

**TRANSFER EVALUATION AND CHECK-OFF FORM
COMPUTER ENGINEERING PROGRAM**

SEMESTER 1 (15 cr)	MU CR	TR CR	GR	COMMENT
CHEM 1001 ^b	4			Core SN
EECE 1953	1			COEN 1
ENGL 1001 ^f	3			Core R - 1
GEEN 1200	3			
MATH 1450 ^b	4			Core MR
SEMESTER 3 (18 cr)				
COSC 2010	3			
EECE 2010 ¹	3			
EECE 2015 ¹	1			
EECE 2710 ¹	3			
GEEN 2952	1			
MATH 2450	4			
PHIL 1001 ^b	3			HN&E-1 (UCCS)
SEMESTER 5 (18 cr)				
Core Elective ^c	3			
EECE 3010	3			
EECE 3015	2			
MATH 2105	3			
PHIL 2310 ^b	3			HN&E-2 (UCCS)
PHYS 1003 ^b	4			
SEMESTER 7 (15 cr)				
COEN 4720	3			
COEN 4920	3			
COEN/TECH ELEC ²	3			
COEN/TECH ELEC ²	3			
COEN/TECH ELEC ²	3			

SEMESTER 2 (17 cr)	MU CR	TR CR	GR	COMMENT
Core elective ^e or THEO 1001 ^b	3			
Core Rhetoric 2 ^f	3			
EECE 1954	1			
EECE 1610	3			
GEEN 1210	3			
MATH 1451 ^b	4			
SEMESTER 4 (17 cr)				
COEN 2020	3			
COEN 2610	3			
EECE 2030 ¹	3			
EECE 2035	1			
MATH 2451	4			
THEO 1001 ^b or Core elective ^c	3			
SEMESTER 6 (19 cr)				
Core Elective ^c	3			
COEN 4710	3			
COEN 4820	3			
COEN/TECH ELEC ²	3			
MATH 4720	3			
PHYS 1004 ^b	4			
SEMESTER 8 (15 cr)				
COEN 4998	3			
COEN/TECH ELEC ²	3			
COEN/TECH ELEC ²	3			
Core Elec ^c /Free Elec ^d	3			
Theology Elective ^e	3			Theology-2 (UCCS)
TOTAL CREDITS	134			

UCCS Requirement	Course No.	COEN Electives	Course No.	Course No.	Course No.
Diverse Cultures (DC)		Hardware Engineering			
Histories of Cul & Soc (HCS)		Software Engineering			
Indiv & Soc Behav (ISB)		Intelligent Systems			
Lit & Perform Arts (LPA)		Other Tech elective			

DEGREE REQUIREMENTS INCLUDE:

- Every required course
- Approved elective program.
- A "C" (2.0) or more average at Marquette
- A "C" (2.0) or more average in Engineering courses
- A minimum of 135 semester hours
- No course may be taken for credit without the required prerequisite(s)
- All substitutions and/or departures from stated curriculum must be approved in writing in advance

Notes:

University Core of Common Studies:

(a) Refer to the College of Engineering section of this bulletin for details relating to footnotes b, c, d, e, and f.

~~~ College Notes ~~~~

- (b) This course satisfies requirements of the University Core of Common Studies.
- (c) The Core Electives must satisfy University Core Requirements in the following four Knowledge Areas: Diverse Cultures, Histories of Cultures and Societies, Individual and Social Behavior, and Literature/Performing Arts. See the section on University Core of Common Studies for lists of acceptable courses. Only one of these courses can be a dual application course.
- (d) If the previous Core Electives span all four Knowledge Areas (as listed in the previous footnote), a three-credit free elective may be chosen. This situation will exist if one of the student's core electives is a "dual application" core course, as described in the section on the University Core of Common Studies.
- (e) The Theology Elective must be selected from the list of approved Core courses in the Theology Knowledge Area. See the section on University Core of Common Studies.
- (f) The Core Rhetoric 1 requirement is to be fulfilled by ENGL 1001; the Core Rhetoric 2 requirement is to be fulfilled by either ENGL 1002 or COMM 1100.

#### ***Department notes:***

- (1) A C or better grade is required in this course to meet the prerequisites for subsequent computer and/or electrical engineering required courses.
- (2) At least five of the six electives must be COEN design electives. The remaining elective can be in any technical area.
- (3) The five COEN design electives must be chosen so the student achieves a breadth of knowledge across several concentration areas and also a depth of knowledge in at least one of the concentration areas. To satisfy the breadth requirement, students must complete a breadth course in the Hardware Engineering area AND the Software Engineering area AND the Intelligent Systems area. To satisfy the depth requirement, students must take at least TWO more electives in one of the three areas. A course listed in two concentration areas may be counted toward only one elective requirement.

## Computer Engineering Concentration Area Courses

**Breadth:** Students must complete a breadth course from each of the three concentration areas.

**Depth:** Students must complete three total breadth/depth courses from a single concentration area.

| <b>Hardware</b>                                                                   |                            |                                                                                                        |
|-----------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------|
| Breadth courses<br>(can be used toward<br>either breadth or depth<br>requirement) | COEN 4730                  | Computer Architecture                                                                                  |
|                                                                                   | COEN 4790                  | Developments in Computer Hardware                                                                      |
|                                                                                   | EECE 4410                  | Integrated Microelectronic Circuits                                                                    |
|                                                                                   | EECE 4740                  | Advanced VHDL and FPGA Design                                                                          |
| Depth courses                                                                     | ELEN 3030                  | Analog Electronics                                                                                     |
|                                                                                   | ELEN 3025 AND<br>ELEN 3035 | Instrumentation Lab and Analog Lab<br>(Taking BOTH counts as a single breadth course)                  |
|                                                                                   | EECE 4510                  | Digital Signal Processing                                                                              |
|                                                                                   | EECE 4310                  | Control Systems                                                                                        |
|                                                                                   | EECE 4560                  | Introduction to Communication Systems                                                                  |
|                                                                                   | COSC 4290                  | Real-Time and Embedded Systems                                                                         |
| <b>Software</b>                                                                   |                            |                                                                                                        |
| Breadth courses<br>(can be used toward<br>either breadth or depth<br>requirement) | COEN 4610                  | Object-Oriented Software Engineering                                                                   |
|                                                                                   | COEN 4620                  | Modern Programming Practices                                                                           |
|                                                                                   | COEN 4630                  | Software Testing                                                                                       |
|                                                                                   | COEN 4690                  | Developments in Computer Software                                                                      |
| Depth courses                                                                     | COEN 4810 or<br>COSC 4800  | Database Applications (COEN 4810)<br>Principles of Database Systems (COSC 4800)                        |
|                                                                                   | COEN 4830                  | Introduction to Computer Graphics                                                                      |
|                                                                                   | COEN 4840                  | Computer Security                                                                                      |
|                                                                                   | COSC 3410                  | Programming Languages                                                                                  |
|                                                                                   | COSC 4400                  | Compiler Construction                                                                                  |
|                                                                                   | COSC 4860                  | Component-Based Software Construction                                                                  |
|                                                                                   | COSC 4300                  | Networks and Internets                                                                                 |
|                                                                                   | COSC 3550                  | Programming Computer Games                                                                             |
| <b>Intelligent Systems</b>                                                        |                            |                                                                                                        |
| Breadth courses<br>(can be used toward<br>either breadth or depth<br>requirement) | COEN 4650                  | Introduction to Algorithms                                                                             |
|                                                                                   | COEN 4850 or<br>COSC 4600  | Introduction to Intelligent Systems (COEN 4850)<br>Fundamentals of Artificial Intelligence (COSC 4600) |
|                                                                                   | COEN 4860                  | Introduction to Neural Nets & Fuzzy Systems                                                            |
|                                                                                   | COEN 4870                  | Evolutionary Computation                                                                               |
| Depth courses                                                                     | COEN 4840                  | Computer Security                                                                                      |
|                                                                                   | COSC 4110                  | Formal Languages and Computability                                                                     |
|                                                                                   | COSC 4610                  | Data Mining                                                                                            |
|                                                                                   | COSC 3550                  | Programming Computer Games                                                                             |