



**CATALOG YEAR 2014-2015**

COLLEGE/SCHOOL/SECTION: College of Arts and Sciences

**Course:** Add: \_\_\_ Delete: \_\_\_ Change: \_\_\_\_\_

(check all that apply)

Number \_\_\_ Title \_\_\_ SCH \_\_\_ Description \_\_\_ Prerequisite \_\_\_\_\_

**Response Required:** New course will be part of major \_\_\_ minor \_\_\_ as a required \_\_\_ or elective \_\_\_ course

**Response Required:** New course will introduce \_\_\_, reinforce \_\_\_, or apply \_\_\_ concepts

If new, provide Course Prefix, Number, Title, **Measurable** Student Learning Outcomes, SCH Value, Description, prerequisite, and lecture/lab hours if applicable. If in current online catalog, provide change and attach text with changes in red and provide a brief justification.

**Program:** Delete: \_\_\_ Add: \_\_\_ Change: X Attach new/changed Program of Study description and 4-year plan. If in current online catalog, provide change and attach text with changes in red.

**B.S. Major in Systems Engineering (see the attached sheets for details)**

**Justification**

The curriculum of B.S. Major in systems engineering is being changed from 126 credit hours to 128 credit hours:

1. Due to new changed core curriculum, it is required to add UNIV 1101 and UNIV 1102 in the curriculum. As the old curriculum is presented to the ABET accreditation board, the total credit hours cannot be reduced for consistency.
2. Based on ABET accreditation regulation, a total of 32 credit hours or 25% of total credit hours in Mathematics and Science courses are required.
3. Based on proper pre-requisite course matrix, the revised curriculum systems engineering program is given below.

**Minor:** Add: \_\_\_ Delete: \_\_\_ Change: \_\_\_ Attach new/changed minor. If in current online catalog, provide change and attach text with changes in red.

**College Introductory Pages:** Add information: \_\_\_ Change information: \_\_\_ Attach new/changed information. If in current online catalog, provide change and attach text with changes in red.

**Other:** Add information: \_\_\_ Change information: \_\_\_ Attach new/changed information. If in current online catalog, provide change and attach text with changes in red.

Approvals:

Signature

Date

Chair  
Department Curriculum Committee

Chair  
Department

Chair  
College Curriculum Committee

Dean

Rohitha Goonatilake,  
Ph.D.

Digitally signed by Rohitha Goonatilake, Ph.D.  
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Goonatilake, Ph.D.

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Lynne L. Manganaro

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\_\_\_\_\_  
Provost's Signature  
Date \_\_\_\_\_

**BACHELOR OF SCIENCE**  
**MAJOR IN SYSTEMS ENGINEERING (Revised January 2014)**

Following is **one** suggested four-year degree plan. Students are encouraged to see their advisor each semester for help with program decisions and enrollment; responsible for reviewing the **Program of Study Requirements**; and must meet **foreign language** and **writing intensive course** requirements for graduation. See [Academic Regulations-Undergraduate](#).

\*See [Appendix A](#) Core Curriculum and Optional Course Information

<b>FALL</b>				<b>HOURS</b>	<b>SPRING</b>				<b>HOURS</b>
<b>FRESHMAN YEAR</b>					<b>FRESHMAN YEAR</b>				
UNIV	1101	Learning in a Global Context I	1	UNIV	1102	Learning in a Global Context II	1		
ENGL	1301	English Composition I	3	ENGL	1302	English Composition II	3		
ENGR	1201	Foundations of Engr I	2	ENGR	1202	Foundations of Engr II	2		
HIST	1301	The U.S. to 1877	3	HIST	1302	The U.S. Since 1877	3		
MATH	2413	Calculus I	4	MATH	2414	Calculus II	4		
COSC	1136	Fundtls of Progrmg Lab	1	PHYS	2125	University Phys I Lab	1		
COSC	1336	Fundtls of Progrmg	3	PHYS	2325	University Physics	3		
				ENGR	1204	Engineering Graphics	2		
<b>Total</b>			<b>17</b>	<b>Total</b>			<b>19</b>		
<b>SOPHOMORE YEAR</b>					<b>SOPHOMORE YEAR</b>				
PHYS	2126	University Phys II Lab	1	ENGR	2105	Electrical Engr Lab	1		
PHYS	2326	University Physics II	3	ENGR	2305	Electrical Engineering	3		
ENGL	2311	Technical Communication-WIN	3	ENGR	2376	Cons Prins Thrml Engr	3		
ENGR	2103	Statics & Dynamics Lab	1	MATH	3310	Intro to Linear Algebra	3		
ENGR	2303	Statics & Dynamics	3	CHEM	1111	General Chemistry I Lab	1		
MATH	2415	Calculus III	4	CHEM	1411	General Chemistry I	3		
		Lang., Phil., & Culture*	3			Creative Arts*	3		
<b>Total</b>			<b>18</b>	<b>Total</b>			<b>17</b>		
<b>JUNIOR YEAR</b>					<b>JUNIOR YEAR</b>				
PSCI	2305	American National Govt	3	PSCI	2306	American State Govt	3		
ENGR	2372	Engineering Statistics	3	SENG	3300	Engineering Economics	3		
SENG	3310	Intro to Control Systems	3	SENG	3330	Operations Research I	3		
SENG	3320	Engr Modeling & Design	3	SENG	3350	Prod Plang & Control	3		
SENG	3380	Measurements and Devices	3	SENG	3337	Software Development	3		
		Soc/Behavioral Sci*	3	<b>Total</b>					
<b>Total</b>			<b>18</b>	<b>Total</b>			<b>15</b>		
<b>SENIOR YEAR</b>					<b>SENIOR YEAR</b>				
SENG	4301	Engr Proj Mgt & Proposal	3	SENG	3370	Computer Integrated Mfg.	3		
SENG	4315	Embedded Systems	3	SENG	4350	Facilities Dsgn & Logistics	3		
SENG	4360	Systems Simulation	3			Engineering Elective <sup>1</sup>	3		
SENG	3340	Robotics & Automation	3	SENG	4390	SE Senior Dgn Proj	3		
<b>Total</b>			<b>12</b>	<b>Total</b>			<b>12</b>		
<b>TOTAL SEMESTER CREDIT HOURS: 128</b>									

**Engineering Electives<sup>1</sup>:** 3 SCH selected from SENG 4330, SENG 4340, SENG 4370, SENG 4385, SENG 4152-4352, SENG 4195-4395, and SENG 4199-4399.

Corrections to POR on next page.

**Degree Requirements for the BS with a Major in Systems Engineering**

1. **Hours Required:** A minimum of **128** semester credit hours (SCH): 45 hours must be advanced, and fulfillment of degree requirements as specified in the “Requirements for Graduation” section of this catalog.
2. **University Core Curriculum:** **42** SCH as outlined in the suggested plans and as specified in the “Requirements for Graduation”. MATH 2413 must be taken as part of the core.
3. **Major:** **59** SCH including COSC 1136, COSC 1336, ENGR 1201, ENGR 1202, ENGR 1204, ENGR 2103, ENGR 2303, ENGR 2105, ENGR 2305, ENGR 2372, ENGR 2376, SENG 3300, SENG 3310, SENG 3320, SENG 3330, SENG 3337, SENG 3340, SENG 3350, SENG 3370, SENG 3380, SENG 4301, SENG 4315, SENG 4350, SENG 4360, and SENG 4390.
4. **Math & Sciences:** **34** SCH selected from **CHEM 1111/1411, PHYS 2125/2325, PHYS 2126/2326, MATH 2413, MATH 2414, MATH 2415, MATH 3310, ENGR 2103/2303, and ENGR 2372.**
5. **Engineering Electives:** **3** SCH selected from SENG 4330, SENG 4340, SENG 4370, SENG 4385, SENG 4152-4352, SENG 4195-4395, and SENG 4199-4399.

**Engineering Electives<sup>1</sup>**

Prefix and Number		Engineering Electives Courses	SCH
SENG	4330	Operations Research II	3
SENG	4340	Intelligent Systems	3
SENG	4370	Introduction to Virtual Manufacturing	3
SENG	4385	Special Topics in Systems Engineering	3
SENG	4195-4395	Undergraduate Research	3
SENG	4199-4399	Independent Study	3
SENG	4152-4352	Internship in Systems Engineering	3

**From:** Goonatilake, Hoonandara R  
**Sent:** Monday, February 24, 2014 6:38 PM  
**To:** Trevino, Mary T.  
**Subject:** RE: Degree Requirements for the BS with a Major in Systems Engineering  
Yes, this covers all changes.  
Thanks,  
Rohitha Goonatilake

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From: Trevino, Mary T.  
Sent: Monday, February 24, 2014 6:17 PM  
To: Goonatilake, Hoonandara R  
Subject: RE: Degree Requirements for the BS with a Major in Systems Engineering

Does the attached cover all the changes?

-----Original Message-----

From: Goonatilake, Hoonandara R  
Sent: Sunday, February 23, 2014 4:12 PM  
To: Trevino, Mary T.  
Subject: RE: Degree Requirements for the BS with a Major in Systems Engineering

Dear Mary,

I was checking "Degree Requirements for the BS with a Major in Systems Engineering." The following would address your concerns. My comments are provided within square brackets, [...]. We appreciate your intervention in the process to make sure these degree programs are presented accurately.

1. Hours Required: A minimum of 128 semester credit hours (SCH): 45 hours must be advanced, and fulfillment of degree requirements as specified in the "Requirements for Graduation" section of this catalog. [Nothing is revised.]
2. University Core Curriculum: 42 SCH as outlined in the suggested plans and as specified in the "Requirements for Graduation". MATH 2413 must be taken as part of the core. [Math 2413 is fine! However, there is an excess of 1 SCH that goes to "Math & Sciences" requirement in the program. Please only count 1 SCH there instead of 4 SCH listed under 4.]
3. Major: 66 SCH including COSC 1136, COSC 1336, ENGR 1201, ENGR 1202, ENGR 1204, ENGR 2103, ENGR 2303, ENGR 2105, ENGR 2305, ENGR 2372, ENGR 2376, SENG 3300, SENG 3310, SENG 3320, SENG 3330, SENG 3337, SENG 3340, SENG 3350, SENG 3370, SENG 3380, SENG 4301, SENG 4315, SENG 4350, SENG 4360, and SENG 4390. The courses listed above total 66 SCH. [This is 66 SCH not 59 SCH as listed at the beginning of 3. earlier.]
4. Mathematics & Sciences: 34 SCH [to be revised to 17 SCH] selected from CHEM 1111/1411 [if we list CHEM 1411, the lab is CHEM 1011. So, it is CHEM 1011/1411.], PHYS 2125/2325, PHYS 2126/2326, [7 SCH from PHYS 2125/2325/2126/2326 are already listed for core], MATH 2413 [only 1 SCH counts here], MATH 2414, MATH 2415, MATH 3310, ENGR 2103/2303, and ENGR 2372. [Do not count as all ENGR 2103/2303, and ENGR 2372 are repeated under 3. and must be deleted here.] [This is now 17 SCH.]
5. Engineering Electives: 3 SCH selected from SENG 4330, SENG 4340, SENG 4370, SENG 4385, SENG 4152-4352, SENG 4195-4395, and SENG 4199-4399.  
[Nothing is revised here.]  
[Adding the SCH with the above corrections, the total is 128 SCH: 42 + 66 + 17 + 3 = 128 as listed in the four-year suggested plan.]

Thanks,  
Rohitha Goonatilake

Revised POR:

**Degree Requirements for the BS with a Major in Systems Engineering**

1. **Hours Required:** A minimum of **128** semester credit hours (SCH): 45 hours must be advanced, and fulfillment of degree requirements as specified in the "Requirements for Graduation" section of this catalog.
2. **University Core Curriculum:** **42** SCH as outlined in the suggested plans and as specified in the "Requirements for Graduation". MATH 2413 must be taken as part of the Core.
3. **Major:** **59 66** SCH including COSC 1136, 1336, ENGR 1201, 1202, 1204, 2103, 2303, 2105, 2305, 2372, 2376, SENG 3300, 3310, 3320, 3330, 3337, 3340, 3350, 3370, 3380, 4301, 4315, 4350, 4360, and 4390.
4. **MATH AND SCIENCES:** **42 17** SCH including 1 SCH MATH excess in the core, **1 SCH PHYS 2126, CHEM 1111/1311, MATH 2414, MATH 2415, MATH 3310.**
5. **Systems Engineering Electives:** **6 3** SCH selected from SENG 4330, SENG 4340, SENG 4370, SENG 4385, SENG 4152-4352, SENG 4195-4395, and SENG 4199-4399.

**BACHELOR OF SCIENCE**  
**MAJOR IN SYSTEMS ENGINEERING (Change in Old Curriculum)**

Following is **one** suggested four-year degree plan. Students are encouraged to see their advisor each semester for help with program decisions and enrollment; responsible for reviewing the **Program of Study Requirements**; and must meet **foreign language** and **writing intensive course** requirements for graduation. See [Academic Regulations-Undergraduate](#).

\*See [Appendix A](#) Core Curriculum and Optional Course Information

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<b>FRESHMAN YEAR</b>			<b>FRESHMAN YEAR</b>				
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ENGR	1201	Foundations of Engr I	2	ENGR	1202	Foundations of Engr II	2
<del>PSCI</del>	<del>2305</del>	<del>American National Govt</del>	<del>3</del>	<del>PSCI</del>	<del>2306</del>	<del>American State Govt</del>	<del>3</del>
HIST	1301	The U.S. to 1877	3	HIST	1302	The U.S. Since 1877	3
MATH	2413	Calculus I	4	MATH	2414	Calculus II	4
COSC	1136	Fundtls of Progrmg Lab	1	PHYS	2125	University Phys I Lab	1
COSC	1336	Fundtls of Progrmg	3	PHYS	2325	University Physics	3
				ENGR	1204	Engineering Graphics	2
<b>Total</b>			<b>16</b>	<b>Total</b>			<b>16</b>
			<b>17</b>				<b>19</b>
<b>SOPHOMORE YEAR</b>			<b>SOPHOMORE YEAR</b>				
PHYS	2126	University Phys II Lab	1	ENGR	2105	Electrical Engr Lab	1
PHYS	2326	University Physics II	3	ENGR	2305	Electrical Engineering	3
<del>ENGL</del>	<del>2311</del>	<del>Technical Writing</del>	<del>3</del>	<del>ENGR</del>	<del>2372</del>	<del>Engr. Stat. and Qlty Cntrl.</del>	<del>3</del>
ENGL	2311	Technical Communication-WIN	3	ENGR	2376	Cons Prins Thrml Engr	3
ENGR	2103	Statics & Dynamics Lab	1	MATH	3310	Intro to Linear Algebra	3
ENGR	2303	Statics & Dynamics	3	CHEM	1111	General Chemistry I Lab	1
MATH	2415	Calculus III	4	CHEM	1411	General Chemistry I	3
		Lang., Phil., & Culture*	3	-	-	<del>Visual/Perform Arts*</del>	<del>3</del>
						Creative Arts*	3
<b>Total</b>			<b>17</b>	<b>Total</b>			<b>16</b>
			<b>18</b>				<b>17</b>

**JUNIOR YEAR**

HIST	1301	The U.S. to 1877	3
PSCI	2305	American National Govt	3
SENG	3300	Engineering Economics	3
ENGR	2372	Engineering Statistics	3
SENG	3310	Intro to Control Systems	3
SENG	3320	Engr Modeling & Design	3
SENG	3380	Measurements and Devices	3
-	-	Activity/Wellness*	1
		Soc/Behavioral Sci*	3
<b>Total</b>			<b>16 18</b>

**JUNIOR YEAR**

HIST	1302	The U.S. Since 1877	3
PSCI	2306	American State Govt	3
SENG	3300	Engineering Economics	3
SENG	3330	Operations Research I	3
SENG	3350	Prod Plang & Control	3
SENG	3340	Robotics & Automation	3
SENG	3337	Software Development	3
<b>Total</b>			<b>18 15</b>

**SENIOR YEAR**

SENG	4301	Engr Proj Mgt & Proposal	3
SENG	4315	Embedded Systems	3
SENG	4360	Systems Simulation	3
		Engineering Elective <sup>1</sup>	3
SENG	3340	Robotics & Automation	3
		Soc/Behavioral Sci*	3
<b>Total</b>			<b>15 12</b>

**SENIOR YEAR**

SENG	3370	Computer Integrated Mfg.	3
SENG	4350	Facilities Dsgn & Logistics	3
		Engineering Elective <sup>1</sup>	3
SENG	4390	SE Senior Dgn Proj	3
<b>Total</b>			<b>12</b>

**TOTAL SEMESTER CREDIT HOURS: 126 128**

**Systems Engineering Electives<sup>1</sup>: 6 3** SCH selected from SENG 4330, SENG 4340, SENG 4370, SENG 4385, SENG 4195-4395, SENG 4199-4399, SENG 4152-4352.

**Degree Requirements for the BS with a Major in Systems Engineering**

- Hours Required:** A minimum of **126 128** semester credit hours (SCH): 45 hours must be advanced, and fulfillment of degree requirements as specified in the “Requirements for Graduation” section of this catalog.
- University Core Curriculum:** 42 SCH as outlined in the suggested plans and as specified in the “Requirements for Graduation”. MATH 2413 must be taken as part of the core.
- Major:** **66 59** SCH including COSC 1136, COSC 1336, ENGR 1201, ENGR 1202, ENGR 1204, ENGR 2103, ENGR 2303, ENGR 2105, ENGR 2305, ENGR 2372, ENGR 2376, SENG 3300, ~~SENG 4301~~, SENG 3310, SENG 3320, SENG 3330, SENG 3337, SENG 3340, SENG 3350, SENG 3370, SENG 3380, **SENG 4301**, SENG 4315, SENG 4350, SENG 4360, and SENG 4390.
- MATH Math & Sciences:** **34 SCH 12 SCH** including ~~1 SCH surplus from core and MATH 2414, MATH 2415, and MATH 3310.~~ selected from CHEM 1111/1411, PHYS 2125/2325, PHYS 2126/2326, MATH 2413, MATH 2414, MATH 2415, MATH 3310, ENGR 2103/2303, and ENGR 2372.
- Systems Engineering Electives:** **6 3** SCH selected from SENG 4330, SENG 4340, SENG ~~4370~~, SENG 4385, SENG ~~4152-4352~~, SENG ~~4195-4395~~, and SENG ~~4199-4399~~.

**Systems Engineering Electives<sup>1</sup>**

<b>Prefix and Number</b>		<b>Engineering Electives Courses</b>	<b>SCH</b>
SENG	4330	Operations Research II	3
SENG	4340	Intelligent Systems	3
SENG	4370	Introduction to Virtual Manufacturing	3
SENG	4385	Special Topics in Systems Engineering	3
SENG	4195-4395	Undergraduate Research	3
SENG	4199-4399	Independent Study	3
SENG	4152-4352	Internship in Systems Engineering	3