

## **VALENCIA COLLEGE AND UNIVERSITY OF CENTRAL FLORIDA**

### **ENGINEERING ARTICULATED PROGRAM**

#### **ASSOCIATE IN SCIENCE (A.S.) IN STEM, ENGINEERING AT VALENCIA COLLEGE TO BACHELOR OF SCIENCE (B.S.) IN ENGINEERING AT UCF**

#### **INTRODUCTION**

The Engineering Articulated Program (EAP) is an articulation agreement which entitles Valencia College (VC) students to earn credits that will be transferable toward an engineering baccalaureate degree at the University of Central Florida (UCF) while they are in the process of completing the appropriate Engineering Common Program Prerequisite courses and earning an Associate in STEM (A.S. STEM), Engineering at Valencia College. Valencia students who successfully complete the A.S. STEM, Engineering degree, the articulated courses and the Common Program Prerequisites will be accepted into the engineering program of their choice after being admitted to the University of Central Florida. This agreement shall update and replace any previous engineering articulated program agreement between the parties.

- A. To participate in the EAP, Valencia students should:
  - 1. Officially select the EAP and the A.S. STEM with specialization in Engineering by consulting with a Valencia advisor,
  - 2. Seek advisement from a qualified advisor for A.S. in STEM each semester before registering for classes,
  - 3. Have selected a specific engineering major by the completion of the first year of the A.S., STEM curriculum, and,
  - 4. Graduate from Valencia College with the A.S. STEM degree with common program prerequisites and articulated courses below completed; or,
- B. General Education Requirements Met (GERM Stamp): Upon completion of the A.S. STEM Engineering Curriculum students will have their diploma endorsed with a GERM Stamp. Valencia students who also earn this degree are encouraged to apply for and earn an AA diploma from Valencia College.
- C. Acceptance of engineering-related courses taken at Valencia:

Up to ten courses may be used toward the Valencia's A.S. STEM with Specialization in Engineering, depending on the Engineering major chosen, toward an Engineering baccalaureate degree at UCF:

- 1. EGS 1006C Introduction to the Engineering Profession (UCF course number EGS 1006C)
- 2. EGN 1007C Engineering Concepts and Methods (UCF course number EGN 1007C)
- 3. EGN 2312 Engineering Analysis-Statics (UCF course number EGN 3310 or equivalent)
- 4. EGN 2322 Engineering Analysis-Dynamics (UCF course number EGN 3321 or equivalent)
- 5. EGN 2440 Probability and Statistics for Engineers (UCF course number STA 3032 or equivalent)
- 6. EGS 2004C Electrical Networks (UCF course number EEL 3004C)
- 7. EGS 2373 Principles of Electrical Engineering (UCF course number EGN 3373)
- 8. COP 3275C C/C++ Programming for Engineering (UCF course number EGN3211)
- 9. EGN 2210C Numerical Computations & Programming (UCF course number EGN 3211)
- 10. COP 2220C C Programming (UCF course number COP 3223)

Valencia may develop and teach courses equivalent to these ten courses. Such courses will be accepted in transfer by the UCF College of Engineering and Computer Science as being equivalent to the indicated UCF courses provided that they satisfy the following characteristics:

1. ABET course control documents prepared and supplied by the UCF College of Engineering and Computer Science/College of Optics and Photonics must be used for defining these courses.
2. The current UCF College of Engineering and Computer Science syllabus for each of these courses must be used to describe the contents of that course as it is to be taught each semester.
3. Qualified Valencia faculty (master's degree and 18 hours within engineering) may teach these courses provided they meet SACSCOC or other department of education approved accreditor requirements for faculty.

NOTE: Prerequisites for all engineering courses must be satisfied prior to enrollment in those courses.

### **BACHELOR OF SCIENCE IN ENGINEERING, UCF**

Students declaring a major in an engineering discipline must be in good academic standing and must have a "C" (2.0) or better in each of the following courses or their equivalents: MAC 2311C, MAC 2312, MAC 2313, PHY 2048C (or PHY2048 and PHY2048L), PHY 2049C (or PHY2049 and PHY2049L), and CHM 2045C or CHS 1440. Students in the EAP will have the same priority as native UCF students for all scheduled classes required for completing the Bachelor of Science (B.S.) in their selected engineering major. This degree may be earned from the UCF College of Engineering and Computer Science in any of the following majors:

1. Aerospace Engineering
2. Civil Engineering
3. Computer Engineering
4. Construction Engineering
5. Electrical Engineering
6. Environmental Engineering
7. Industrial Engineering
8. Materials Science and Engineering
9. Mechanical Engineering
10. Photonic Science and Engineering (offered jointly by the UCF College of Optics and Photonics and College of Engineering and Computer Science)

### **VC TO UCF ENGINEERING ARTICULATED COURSE EQUIVALENCIES**

Valencia	UCF	UCF Course Title
EGN 2312	EGN 3310	Engineering Analysis – Statics
EGN 2440	STA 3032	Probability and Statistics for Engineers
EGN 2322	EGN 3321	Engineering Analysis - Dynamics
EGS 1006C	EGS 1006C	Introduction to the Engineering Profession
EGN 1007C	EGN 1007C	Engineering Concepts and Methods

EGS 2004C	EEL 3004C	Linear Circuits 1
EGS 2373	EGN 3373	Principles of Electrical Engineering
COP 3275C	EGN 3211	Engineering Analysis and Computation
EGN 2210C	EGN 3211	Engineering Analysis and Computation
COP 2220C	COP 3223	Introduction to Programming with C

### **Aerospace Engineering**

Students intending to major in Aerospace Engineering should include the following lower-division prerequisite program courses within their A.S. STEM, Engineering Specialization.:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312	Engineering Analysis – Statics (3 hrs.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2322	Engineering Analysis – Dynamics (3 hrs.)	(PR: MAC 2313, EGN 2312)
EGS 2373	Principles of Electrical Engineering (3 hrs.)	(PR: PHY 2049C, MAC 2313; PR/CR: MAP 2302)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
Select 1 of the Following:		
COP 3275C	C/C++ Programming for Engineering (3 hrs.)	(PR: MAC 2312)
EGN 2210C	Engineering Analysis and Computation	(PR: MAC 2312)
COP 2220C	C Programming	(PR: COP 1000 OR EGN 1007)

### **Civil Engineering**

Students intending to major in Civil Engineering should include the following lower division pre-requisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312	Engineering Analysis – Statics (3 hr.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGN 2322	Engineering Analysis – Dynamics (3 hrs.)	(PR: MAC 2313, EGN 2312)

### **Computer Engineering**

Students intending to major in Computer Engineering should include the following lower division pre-requisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGS 2004C	Electrical Networks (3 hrs.)	(PR: MAC 2313; PHY 2049C; PR/CR: MAP 2302)
Select One of the Following		
COP 3275C	C/C++ Programming for Engineering (3 hrs.)	(PR: MAC 2312)
EGN 2210C	Engineering Analysis and Computation	(PR: MAC 2312)

### **Construction Engineering**

Students intending to major in Construction Engineering should include the following lower-division prerequisite program courses within their A.S. STEM Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312	Engineering Analysis – Statics (3 hr.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGN 2322	Engineering Analysis – Dynamics (3 hrs.)	(PR: MAC 2313, EGN 2312)

### **Electrical Engineering**

Students intending to major in Electrical Engineering should include the following lower-division prerequisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGS 2004C	Electrical Networks (3 hrs.)	(PR: MAC 2313; PHY 2049C; PR/CR: MAP 2302)

Select 1 of the Following

COP 3275C	C/C++ Programming for Engineering (3 hrs.)	(PR: MAC 2312)
EGN 2210C	Engineering Analysis and Computation	(PR: MAC 2312)

### **Environmental Engineering**

Students intending to major in Environmental Engineering should include the following lower-division pre-requisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312	Engineering Analysis – Statics (3 hr.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGN 2322	Engineering Analysis – Dynamics (3 hrs.)	(PR: MAC 2313, EGN 2312)

### **Industrial Engineering**

Students intending to major in Industrial Engineering should include the following lower-division prerequisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312	Engineering Analysis – Statics (3 hr.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGN 2322	Engineering Analysis – Dynamics (3 hrs.)	(PR: MAC 2313, EGN 2312)
EGS 2373	Principles of Electrical Engineering (3 hrs.)	(PR: MAC 2313; PHY 2049C; PR/CR: MAP 2302)

Select 1 of the following:

COP 3275C	C/C++ Programming for Engineering (3 hrs.)	(PR: MAC 2312)
EGN 2210C	Engineering Analysis and Computation	(PR: MAC 2312)
COP 2220C	C Programming	(PR: COP 1000 OR EGN 1007)

### Material Sciences and Engineering

Students intending to major in Materials Science and Engineering should include the following lower-division prerequisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312 <sup>1</sup>	Engineering Analysis – Statics (3 hr.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGS 2373	Principles of Electrical Engineering (3 hrs.)	(PR: MAC 2313; PHY 2049C; PR/CR: MAP 2302)
COP 3275C	C/C++ Programming for Engineering (3 hrs.)	(PR: MAC 2312)
CHM 1046C	Chemistry Fundamentals II	(PR: CHM 1045C)

### Mechanical Engineering

Students intending to major in Mechanical Engineering should include the following lower-division prerequisite program courses within their A.S. STEM, Engineering Specialization:

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2312	Engineering Analysis – Statics (3 hr.)	(PR: MAC 2311, PHY 2048C; PR/CR: MAC 2312)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGN 2322	Engineering Analysis-Dynamics (3 hrs.)	(PR: MAC 2313, EGN 2312)
EGS 2373	Principles of Electrical Engineering (3 hrs.)	(PR: MAC 2313; PHY 2049C; PR/CR: MAP 2302)

Select 1 of the following:

COP 3275C	C/C++ Programming for Engineering (3 hrs.)	(PR: MAC 2312)
EGN 2210C	Engineering Analysis and Computation	(PR: MAC 2312)
COP 2220C	C Programming	(PR: COP 1000 OR EGN 1007)

### Photonic Science and Engineering

Students intending to major in Photonic Science and Engineering should include the following lower-division prerequisite program courses within their A.S. STEM, Engineering Specialization

EGS 1006C	Intro to the Engineering profession (1 hr.)	(PR: None)
EGN 1007C	Engineering Concepts and Methods (1 hr.)	(PR: MAC 1105 or higher)
EGN 2440	Probability & Statistics for Engineers (3 hrs.)	(PR: MAC 2312)
EGS 2004C	Electrical Networks (3 hrs.)	(PR: MAC 2313; PHY 2049C; PR/CR: MAP 2302)

Select 1 of the Following

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<sup>1</sup> EGN 2312 is an optional course for Material Science and Engineering

COP 3275C            C/C++ Programming for Engineering (3 hrs.) (PR: MAC 2312)  
EGN 2210C            Engineering Analysis and Computation            (PR: MAC 2312)

### **UCF B.S. REQUIREMENTS**

To earn a UCF Engineering B.S. through the Engineering Articulated Program (EAP), the student must meet all the graduation requirements listed in the UCF Undergraduate Catalog for the appropriate catalog year. Generally, this catalog will include the following:

#### **UCF Graduation Requirements**

- A. General Education Program Requirement (Completed as part of the A.S. STEM, Engineering Specialization degree and A.A. degree at Valencia College)
- B. Common Program Prerequisites (Completed as part of the A.S. STEM, Engineering Specialization degree at Valencia College)
- C. Program Requirements:
  - a. Core requirements: Basic Level (2 hrs.) the College of Engineering and Computer Science requires all engineering students to achieve a minimum 2.25 GPA in completing these courses, together with the core requirements listed in subsections c and d and with the Capstone Requirements. Independent study courses generally do not satisfy the major requirements.
  - b. Core Requirements: Advanced Level (51 hrs.)
  - c. Restricted Electives (variable)
  - d. Capstone Requirements (6 hrs.) these courses are a capstone course experience to the engineering program and should be completed in the last two major semesters of study.
- D. College/School Exit Requirements (Refer to discipline specific requirements in the UCF Undergraduate Catalog)
- E. University Minimum Exit Requirements
  - a. 2.0 UCF GPA
  - b. 60 semester hours earned after CLEP awarded
  - c. 42 semester hours of upper-division credit completed
  - d. 30 of the last 39 hours of coursework must be completed in residency at UCF
  - e. A maximum of 45 hours of extension, correspondence, CLEP, Credit by Exam, and Armed Forces credits permitted
  - f. Complete the General Education Program, the Gordon Rule, the CLAS and nine hours of summer credit (if applicable)

### **AGREEMENT PROVISIONS**

#### **Admission to the UCF**

Students who complete this Associate in Science (A.S.) STEM – Engineering and complete an A.A. degree at Valencia as described herein will be guaranteed admission to UCF consistent with the University Admission Policies. Grade forgiveness will be consistent with the UCF Undergraduate Catalog applicable to the student.

#### **Admission to the College of Engineering and Computer Science/College of Optics and Photonics at UCF**

Upon admission to UCF, students who have completed their Associate in STEM - Engineering at Valencia College and maintained a 2.0 GPA will be accepted into the upper-division in the UCF College of

Engineering and Computer Science or College of Optics and Photonics as either an engineering major (if grades of C[2.0] or better have been earned in MAC 2311C, MAC 2312, PHY 2048C, and CHM 2045C [or equivalent courses]), or otherwise as an engineering pending major.

### **Foreign Language Requirements**

Students must demonstrate competency of a foreign language or American Sign Language equivalent to the second high school level or higher (e.g., Spanish 2) or the second elementary course at the college level (e.g., SPN 1211-Beginning Spanish II). Students admitted to UCF without completing this requirement must satisfy it prior to graduation from the university.

### **Immunization**

Students who matriculate at a state university are required to provide proof of immunization against Rubeola (measles) and Rubella (German measles) prior to enrollment.

### **Resources**

Resources for implementation of the Agreement may come from either party, depending upon budgetary availability. No party hereto is obligated hereby to expend any resources whatsoever in connection with this Agreement. No implementation of any portion of the Agreement, or commencement of any specific projects, may be initiated prior to the written assurance of such budgetary availability to the other party hereto. To the extent any external funding is required by the university to implement this Agreement and funding for such purposes is not appropriated to the university by the Legislature of the State of Florida or is not otherwise available to the university, the university shall thenceforth have no further financial obligations hereunder. In the event the university does not have sufficient legislative appropriations to carry out any obligations under this Agreement, it shall immediately notify Valencia College of such fact and of such portions of this Agreement that may be deemed terminated due to failure of appropriations.

### **Modifications or Updates**

Any amendments to this agreement shall not be valid unless made in writing and signed by both parties. This agreement is subject to change by legislative action, the Department of Education, the Florida Board of Governors, the University of Central Florida or its Board of Trustees, Valencia College or its Board of Trustees, or external accrediting agencies. This agreement will be reviewed by both parties on a yearly basis to ensure the timeliness of this document.

### **Notifications**

Notices with respect to rights and obligations of each Party hereto shall be provided as follows:

#### **University of Central Florida**

Michael Johnson, Provost and Executive Vice President, Academic Affairs

Michael Georgiopoulos, Dean, College of Engineering and Computer Sciences

David Hagan, Dean, College of Optics and Photonics

Theodorea Regina. Berry, Vice Provost and Dean, College of Undergraduate Studies

Manoj Chopra, Associate Dean, Academic Affairs, College of Engineering and Computer Sciences

Patrick L. LiKamWa, Associate Dean, College of Optics and Photonics

