

COLLEGE OF ENGINEERING UNDERGRADUATE PROGRAMS



The information here is provided as a guide. The USF Undergraduate Catalogue (http://ugs.usf.edu/catalog/) is the only definitive source of program requirements.

Admission Requirements for First Time in College Students for All Engineering Majors and for the Computer Science Major*

*This excludes first-year students pursuing the either the information Technology major or Cybersecurity major, who only need to meet requirement #1 below.

First time in college students and lower division students with 30 credits or less, who meet the criteria below, are granted direct entry into the College of Engineering:

- 1. Admitted fully to the University of South Florida as a degree seeking student;
- 2. Test Scores:
 - SATM-a minimum quantitative score of 570 or
 - ACTM-a minimum score of 24 or
 - Completed College Algebra with a grade of C or better (not C-) or
 - Take College Algebra at USF before the first fall semester and get a grade of C or better (not C-).

Those students who do not meet the above criteria can be admitted to the college after satisfactorily completing Calculus I and II and Physics I with lab, all with a minimum grade of C or better (not C-) in no more than two (2) attempts per course while at USF. Two attempts includes withdrawal from a course. Additional requirements must be met prior to admission to specific degree programs.

Admission Requirements for Transfer Students for All Engineering Majors and for the Computer Science Major

(Excludes Admission Requirements for the Information Technology and Cybersecurity Majors - see below)

- 1. Admitted fully to the University of South Florida as a degree-seeking student with more than 30 earned credits.
- 2. Transfer students must complete all of the following courses with a grade of C or better (not C-) in each course (maximum two {2} attempts allowed to earn required grade and a withdrawal is considered an attempt:

Calculus I (MAC X281 or MAC X311 or equivalent) Calculus II (MAC X282 or MAC X312 or equivalent), and Calculus-based Physics I with lab (PHY X048 or PHY X045 and PHY X048L or PHY X045L or equivalent)

If a student does not meet these admissions requirements, the student can attempt to meet these transfer admission requirements in no more than two (2) attempts per course while at USF. If a grade of C is not attained in each of these courses in two or less attempts, the student will be redirected to another major.

For the specific state mandated common prerequisite courses for each major within the College of Engineering, please see the section titled, "State Mandated Common Prerequisites" located in each department's section of the catalog.

3. Florida College System transfer students who have met the minimum criteria above and have completed the prerequisites required for their major with the minimum grades and GPA required by the academic department are accepted directly into the College of Engineering and into the specific program/major.

Transfer Admission Requirements for the Information Technology Major or Cybersecurity Major

For the specific state mandated common prerequisite courses for the Information Technology major, please see the section titled, "State Mandated Common Course Prerequisites" located in the Information Technology major.

Real World Opportunities

Co-ops and Internships - These programs offer students numerous opportunities to engage with the broader engineering, technology and science community while gaining valuable on-the-job experience.

Engineering EXPO - This student-run event exposes schoolchildren to science and engineering principles in a two-day, on-campus event.

Research Experiences for Undergraduates - The program gives undergraduate students an opportunity to participate in research projects. Students work as research assistants with professors and graduate students on a variety of exciting and interdisciplinary research projects.

BEST@USF - The Bulls Engineering Success Training (BEST) program provides selected undergraduate students an interdisciplinary industry-based capstone design experience.

Bulls L.E.A.D. - The Bulls L.E.A.D. program helps sophomores and juniors develop the leadership skills and industry connections they need to excel in their chosen engineering fields after graduation.

Grand Challenges Scholars Program - The Grand Challenges Scholars Program is designed to prepare the next generation of students for addressing the grand challenges facing society in the 21st century with a focus on global perspectives, entrepreneurship and innovation.

Student Societies and Organizations by Department (not a complete list)

College of Engineering

- National Society of Black Engineers (NSBE)
- Society of Hispanic Professional Engineers (SHPE)
- Society of Asian Scientists and Engineers
- Society of Women Engineers (SWE)
- Theta Tau (Upsilon Gamma Chapter)
- Association of American University Women
- Tau Beta Pi (Florida Gamma Chapter)
- Engineers Without Borders

Chemical Engineering

- American Institute of Chemical Engineers
- Omega Chi Epsilon (Beat Kappa Chapter)

Civil Engineering

- Florida Water Environment Association (FWEA)
- Tampa Bay Association of Environmental Professionals
- American Society of Civil Engineers

Computer Science and Engineering

Women in Computer Science and Engineering

- Microsoft Developers Network
- Whitehatters Computer Security Club
- Society of Competitive Programmers
- RoboBulls
- IEEE Computer Society
- Association for Computer Machinery
- Brain Computer Interface Club

Electrical Engineering

• Institute of Electrical and Electronics Engineers (IEEE)

Industrial Engineering

• Institute of Industrial and Systems Engineers (IISE)

Mechanical Engineering

- Society of Automotive Engineers (SAE)
- American Society of Mechanical Engineers (ASME)

Medical Engineering

- Biomedical Engineering Society
- Engineering Medical Society

Fall Semester - Year 1

- MAC 2281 or MAC 2311 Calculus I 4
- CHM 2045 General Chemistry I 3
- CHM 2045L General Chemistry I Lab 1
- EGN 3000 Foundations of Engineering R
- EGN 3000L Foundations of Engineering Lab (TGEC) 3
- ENC 1101 Composition I 3

Total 14

Fall Semester - Year 2

- MAC 2283 or MAC 2313 Calculus III 4
- PHY 2049 General Physics II 3
- PHY 2049L General Physics II Lab 1
- 3 EGN 3311 Statics
- BME 4100 Biomedical Engineering 3
- 3 EGN 3443 Probability & Statistics for Engineers (TGEI)

Total 17

Fall Semester - Year 3

- 3 BME 4508 Biomedical Signals and Systems Analysis
- 3 BME 4503 Biomedical Instrumentation
- EGN 3373 Introduction to Electrical Systems I 3
- EGN 3365 or EMA 4003 Materials 3
- 3 General Education Core Humanities

Total 17

Spring Semester - Year 3

- **Spring Semester Year 1**
- MAC 2282 or MAC 2312 Calculus II 4
- 3 CHM 2046 General Chemistry II
- 1 CHM 2046L General Chemistry II Lab
- PHY 2048 General Physics I 3
- PHY 2048L General Physics I Lab 1
- ENC 1102 Composition II 3

Total 15

Spring Semester - Year 2

3

3

2

Total 16

- BME 3053 Computer Programming for BME 3
 - EGN 3343 Thermodynamics I
- EGN 3433 Modeling & Analysis Eng. Systems 3
- 3 BSC 2010 Bio I - Cellular Processes
- BSC 2010L Bio I Cellular Processes lab 1 *Gen Ed. Core Social Science Elective

Internship / Co-op

List Company / employer name and position

Summer Term - Year 2

3 CHM 2210 Org Chem I

1

Total 9

2 CHM 2210 Org Chem I Lab

Professional Elective

3 ENC 3246 Comm. for Engineers

- 3 BME 3312 Molecular and Cellular Eng.
 - BME 4409 Engineering Physiology 3

BME 4056C Biomedical Eng. Lab I

- BME 3082 Ethics for BME (ERCE) 3
- 3 EGN 3321 Dynamics

Total 14

Fall Semester - Year 4

- 3 BME 3032 Biomedical Transport Proces
- 2 BME 4057C Biomedical Engineering Lab II
- 3 BME 4882 Biomedical Engineering Design I
- 3 BME Upper-Level Elective
- STEM Upper-Level Elective 3
- ! Apply for Graduation

Total 14

Spring Semester - Year 4

- BME 4883 Biomedical Engineering Design II 3 (HIP)
- 3 **BME Upper-Level Elective**
- 3 STEM Upper-Level Elective
- 3 General Ed. Human & Cultural Diversity

Total 12

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$64,436 (NACE Fall 2018 Salary Survey)

Note: Limited Access Admission & Continuation requirements noted on overleaf. * Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test. TGE = Tampa General Education; C = Creative Thinking, I = Information & Data Literacy

ERCE = Ethical Reasoning & Civic Engagement,

HIP = High Impact Practice Capstone

Chemical Engineering

Bachelor of Science in Chemical Engineering (BSCH)

Spring Semester - Year 1

4 MAC 2282 or MAC 2312 Calculus II

CHM 2046 General Chemistry II

1 PHY 2048L General Physics I Lab

3 ECH 3854 Engineering Computations

3 PHY 2048 General Physics I

CHM 2046L General Chemistry II Lab



The Bachelor of Science degree program in Chemical Engineering is accredited by the Engineering Accreditation Comission of ABET www.abet.org

Fall Semester - Year 1

- 3 ENC 1101 Composition I
- MAC 2281 or MAC 2311 Calculus I 4
- HM 2045 General Chemistry I 3
- CHM 2045L General Chemistry I Lab 1
- R EGN 3000 Foundations of Engineering
- 3 EGN 3000L Foundations of Engineering Lab (TGEC)
- ECH 3002 Introduction to ChBME 2
- 16 Total

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 3 PHY 2049 General Physics II
- PHY 2049L General Physics II Lab 1
- 3 BSC 2010 Cellular Processes
- 3 ECH 3023 Material and Energy Balances
- 3 ENC 1102 Composition II

Total 17

Fall Semester - Year 3

- ECH 3266 Transport Phenomena I 3
- 3 ECH 4123 ChE Thermodynamics
- 3 Upper-Level Department or Science Elective

- **Spring Semester Year 3**
- 3 ECH 4504 Kinetics and Reaction Eng
- 3 ECH 4418 Separation Processes
- 3 ECH 4267 Transport Phenomena II
- 3 UL Department or Science Elective

Summer Semester - Year 1

3 Upper-Level Dept. Elective

Summer Semester - Year 2

3 Upper-Level Department Elective

Total 3

- 3 CHM 2211 Organic Chem. II or BCH 3053 Bio-
- Chem.
- 3 Gen. Ed. Information & Data Literacy

- 3 EMA 4003 Intro to Materials Science

Total 15

Internship / Co-op

List Company / employer name and position

3 Upper-Level Department Elective

Total 3

Fall Semester - Year 4

- 2 ECH 3240L Chemical Engineering Laboratory I
- 3 ECH 4605 Product and Process Systems Engineering
- 3 ECH 4680 Product Design and Manufacturing
- 3 ECH 4323 Process Dynamics and Control
- ECH 4715 Chemical Process Safety and Ethics 2
- ! Apply for Graduation

Total 13

Total 15

Spring Semester - Year 4

- 2 ECH 4241L Chemical Engineering Laboratory II
- 3 ECH 4615 Product and Process Design (HIP)
- 3 *General Elective
- 3 GenEd. Humanities Elective
- 3 *GenEd. Social Science Elective

Total 14

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$69,972 (NACE Fall 2018 Salary Survey)

Note: Courses in bold must be completed with an overall grade point average of 2.75, see overleaf. R – Required course * Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test. TGEC = Tampa General Education Creative Thinking HIP = High Impact Practice Capstone

3 CHM 2210 Organic Chemistry I 2 CHM 2210 Organic Chemistry I Lab

3

1

15 Total

Spring Semester - Year 2

3 ECH 4846 Numerical Methods

3 EGN 3343 Thermodynamics

3 Gen. Ed. Human & Cultural Diversity

3 EGN 3433 Modeling & Analysis Eng Syst

or MAP 2302 Differential Equations

Total 17

Civil Engineering

Bachelor of Science in Civil Engineering (BSCE)

The Bachelor of Science degree program in Civil Engineering is accredited by the Engineering Accreditation Comission of ABET

Fall Semester - Year 1

- 3 ENC 1101 Composition I
- 4 MAC 2281 or MAC 2311 Calculus I
- 3 CHS 2440 or CHM 2045 Chemistry I
- 1 CHS 2440L or CHM 2045L Chemistry I Lab
- R EGN 3000 Foundations of Engineering
- 3 EGN 3000L Foundations of Eng. Lab (TGEC)

14 Total

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 3 PHY 2049 General Physics II
- 1 PHY 2049L General Physics II Lab
- 3 ** EGN 3311 Statics
- 3 EGN 4453 Numerical & Computer Tools I
- 3 EGN 3365 Materials I

Total 17

Fall Semester - Year 3

- 3 ENV 4001 Environmental Systems Engineering
- 3 EGN 3343 Thermodynamics
- 3 TTE 4004 Transportation Engineering I 3 EGN 3443 Probability & Statistics for Eng
- (TGEI)
- 3 EGN4454 Numerical & Computer Tools II

Total 15

Fall Semester - Year 4

- 3 CEG 4011 Geotechnical Engineering I
- 1 CEG 4011L Geotechnical Lab
- 3 CE Track Elective
- 3 CE Track Elective
- 2 General Elective
- 3 EGN 3373 Intro to Electrical Systems I
- Total 15

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$54,892

(NACE Fall 2018 Salary Survey)

Spring Semester - Year 1

- 3 ENC 1102 Composition II
- MAC 2282 or MAC 2312 Calculus II 4
- 3 PHY 2048 General Physics I
- 1 PHY 2048L General Physics I Lab
- EGN 1113 Intro. to Design Graphics 3
- * General Education Core Social Science 3

17 Total

Spring Semester - Year 2

- 3 MAP 2302 Differential Eq. or EGN 3433 Modeling & Analysis of Eng Systems
- 3 EGN 3321 Dynamics
- 3 EGN 3353 Basic Fluid Mechanics
- 3 EGN 3331 Mechanics of Materials
- 1 EGN 3331L Mechanics of Materials Lab

Total 13

Spring Semester - Year 3

- 3 CES 3102 Structures I
- CWR 4202 Hydraulics 3
- 3 CE Track Elective
- 3 GLY 3850 Geology for Engineers
- ENV 4004L Environmental Lab 1
- CF Track Elective 3

Total 16

Spring Semester - Year 4

- 3 CGN 3021 Civil Engineering Lab
- 3 CE Track Elective
- 3 CE Capstone Design Requirement (HIP)
- 3 CGN 4122 Professional/Ethical Issues in Eng. (ERCE)
- 3 CE Track Elective

Total 15

Note: Courses in bold must be completed with an overall grade point average of 3.0, see overleaf. R - Required course

** - High Priority course that begins a five semester sequence

* Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test.

TGE = Tampa General Education; C = Creative Thinking, I = Information & Data Literacy, D = Human & Cultural Diversity ERCE = Ethical Reasoning & Civic Engagement HIP = High Impact Practice Capstone

3 ENC 3246 Communication for Engineers

Summer Semester - Year 2

Economics (TGED)

*Gen Ed. Core Humanities Elective

3 EGN 3615 Engineering

Total 9

3

Internship / Co-op

List Company / employer name and position



Computer Engineering

Spring Semester - Year 1

3 ENC 1102 Composition II

The Bachelor of Science degree program in Computer Engineering is accredited by the Engineering Accreditation Comission of ABET

Fall Semester - Year 1

- 4 MAC 2281 or MAC 2311 Calculus I
- 3 ENC 1101 Composition I
- 3 CHS 2440 or CHM 2045 Chemistry I
- 1 CHS 2440L or CHM 2045L Chemistry I Lab
- R EGN 3000 Foundations of Engineering
- EGN 3000L Foundations of Engineering Lab (TGEC) 3
- 14 Total

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 3 PHY 2049 General Physics II
- 1 PHY 2049L General Physics II Lab
- 3 *COP 3514 Program Design
- 3 State Gen Ed. Social Science Elective

Total 14

Spring Semester - Year 2

- 3 MAP 2302 Differential Eq or EGN 3433 Modeling & Analysis of Eng. Systems
- 3 *CDA 3103 Computer Organization
- 3 COT 3100 Intro Discrete Structures
- 3 COP 3331 Object Oriented Design
- 3 State Gen Ed. Core Humanities Elective

Total 15

Summer Semester - Year 2

- 3 COP 4530 Data Struct.
- CDA 3201 Logic Design 3
- 1 CDA 3201L Logic Lab
- EGN 4450 Linear Systems 2

Total 9

Fall Semester - Year 3

- 3 CDA 4205 Computer Architecture
- 3 EEE 3394 Electronic Materials
- 3 EGN 3373 Electrical Systems I
- 3 COT 4400 Analysis of Algorithms
- 3 CSE Hardware Elective
- Total 15

Spring Semester - Year 3

- 3 CDA 4203 Computer System Design
- CDA 4203L Computer Syst Design Lab 1
- 3 EGN 3615 Engineering Economics (TGED)
- 3 COP 4600 Operating Systems
- **CSE Hardware Elective** 3
- 3 *Gen. Ed. Natural Science Elective

Total 16

Internship / Co-op

List Company / employer name and position

(see advisor for credit options - CIS 4940)

Fall Semester - Year 4

- 3 CDA 4213 CMOS-VLSI Design
- 1 CDA 4213L CMOS-VLSI Design Lab
- 3 EGN 3443 Probability and Statistics for Eng. (TGEI)
- 3 ENC 3246 Communication for Eng.
- 3 CSE Elective
- 3 **General Elective
- ! Apply for Graduation
- Total 16

Spring Semester - Year 4

- 3 CIS 4910 Senior Project (HIP)
- 3 CIS 4250 Ethical Issues & Professional Conduct (ERCE)
- 3 CSE Elective
- 3 ** General Elective
- 3 ** General Elective
- Total 15

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2018 median starting salary: \$69,083

(NACE Fall 2018 Salary Survey)

Note: Courses in bold must be completed with a competitive GPA, see overleaf for details. R = Required course, * Requires a minimum grade of a "B"

** Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing an exam TBD

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HIP = High Impact Practice capstone

3 PHY 2048 General Physics I PHY 2048L General Physics I Lab

3 *COP 2510 Programming Concepts

4 MAC 2282 or MAC 2312 Calculus II

14 Total

1

Computer Science

Bachelor of Science in Computer Science (BSCS)

Fall Semester - Year 1

- 4 MAC 2281 or MAC 2311 Calculus I
- 3 ENC 1101 Composition I
- R EGN 3000 Foundations of Engineering
- EGN 3000L Foundations of Eng. Lab (TGEC) 3
- Gen. Ed. Natural Science Elective 3

Total 13

Total 14

Spring Semester - Year 1

- 4 MAC 2282 or MAC 2312 Calculus II
- 3 PHY 2048 General Physics I
- 1 PHY 2048L General Physics I Lab
- 3 ENC 1102 Composition II
- 3 *COP 2510 Programming Concepts
- 14 Total

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 3 PHY 2049 General Physics II
- 1 PHY 2049L General Physics II Lab
- 3 *COP 3514 Program Design
- 3 ** St. Gen. Ed. Core Social Science Elective

Spring Semester - Year 2

- 3 *CDA 3103 Computer Organization
- 3 COT 3100 Intro Discrete Structures
- 3 COP 3331 Object Oriented Design
- State GenEd. Core Social Science Elective 3

Total 12

Summer Semester - Year 2

- 3 COP 4530 Data Structures
- CDA 3201 Logic Design 3
- CDA 3201L Logic Lab 1
- 2 EGN 4450 Linear Systems
- Total 9

Fall Semester - Year 3

- 3 CDA 4205 Computer Architecture
- 4 COT 4400 Analysis of Algorithms
- 3 CSE Software Elective
- 1 EGN 3443 Probability and Statistics for Eng. (TGEI)
- 3 Gen. Ed. Natural Science Elective

Total 15

Fall Semester - Year 4

- 3 CSE Elective
- 3 CNT 4419 Secure Coding
- 2 Gen. Ed. Human and Cultural Diversity Elective
- 3 **General Elective
- 3 **General Elective
- ! Apply for Graduation
- Total 15

Spring Semester - Year 3 3 COP 4600 Operating Systems

- CSE Elective 3
- CSE Theory Elective 3
- 3 **CSE Software Elective**
- 3 ENC 3246 Communication for Engineers
- Total 15

Internship / Co-op

List Company / employer name and position

(see advisor for credit options - CIS 4940)

Spring Semester - Year 4

- 3 CIS 4250 Ethical Issues & Professional Conduct
- (ERCE)
- 3 CEN 4020 Software Engineering (HIP)
- 3 CSE Elective
- 3 CSE Elective
- 1 CSF Flective
- Total 13

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$74,080

(NACE Fall 2018 Salary Survey)

Note: Courses in bold must be completed with a competitive GPA, see overleaf for details. R - Required course.

* - Requires a minimum grade of a "B".

** Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test.

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Cybersecurity

The Bachelor of Science degree program in Cybersecurity is accredited by the Computing Accreditation Comission of ABET www.abet.org

Fall Semester - Year 1

- 3 CGS 1540 Intro to Databases for IT
- 4 MAC 1147 Pre-Calculus
- R EGN 3000 Foundations of Engineering
- 3 ENC 1101 Composition I
- 3 EGN 3000L Foundations of Eng Lab (TGEC)

Total 13

Fall Semester - Year 2

- 3 COP 2513 Object-Oriented Programming
- 3 CGS 3303 IT Concepts
- 3 ECO 2013 Macroeconomics (Required St. Gen. Ed. Core Social Science)
- 3 STA 2023 Introductory Statistics I

Total 12

Fall Semester - Year 3

- 3 COP 4538 Data Structures and Algorithms
- 3 CEN 3722 Human Computer Interfaces for IT
- 3 CIS 3363 IT Systems Security
- 3 ISM 4323 Info Security & IT Risk Mgmnt.
- 3 CIS 4366 Hands-on Cybersecurity

Total 15

Spring Semester - Year 1

- 3 *COP 2512 IT Programming Fundamentals
- 3 Mad 2104 IT Discrete Math
- 3 PHY 2020 Conceptual Physics
- 3 ENC 1102 Composition II
- 3 St. Gen. Ed. Core Humanitities

Total 15

Spring Semester - Year 2

- 3 CIS 3213 Foundations of Cyber Security
- 3 PSY 2012 Psychological Science I (Required St. Gen. Ed. Core Social Science)
- 3 General Ed. Natural Science Elective
- 3 Gen. Ed. Human & Cultural Diversity

Total 12

Summer Semester - Year 2

- 3 COP 3515 Program Design for IT
- 3 ENC 3246 Comm. for Engineers
- 3 Gen. Ed. Information & Data Literacy

Total 9

Spring Semester - Year 3

- 3 CGS 3853 Web Systems for IT
- 3 CIS 4219 Human Aspects of Cybersecurity
- 3 CNT 4104 Computer Information Networks
- 1 CNT 4104L Computer Info Networks Lab
- 3 CIS 3615 Secure Software Development
- 3 Approved Cybersecurity Elective

Total 16

Internship / Co-op

List Company / employer name and position (see advisor for credit options – CIS 4947)

Fall Semester - Year 4

- 3 COP 4703 Advance Database Systems for IT
- 3 LIS 4414 Information Policy & Ethics (ERCE)
- 3 CNT 4403 Network Security & Firewalls
- 3 Approved Cybersecurity Elective
- 3 Approved Cybersecurity Elective
- ! *Apply for Graduation

Total 15

Spring Semester - Year 4

- 4 CIS 4935 Senior Project in IT (HIP)
- 3 CIS 4200 Penetration Testing for IT
- 3 Approved Cybersecurity Elective
- 3 Approved Cybersecurity Elective

Total 13

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$60,560

(NACE Fall 2018 Salary Survey)

R = Required course, * Requires a minimum grade of a "B" ** Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing an exam TBD.

Note: Courses in bold must be completed with a competitive GPA, see catalog for details.

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TGE = Tampa General Education; C = Creative Thinking, I = Information & Data Literacy ERCE = Ethical Reasoning & Civic Engagement

HIP = High Impact Practice capstone

Electrical Engineering

The Bachelor of Science degree program in Electrical Engineering is accredited by the Engineering Accreditation Comission of ABET www.abet.org

Fall Semester - Year 1

- 3 ENC 1101 Composition I
- 4 MAC 2281 or MAC 2311 Calculus I
- 3 CHS 2440 or CHM 2045 Chemistry I
- 1 CHS 2440L or CHM 2045L Chemistry I Lab
- R EGN 3000 Foundations of Engineering
- EGN 3000L Foundations of Engineering Lab (TGEC) 3
- 14 Total

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 4 EGN 3420 Engineering Analysis
- 3 EEE 3394 EE Science I Electronic Materials
- 1 EEL 3705L Logic Lab
- 3 State Gen. Ed. Core Humanities Elective

Total 15

Fall Semester - Year 3

- 3 EEL 4102 Signals & Systems
- 3 ENC 3246 Communication for Engineers
- 1 EEL 3115L Lab I (Circuits)
- 1 EEL 3163C Computer Tools Lab
- 3 EE Core Technical Elective
- 3 EE Core Technical Elective
- 1 EGS 3071 Prof. Formation of Eng 2 (ERCE)

Total 15

Fall Semester - Year 4

- 3 EEL 4906 EE Design I
- 3 EE Track Elective
- 3 EE Track Elective
- 1 EE Track Elective Lab
- EE Upper Level Technical Elective 3
- 3 EE Upper Level Technical Elective
- Apply for Graduation !
- Total 16

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$67,787 (NACE Fall 2018 Salary Survey)

Spring Semester - Year 1

- 3 ENC 1102 Composition II
- 4 MAC 2282 or MAC 2312 Calculus II
- 3 PHY 2048 General Physics I
- PHY 2048L General Physics I Lab 1
- EEL 3705 Fund. Of Digital Circuits 3

14 Total

Spring Semester - Year 2

- 3 *EGN 3433 Modeling & Analysis Eng Sys. or MAP 2302 Differential Equations
- 3 EGN 3373 Electrical Systems I
- 4 **EEL 3472C EE Science II - Electromag.
- 3 EEL 2161 Electrical Eng Comp Methods
- 1 EGS 2070 Prof. Formation of Eng 1 (ERCE)
- Total 14

Summer Semester - Year 2

- 3 EGN 3374 Electrical Sys II
- 3 EGN 3443 Probability & Statistics for Eng. (TGEI)
- 3 EGN 3615 Eng. Economics (TGED)

Spring Semester - Year 3

- 3 EE Core Technical Elective
- **EE Core Technical Elective** 3
- 3 EE Track Elective
- 3 EE Track Elective
- 1 EE Track Elective Lab
- 1 EE Upper-Level Technical Elective Lab
- 1 EGS 3072 Professional Formation of Eng III (ERCE)

Total 15

Spring Semester - Year 4

- 3 EEL 4914 EE Design II (HIP)
- 3 **EE Upper-Level Technical Elective**
- 3 EE Upper-Level Technical Elective
- 1 EE Upper Level Technical Elective Lab
- Upper-Level Approved Tech. Elective 3
- 3 *** Gen. Ed. Core Social Science Elective

Total 16

- Notes: Courses in bold must be completed with an overall grade point average of 2.75, see overleaf.
- * Requires a minimum grade of a "B".

** - If transferring PHY 2049/L, EEL 3472C will apply as EE upper level and lab elective. *** Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test. TGE = Tampa General Education; C = Creative Thinking, I = Information & Data Literacy,

D = Human & Cultural Diversity

ERCE = Ethical Reasoning & Civic Engagement

HIP = High Impact Practice Capstone

Internship / Co-op

List Company / employer name and position

Total 9

R - Required course

Industrial Engineering

The Bachelor of Science degree program in Industrial Engineering is accredited by the Computing Accreditation Comission of ABET

Fall Semester - Year 1

- 3 ENC 1101 Composition I
- 4 MAC 2281 or MAC 2311 Calculus I
- 3 CHS 2440 or CHM 2045 Chemistry I
- 1 CHS 2440L or CHM 2045L Chemistry I Lab
- R EGN 3000 Foundations of Engineering
- EGN 3000L Foundations of Eng Lab (TGEC) 3

Total 14

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 3 PHY 2049 General Physics II
- 1 PHY 2049L General Physics II Lab
- 2 EGN 4450 Linear Systems
- 3 *EGN 3443 Probability & Statistics for Eng (TGEI)

Total 13

Fall Semester - Year 3

- 3 ESI 4007^F Engineering Programming
- 3 EIN 4312CF Work Analysis
- 3 EIN 4621^F Manufacturing Processes
- 3 ESI 4312^F Deterministic Operations Research
- 3 ENC 3246 Communication for Engrs.
- Total 15

Fall Semester - Year 4

- 3 EIN 4890^FI.E. Senior Design Project I (ERCE)
- 3 ESI 4606^F Engineering Analytics I
- 3 ESI 4244^F Design of Experiments
- 3 ESI 4523^F Industrial Systems Simulation
- Tech Elective Industrial Engineering 3
- 1 Apply for Graduation

Total 15

Spring Semester - Year 4

- EIN 4891^s I.E. Senior Design Project II (HIP) 3
- 3 EIN 4243C^s Human Factors
- 3 EIN 4601C^s Automation and Robotics
- ESI 4607^s Engineering Analytics II 3
- 3 Tech Elective Industrial Engineering

* - Requires a minimum grade of B or higher (B- is insufficient).

Total 15

R - Required course

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$60,500

(NACE Fall 2018 Salary Survey)

- **Spring Semester Year 1**
- 3 ENC 1102 Composition II
- 4 MAC 2282 or MAC 2312 Calculus II
- PHY 2048 General Physics I 3
- 1 PHY 2048L General Physics I Laboratory
- State Gen. Ed. Humanities Elective 3
- 3 State Gen. Ed. Social Science Elective

Total 17

Spring Semester - Year 2

- 3 EGN 3311 Statics
- 3 EGN 3365 Materials Engineering I
- 3 EGN 3373 Intro to Electrical Systems I
- 3 EGN 3433 Modeling & Analysis of Systems or MAP 2302 Differential Equations
- 3 **General Elective

Total 15

Spring Semester - Year 3

- 3 ESI 4620^s Design of Industrial Info Systems
- ESI 4313^s Probabilistic OR 3
- Tech Elective Industrial Engineering 3

Internship / Co-op

Summer Semester - Year 2 3 EGN 3343 Thermodynamics I

EGN 3615 Eng. Economics

3 EGN 1113 Design Graphics

3

Total 9

List Company/employer name and position

- - EIN 4333^s Production Control
- 3 ESI 4221^s Industrial Statistics/Quality Control

Total 15

3

F – Course offered only in the fall semester (EIN and ESI courses are taught once a year) S - Course offered only in the spring semester (EIN and ESI courses are taught once a year) TGE = Tampa General Education; C = Creative Thinking, I = Information & Data Literacy, D = Human & Cultural Diversity ERCE = Ethical Reasoning & Civic Engagement HIP = High Impact Practice Capstone

** Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test.

Notes: Courses in bold must be completed with an overall grade point average of 3.0, see overleaf.

Fall Semester - Year 1

- 3 CGS 1540 Intro to Databases for IT
- 4 MAC 1147 Pre-Calculus
- R EGN 3000 Foundations of Engineering
- 3 ENC 1101 Composition I
- 3 EGN 3000L Foundations of Eng Lab (TGEC)

13 Total

Fall Semester - Year 2

- 3 COP 2513 Object-Oriented Programming
- 3 CGS 3303 IT Concepts
- 3 ECO 2013 Macroeconomics (Requires State Gen. Ed. Core Social Science)
- 3 STA 2023 Introductory Statistics I

Total 12

Fall Semester - Year 3

- 3 COP 4538 Data Structures and Algorithms
- 3 CEN 3722 Human Computer Interfaces for IT
- 3 CIS 3433 System Integration & Architecture for IT
- 3 Gen. Ed. Natural Science Elective
- 3 *General Elective

Total 15

Spring Semester - Year 1

- 3 COP 2512 IT Programming Fundamentals
- 3 MAD 2104 IT Discrete Math
- 3 PHY 2020 Conceptual Physics
 - ENC 1102 Composition II
- 3 St. Gen. Ed. Core Humanities

Total 15

Spring Semester - Year 2

3

- 3 CIS 3213 Foundations of Cyber Security
- 3 PSY 2012 Psychological Science I (Requires State Gen. Ed. Social Science)
- 3 INR 3033 International Political Cultures
- 3 Gen. Ed. Human & Cultural Diversity

Total 12

Summer Semester - Year 2

- 3 COP 3515 Program Design for IT
- 3 *General Elective
- 3 Gen. Ed. Information and Data Literacy

Total 9

Spring Semester - Year 3

- 3 CGS 3853 Web Systems for IT
- 3 ENC 3246 Communication for Eng.
- 3 CNT 4104 Computer Information Networks
- 1 CNT 4104L Computer Info Networks Lab
- 3 IT Department Elective
- 3 IT Department Elective

Total 16

Internship / Co-op

List Company / employer name and position

(see advisor for credit options – CIS 4947)

Fall Semester - Year 4

- 3 COP 4703 Database Systems for IT
- 3 CIS 4083 Cloud Computing for IT
- 3 CNT 4603 System Administration & Maintenance for IT
- 3 IT Department Elective
- 3 IT Department Elective
- ! Apply for Graduation

Total 15

Spring Semester - Year 4

- 4 CIS 4935 Senior Project in IT (HIP)
- 3 CIS 4253 Ethics for Information Technology (ERCE)
- 3 IT Department Elective
- 3 IT Department Elective
- Total 13

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$55,996

(NACE Fall 2018 Salary Survey)

Note: Courses in bold must be completed with minimum grade of C, not C-. See overleaf for admission requirements.

R - Required course

* Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the Civic Literacy test.

TGEC = Tampa General Education Creative Thinking

ERCE = Ethical Reasoning & Civic Engagement

HIP = High Impact Practice Capstone

Mechanical Engineering

www.abet.org

Accredited ABB Engineering Accreditation Commission

The Bachelor of Science degree program in Mechanical Engineering is accredited by the Computing Accreditation Comission of ABET

Fall Semester - Year 1

- 3 ENC 1101 Composition I
- 4 MAC 2281 or MAC 2311 Calculus I
- 3 CHS 2440 or CHM 2045 Chemistry I
- 1 CHS 2440L or CHM 2045L Chemistry Lab
- R EGN 3000 Foundations of Engineering
- 3 EGN 3000L Foundations of Engineering Lab (TGEC)
- 14 Total

Fall Semester - Year 2

- 4 MAC 2283 or MAC 2313 Calculus III
- 3 PHY 2049 General Physics II
- 1 PHY 2049L General Physics II Lab
- 3 EGN 3311 Statics
- 3 EGN 3615 Engr Econ Social/Global Impltn (TGED)

Total 14

Fall Semester - Year 3

- 3 EML 3041 Computational Methods
- 3 EML 3701 Fluid Systems
- 3 EML 4325 Mechanical Manufacturing Processes
- 3 EML 3262 Kinematics & Dynamics of Machinery
- 3 ENC 3246 Communication for Engrs.

Total 15

Fall Semester - Year 4

- 3 EML 4123 Heat Transfer
- 3 EML 4302 Mechanical Engineering Lab II
- 3 EML 4220 Vibrations
- 3 Approved Technical/Design/Science Elective
- 3 Approved Technical/Design/Science Elective
- ! Apply for Graduation

Total 15

Spring Semester - Year 1

- 3 ENC 1102 Composition II
- 4 MAC 2282 Engineering Calculus II or MAC 2312
- 3 PHY 2048 General Physics I
- 1 PHY 2048L General Physics I Laboratory
- 3 State Gen. Ed. Core Humanities Elective

14 Total

Spring Semester - Year 2

- 3 *EGN 3343 Thermodynamics I
- 3 *EML 3500 Mechanics of Solids
- 3 EGN 3321 Dynamics
- 3 MAP 2302 Differential Equations or EGN 3433 Mod Analysis of Eng. Systems
- 3 **State Gen. Ed. Core Social Science Elective

Total 15

Summer Semester - Year 2

- 2 EML 3035 Prog. Concepts
- 3 EGN 3443 Probability & Statistics Eng (TGEI)
- 3 EML 3022 CAD
- 3 EGN 3365 Materials Engineering I
- Total 11

Spring Semester - Year 3

- 3 EGN 3373 Electrical Systems I
- 3 EML 3303 Mechanical Engineering Lab I
- 3 EML 4501 Machine Design
- 3 EML 4106C Thermal Systems
- 3 Ethical Reasoning & Civic Engagement

Total 15

Internship / Co-op

List Company / employer name and position

Spring Semester - Year 4

3 EML 4312 Mechanical Controls

* - High priority courses to be completed with a minimum grade of C

- 3 EML 4551 Capstone Design (High Impact Practice Capstone)
- 3 Approved Technical/Design/Science Elective
- 3 Approved Technical/Design/Science Elective
- 3 Upper-Level Elective

Total 15

R - Required course.

Civic Literacy test

This semester plan is provided as a guide; the catalog is the definitive source of requirements.

2018 median starting salary: \$63,668 (NACE Fall 2018 Salary Survey)

TGE = Tampa General Education; C = Creative Thinking, I = Information & Data Literacy, D = Human & Cultural Diversity

** Students must meet the Civic Literacy requirement with credit for AMH 2020, POS 2041 or passing the

Note: Courses in bold must be completed with an overall grade point average of 3.00, see overleaf.

redited

MINOR IN BIOMEDICAL ENGINEERING

This Biomedical Engineering minor is a 15 credit hour program that is open to all engineering majors and other students that meet the prerequisites listed below. For engineering majors, at least 9 hours beyond the B.S. in any engineering discipline must be completed for the biomedical engineering minor. Student must register with the Department of Chemical & Biomedical Engineering undergraduate advisor prior to starting this minor program. Consultation with the undergraduate advisor will ensure that students are informed of all offered courses.

Visit usf.edu/engineering/student-services/documents/minor-bme.pdf for this minor's complete curriculum list.

This Computer Science minor is an 18 credit hour program that is open to all students, except for Computer Science, Computer Engineering and Information Technology majors, that meet the prerequisites listed below. The Computer Science minor is very attractive to students in other engineering departments, and to students in Mathematics and the Sciences (including Physics, Chemistry, and Biology). Students must register with the Department of Computer Science and Engineering undergraduate advisor prior to starting this minor program. Consultation with the department undergraduate advisor will ensure that students are informed of all offered courses. All catalog prerequisites and registration requirements must be met for enrollment in any of the courses required for the minor. All students desiring to pursue the minor must meet the same entry and continuation requirements as a departmental major.

Visit usf.edu/engineering/student-services/documents/minor-cs.pdf for this minor's complete curriculum list.

The Information Technology minor covers key topics in the discipline - a 21-credit hour program that is attractive to students in other engineering departments and students in mathematics and the sciences (physics, chemistry, biology) who have no background in software development. The IT minor is open to all students, except students majoring in Computer Science, Computer Engineering and Information Technology, who meet the prerequisites. Students must register with the department undergraduate advisor prior to starting this minor program. Consultation with the department undergraduate advisor will ensure that students are informed of all offered courses. All catalog prerequisites and registration requirements must be met for enrollment in any of the courses required for the minor.

Visit usf.edu/engineering/student-services/documents/minor-it.pdf for this minor's complete curriculum list.





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