COLLEGE OF ENGINEERING

INFORMATION TECHNOLOGY B.S.I.T.

TOTAL DEGREE HOURS: 120

The Information Technology program focuses on programming, databases, networking, human-computer interaction, web systems, and cybersecurity to meet the technology requirements of business, government, healthcare, education, and other organizations. Students in this program acquire the right combination of fundamental knowledge and practical expertise to solve computing technology problems and meet user needs.

MISSION STATEMENT

In keeping with the mission of the College of Engineering, the Department of Computer Science and Engineering strives for excellence in teaching, research, and public service. Specifically, the Department aspires to:

1. Lead the advancement of computer science, computer engineering, information technology, and cybersecurity through internationally recognized research and education, as well as technology transfer.
2. Prepare students for full and ethical participation in a diverse society and encourage lifelong learning.
3. Educate students in the best practices of the field as well as integrate the latest research into the curriculum.
4. Foster the development of problem solving and communication skills as an integral component of the profession.
5. Provide quality learning experiences through effective classroom practices, active learning styles of teaching, and opportunities for meaningful interactions between students and faculty.

PROGRAM EDUCATIONAL OBJECTIVES AND STUDENT OUTCOMES

The Department has established the following program educational objectives for the Computer Engineering graduates.

Objective 1: Our graduates will apply their knowledge and skills to succeed in their careers and/ or obtain an advanced degree.

Objective 2: Our graduates will function ethically and responsibly, and will remain informed and involved as full participants in our profession and society.

Objective 3: Our graduates will creatively solve problems, communicate effectively, and successfully function in multi-disciplinary teams.

Objective 4: Our graduates will apply principles and practices of information technology to identify, implement, and enable effective technologies and apply fundamental computing knowledge to solve information technology problems.

The following are the Student Outcomes. Graduates of the program will have an ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.

Student Enrollment Data

Student enrollment data is posted on the Department website.

COLLEGE OF ENGINEERING

UNIVERSITY ADMISSIONS - COLLEGE OF ENGINEERING

Admission to the University is based on the University's Undergraduate Admission Requirements that may be found by clicking on the following urls:

- **Freshman:** https://www.usf.edu/admissions/freshmen/admission-information/requirements-deadlines.aspx
- **Transfer:** https://www.usf.edu/admissions/transfer/admission-information/index.aspx
- **International:** https://www.usf.edu/admissions/international/admission-information/index.aspx

For Admission information specific to the College of Engineering, see the information at College of Engineering.

PROGRESSION REQUIREMENTS IN THE UPPER DIVISION - INFORMATION TECHNOLOGY B.S.I.T.

Information Technology students who have fully met the below requirements and are in good standing may progress into the upper division of the major. Prior to progression into the upper division, a student may be permitted to take no more than two Departmental courses. The department may have continuation requirements, which specify minimum performance standards in core major courses which must be met before further registration in the department is granted.

1. Completion of with a minimum grade of C in each course (grades of C- are insufficient)
    - **MAD 2104 - Discrete Mathematics Credit(s): 3**
    - **STA 2023 - Introductory Statistics I Credit(s): 3**
    - **PHY 2020 - Conceptual Physics Credit(s): 3**
    - **MAC 1147 - Precalculus Algebra and Trigonometry Credit(s): 4**

All students must complete the equivalent of USF Discrete Mathematics (MAD 2104), Introductory Statistics (STA 2023), Conceptual Physics (PHY 2020), and Pre-calculus with Algebra and Trigonometry (MAC 1147) with minimum grades of C in each course (grades of C- are insufficient). The minimum overall grade average in these four courses required for progression to the upper level is between 2.0 and 3.5 for any given year. The minimum acceptable grade average will be posted on the department's website one year prior to the fall semester that the revised grade average is applicable. The computed grade average is based on the best attempts in these courses. These requirements must be met with a maximum of two attempts allowed for each course.

2. A minimum overall GPA of 2.0
3. A minimum USF GPA of 2.0
4. Completion of CGS 1540 - Introduction to Databases for Information Technology **Credit(s): 3** with a minimum grade of B (grade of B- is insufficient) or another introductory database course with a minimum grade of B (grade of B- is insufficient).

DEPARTMENTAL POLICIES

In addition to the College's graduation requirements, the department has the following policies:

1. Mandatory academic advising and/or mentoring of students.
2. Exit interview and/or survey as a graduation requirement.

STATE MANDATED COMMON COURSE PREREQUISITES - INFORMATION TECHNOLOGY B.S.I.T.

Following Florida BOG Regulation 8.010, state mandated common course prerequisites are lower-division courses that are required for progression into the upper division of a particular baccalaureate degree program.

Transfer students should complete the State Mandated Common Course Prerequisites at the lower level prior to entering the university. If these courses are not taken at a Florida College System institution, they must be completed before the degree is granted. Successful completion of the common prerequisites alone does not guarantee a student admission into the degree program.

Unless stated otherwise, a grade of C is the minimum acceptable grade in prerequisite courses.

- MAC X000-X999 Any Precalculus course - 3 credit hours
- MAD X000-X999 Any Discrete Mathemtics course - 3 credit hours
- PHY X000-X999 Physics - 3 credit hours
- PSY X000-X999 Psychology - 3 credit hours
- CGS X000-X999 Any Database course - 3 credit hours
- STA X023 Introductory Statistics I **OR** STA X122 Social Science Statistics - 3 credit hours
- ECO X013 Economic Principles II Macroeconomics - 3 credit hours
- COP X000-X999 Any Computer Programming course - 3 credit hours
- COP X000-X999 Any Computer Programming course - 3 credit hours

Note: Introductory Programming in C, C++, Java, Python or equivalent language. Choose programming language required by the university to which the student wishes to transfer.

REQUIRED COURSES: (102 CREDIT HOURS)

MAJOR CORE COURSES: 36 COURSES; 87 CREDIT HOURS

MATH AND SCIENCE COURSES: 5 COURSES; 16 CREDIT HOURS

- STA 2023 - Introductory Statistics I **Credit(s): 3**
- MAC 1147 - Precalculus Algebra and Trigonometry **Credit(s): 4**
- MAD 2104 - Discrete Mathematics **Credit(s): 3**
- PHY 2020 - Conceptual Physics **Credit(s): 3**
- SGEN - General Education Core Natural Sciences Elective

BREADTH COURSES: 3 COURSES; 9 CREDIT HOURS

- PSY 2012 - Introduction to Psychological Science **Credit(s): 3**
- ECO 2013 - Economic Principles (Macroeconomics) **Credit(s): 3**
- INR 3033 - International Political Cultures **Credit(s): 3** *

  * If you are planning to transfer into the Computer Engineering program after obtaining an AA degree, a substitute for this course should be taken as part of your two-year degree program at the lower level to be equated into USF's upper-level curriculum. Please refer to the Fuse Graduation Pathway, or your advisor, for guidance on equivalent lower-level courses. See https://www.usf.edu/undergrad/transfer-student-success/fuse/graduation-paths/index.aspx for more information.

BASIC ENGINEERING COURSES: 2 COURSES; 3 CREDIT HOURS

- EGN 3000 - Foundations of Engineering **Credit(s): 0-3**
- EGN 3000L - Foundations of Engineering Lab **Credit(s): 3**

SPECIALIZATION COURSES: 17 COURSES; 50 CREDIT HOURS

- CEN 3722 - Human Computer Interfaces for Information Technology **Credit(s): 3**
- CGS 1540 - Introduction to Databases for Information Technology **Credit(s): 3**
- CGS 3303 - IT Concepts **Credit(s): 3**
- CGS 3853 - Web Systems for IT **Credit(s): 3**
- CIS 3213 - Foundations of Cybersecurity **Credit(s): 3**
- CIS 3433 - System Integration and Architecture for IT **Credit(s): 3**
- CIS 4083 - Cloud Computing for IT **Credit(s): 3**
- CIS 4253 - Ethics for Information Technology **Credit(s): 3**
- CIS 4935 - Senior Project in Information Technology **Credit(s): 4**
- CNT 4104 - Computer Information Networks for Information Technology **Credit(s): 3**
- CNT 4104L - Computer Information Networks Laboratory for Information Technology **Credit(s): 1**

- CNT 4603 - System Administration and Maintenance for Information Technology **Credit(s): 3**
- COP 2512 - Programming Fundamentals for Information Technology **Credit(s): 3**
- COP 2513 - Object Oriented Programming for Information Technology **Credit(s): 3**
- COP 3515 - Advanced Program Design for Information Technology **Credit(s): 3**
- COP 4538 - Data Structures and Algorithms for Information Technology **Credit(s): 3**
- COP 4703 - Advanced Database Systems for Information Technology **Credit(s): 3**

COMPOSITION AND TECHNICAL WRITING COURSES: 3 COURSES; 9 CREDIT HOURS

- ENC 1101 - Composition I **Credit(s): 3**
- ENC 1102 - Composition II **Credit(s): 3**
- ENC 3246 - Communication for Engineers **Credit(s): 3**

MAJOR ELECTIVES: 5 COURSES; 15 CREDIT HOURS

The Department website undergraduate section contains the most up-to-date list of Approved IT Electives. These posted lists also describe the required pre-requisites for the electives. Additional electives may be available with a Special Topics course number (e.g., COP 4931 - Special Topics for Information Technology). Consult with the Department Undergraduate Advisor to learn more about available electives. A maximum of nine (9) hours combined of COP 4900 - Independent Study in Information Technology Independent Study and CIS 4947 - Industry Internship for IT Industry Internship for Information Technology are allowed as Department credit, with no more than 3 hours in any one given company for CIS 4947 credit

- CAP 4136 - Malware Analysis and Reverse Engineering **Credit(s): 3**
- CEN 4360 - Mobile Applications Development for IT **Credit(s): 3**
- CIS 4200 - Penetration Testing for IT **Credit(s): 3**
- CIS 4361 - Information Assurance and Security Management for IT **Credit(s): 3**
- CIS 4947 - Industry Internship for IT **Credit(s): 1-5**
- CNT 4403 - Network Security and Firewalls **Credit(s): 3**
- COP 3353 - User-Level Introduction to Linux for IT **Credit(s): 3**
- COP 4564 - Application Maintenance & Debugging for IT **Credit(s): 3**
- COP 4883 - Java Programming for Information Technology **Credit(s): 3**
- CTS 4337 - Linux Workstations System Administration for IT **Credit(s): 3**
- COP 4900 - Independent Study in Information Technology **Credit(s): 1-5**

INFORMATION TECHNOLOGY B.S.I.T. - ADDITIONAL INFORMATION

GPA REQUIREMENTS

Students must have and maintain a minimum 2.0 semester GPA, 2.0 Math and Science GPA, 2.0 Engineering GPA, 2.0 Specialization GPA, 2.0 USF GPA, and 2.0 overall GPA.

GRADING REQUIREMENTS

Unless otherwise stated, the minimum acceptable grade in all BSIT required math, science, and engineering courses is a C or higher (C- is insufficient). The minimum acceptable grade in state mandated prerequisite courses is a C or higher (C- is insufficient). The minimum acceptable grade in a specialization course is a C-, expect as stated in the major progression and continuation requirements.

RESIDENCY REQUIREMENTS

Transfer students must complete a minimum number of approved major core courses in the major at USF. The minimum number of USF major core credit hours required is established by the respective academic department. In

no case will this be less than 18 hours. Basic engineering courses are not considered specialization courses. The University residency requirement must also be met.

A concurrent degree (dual degree) student must meet the requirements of each major and have a minimum of 18 approved specialization hours taken in the degree granting department beyond those specialization hours required for the first degree.

INTERNSHIP OPPORTUNITIES

The College of Engineering and USF's Career Services Cooperative Education (Co-Op) program provides services for students interested in experiential educational experiences. A wide variety of industries and government agencies offer internships and cooperative education employment opportunities for engineering students. Participants gain valuable expertise in practical applications and other aspects of operations and development in a professional engineering environment. Students normally apply for participation in this program during their first year in the engineering college and pursue actual internships during their sophomore, junior, and senior years. See the Department Undergraduate Advisor for more information on earning academic credit for internships.

BACHELOR'S/MASTER'S PATHWAYS

Students majoring in Information Technology have the option to pursue the following Bachelor's/Master's Pathways:

- B.S.I.T. in Information Technology and M.S.I.T. Information Technology

For more information, see the Graduate Catalog.

RESEARCH OPPORTUNITIES - COLLEGE OF ENGINEERING

Undergraduate students in any degree program are able to participate in undergraduate research. Several options exist to show mentored undergraduate research activity on a student's official transcript. Those who wish to enroll in an undergraduate research course should consult with their academic advisor to understand how the credit will apply towards the degree requirements. If no credit is needed, students may be eligible to enroll in the 0-credit IDS 4914 - Advanced Undergraduate Research Experience course. This course will not impact degree credits or GPA but will show on an official transcript and document the experience. The Office of High Impact Practices and Undergraduate Research (HIPUR) is able to assist with further inquiries.

ADVISING INFORMATION - INFORMATION TECHNOLOGY B.S.I.T.

Department Undergraduate Advisor: http://www.usf.edu/engineering/cse/undergraduate/contacts.aspx.

4 YEAR PLAN OF STUDY - INFORMATION TECHNOLOGY B.S.I.T.

NOTES:

- SCIV - Civics Literacy needs to be completed prior to graduation. For more information, see https://www.usf.edu/undergrad/students/civics-literacy.aspx or talk with your academic advisor.
- Items that are critical are marked with a ✳ and are included in the plan for a student to stay on track.

Potential Entry Level Job Titles:

- Information Technology Specialist
- System Administrator
- Database Administrator
- Network Administrator

Potential Entry Level Salary Range:

$45,000 - $75,000

COLLEGE OF ENGINEERING

YEAR 1

SEMESTER 1 (FALL)

- EGN 3000 - Foundations of Engineering **Credit(s): 0-3**
- ENC 1101 - Composition I **Credit(s): 3**
- MAC 1147 - Precalculus Algebra and Trigonometry **Credit(s): 4**
- ✳ CGS 1540 - Introduction to Databases for Information Technology **Credit(s): 3**
- EGN 3000L - Foundations of Engineering Lab **Credit(s): 3** Note: TGEC - Creative Thinking requirement is met with EGN 3000L.

NOTE: SCIV - Civics Literacy requirement needs to be fulfilled prior to graduation. See advisor.

Total Credit Hours: 13

SEMESTER 2 (SPRING)

- ✳ MAD 2104 - Discrete Mathematics **Credit(s): 3**
- ENC 1102 - Composition II **Credit(s): 3**
- PHY 2020 - Conceptual Physics **Credit(s): 3**
- ✳ COP 2512 - Programming Fundamentals for Information Technology **Credit(s): 3**
- SGEH - General Education Core Humanities **Credit(s): 3**

Total Credit Hours: 15

SEMESTER 3 (SUMMER)

Please consider pursing High Impact Practice opportunities this semester such as Education Abroad, Internship Opportunities, Community Engagement, or Research Opportunities.
Questions about opportunities? Schedule an appointment with your academic advisor.

YEAR 2

SEMESTER 4 (FALL)

- STA 2023 - Introductory Statistics I **Credit(s): 3**
- ✳ COP 2513 - Object Oriented Programming for Information Technology **Credit(s): 3**
- ECO 2013 - Economic Principles (Macroeconomics) **Credit(s): 3** Note: SGES - General Education Core Social Sciences is met with ECO 2013.
- CGS 3303 - IT Concepts **Credit(s): 3**

Total Credit Hours: 12

SEMESTER 5 (SPRING)

- CIS 3213 - Foundations of Cybersecurity **Credit(s): 3**
- COP 3515 - Advanced Program Design for Information Technology **Credit(s): 3**
- PSY 2012 - Introduction to Psychological Science **Credit(s): 3** Note: SGES - General Education Core Social Sciences requirement is met with PSY 2012.
- INR 3033 - International Political Cultures **Credit(s): 3**

Total Credit Hours: 12

SEMESTER 6 (SUMMER)

- General Elective **Credit(s): 3**
- TGED - Human & Cultural Diversity **Credit(s): 3**
- TGEI - Information and Data Literacy **Credit(s): 3**

Total Credit Hours: 9

YEAR 3

SEMESTER 7 (FALL)

- COP 4538 - Data Structures and Algorithms for Information Technology **Credit(s): 3**
- CEN 3722 - Human Computer Interfaces for Information Technology **Credit(s): 3**
- CIS 3433 - System Integration and Architecture for IT **Credit(s): 3**
- General Elective **Credit(s): 3**
- Natural Science Elective (Life or Physical) **Credit(s): 3**

Total Credit Hours: 15

SEMESTER 8 (SPRING)

- CGS 3853 - Web Systems for IT **Credit(s): 3**
- CNT 4104 - Computer Information Networks for Information Technology **Credit(s): 3**
- CNT 4104L - Computer Information Networks Laboratory for Information Technology **Credit(s): 1**
- ENC 3246 - Communication for Engineers **Credit(s): 3**
- General Elective **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**

Total Credit Hours: 16

SEMESTER 9 (SUMMER)

- Internship/Co-op Participation (see advisor for credit options - CIS 4947)

Total Credit Hours: 0

YEAR 4

SEMESTER 10 (FALL)

- CIS 4083 - Cloud Computing for IT **Credit(s): 3**
- COP 4703 - Advanced Database Systems for Information Technology **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**
- CNT 4603 - System Administration and Maintenance for Information Technology **Credit(s): 3**

Total Credit Hours: 15

SEMESTER 11 (SPRING)

- CIS 4253 - Ethics for Information Technology **Credit(s): 3** Note: TGEE - Ethical Reasoning & Civic Engagement requirement is met with CIS 4253.
- CIS 4935 - Senior Project in Information Technology **Credit(s): 4** Note: TGEH - High Impact Practice requirement is met with CIS 4935.
- Approved IT Elective **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**

Total Credit Hours: 13

2 YEAR PLAN OF STUDY - INFORMATION TECHNOLOGY B.S.I.T.

NOTES:

- SCIV - Civics Literacy needs to be completed prior to graduation. For more information, see https://www.usf.edu/undergrad/students/civics-literacy.aspx or talk with your academic advisor.

- Items that are critical are marked with a ✳ and are included in the plan for a student to stay on track.

YEAR 1

SEMESTER 1 (FALL)

- EGN 3000 - Foundations of Engineering **Credit(s): 0-3**
- CGS 3303 - IT Concepts **Credit(s): 3**
- CIS 3213 - Foundations of Cybersecurity **Credit(s): 3**
- COP 3515 - Advanced Program Design for Information Technology **Credit(s): 3**
- CIS 3433 - System Integration and Architecture for IT **Credit(s): 3**
- ENC 3246 - Communication for Engineers **Credit(s): 3**

NOTE: SCIV - Civics Literacy requirement needs to be fulfilled prior to graduation. See advisor.

Total Credit Hours: 15

SEMESTER 2 (SPRING)

- COP 4538 - Data Structures and Algorithms for Information Technology **Credit(s): 3**
- CEN 3722 - Human Computer Interfaces for Information Technology **Credit(s): 3**
- CIS 4083 - Cloud Computing for IT **Credit(s): 3**
- CNT 4104 - Computer Information Networks for Information Technology **Credit(s): 3**
- CNT 4104L - Computer Information Networks Laboratory for Information Technology **Credit(s): 1**
- Approved IT Elective **Credit(s): 3**

Total Credit Hours: 16

SEMESTER 3 (SUMMER)

- Internship/Co-op Participation (see advisor for credit options - CIS 4947 - Industry Internship for IT)

Total Credit Hours: 0

YEAR 2

SEMESTER 4 (FALL)

- COP 4703 - Advanced Database Systems for Information Technology **Credit(s): 3**
- CGS 3853 - Web Systems for IT **Credit(s): 3**
- CNT 4603 - System Administration and Maintenance for Information Technology **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**

Total Credit Hours: 15

SEMESTER 5 (SPRING)

- CIS 4935 - Senior Project in Information Technology **Credit(s): 4** (meets TGEH - High Impact Practice requirement)
- CIS 4253 - Ethics for Information Technology **Credit(s): 3** (meets TGEE - Ethical Reasoning & Civic Engagement requirement)
- Approved IT Elective **Credit(s): 3**
- Approved IT Elective **Credit(s): 3**

Total Credit Hours: 13