

**University of South Florida**  
**College of Engineering**  
**Recruitment Office**  
**2008 / 09 CURRICULUM**

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BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

131 hours

**Chemical Engineering Admissions Requirements**

Students must have completed the equivalent USF Engineering Calculus, General Physics, and Chemistry courses with a C or better in each course; must have a USF and an overall GPA of 2.0 or better.

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

ENC 1101 Composition I	3
<b>MAC 2281 Engineering Calculus I</b>	4
<b>CHM 2045 General Chemistry I</b>	3
<b>CHM 2045L General Chemistry I Lab</b>	1
EGN 3000 Foundations of Engineering	1
ALAMEA Perspectives Elective	3
Fine Arts Elective	<u>3</u>
Total	18

**Semester II**

ENC 1102 Composition II	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>CHM 2046 General Chemistry II</b>	3
<b>CHM 2046L General Chemistry II Lab</b>	1
<b>PHY 2048 General Physics I</b>	3
<b>PHY 2048L General Physics I Lab</b>	<u>1</u>
Total	15

**Semester III**

<b>MAC 2283 Engineering Calculus III</b>	4
<b>PHY 2049 General Physics II</b>	3
<b>PHY 2049L General Physics II Lab</b>	1
EGN 3443 Probability & Statistics for Engineers	3
Historical Perspectives Elective	3
Social Science Elective	<u>3</u>
Total	17

**Semester IV**

EGN 3433 Modeling & Analysis of Engineering Systems or MAP 2302 Differential Equations	3
EGN 3343 Thermodynamics	3
ECH 3023C Material and Energy Balances	4
ECH 4936 Undergraduate Seminar	1
Social Science Elective	<u>3</u>
Total	14

**Summer**

CHM 2210 Organic Chemistry I	3
CHM 2210L Organic Chemistry I Laboratory	2
ENC 3246 Communication for Engineers (6A L&W)	3
Historical Perspectives Elective	<u>3</u>
Total	11

**Semester V**

ECH 4123 Chemical Engineering Thermodynamics	3
ECH 4264 Transport Phenomena	4
ECH 4845 Numerical Methods in Chem Eng	4
Chemical Engineering Elective	<u>3</u>
Total	14

**Semester VI**

ECH 3702 Instrument Systems	3
ECH 3242L Chemical Engineering Lab I	1
ECH 4265C Mass Transfer Operations	4
CHM 2211 Organic Chemistry II	3
CHM 2211L Organic Chemistry II Lab	2
Chemical Engineering Elective	<u>3</u>
Total	16

**Semester VII**

ECH 4415C Reaction Engineering	4
ECH 4243L Chemical Engineering Lab II	1
EMA 4003 Intro to Materials Science	3
ECH 4605 Product & Process Sys Engineering	3
Chemical Engineering Elective	<u>3</u>
Total	14

**Semester VIII**

ECH 4323C Process Dynamics and Control	3
ECH 4615 Plant Design (MW/MI)	3
BME 4406 Engineering of Biological Systems	3
ECH 4244L Chemical Engineering Lab III	1
Chemical Engineering Elective	<u>2</u>
Total	12

**Gordon Rule** (6A) is fully met through the mathematics courses above, ENC1101, ENC1102, ENC 3246 and by selecting one technical or general education elective that is an approved 6A communication course or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and ECH 4615.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.

## MINOR IN BIOMEDICAL ENGINEERING

15 hours

### **Biomedical Engineering Minor**

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. Departments within the College of Engineering are currently developing additional courses that will be added to the list of courses that can be applied to this minor, so consultation with the advisor will insure that students are informed of all offered courses.

#### **Prerequisite courses:**

	<b>CREDIT HOURS</b>
1. Biology I: BSC 2010	
2. Calculus II: MAC 2282, MAC 2242, or MAC 2312	3-4
3. Physics II: PHY 2049 or PHY 2054	3-4
4. General Chemistry II: CHM 2046	3-4

#### **Required Courses (6 hours)**

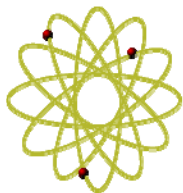
ECH 4931 Special Topics in Chemical Engineering*	3
BME 4406 Engineering of Biological Systems	3

#### **The remaining 9 credit hours can be taken from the following list:**

ECH 6417 Bioseparations	3
ECH 4931 Special Topics in Chemical Engineering**	3
PHZ 4702 Applications of Physics to Biology & Medicine I	4
PHZ 4703 Applications of Physics to Biology & Medicine II	4
BCH 3023 Introductory Biochemistry	3
EIN 4243C Human Factors	3
BME 5320 Theory and Design of Bioprocesses	3
EIN 5275 Work Physiology/Biomechanics	3
BME 5040 Pharmaceutical Engineering	2
ECH 5748 Selected Topics in Biomedical Engineering**	1-9
BME 5748 Selected Topics in Biomedical Engineering **	3

\*Please see academic advisor for required special topics courses.

\*\*Please see academic advisor for selected special topics courses.



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**BACHELOR OF SCIENCE IN CIVIL ENGINEERING**

131 HOURS

**Civil and Environmental Engineering Admissions Requirements**

Students entering the Civil & Environmental Engineering department must have completed the equivalent USF Engineering Calculus sequence, one year equivalent USF General Physics and one semester equivalent USF General Chemistry with a minimum of 2.3 GPA; and must have an overall and USF GPA of 2.0 or better. **Continuation** in the Civil & Environmental Engineering program requires a minimum grade of "C" as well as a 2.5 GPA (based on best attempt) over the following courses: EGN 3311 Statics, EGN 3331 Mechanics of Materials, EGN 3353 Basic Fluid Mechanics, EGN 3365 Materials Engineering I.

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

ENC 1101 Composition I	3
<b>MAC 2281 Engineering Calculus I</b>	4
<b>CHM 2045 General Chemistry I</b>	3
<b>CHM 2045L General Chemistry I Lab</b>	1
EGN 3000 Foundations of Engineering	1
Social Science Elective	<u>3</u>
Total	15

**Semester II**

ENC 1102 Composition II	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>CHM 2046 General Chemistry II</b>	3
<b>PHY 2048 General Physics I</b>	3
<b>PHY 2048L General Physics I Lab</b>	1
EGS 1113 Introduction to Design Graphics	<u>3</u>
Total	17

**Summer Semester**

ALAMEA Perspective Elective	3
Historical Perspective Elective	3
EGN 3615 Engineering Economics with Social & Global Implications	<u>3</u>
Total	9

**Semester III**

<b>MAC 2283 Engineering Calculus III</b>	4
<b>PHY 2049 General Physics II</b>	3
<b>PHY 2049L General Physics II Lab</b>	1
<b>EGN 3311 Statics</b>	3
Historical Perspective Elective	3
Fine Arts Elective	<u>3</u>
Total	17

**Semester IV**

MAP 2302 Differential Equations or EGN 3433 Modeling and Analysis of Engineering Systems	3
EGN 3321 Dynamics	3
EGN 3343 Thermodynamics	3
EGN 3443 Probability & Statistics for Engineers	3
EGN 3365 Materials I	<u>3</u>
Total	15

**Semester V**

EGN 3353 Fluid Mechanics	3
EGN 3331 Mechanics of Materials	3
EGN 3331L Mechanics of Materials Lab	1
ENV 4001 Environmental Systems Engineering	3
TTE 4004 Transportation Engineering I	3
EGN 4420 Numerical and Computer Tools	<u>3</u>
Total	16

**Semester VI**

CES 3102 Structures I	3
CWR 4202 Hydraulics	3
ENV 4004L Environmental/Hydraulics Lab	1
EGN 3373 Introduction to Electrical Systems I	3
CE Concentration Elective	<u>3</u>
Total	13

**Semester VII**

CEG 4011 Geotechnical Engineering I	3
CEG 4011L Geotechnical/Transportation Lab	1
CE Concentration Elective	3
CE Concentration Elective	3
ENC 3246 Communication for Engineers (6A L&W)	<u>3</u>
Total	13

**Semester VIII**

CE Concentration Elective	3
CE Concentration Elective	3
CE Concentration Elective	3
CE Capstone Design Requirement (MW/MI)	4
Social Science Elective	<u>3</u>
Total	16

**Gordon Rule (6A)** is fully met through the mathematics courses above, ENC1101, ENC1102, ENC 3246 and by selecting one technical or general education elective that is an approved 6A communication course or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and a Capstone Design Course indicated as MW/MI.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.

### **Civil Engineering Concentration AND CAPSTONE DESIGN Requirements**

Civil Engineering students take one of the 3 tracks next listed:

#### **Structures/Materials/Geotechnical Track**

CES 4702 Concepts of Concrete Design	3
CES 4605 Concepts of Steel Design	3
CGN 4851 Concrete Construction Materials	3
CEG 4012 Geotechnical Engineering II	
or	
TTE 4005 Transportation Engineering II	3
Technical Elective	3
Technical Elective	3
CES 4750 Capstone Structures/Materials/Geotechnical Design	4

#### **Geotechnical/Transportation Track**

CGN 4851 Concrete Construction Materials	3
CEG 4012 Geotechnical Engineering II	3
TTE 4005 Transportation Engineering	3
Technical Elective	3
Technical Elective	3
Technical Elective	3
CEG 4850 Capstone Geotechnical/Transportation Design	4

#### **Environmental/Water Resources Track**

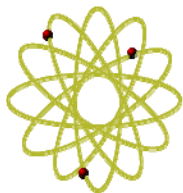
ENV 4417 Water Quality and Treatment	3
CWR 4103 Water Resources Engineering	3
CEG 4012 Geotechnical Engineering II	
or	
TTE 4005 Transportation Engineering II	3
Technical Elective	3
Technical Elective	3
Technical Elective	3
CWR 4812 Capstone Water Resources/Environmental Design	4

#### **The Program supports the following technical elective courses:**

CCE 4034 Construction Management	3
CEG 4012 Geotechnical Engineering II	3
CES 4605 Concepts of Steel Design	3
CES 4702 Concepts of Concrete Design	3
CGN 4851 Concrete Construction Materials	3
CGN 4933 Special Topics in Civil & Environmental Engineering **	3
CWR 4103 Water Resources Engineering I	3
ENV 4417 Water Quality and Treatment	3
SUR 2101C Engineering Land Surveying	3
TTE 4003 Transportation and Society	3
TTE 4005 Transportation Engineering II	3

\*\*Please see academic advisor for selected special topics courses.

Students may, with the help of an advisor, formulate their own track to meet the requirements for a bachelor's degree in civil engineering. This track will consist of six electives coupled with a capstone design course (22 credit hours).



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**BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

120 HOURS

**Computer Science and Engineering Admissions Requirements**

All students must complete the equivalent of USF Composition I & II, Engineering Calculus I & II and calculus-based General Physics I & II (with labs) with a 3.00 overall grade point average in these courses (best attempt) and a minimum grade of "C" in each course to be admitted to the CS&E department. **Continuation** in the major requires successful completion of CDA 3103 and COP 3514 with a minimum grade of "C" based on best attempts ("C-" is insufficient).

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

<b>ENC 1101 Composition I</b>	3
<b>MAC 2281 Engineering Calculus I</b>	4
EGN 3000 Foundations of Engineering	1
Natural Science Elective	3
Social Science Elective	3
Total	14

**Semester II**

<b>ENC 1102 Composition II</b>	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>PHY 2048 General Physics I</b>	3
<b>PHY 2048L General Physics I Lab</b>	1
<b>COP 2510 Programming Concepts</b>	3
Total	14

**Semester III**

MAC 2283 Engineering Calculus III	4
<b>PHY 2049 General Physics II</b>	3
<b>PHY 2049L General Physics II Lab</b>	1
<b>COP 3514 Program Design</b>	3
Natural Science Elective	3
Total	14

**Semester IV**

<b>CDA 3103 Computer Organization</b>	3
COT 3100 Intro Discrete Structures	3
COP 3331 Object Oriented Design	3
Historical Perspectives Elective	3
Total	12

**Summer Semester**

EEL 4851C Data Structures	3
CDA 3201 Computer Logic Design	3
CDA 3201L Computer Logic Design Lab	1
EGN 4450 Linear Systems	2
Total	9

**Semester V**

CDA 4205 Computer Architecture	3
COP 4600 Operating Systems	3
COT 4400 Analysis of Algorithms	3
EGN 3443 Probability & Statistics for Engineers	3
Social Science Elective	3
Total	15

**Semester VI**

CSE Theory Elective	3
CSE Software Elective	6
CSE Elective	3
ENC 3246 Communication for Engineers	3
Total	15

**Semester VII**

Fine Arts Elective	3
ALAMEA Elective	3
Historical Perspective	3
CSE Electives	6
Total	15

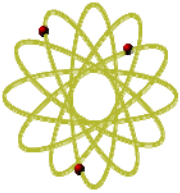
**Semester VIII**

CIS 4250 Ethical Issues (6A MW/MI)	3
Upper Level Humanities, Social Science or Fine Arts Elective	3
CSE Electives	6
Total	12

**Gordon Rule** (6A) is fully met through the mathematics courses above, ENC1101, ENC1102, ENC3246 and CIS4250 or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and CIS4250.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.



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**BACHELOR OF SCIENCE IN COMPUTER ENGINEERING**

128 hours

**Admission to the Department of Computer Science and Engineering**

All students must complete the equivalent of USF Composition I & II, Engineering Calculus I & II and calculus-based General Physics I & II (with labs) with a 3.00 overall grade point average in these courses (best attempt) and a minimum grade of "C" in each course to be admitted to the CS&E department. **Continuation** in the major requires successful completion of CDA 3103 and COP 3514 with a minimum grade of "C" based on best attempts ("C-" is insufficient).

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

<b>ENC 1101 Composition I</b>	3
<b>MAC 2281 Engineering Calculus I</b>	4
CHM 2045 General Chemistry I	3
CHM 2045L General Chemistry I Lab	1
EGN 3000 Foundations of Engineering	1
Social Science Elective	<u>3</u>
Total	15

EGN 4450 Linear Systems	<u>2</u>
Total	9

**Semester V**

CDA 4205 Computer Architecture	3
COP 4600 Operating Systems	3
EEE 3394 Electronic Materials	3
EGN 3373 Electrical Systems I	3
COT 4400 Analysis of Algorithms	<u>3</u>
Total	15

**Semester II**

<b>ENC 1102 Composition II</b>	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>PHY 2048 General Physics I</b>	3
<b>PHY 2048L General Physics I Lab</b>	1
<b>COP 2510 Programming Concepts</b>	<u>3</u>
Total	14

**Semester VI**

CDA 4203 Computer System Design	3
CDA 4203L Computer Systems Design Lab	1
CSE Elective	3
EGN 3615 Engineering Economics with Social and Global Implications	3
Natural Science Elective	3
CSE Hardware Elective	<u>3</u>
Total	16

**Semester III**

MAC 2283 Engineering Calculus III	4
<b>PHY 2049 General Physics II</b>	3
<b>PHY 2049L General Physics II Lab</b>	1
<b>COP 3514 Program Design</b>	<u>3</u>
Social Science Elective	<u>3</u>
Total	14

**Semester VII**

CDA 4213 CMOS-VLSI Design	3
CDA 4213L CMOS-VLSI Design Lab	1
EGN 3443 Probability & Statistics for Engineers	3
ENC 3246 Communication for Engineers (6A L&W)	3
Fine Arts Elective	3
CSE Elective	<u>3</u>
Total	16

**Semester IV**

<b>CDA 3103 Computer Organization</b>	3
COT 3100 Intro Discrete Structures	3
COP 3331 Object Oriented Design	3
MAP 2302 Differential Equations or EGN 3433 Modeling and Analysis of Engineering Systems	3
Historical Perspectives Elective	<u>3</u>
Total	15

**Semester VIII**

CIS 4910 Senior Project	2
CIS 4250 Ethical Issues (6A MW/MI)	3
ALAMEA Elective	3
Historical Perspective Elective	3
CSE Hardware Elective	<u>3</u>
Total	14

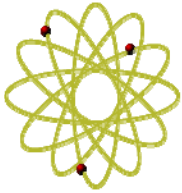
**Summer Semester**

CDA 3201 Logic Design	3
CDA 3201L Logic Design Lab	1
EEL 4851C Data Structures	3

**Gordon Rule (6A)** is fully met through the mathematics courses above, ENC1101, ENC1102, ENC3246 and CIS4250 or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and CIS4250.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.



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**BACHELOR OF SCIENCE IN INFORMATION SYSTEMS**

120 hours

**Admission to the Department of Computer Science and Engineering**

All students must complete the equivalent of USF Composition I & II, Engineering Calculus I & II and calculus-based General Physics I & II (with labs) with a 3.00 overall grade point average in these courses (best attempt) and a minimum grade of "C" in each course to be admitted to the CS&E department. **Continuation** in the major requires successful completion of CDA 3103 and COP 3514 with a minimum grade of "C" based on best attempts ("C-" is insufficient).

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

<b>ENC 1101 Composition I</b>	3
<b>MAC 2281/2241 Calculus I</b>	4
Natural Science Elective	3
Social Science Elective	<u>3</u>
<b>Total</b>	<b>13</b>

**Semester II**

<b>ENC 1102 Composition II</b>	3
<b>MAC 2282/2242 Calculus II</b>	4
<b>PHY 2048/2053 Physics I</b>	3
<b>PHY 2048L/2053L Physics I Lab</b>	1
<b>COP 2510 Programming Concepts</b>	<u>3</u>
<b>Total</b>	<b>14</b>

**Semester III**

ACG 2021 Accounting I	3
<b>PHY 2049/2054 Physics II</b>	3
<b>PHY 2049L/2054L Physics II Lab</b>	1
<b>COP 3514 Program Design</b>	3
ECO 2013 Macroeconomics	<u>3</u>
<b>Total</b>	<b>13</b>

**Semester IV**

<b>CDA 3103 Computer Organization</b>	3
COT 3100 Intro Discrete Structures	3
COP 3331 Object Oriented Design	3
Social Science Elective	3
Historical Perspective Elective	<u>3</u>
<b>Total</b>	<b>15</b>

**Summer Semester**

ECO 2023 Microeconomics	3
EEL 4851C Data Structures	3
Fine Arts Elective	<u>3</u>
<b>Total</b>	<b>9</b>

**Semester V**

EGN 3443 Probability & Statistics for Engineers	3
COP 4600 Operating Systems	3
MAN 3025 Principles of Management	3
COT 4400 Analysis of Algorithms	3
Historical Perspectives	<u>3</u>
<b>Total</b>	<b>15</b>

**Semester VI**

CEN 4020 Software Engineering	3
CEN 4023 Software System Development	3
EGN 3615 Engineering Economics with Social & Global Implications	3
Natural Science Elective	3
CSE Software Elective	<u>3</u>
<b>Total</b>	<b>15</b>

**Semester VII**

EGN 4450 Introduction to Linear Systems	2
CSE Software Elective	6
CSE Elective	3
ALAMEA Elective	<u>3</u>
<b>Total</b>	<b>14</b>

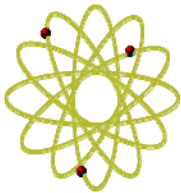
**Semester VIII**

ENC 3246 Communication for Engineers	3
CIS 4250 Ethical Issues (6A MW/MI)	3
CSE Electives	<u>6</u>
<b>Total</b>	<b>12</b>

**Gordon Rule** (6A) is fully met through the mathematics courses above, ENC1101, ENC1102, ENC3246 and CIS4250 or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and CIS4250.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.



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BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

128 hours

**Department of Electrical Engineering Admissions Requirements**

Completion of the Engineering Calculus and Physics sequences and Chemistry I and Chemistry I lab with a "C" or better in each course and a minimum 2.25 GPA in these courses (all attempts); must have an overall GPA of 2.0 or better. **Continuation** in the Electrical Engineering Department requires the completion of both EGN 3373 and EGN 3374 with grades of B or higher (best attempt).

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

ENC 1101 Composition I	3
<b>MAC 2281 Engineering Calculus I</b>	4
Social Science Elective	3
Fine Arts Elective	3
Historical Perspective	<u>3</u>
Total	16

**Semester II**

ENC 1102 Composition II	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>CHM 2045 Chemistry I</b>	3
<b>CHM 2045L Chemistry Lab I</b>	1
<b>PHY 2048 Physics I</b>	3
<b>PHY 2048L Physics Lab I</b>	1
EGN 3000 Foundations of Engineering	<u>1</u>
Total	16

**Semester III**

<b>MAC 2283 Engineering Calculus III</b>	4
<b>PHY 2049 Physics II</b>	3
<b>PHY 2049L Physics Lab II</b>	1
EGN 3443 Probability & Statistics for Engineers	3
EGN 3615 Engineering Economics with Social & Global Implications	<u>3</u>
Total	14

**Semester IV**

EGN 3433 Modeling & Analysis of Engineering Systems or MAP 2302 Differential Equations	3
EGN 3420 Engineering Analysis	3
<b>EGN 3373 Electrical Systems I</b>	3
COP 2270 C for Engineers	3
EEE 3394 Electronic Materials	<u>3</u>
Total	15

**Summer Term**

EGN 3374 Electrical Systems II	3
ENC 3246 Communications for Engineers (6A L&W)	3
Historical Perspective	<u>3</u>
Total	9

**Semester V**

EEL 3100 Network Analysis	3
EEL 4705 Logic Design	3
EEL 4705L Logic Lab	1
EEL 3115L Lab I (Circuits)	1
EEL 4471 Electromagnetics	3
EEE 4351C Semiconductor Devices	3
Total	14

**Semester VI**

EEL 4102 Linear Systems Analysis	3
EGN 3375 Electromechanical Systems	3
EEL 4744 Microprocessors	3
EEL 4743L Microprocessor Lab	1
EEE 3302 Electronics I	3
EEL 4423L Wireless Circuits & Systems Lab	<u>2</u>
Total	15

**Semester VII**

EEL 4906 Prof. Issues & Eng. Design (MW/MI)	3
EEL 3116L EE Lab II (Electronics)	1
EEL 4657 Linear Control Systems	3
EEL 4657L Linear Controls Laboratory	1
EEE 4301 Electronics II	3
EEL 4512C Communication Systems	<u>3</u>
Total	14

**Semester VIII**

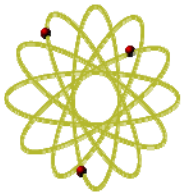
EEL 4914 EE Design Project	3
Tech Elective*	3
Tech Elective*	3
Social Science Elective	3
ALAMEA Elective	<u>3</u>
Total	15

\*Some electives with lab components will incur a lab fee.

**Gordon Rule** (6A) is fully met through the mathematics courses above, ENC 1101, ENC 1102, ENC 3246 and by selecting one technical or general education elective that is an approved 6A communication course or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC 3246 and EEL 4906.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.



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BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

128 hours

**Department of Industrial and Management Systems Engineering Admissions Requirements**

Transfer students must have completed the equivalent USF Engineering Calculus sequence with a 2.0 GPA; must have completed one year of equivalent USF General Physics and Chemistry courses with a minimum of 2.0 GPA; must have a USF and overall GPA of 2.0 or better.

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

ENC 1101 Composition I	3
<b>MAC 2281 Engineering Calculus I</b>	4
<b>CHM 2045 Chemistry I</b>	3
<b>CHM 2045L Chemistry I Lab</b>	1
EGN 3000 Foundations of Engineering	1
Social Science Elective	<u>3</u>
Total	15

**Semester II**

ENC 1102 Composition II	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>CHM 2046 Chemistry II</b>	3
<b>PHY 2048 Physics I</b>	3
<b>PHY 2048L Physics I Lab</b>	1
Historical Perspectives Elective	<u>3</u>
Total	17

**Semester III**

<b>MAC 2283 Engineering Calculus III</b>	4
<b>PHY 2049 Physics II</b>	3
<b>PHY 2049L Physics II Lab</b>	1
EGN 3443 Probability & Statistics for Engineers	3
Historical Perspectives Elective	<u>3</u>
Total	14

**Semester IV**

EGN 3311 Statics	3
COP 2510 Programming Concepts	3
EGN 4450 Linear Systems	2
EGN 3433 Modeling & Analysis of Engineering Systems or MAP 2302 Differential Equations	3
Fine Arts Elective	<u>3</u>
Total	14

**Summer Term**

EGS 1113 Engineering Graphics	3
EGN 3615 Engineering Economy with Social and Global Implications (SS)	3
ALAMEA Elective	<u>3</u>
Total	9

**Semester V**

EGN 3365 Materials Engineering I	3
EGN 3373 Introduction to Electrical Systems I	3
EIN 4312C Work Analysis	3
EIN 4621 Manufacturing Processes	3
ESI 4312 Deterministic OR	3
Total	15

**Semester VI**

EGN 3343 Thermodynamics	3
EIN 4333 Production Control	3
ESI 4221 Industrial Statistics/Quality Control	3
ESI 4313 Probabilistic OR	3
Tech Elective Engineering Science	<u>3</u>
Total	15

**Semester VII**

EIN 4364C Facilities Design	3
EIN 4352 Engineering Cost Analysis	3
ESI 4244 Design of Experiments	3
ESI 4523 Industrial Systems Simulation	3
Tech Elective Industrial Engineering	<u>2</u>
Total	14

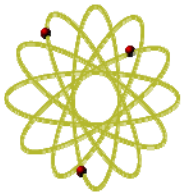
**Semester VIII**

EIN 4243C Human Factors (6A)	3
EIN 4891 Capstone Design (MW/MI)	3
EIN 4601C Automation and Robotics	3
ENC 3246 Communication for Engineers (6A L&W)	3
Tech Elective Industrial Engineering	<u>3</u>
Total	15

**Gordon Rule (6A)** is fully met through the mathematics courses above, ENC 1101, ENC 1102, ENC 3246 and EIN 4243C or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC 3246 and EIN 4891.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.



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BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

128 hours

**Department of Mechanical Engineering Admissions Requirements**

Students entering the Mechanical Engineering department must have completed the equivalent USF Engineering Calculus sequence, one year equivalent USF General Physics and one semester equivalent USF General Chemistry with a 2.5 GPA (based on better of first two attempts) and minimum grade of C in these courses; and must have an overall and USF GPA of 2.0 or better.

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

ENC 1101 Composition I	3
<b>MAC 2281 Engineering Calculus I</b>	4
<b>CHM 2045 General Chemistry I</b>	3
<b>CHM 2045L General Chemistry I Lab</b>	1
EGS 1113 Introduction to Design Graphics	3
EGN 3000 Foundations of Engineering	<u>1</u>
Total	15

**Semester II**

ENC 1102 Composition II	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>PHY 2048 General Physics I</b>	3
<b>PHY 2048L General Physics I Lab</b>	1
Fine Arts Elective	<u>3</u>
Total	14

**Semester III**

<b>MAC 2283 Engineering Calculus III</b>	4
<b>PHY 2049 General Physics II</b>	3
<b>PHY 2049L General Physics II Lab</b>	1
<b>EGN 3311 Statics</b>	3
EGN 3615 Engineering Economics with Social and Global Implications (SS)	<u>3</u>
Total	14

**Semester IV**

EGN 3321 Dynamics	3
EGN 3365 Materials Engineering I	3
EGN 3373 Electrical Systems I	3
EML 3035 Programming Concepts for ME	1
EGN 3433 Modeling & Analysis of Engineering Systems or MAP 2302 Differential Equations	3
Social Science Elective	<u>3</u>
Total	16

**Summer Term**

EGN 3343 Thermodynamics I	3
EGN 3443 Probability & Statistics for Engineers	3
EML 3500 Mechanics of Solids	3
Historical Perspectives Elective	<u>3</u>
Total	12

**Semester V**

EML 3041 Computational Methods	3
EML 3701 Fluid Systems	3
EML 3262 Kinematics and Dynamics of Machinery	3
ENC 3246 Communication for Engineers (6A L&W)	3
EML 4325 Mechanical Manufacturing Processes	3
Total	15

**Semester VI**

EML 4501 Machine Design	3
EML 3303 Mechanical Engineering Lab I	3
EML 4124 Heat Transfer	3
Approved Technical/Design/Science Elective	3
ALAMEA Elective	<u>3</u>
Total	15

**Semester VII**

EML 4106C Thermal Systems	3
EML 4302 Mechanical Engineering Lab II	3
EML 4220 Vibrations	3
Approved Technical/Design/Science Elective	3
Historical Perspectives Elective	<u>3</u>
Total	15

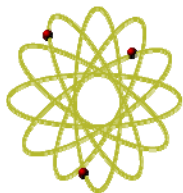
**Semester VIII**

EML 4312 Mechanical Controls	3
EML 4551 Capstone Design (MW/MI)	3
Approved Technical/Design/Science Elective	3
Approved Technical/Design/Science Elective	<u>3</u>
Total	12

**Gordon Rule (6A)** is fully met through the mathematics courses above, ENC 1101, ENC 1102, ENC 3246 and by selecting one technical or general education elective that is an approved 6A communication course or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature & Writing (L&W) are fully met through ENC 3246 and EML 4551.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.



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BACHELOR OF SCIENCE IN GENERAL ENGINEERING

128 hours

**Admissions Requirements**

Students entering the General Engineering degree must have completed the equivalent USF Engineering Calculus sequence, one year equivalent USF General Physics and one semester equivalent USF General Chemistry with a minimum 2.0 GPA; and must have a USF and an overall GPA of 2.0 or better. **Continuation** in the General Engineering degree requires completion of the following: EGN3311, EGN3343, EGN3443, and EGN3373 with grades of C or better (no C-).

*The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.*

**Semester I**

ENC 1101 Composition I	3
<b>MAC 2281 Engineering Calculus I</b>	4
<b>CHM 2045 General Chemistry I</b>	3
<b>CHM 2045L General Chemistry I Lab</b>	1
Historical Perspectives Elective	<u>3</u>
Total	14

**Semester II**

ENC 1102 Composition II	3
<b>MAC 2282 Engineering Calculus II</b>	4
<b>PHY 2048 General Physics I</b>	3
<b>PHY 2048L General Physics I Lab</b>	1
EGN 3000 Foundations of Engineering	1
Social Science Elective	<u>3</u>
Total	15

**Semester III**

<b>MAC 2283 Engineering Calculus III</b>	4
<b>PHY 2049 General Physics II</b>	3
<b>PHY 2049L General Physics II Lab</b>	1
EGN 3311 Statics	3
Social Science Elective	3
ALAMEA Elective	<u>3</u>
Total	17

**Semester IV**

EGN 3433 Modeling & Analysis of Engineering Systems or MAP 2302 Differential Equations	3
EGN 3373 Introduction to Electrical Systems I	3
EGN 3443 Probability & Statistics for Engineers	3
EGN 3343 Thermodynamics I	3
Historical Perspectives Elective	<u>3</u>
Total	15

**Summer**

XXX XXXX College Elective	3
Fine Arts Elective	3
Elective	<u>3</u>
Total	9

**Semester V**

ENC 3246 Communication for Engineers	3
XXX XXXX College Elective	3
XXX XXXX College Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	<u>3</u>
Total	15

**Semester VI**

XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	<u>3</u>
Total	15

**Semester VII**

XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	3
XXX XXXX College Upper-Level Elective	<u>3</u>
Total	15

**Semester VIII**

XXX XXXX College Upper-Level Elective	4
XXX XXXX College Upper-Level Elective	3
XXX XXXX Exit - College MW/MI Elective	3
XXX XXXX Elective	<u>3</u>
Total	13

*NOTE: No grade lower than a C (not a C-) in degree applicable math, science, or engineering courses.*

**Gordon Rule (6A)** is fully met through the mathematics courses above, ENC1101, ENC1102, ENC 3246 and by selecting one technical or general education elective that is an approved 6A communication course or by completing an AA degree at a Florida Community College.

**Exit Requirements** in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and a Capstone Course indicated as MW/MI.

**Course sequence:** Courses in bold are critical path courses. These courses should be taken in the recommended sequence as early as possible in preparation for your major. General education courses (historical perspective, social science, fine arts and "ALAMEA") may be taken in any order.