses existing courses from the Department of Civil, Environmental & Geomatics Engineering. The only differences are summarized as follows:

Table 1. Curriculum Changes

B.S. Geomatics Engineering 14.3801 (Existing Program)	B.S. Engineering Technology 15.9999 (New CIP Code Change)	Change Benefits
Foundations of Mathematics and Quantitative Reasoning	<i>Removed MAC2313-Calculus with Analytical Geometry 3 and MAP 3305 – Engineering Math 1, although can still be taken as math electives</i>	Remove unnecessary requirement
Foundations of Science and the Natural World	<i>Removed PHY2049/L-General Physics 2 with lab as required and replaced with more flexible elective structure, so can still be taken as basic science elective</i>	Remove unnecessary requirement
ENT4024-Entrepreneuership, EGN4613-Engineering Economics, or SUR4430-Surveying Business Practices	<i>Replaced with Foundations of Business (select 2 business electives from a list of 6)*</i>	Increase flexibility
Engineering Fundamentals	<i>Same except removed SUR2034-Introduction to Geomatics Engineering from the required coursework</i>	Remove duplications
Geomatics Engineering Core	Instead of prescribing required courses, students can select 3 of 5 core course groupings** from the following: <ul style="list-style-type: none"> • Surveying Engineering Technology (12 credits) • Construction Engineering Technology (12 credits) • Environmental Engineering Technology (12 credits) • Engineering Mechanics Technology (12 credits) • Computing Technology (13 credits) 	Increase flexibility
Surveying Upper Division	Same except <ul style="list-style-type: none"> • <i>SUR3530-Geodesy and SUR4531/L-Satellite Positioning with Lab were combined to SUR4530/L-Geodesy and Geodetic Positioning</i> • <i>CCE4031-Construction Project Management and TTE3004C-Intro to Transportation Engineering were moved from technical electives to restricted electives</i> 	Increase efficiency and flexibility
Geographic Information Systems (GIS)	<i>All GIS courses were moved from list of required courses to technical electives per the request of the Department of Geosciences</i>	Increase flexibility
Capstone Requirement (6 credits)	<i>CGN4803C and CGN4804C were replaced with ETG4670-Engineering Technology Capstone (3 credits)</i>	Reduce design component
Technical Electives (6 credits)	Technical Electives (17-18 credits)	Increase flexibility
Total Credits (120 credits)	Total Credits (120 credits)	No change

Table 2 Course Title Changes

B.S. Geomatics Engineering 14.3801 (Existing Program)	B.S. Engineering Technology 15.9999 (New CIP Code Change)	Change Benefits
SUR2101/L-Fundamentals of Surveying with Lab	SUR3103/L-Geomatics with Lab	Better reflect the course content
SUR3643-Surveying Data Analysis	SUR3643-Measurement Theory and Data Adjustments	Better reflect the course content
SUR4403-Legal Aspects of Surveying	SUR4403-Cadastral Principles and Legal Aspects	Better reflect the course content
SUR4150C-Intro to Terrestrial Laser Scanning	CCE4516-Intro to Laser Mapping Technology	Better reflect the course content

* Because the aging workforce in surveying in which a large majority of the licensed professionals are above the age of 55 and the fact that the average size of a surveying company is 2.5 individuals, the likelihood of graduates being thrust into ownership roles is very high; therefore, it is essential that students have business/entrepreneurship skills, which is why we teamed up with the College of Business to create a group of specialized courses from which students can select 2 courses to satisfy the Foundations of Business.

** The core course groupings include classes that are currently existing and being offered regularly, and many of the courses in the table were simply moved from the list of technical electives in the existing CIP code into these new restricted electives.

Other Benefits:

- 1) The more flexible BSET curriculum was designed to accommodate current students matriculating in the existing CIP code as well as students in the pre-professional engineering program who are not eligible to declare an engineering major.
- 2) The new framework will facilitate advising, improve retention, shorten graduation times, increase headcount, and increase degree completions
- 3) The new degree title will be to the advantage of the degree marketability and employment opportunities for graduates.
- 4) The revised curriculum is designed to allow students who select the appropriate courses to complete the GIS certificate and the surveying and mapping certificate, if desired, as well as ensure eligibility for the Fundamentals of Surveying licensing exam for those that choose the surveying engineering technology course grouping and appropriate technical electives.
- 5) The curriculum is intended to meet ABET accreditation requirements in Engineering Technology.
- 6) With the expansion of technical electives from 6 credits to 17-18 credits, graduates can choose courses that will increase their likelihood of passing the Fundamentals of Engineering exam, if eligible, and if they choose the appropriate course options, they may be eligible for the computer science minor or entrepreneurial management minor.

2. Explain the impact of the proposed change on the current faculty and current and future students.

The curriculum for new CIP code largely uses existing courses from the Department of Civil, Environmental & Geomatics Engineering as well as the other degree programs in the College of Engineering and Computer Science. Two existing courses are combined (Geodesy and Satellite Positioning). The net effect is that 2 less core courses are required in the newer program, so faculty will have more flexibility to offer electives. Four existing courses will undergo name changes to better reflect the course content, and the existing capstone course will undergo a minor revision. The curriculum now has more flexibility and was designed to accommodate current students matriculating in the existing CIP code. We anticipate that the new framework will facilitate advising, improve retention, shorten graduation times, increase headcount, and increase degree completions, while the new degree title will be to the advantage of the degree marketability and employment opportunities for graduates. The curriculum is designed to allow students who select the appropriate courses to complete the GIS certificate and the surveying and mapping certificate, if desired, as well as ensure eligibility for the Fundamentals of Surveying licensing exam for those that choose the surveying core grouping and appropriate technical electives. The curriculum is intended to meet ABET accreditation requirements in Engineering Technology. With the expansion of technical electives, graduates can choose courses that will increase their likelihood of passing the Fundamentals of Engineering exam, if eligible, and if they choose the appropriate course options, they may be eligible for the computer science minor or entrepreneurial management minor.

Transition Plan: Analysis of the current BSGE headcount reveals that there are 20 declared majors in the program. Nine of these are currently in the capstone sequence and scheduled to graduate in Spring or Summer 2018, which leaves 11 remaining. Of those 4 are scheduled to start the capstone sequence in Fall 2018, which means that they have very few upper division requirements remaining and can be easily accommodated. Another 4 students have not registered for classes recently or have been academically dismissed or otherwise have interrupted their enrollment to pursue other interests, so this leaves only 3 students that may require directed independent study to complete the BSGE degree unless they choose to voluntarily switch to the new CIP code curriculum.

3. Provide evidence that considerations have been given to the impact of this CIP change on existing programs at the university, and the possibility that the program using the new CIP will duplicate already existing programs at other SUS institutions.

No negative impact on other programs or other Departments at FAU are foreseen as the

requested CIP change only affects the programs housed in a single academic unit. On the contrary, we anticipate a positive impact will be that the new curriculum will help in advising, retention, speed of graduation, and employment prospects. Within the SUS, no engineering technology degree programs currently exist, except at UWF and most recently at FIU (spring 2018). The UWF program is significantly different – in name (General Engineering Technology) and focus (3 tracks – Electrical, Construction, and Instruction). The FIU program is a BS in the Internet of Things, which is also completely different, focusing on managing networks and smart systems. In addition, we have consulted with our partners in the Geosciences Department who have been offering core classes for the B.S.G.E. program since its inception, and we have also consulted with the other departments in the College of Engineering and Computer Science. The curriculum has no change to courses from these other departments, and they see only positive impacts in our continued cooperation and close collaboration, as evidenced in their support letters.

- 4. If applicable, please explain how the CIP change will impact the program's listing in a Programs of Strategic Emphasis (PSE) category. Please provide a rationale to support the need for the program to be included in a PSE category, if it is not already included in a PSE category.**

The current CIP for the B.S.G.E. program (14.4801) is listed as a Program of Strategic Emphasis (PSE). The new CIP code is closely related to the following existing PSE CIP codes: 14.0101 (Engineering, General), 15.1001 (Construction Engineering Technology), 15.1005 (unknown), 15.0303 (Electrical, Electronic and Communications Engineering Technology/Technician), 15.1102 (Surveying Technology), 15.1202 (Computer Technology/Computer Systems Technology), and 15.1501 (Engineering/Industrial Management). We are working under the assumption that the new curriculum with the new CIP code will eventually be included on the PSE list if the CIP change is approved because it combines aspects of construction, computing, general engineering, and surveying engineering technology.

- 5. For baccalaureate programs please identify any related changes to the approved common prerequisites and degree program length.**

The existing common prerequisites will be reduced from 7 to 2 as described in the table in question number 6 that follows. All previous common prerequisites can be counted towards the new CIP degree program. In addition, the existing B.S.G.E. program was 120 credits, and the requested curriculum change with the new CIP code has no change to the number of credits required for graduation.

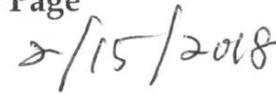
6. If this is a baccalaureate program, please list the common prerequisites for the current CIP code as listed in the program's curriculum and the common prerequisites associated with the new CIP code.

Existing 14.3801	Proposed 15.9999
MACX311 or MACX281 (4)	Same - MACX311 or MACX281 (4)
MACX312 or MACX282 (4)	Not required but counts toward the math restricted elective (4)
MACX313 or MACX283 (4)	Not required
MAPX302 or MAPX305 (3)	Not required but counts toward the math restricted elective (3)
CHMX045/X045L (4) or CHMX045C (4) or CHSX440/X440L (4)	Not required but counts toward the Physical and Natural Science restricted elective (4)
PHYX048/X048L (4) or PHYX048C (4) or PHYX043/X048L (4)	Not required but counts toward the Physical and Natural Science restricted elective (4)
PHYX049/X049L (4) or PHYX049C (4) or PHYX044/X049L (4)	Not required but counts toward the physical and natural science restricted elective (4)
	COPX220 or COPX001

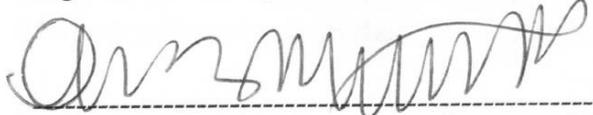
CIP Change Request Form - Signatures Page



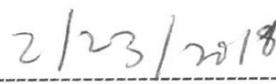
Signature of Requestor/Initiator



Date



Signature of College Dean/Chair



Date

Signature of President or Vice President for
Academic Affairs

Date