SOFTWARE ENGINEERING (B.S.)

The Bachelor of Science (B.S.) in Software Engineering prepares students in the theory and methods of systematic and rigorous construction and maintenance of software for industrial, scientific, and commercial applications.

Software engineering concerns the design, implementation, testing and maintenance of software. Software engineers design and develop many types of software, including business applications, embedded systems, computer games, operating systems, and networks. According to the 2020 Occupational Outlook Handbook from the U.S. Bureau of Labor Statistics, employment of software developers is projected to grow 21 percent from 2018 to 2028, much faster than the average for all occupations. Software developers will be needed to respond to an increased demand for computer software.

The FGCU B.S. in Software Engineering degree program will produce graduates who:

- successfully enter chosen careers in traditional and contemporary areas of software engineering and/or graduate studies,
- practice life-long learning in their professions, adapting to the rapidly changing technological world.

Program Progression and Additional Graduation Requirements

Students admitted to FGCU as a degree seeking student in good academic standing may declare a major in engineering. All engineering majors must satisfy the academic milestones as described in the student guidebook. Refer to the Software Engineering (B.S.) Student Guidebook for further information on milestones.

In addition to the program requirements, students must:

- Complete a minimum of 120 credits.
- Complete a minimum of 48 of the 120 credits at the upper division (3000-4999 level).
- Earn a cumulative GPA of 2.0 for all coursework attempted at FGCU.
- Satisfy the College-Level Skills and foreign language entrance requirements.
- Satisfy the Service-Learning requirement.
- Satisfy the Civic Literacy requirement.
- Satisfy the residency requirement: 30 of the last 60 credits, including 12 credit hours in the major must be completed at FGCU. Also, CEN 4934 and CEN 4935 must be taken at FGCU.
- Complete the summer course enrollment requirement.
- Submit an application for graduation by the deadline listed in the FGCU Academic Calendar.

Program Requirements

Code	Title	Credits
FGCU General Education Program (https://www.fgcu.edu/academics/undergraduatestudies/generaleducation/)		
To prevent or minimize excess hours, select general education courses that satisfy common prerequisite requirements for your intended major.		
Common Prerequisites		
For this major, common prerequisite courses with an asterisk (*) require prior knowledge and skills demonstrated through degree acceleration programs (e.g., the College Board's Advanced Placement Program [AP], International Baccalaureate Program [IB], College-Level Examination Program [CLEP], Advanced International Certificate of Education Program [AICE]); dual enrollment; placement exam; or college coursework.		
A minimum grade of C is required in each course		
COP 1500	Intro to Computer Science (Acceptable Substitute: COPX500 or COP X000) *, 1	3
COP 2006	Programming I (Acceptable Substitute: COP X250, COP X253, or COP X800)	3
MAC 2311	Calculus I (Acceptable Substitute: MACX311) *, 2	4
MAC 2312	Calculus II (Acceptable Substitute: MACX312)	4
PHY 2048 & 2048L & PHY 2049 & PHY 2049L	General Physics I and General Physics I Laboratory and General Physics II and General Physics II Laboratory (Acceptable Substitute: [(PHYX048 and PHYX048L) and (PHYX049 and PHYX049L)] or (PHYX048C and PHYX049C))	8
STA 2023	Statistical Methods (Acceptable Substitute: STAX023 or STAX037) *, 3	3
or STA 2037		
Math Electives (6-7 credits) from the following:		6-7
MAC 2313	Calculus III	4
MAP 2302	Differential Equations	3
MHF 2191	Mathematical Foundations	3
MHF 2310	Symbolic Logic (Acceptable Substitutes: (6-7 credits) from: MACX313 or MAPX302 or MHFX191 or MHFX310)	3
Science Electives (4 credits) from the following:		4
BSC 1010C	General Biology with Lab I	4
BSC 1011 & 1011L	General Biology II and General Biology II Laboratory	4
CHM 1045 & 1045L	General Chemistry I and General Chemistry I Laboratory *, 4	4
CHM 1046 & 1046L	General Chemistry II and General Chemistry II Lab	4
GLY 1010C	Physical Geology (Acceptable Substitutes: BSCX010C or (BSCX010 and BSCX010L) or BSCX011C or (BSCX011 and BSCX011L) or CHMX045C or (CHMX045 and CHMX045L) or GLYX000C or GLY X010C or (GLY X010 and GLYX010L))	4
Required Courses in the Major		**(36 credits)**
A minimum grade of C is required in each course		
CEN 3031	Software Engng Fundamentals	3
CEN 3073	Requirements Engr & Analysis	3
CEN 3078	Computer Security	3
CEN 4065	Software Architecture & Design	3

CEN 4072	Software Testing	3
CEN 4934	Senior Software Engr Project I	3
CEN 4935	SeniorSoftware Engr Project II	3
COP 3003	Programming II	3
COP 3530	Data Structures & Algorithms	3
COP 3710	Intro to Data Engineering	3
COP 4610	Operating Systems	3
MAD 3107	Discrete Mathematics	3
Restricted Electives in the Major		**(21 credits)**
A minimum grade of C is required in each course		
CDA 3104	Comp Org'n & Assem Lang Prog [5]	3
or CDA 3200	Digital Systems & Architecture	
Complete two from the following: [5]		
CEN 3941	Internship in Software Engr	1-3
CEN 4083	Intro. to Cloud Computing	3
CEN 4721	Human Computer Interaction	3
COP 3350	Systems Admin and Programming	3
COT 3400	Design&Analysis of Algorithms	3
Complete four from the following: [5]		
CAP 4662	Introduction to Robotics	3
CAP 4730	Computer Graphics	3
CAP 4770	Knowledge Disc. & Data Mining	3
CDA 3104	Comp Org'n & Assem Lang Prog	3
CDA 3200	Digital Systems & Architecture	3
CDA 4150	Computer Architecture	3
CEN 3941	Internship in Software Engr	1-3
CEN 4026	Software Maint & Evolution	3
CEN 4083	Intro. to Cloud Computing	3
CEN 4216	Cyberphysical Systems	3
CEN 4721	Human Computer Interaction	3
CEN 4930	Special Topics in Software Eng	1-3
COP 3350	Systems Admin and Programming	3
COP 4908	Independent Study	3
COP 4931	Special Topics in Comp. Sci.	3
COT 3400	Design&Analysis of Algorithms	3
The same course that is used to satisfy a **required** class for major cannot meet a **restricted elective**, e.g., COT 3400 can either count as a required class for major or a restricted elective, but not both.		
Sustainability Course Graduation Requirement		**(3 credits)**
Select at least 3 credits in sustainability coursework (SCGR Attribute)		
Additional Electives		
As needed to reach total credits required for the degree		

1 Prerequisites of MAT 1033 Intermediate Algebra minimum grade of C then MAC 1105 College Algebra Minimum grade of C; or relevant accelerated credit; or placement exam

2 Prerequisites of MAT 1033 Intermediate Algebra minimum grade of C then MAC 1105 College Algebra minimum grade of C then MAC 1147 Precalculus minimum grade of C; or relevant accelerated credit; or placement exam

3 For STA 2023 Statistical Methods Prerequisites of MAT 1033 Intermediate Algebra minimum grade of C; or relevant accelerated credit; or placement exam

4 Prerequisites of MAT 1033 Intermediate Algebra minimum grade of C then MAC 1105 College Algebra minimum grade of C; or relevant accelerated credit; or placement exam

5 Additional courses and/or substitutions may be permitted with approval of the Academic Unit housing the degree program or major.

Total Credits Required: 120