

## Associate of Science in Engineering (ASE) Transfer Students

The following information applies to students who are earning an Associate of Science in Engineering degree from a Maryland public community college. If you do not fall within this category, please visit [the UMBC transfer student admission page](#).

### About the ASE Degree

The ASE was developed to help ease students' transfer from two-year to four-year engineering programs and to help expand the pipeline into engineering careers. It is a transfer-oriented degree built around an outcomes-based statewide agreement. The ASE degree is designed to transfer as a degree, rather than on a course-by-course basis, into parallel four-year engineering programs in Maryland.

Please note that currently not all Maryland community colleges offer the ASE degree. Be sure to check with your community college to make sure the degree is available. For more information on the ASE degree program, please visit [the Maryland Higher Education Commission](#) website.

### Admissions Process

The ASE degree does not guarantee admission into the Computer Engineering program within UMBC's College of Engineering and Information Technology (COEIT). In particular, ASE transfer students must meet the CMPE gateway requirements outlined below, including any applicable requirements on the number of attempts or minimum grade achieved in a particular course or course equivalent. The transfer admissions process for UMBC is handled by the Office of Undergraduate Admissions. Admission to the CMPE major handled by the COEIT Advising Staff. We strongly encourage prospective transfer students to contact these offices so they can learn about the transfer admissions process and the requirements for admissions into the Engineering programs.

The COEIT Undergraduate Student Services Website is <http://advising.coeit.umbc.edu>

The advising staff may be reached by email at [coeittransfer@umbc.edu](mailto:coeittransfer@umbc.edu).

**It is important for incoming ASE Transfer Students to identify themselves as ASE students within their transfer admissions application.**

### ASE Degree Verification

Students must submit official transcripts with the official ASE degree posted. Please note that without official confirmation of the ASE degree, the student's transfer credits will be subject to a course-by-course evaluation.

We recommend students to also bring a copy of their official transcripts with them to Orientation and Course Selection Day. This is especially important for those students attending an early orientation program. This will help the COEIT advising staff verify that you have completed your degree and plan your coursework accordingly.

### Computer Engineering Curriculum Information

The ASE degree typically covers the first two years of a student's academic program. Only 60 credits of the ASE will be accepted by the University of Maryland Baltimore County (UMBC). Upon successful transfer to UMBC the student will complete the remaining 300 and 400 level courses, including any prerequisite classes that may be missing from their ASE program. The current requirements (September 2014) for the Bachelor of Science in Computer Engineering include a total of 125 credits, which will typically require at least 65 credits be taken at UMBC, not including any prerequisite courses that may be required. Necessary prerequisite courses, if any, will depend on the specific community college program in which the student earned the ASE.

## The Computer Engineering Gateway

Before taking any 300-level Computer Engineering (CMPE) course other than CMPE306 and before taking any 400-level Computer Science (CMSC) course required in the Computer Engineering curriculum, including List A, List B, and List C electives, the transferring ASE student must satisfy the Computer Engineering Gateway. For the purpose of the outcomes-based ASE degree, the UMBC CMPE program will consider all courses that encompass outcomes included in CMPE212 (Digital Design), PHYS121 (Physics I with calculus), MATH151 (Calculus I), CMSC201 (Computer Science I), ENES101 (Introduction to Engineering, including teamwork skills, professional practice/ethics, and MATLAB). The following Gateway requirements will be established for each ASE program: 1) A grade of "B" or better in ASE courses encompassing the outcomes achieved by UMBC students in CMPE212 Digital Design, CMSC201, MATH151, and PHYS121, and, 2) a grade of "C" or better in ASE courses encompassing the outcomes achieved by UMBC students in ENES101. The list of ASE Gateway courses may vary for each ASE institution, depending on that institution's allocation of outcomes among its ASE courses.

## Post-Gateway Requirements in Computer Engineering

Successful completion of the Computer Engineering Gateway corresponds to formal admittance to the CMPE program. After this milestone, ASE students must take the following required courses

### Required CMPE 300 & 400 Level Courses (24 credits)

CMPE306 Basic Circuit Theory (4 credits) (both semesters),

*Note: Students may take this course while completing their Gateway requirements. Some ASE programs may already include this course.*

CMPE310 System Design and Programming (4 credits)(both semesters)

CMPE311 C Programming and Embedded Systems (3 credits) (Fall only)

CMPE314 Principles of Electronic Circuits (4 credits) (both semesters)

CMPE320 Probability, Statistics and Random Processes (3 credits) (Spring only)

CMPE349 Introduction to Professional Practice (3 credits) (Spring only)

CMPE450 Capstone I (2 credits) (Fall only)

CMPE451 Capstone II (2 credits) (Spring only)

### Required CMSC 300 & 400 Level Courses (9 credits)

CMSC341 Data Structures (3 credits) (both)

CMSC411 Computer Architecture (3 credits) (both)

CMPE421 Operating Systems (3 credits) (both)

### Track Electives (7 credits or 13 credits)

Each student will choose either the Electronic Systems (ES), Communications (COM) or Cybersecurity (CyS) track.

The ES track electives are

CMPE315 VLSI Design (4 credits) (nominally Fall only)

CMPE415 Programmable Logic Arrays (3 credits) (nominally Spring only)

The COM track electives are

CMPE323 Signals and Systems (4 credits) (nominally Fall only)

CMPE330 Electromagnetic Waves and Transmission (3 credits) (nominally Spring only)

The CyS track electives are

CMPE315 VLSI Design (4 credits) (nominally Fall only)

CMPE415 Programmable Logic Arrays (3 credits) (nominally Spring only)

CMSC426 Computer Security (3 credits) (both)

CMSC481 Computer Networks (3 credits) (both)

## List A, List B and List C Electives (9 credits or 3 credits)

In addition to the track elective courses, each student in the ES or COM tracks will take two additional electives from List A and one additional elective from either List A or List B. The current List A and List B courses are identified in the [CMPE four year plan after 2014](#).

In addition to the track elective courses, each student in the CyS track will take one additional elective from List C. The current List C electives are identified in

## MATH and Science Requirements

All ASE transfer students must complete the mathematics and science requirements of the CMPE program as shown in the [CMPE four year plan after 2014](#). In most cases, the outcomes-based ASE certificate satisfies many, but not all, of these requirements.

## Language and GEP Requirements

All ASE transfer students must complete the UMBC requirements for GEP distributions, including a total of three courses in Arts and Humanities, three courses in Social Sciences, one science course with lab (UMBC CMPE306 counts toward this requirement), one culture course, two physical education courses, and one foreign language through the 201 level. In most cases, the ASE certificate satisfies many, but not all, of these requirements. In accordance with UMBC graduation requirements, each student must complete a Writing Intensive (WI) course at UMBC.

## Capstone Eligibility

To be eligible for CMPE450 Capstone I, all students must meet the following prerequisites: a "C" or better in CMPE314, and, a "C" or better in CMPE311 or concurrent enrollment in CMPE311, and, a "C" or better in CMPE349, and, a "C" or better in one of CMPE315, CMPE320, CMPE323, CMPE330 or CMPE415, or concurrent enrollment in one of those five courses. These prerequisites assure that Capstone I students are prepared for the "culminating design experience" required by ABET accreditation standards. The CMPE450/451 sequence is a Fall/Spring sequence. Students may not start the CMPE450/CMPE451 sequence during the Spring semester.

## **Typical Four–Semester Programs**

The following tables show typical four semester programs for ASE transfer students, starting with the Fall semester of the Junior Year (Fifth Semester). The nature of the ASE transfer process, and the fact that the ASE program is outcome based and not course equivalence based, make these sample programs very rigorous. Incoming ASE students should contact and consult with UMBC College of Engineering and Information Technology advisors (see Admissions Process, above) during registration to map out a success-oriented program that best suits their personal needs, skills, and preparation.

# Department of Computer Science and Electrical Engineering

Inspiring Innovation

<b>Sample Computer Engineering Curriculum for ASE Students—Electronic Systems Track</b>	
<b>Fifth Semester</b> CMPE 310 Systems Design and Prog (Both).....4 MATH 251: Multivariable Calculus..... 4 CMPE 314: Electronic Circuits (Both)..... 4 CMSC 341: Data Structures (Both).....3 GEP (A & H #3) .....3  Total.....18	<b>Sixth Semester</b> GEP ( Culture)..... 3 MATH 221: Linear Algebra..... 3 CMPE 320: Prob. & Random Processes (Spring).3 CMSC 411: Computer Architecture (Both)..... 3 CMPE 415: FPGA Arch and App. (Spring)..... 3 CMPE 349: Intro. to Prof. Practice (Spring) ..... 3 PHED....(not included in total).....(1.5) Total..... 18
<b>Seventh Semester</b> GEP (Social Science #2 ) .....3 CMPE 311: C Prog and Embedded Systems(Fall).....3 CMPE 315: Principles of VLSI (Fall)..... 4 CMPE 450: Capstone I (Fall)..... 2 CMPE List A/B Elective ..... 3 CMPE List A Elective ..... 3 Total..... 18	<b>Eighth Semester</b> GEP (Social Science #3) .....3 Foreign Language 201 ..... 4 CMSC 421: Computer Architecture (Both)..... 3 CMPE 451 Capstone II (Spring) ..... 2 CMPE List A Elective .....3 PHED...(not included in total).....(1.5) Total..... 15

Tables per CMPE 4 year for ASE 170617 rev 2.docx  
 Revision 3 6/17/17 EFC LaBerge, UPD

(G = CMPE Gateway course; Fall = CMPE course only offered in Fall; Spring = CMPE course only offered in Spring; Both = CMPE course offered both semesters)

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<b>Sample Computer Engineering Curriculum for ASE Students—Communications Track</b>	
<p><b>Fifth Semester</b></p> <p>CMPE 310 Systems Design and Prog (Both).....4</p> <p>MATH 251: Multivariable Calculus.....4</p> <p>CMPE 314: Electronic Circuits (Both)..... 4</p> <p>CMPE 323: Signals and Systems (Fall) ..... 4</p> <p>PHED...(not included in total).....(1.5)</p> <p><b>Total.....16</b></p>	<p><b>Sixth Semester</b></p> <p>GEP (A&amp;H #3) ..... 3</p> <p>GEP (Culture)..... 3</p> <p>CMSC 341: Data Structures (Both).....3</p> <p>CMSC 411: Computer Architecture (Both).....3</p> <p>CMPE 330: FPGA Arch and App. (Spring)..... 3</p> <p>CMPE 349: Intro. to Prof. Practice (Spring) ..... 3</p> <p>PHED....(not included in total).....(1.5)</p> <p><b>Total..... 18</b></p>
<p><b>Seventh Semester</b></p> <p>GEP (Social Science #2 ) .....3</p> <p>MATH 221: Linear Algebra..... 3</p> <p>CMPE 311: C Prog and Embedded Systems(Fall).....3</p> <p>CMPE 450: Capstone I (Fall)..... 2</p> <p>CMPE List A/B Elective ..... 3</p> <p>CMPE List A Elective ..... 3</p> <p><b>Total..... 17</b></p>	<p><b>Eighth Semester</b></p> <p>GEP (Social Science #3).....3</p> <p>Foreign Language 201..... 4</p> <p>CMPE 320: Prob. &amp; Random Processes (Spring)..3</p> <p>CMSC 421: Computer Architecture (Both).....3</p> <p>CMPE 451 Capstone II (Spring) .....2</p> <p>CMPE List A Elective .....3</p> <p><b>Total..... 18</b></p>

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<p><b>Seventh Semester</b></p> <p>GEP (Social Science #2 ) .....3</p> <p>MATH 221: Linear Algebra..... 3</p> <p>CMPE 311: C Prog and Embedded Systems(Fall).....3</p> <p>CMPE 450: Capstone I (Fall)..... 2</p> <p>CMSC426 Computer Security ..... 3</p> <p>CMPE List C Elective ..... 3</p> <p><b>Total..... 17</b></p>	<p><b>Eighth Semester</b></p> <p>GEP (Social Science #3).....3</p> <p>Foreign Language 201..... 4</p> <p>CMPE 320: Prob. &amp; Random Processes (Spring)..3</p> <p>CMSC 421: Computer Architecture (Both).....3</p> <p>CMPE 451 Capstone II (Spring) .....2</p> <p>CMSC481: Computer Networks.....3</p> <p><b>Total..... 18</b></p>

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