B.S. COMPUTER ENGINEERING / M.S. ELECTRICAL AND COMPUTER ENGINEERING

Overview

This is a structured and integrated program of 154 credit hours. Students may pursue this program from either of the undergraduate options available for Computer Engineering Majors. It includes two required courses, ECE 715 and ECE 716 as well as the selection of advanced technical electives.

- At least 30 credit hours must be at the graduate (600 or 700) level. Of these, at least 12 credit hours must be in courses open to graduate students only (700 level).
- Interested Computer Engineering juniors with cumulative GPA above 3.0 may declare their intent to participate by submitting an official application to the Departmental Graduate Committee for admission into the M.S.E.C.E. portion of the program.
- A student wishing to drop out of the five-year program without the M.S.E.C.E. degree could receive the B.S.Cp.E. degree after completing all its requirements, including the senior design project.
- · All students must take the Graduate Record Examination (G.R.E.) before beginning their fifth-year courses.
- To qualify for the M.S.E.C.E. degree, students must meet all the pertinent Graduate School requirements, including an acceptable GRE score and a minimum of 3.0 GPA in the 30 credit hours applied towards the M.S.E.C.E. degree.
- The student is awarded both the B.S.Cp.E. and the M.S.E.C.E. degrees after the requirements for both degrees are satisfied.

For more information about the BS/MS Program please refer to the College of Engineering Section (http://bulletin.miami.edu/undergraduate-academic-programs/engineering/#fiveyearbsmsprogramtext).

Software Engineering Option

This is a structured and integrated program of 155 credit hours. Students may pursue this program from either of the undergraduate options available for Computer Engineering Majors. It includes two required courses, ECE 715 and ECE 716 as well as the selection of advanced technical electives.

- At least 30 credit hours must be at the graduate (600 or 700) level. Of these, at least 12 credit hours must be at 700 level. More specifically, in addition to ECE 715 (M.S. Design Project I) and ECE 716 (M.S. Design Project II), at least 6 credit hours must be in courses open to graduate students only (700 level).
- Interested Computer Engineering juniors with cumulative GPA above 3.0 may declare their intent to participate by submitting an official application to the Departmental Graduate Committee for admission into the M.S.E.C.E. portion of the program.
- A student wishing to drop out of the five-year program without the M.S.E.C.E. degree could receive the B.S.Cp.E. degree after completing all its requirements, including the senior design project.
- To qualify for the M.S.E.C.E. degree, students must meet all the pertinent Graduate School requirements, including an acceptable GRE score and a minimum of 3.0 GPA in the 30 credit hours applied towards the M.S.E.C.E. degree.
- The student is awarded both the B.S.Cp.E. and the M.S.E.C.E. degrees after the requirements for both degrees are satisfied.

For more information about the BS/MS Program please refer to the College of Engineering Section (http://bulletin.miami.edu/undergraduateacademic-programs/engineering/#fiveyearbsmsprogramtext).

Admission Requirements

- Interested Computer Engineering juniors with cumulative GPA above 3.0 may declare their intent to participate by submitting an official application to the Departmental Graduate Committee for admission into the M.S.E.C.E. portion of the program.
- To qualify for the M.S.E.C.E. degree, students must meet all the pertinent Graduate School requirements, including an acceptable GRE score and a minimum of 3.0 GPA in the 30 credit hours applied towards the M.S.E.C.E. degree.

Curriculum Requirements: B.S. Computer Engineering / M.S. Electrical and Computer Engineering

Code	Title	Credit Hours
BS IN COMPUTER ENGINEERING REQUIREMENTS (124 CR	EDIT HOURS)	
Engineering Courses		
EGN 123	Computing and Digital Solutions for the future	3
ECE 118	Introduction to Programming	3
ECE 112	Introduction to Engineering II	2
ECE 201	Electrical Circuit Theory	3
ECE 202	Electronics I	3

Arts and Humanities Cognate People and Society Cognate		9
Areas of Knowledge:		
MTH 151	Calculus I for Engineers (fulfilled through the major)	
Quantitative Skills:		
WRS 107	First-Year Writing II: STEM	3
WRS 105	First-Year Writing I	3
Written Communication Skills:		
General Education Requirements		
Basic Science Lab Elective		1
Basic Science Electives		6
or PHY 225	University Physics III Lab	
PHY 224	University Physics II Lab	1
or PHY 223	University Physics III	_
PHY 222	University Physics II	3
	University Physics I	3
PHY 221		
MTH 311	Introduction to Ordinary Differential Equations	3
MTH 309	Discrete Mathematics I	3
MTH 210	Introduction to Linear Algebra	3
MTH 162	Calculus II	4
MTH 151	Calculus I for Engineers	5
ECE 310	Introduction to Engineering Probability	3
Math and Science Courses		0
ECE Technical Elective ¹		3
CE Technical Electives ¹		6
ECE 481	Senior Project I	1
ECE 467	Database Design and Management	3
ECE 455	Design-for-Testability Laboratory	1
ECE 454	Digital System Design and Testing	3
ECE 421	Computer Operating Systems	3
ECE 414 ECE 417	Embedded Microprocessor System Design	3
ECE 414	Computer Organization and Design	3
ECE 318 ECE 322	Systems Programming	3
ECE 318	Algorithms	3
ECE 316	Structured Digital Design	1
ECE 303 ECE 315	Digital Design Laboratory	1
ECE 302 ECE 303	Electronics Laboratory	1
ECE 302	Electronics II	3
ECE 212 ECE 218	Data Structures	3
ECE 212	Processors: Hardware, Software, and Interfacing	3
ECE 211	Logic Design	3
ECE 203 ECE 206	Electrical Circuits Laboratory Circuits, Signals, and Systems	1

Curriculum Requirements: B.S. Computer Engineering / M.S. Electrical and Computer Engineering - Software Option

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PHY 221University Physics I3PHY 222University Physics II3or PHY 223University Physics III1PHY 224University Physics II Lab1or PHY 225University Physics III Lab1Basic Science Electives6Basic Science Lab Elective1General Education RequirementsWritten Communication Skills:First-Year Writing I3WRS 105First-Year Writing II: STEM3Quantitative Skills:Stelester3	MTH 210	Introduction to Linear Algebra	3
PHY 222University Physics II3or PHY 223University Physics III Lab1PHY 224University Physics II Lab1or PHY 225University Physics III Lab6Basic Science Electives6Basic Science Lab Elective1General Education RequirementsWritten Communication Skills:First-Year Writing I3WRS 105First-Year Writing II: STEM3Quantitative Skills:13	MTH 309	Discrete Mathematics I	3
or PHY 223University Physics IIIPHY 224University Physics II Labor PHY 225University Physics III LabBasic Science Electives6Basic Science Lab Elective1General Education RequirementsWritten Communication Skills:WRS 105First-Year Writing IWRS 107First-Year Writing II: STEMQuantitative Skills:	PHY 221	University Physics I	3
PHY 224University Physics II Lab1or PHY 225University Physics III LabBasic Science Electives6Basic Science Lab Elective1General Education RequirementsWritten Communication Skills:WRS 105First-Year Writing IWRS 107First-Year Writing II: STEMQuantitative Skills:	PHY 222	University Physics II	3
or PHY 225 University Physics III Lab Basic Science Electives 6 Basic Science Lab Elective 1 General Education Requirements Written Communication Skills: WRS 105 First-Year Writing I 3 WRS 107 First-Year Writing II: STEM 3 Quantitative Skills:	or PHY 223	University Physics III	
Basic Science Electives6Basic Science Lab Elective1General Education Requirements1Written Communication Skills:1WRS 105First-Year Writing IWRS 107First-Year Writing II: STEMQuantitative Skills:3	PHY 224	University Physics II Lab	1
Basic Science Lab Elective 1 General Education Requirements 7 Written Communication Skills: 7 WRS 105 First-Year Writing I WRS 107 First-Year Writing II: STEM Quantitative Skills: 3	or PHY 225	University Physics III Lab	
General Education Requirements Written Communication Skills: WRS 105 First-Year Writing I 3 WRS 107 First-Year Writing II: STEM 3 Quantitative Skills: Step Step Step Step Step Step Step Step	Basic Science Electives		6
Written Communication Skills: WRS 105 First-Year Writing I WRS 107 First-Year Writing II: STEM Quantitative Skills:			1
WRS 105First-Year Writing I3WRS 107First-Year Writing II: STEM3Quantitative Skills:	-		
WRS 107 First-Year Writing II: STEM 3 Quantitative Skills:			
Quantitative Skills:			
		First-Year Writing II: STEM	3
MTH 151 Calculus I for Engineers (fulfilled through the major)	•		
	MTH 151	Calculus I for Engineers (fulfilled through the major)	

Areas of Knowledge:		
Arts and Humanities Cognate		9
People and Society Cognate		9
STEM Cognate (9 credits) (fulfilled through the major)		
M.S. IN ELECTRICAL AND COMPUTER ENGINEERING REQU	IREMENTS (30 CREDIT HOURS)	
ECE 715	M.S. Design Project I	3
ECE 716	M.S. Design Project II	3
SE 600 Level Electives ^{1,3}		6
CE 600 Level Electives ^{1,3}		12
700 Level Technical Elective ^{1,3}		6
Total Credit Hours		155

Suggested Plan of Study: B.S. Computer Engineering / M.S. Electrical and Computer Engineering

Encolonian Veen		
Freshman Year		
Fall		Credit Hours
EGN 123	Computing and Digital Solutions for the future	3
ECE 118	Introduction to Programming	3
WRS 105	First-Year Writing I	3
MTH 151	Calculus I for Engineers	5
	Credit Hours	14
Spring		
ECE 112	Introduction to Engineering II	2
ECE 218	Data Structures	3
WRS 107	First-Year Writing II: STEM	3
MTH 162	Calculus II	4
PHY 221	University Physics I	3
People and Society Cognate ¹		3
	Credit Hours	18
Sophomore Year		
Fall		
ECE 211	Logic Design	3
ECE 318	Algorithms	3
MTH 210	Introduction to Linear Algebra	3
PHY 222 or 223	University Physics II	3
	or University Physics III	
PHY 224 or 225	University Physics II Lab	1
	or University Physics III Lab	
Arts and Humanities Cognate ¹		3
	Credit Hours	16
Spring		
ECE 201	Electrical Circuit Theory	3
ECE 212	Processors: Hardware, Software, and Interfacing	3
ECE 315	Digital Design Laboratory	1
ECE 310	Introduction to Engineering Probability	3
MTH 309	Discrete Mathematics I	3
People and Society Cognate ¹		3
	Credit Hours	16
Junior Year		
Fall		
ECE 202	Electronics I	3
ECE 203	Electrical Circuits Laboratory	1

ECE 316	Structured Digital Design	1
ECE 322	Systems Programming	3
ECE 414	Computer Organization and Design	3
Basic Science Elective ¹		3
Arts and Humanities Cognate ¹		3
	Credit Hours	17
Spring		
ECE 302	Electronics II	3
ECE 303	Electronics Laboratory	1
ECE 454	Digital System Design and Testing	3
ECE 455	Design-for-Testability Laboratory	1
ECE 467	Database Design and Management	3
MTH 311	Introduction to Ordinary Differential Equations	3
Basic Science Elective ¹		3
Basic Science Lab Elective ¹		1
	Credit Hours	18
Senior Year		
Fall		
ECE 206	Circuits, Signals, and Systems	3
ECE 417	Embedded Microprocessor System Design	3
ECE 481	Senior Project I ²	1
SE 600 Level Elective ^{1,3}		3
SE 600 Level Elective ^{1,3}		3
Arts and Humanities Cognate ¹		3
People and Society Cognate ¹		3
	Credit Hours	19
Spring		
ECE 421	Computer Operating Systems	3
CE Technical Elective ¹		3
CE Technical Elective ¹		3
ECE Technical Elective ¹		3
CE 600 Level Elective ^{1,3}		3
CE 600 Level Elective ^{1,3}		3
	Credit Hours	18
Fifth Year		
Fall		
ECE 715	M.S. Design Project I	3
CE 600 Level Elective ^{1,3}		3
700 Level Technical Elective ^{1,3}		3
	Credit Hours	9
Spring		
ECE 716	M.S. Design Project II	3
CE 600 Level Elective ^{1,3}		3
700 Level Technical Elective ^{1,3}		3
	Credit Hours	9
	Total Credit Hours	154

¹ See description of electives under the Departmental Electives Section.

² Offered only in the Fall semester.

³ Should be taken as Graduate (G) courses.

Suggested Plan of Study: B.S. Computer Engineering / M.S. Electrical and Computer Engineering - Software Option

Freshman Year	-	
Fall		Credit Hours
EGN 123	Computing and Digital Solutions for the future	3
ECE 118	Introduction to Programming	3
WRS 105	First-Year Writing I	3
MTH 151	Calculus I for Engineers	5
	Credit Hours	14
Spring		
ECE 112	Introduction to Engineering II	2
ECE 218	Data Structures	3
WRS 107	First-Year Writing II: STEM	3
MTH 162	Calculus II	4
PHY 221	University Physics I	3
	Credit Hours	15
Sophomore Year		
Fall		
ECE 211	Logic Design	3
ECE 318	Algorithms	3
MTH 210	Introduction to Linear Algebra	3
PHY 222 or 223	University Physics II	3
	or University Physics III	
PHY 224 or 225	University Physics II Lab or University Physics III Lab	1
Arts and Humanities Cognate ¹		3
	Credit Hours	16
Spring		
ECE 201	Electrical Circuit Theory	3
ECE 212	Processors: Hardware, Software, and Interfacing	3
ECE 315	Digital Design Laboratory	1
ECE 310	Introduction to Engineering Probability	3
MTH 309	Discrete Mathematics I	3
People and Society Cognate ¹		3
, , , , ,	Credit Hours	
Junior Year		-
Fall		
ECE 202	Electronics I	3
ECE 203	Electrical Circuits Laboratory	1
ECE 322	Systems Programming	3
ECE 412	Software Engineering and Architecture	3
ECE 414	Computer Organization and Design	3
Basic Science Elective ¹	comparer organization and beorgn	3
Basic Science Lab Elective		1
	Credit Hours	17
Spring	Great Hours	
ECE 316	Structured Digital Design	1
ECE 413	Software Design and Verification	3
ECE 413 ECE 421 or CSC 421	-	
EUE 421 01 USU 421	Computer Operating Systems or Principles of Computer Operating Systems	3
ECE 467 or CSC 423	Database Design and Management	3
	or Database Systems	5

ECE 716	M.S. Design Project II	
Spring		
	Credit Hours	
700 Level Technical Elective ¹		
CE 600 Level Elective		
CE 600 Level Elective ¹	M.S. Design Project I	
Fall ECE 715	M.C. Design Project	
Fifth Year		
- :61 V	Credit Hours	1:
People and Society Cognate ¹	- P.11	
CE 600 Level Elective ^{1,3}		
SE Technical Elective ¹		
SE Technical Elective ¹		
CSC 419	Programming Languages	
ECE 470	Network Client-Server Programming	
Spring		
	Credit Hours	1
Arst and Humanities Cognate ¹		
Arts and Humanities Cognate ¹		
SE 600 Level Elective ^{1,3}		
SE 600 Level Elective ^{1,3}		
CSC 317	Data Structures and Algorithm Analysis	
ECE 481	Senior Project I ²	
ECE 417	Embedded Microprocessor System Design	
Fall		
Senior Year		
reopie and obolety obghate	Credit Hours	
People and Society Cognate ¹		
Basic Science Elective ¹		