

Approval Chart for Curriculum Changes

A = Approval I = Information*

Course Number _____ or Degree Plan(s) BS: Physics

State the requested change and reason. A memo may be attached if more space is necessary.

Changes are proposed to the BS in Physics degree. The tracks have been updated to better meet student needs. The specific goals of each track are:
 PHYS: prepare students for graduate school in physics.
 PHYA: prepare students that are interested in physics, but want to pursue multiple majors (i.e physics/CS double majors), preparation for professional fields (i.e. law school), or want maximum flexibility in their course selection.
 PHYC: prepare students for employment in a computational physics career.
 PHYM: prepare students for medical physics positions or medical school.
 Attached is the 1. Current degree, 2. Proposed degree, 3. Marked up versions of the changes to each track.

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

		COUNCIL**								
	Change to a Course	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President
1.	Title (description unchanged)	A	A	A	I			I	--	I
2.	Description (not affecting content)	A	A	A	I			I	--	I
3.	Content (substantive change)	A	A	A	I			A	--	A
4.	Number of hours (lecture, lab, contact)	A	A	A	A			A	--	A
5.	Course number within the hundred	A	A	I	I			I	--	I
6.	Course number beyond the hundred	A	A	A	A			A	--	A
7.	Prerequisites	A	A	A	I			I	--	I
8.	Course fee(s)	A	--	A	--			A	--	I
9.	From U to G <i>or</i> G to U	A	A	A	A			A	--	A
10.	Cross list with another dept: U or G level	A	A	A	A			A	--	A
11.	Department of record	A	A	A	A			A	--	A
12.	Open or close a course	A	A	A	A			A	--	A
13.	New course — See Adams Center for packet. This change includes combining or splitting a course(s).	A	A	A	A			A	--	A

* Councils may request additional information about "Information" items. These items are approved as "Consent Agenda."

** In most cases, approval by only one council is necessary.

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

Approval Chart for Curriculum Changes

A = Approval I = Information

	Change to a Degree Plan	Dept./School	College Academic	Deans	COUNCIL			Provost	Faculty	President	Board of Trustees
					UGEC	UUAC	GRAD				
1.	University Requirements — Require or change a specific course from a menu within a degree plan	A	A	I		I		I	--	I	--
2.	University Requirements — Substitute an existing course for a university requirement within a degree plan	A	A	A		A		A	--	A	--
3.	University Requirements — Add a course to or drop a course from the University Requirements	A	A	A		A		A	A	A	--
4.	University Requirements — Change in approved course content	A	A	A		A		A	--	A	--
5.	Major — Revision of major ♦ ‡	A	A	A		A		A	--	A	--
6.	Major — Adopt or change admission requirements	A	A	A		A		A	--	A	--
7.	Major — Add or discontinue	A	A	A		A		A	A	A	I
8.	GPA — Revise major or cumulative requirement	A	A	A		A		A	A	A	--
9.	Minor — Revise course selection	A	A	A		I		I	--	I	--
	Minor — Add or discontinue	A	A	A		A		A	--	A	--
10.	Degree — Add or discontinue	A	A	A		A		A	A	A	I
11.	Any change to a graduate degree program*	A	A	A		A		A	--	A	--

♦ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

‡ Program or course changes applying only to a Teacher Education degree will be reviewed by the Teacher Education Council and then forwarded to the UUAC.

* All graduate degree plan changes must go through the Graduate Council.

Revised 11-2-11

Approval Chart for Academic Information Changes

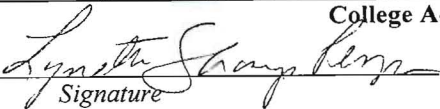
	Change to the Catalog	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President	Board of Trustees
1.	General requirements for graduation including course requirements that are common to all majors for all degrees*	--	--	--		A		A	A	A	--
2.	Admission requirements	--	--	--		A		A	A	A	--
3.	Policies governing academic probation and suspension	--	--	--		A		A	A	A	--
4.	Requirements for graduating with honors	--	--	--		A		A	A	A	--
5.	Other academic policy changes	--	--	--		A		A	--	A	

* The UUAC approved the clarification that "general requirements for graduation" means the seventeen items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 3-2-11

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
 Signature	3-28-14 Approval date
_____ Signature	_____ Approval date

College Academic Council(s)	
 Signature	3-31-14 Approval date
_____ Signature	_____ Approval date

Dean(s)	
_____ Signature	_____ Approval date
_____ Signature	_____ Approval date

Teacher Education Council	
_____ Chair's signature	_____ Approval date

General Education Council	
_____ Chair's signature	_____ Approval date

Undergraduate Academic Council	
_____ Chair's signature	_____ Approval date

Graduate Council	
_____ Chair's signature	_____ Approval date

Provost	
_____ Signature	_____ Approval date

Faculty	
_____ Chair of faculty senate	_____ Approval date

President	
_____ Signature	_____ Approval date

Current Degree Plan

BS. PHYSICS DEGREE PLAN (PHYS)	
UNIVERSITY REQUIREMENTS	
Please see the <u>University Requirements</u> section of this catalog.	
MAJOR REQUIREMENTS	
Mathematics	
<u>MATH 185</u> Calculus I	(3) ¹
Physics	
<u>PHYS 120</u> Engineering Physics I	(3) ¹
<u>PHYS 121</u> Engineering Physics I Lab	(1) ¹
<u>PHYS 122</u> Engineering Physics II	(3) ¹
<u>PHYS 123</u> Engineering Physics II Lab	(1) ¹
<u>PHYS 230/231</u> Modern Physics Lecture/Lab	4
<u>PHYS 360</u> Electricity and Magnetism	3
<u>PHYS 362/363</u> Optics	4
<u>PHYS 371</u> Classical Mechanics	3
<u>PHYS 385</u> Math of Physics and Engineering	3
<u>PHYS 481</u> Thermodynamics	3
<u>PHYS 491</u> Quantum Mechanics (writing-intensive course)	3
Other Required Course	
<u>PHIL 379</u> Philosophy, Religion and Science	(3) ¹
TOTAL	26
¹ Hours (in parentheses) may also fulfill university requirements and are not included in total major hours	
CONCENTRATIONS (CHOOSE ONE)	
Physics Track (PHYS)	
ENGR 115/116 Introduction to Engineering and Physics	4

12 additional hours from <u>PHYS 300-499</u> (except 378)	12
TOTAL	16
Applied Physics (PHYA)	
<u>CS 130</u> Programming II and Data Structures	3
<u>DSGN 232</u> Digital Design Communication	3
ENGR 115/116 Introduction to Engineering and Physics	4
<u>MATH 341</u> Numerical Methods <i>or</i>	
<u>MATH 325</u> Linear Algebra <i>or</i>	
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 335/336</u> Introduction to Electronics Lecture/Lab	3
<u>PHYS 342/343</u> Instrumentation Lecture/Lab	3
<u>PHYS 388</u> Network Analysis	3
3 additional hours from <u>PHYS 300-499</u> (except 378)	3
TOTAL	25
Engineering Physics (PHYN)	
<u>CS 130</u> Programming II and Data Structures	3
ENGR 115/116 Introduction to Engineering and Physics	4
<u>DSGN 232</u> Digital Design Communication	3
<u>ENGR 220</u> Engineering Mechanics: Statistics	3
<u>ENGR 222</u> Engineering Mechanics: Dynamics	3
<u>MATH 341</u> Numerical Methods <i>or</i>	
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 335/336</u> Introduction to Electronics Lecture/Lab	3
<u>PHYS 342/343</u> Instrumentation Lecture/Lab <i>or</i>	
<u>PHYS 388</u> Network Analysis	3

TOTAL	25
Computational Physics (PHYC)	
<u>CS 130</u> Programming II and Data Structures	3
ENGR 115/116 Introduction to Engineering and Physics	4
<u>MATH 341</u> Numerical Methods	3
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 451</u> Computational Physics I: Simulation and Modeling	3
<u>PHYS 453</u> Computational Physics II: Pattern Recognition	3
3 additional hours from <u>CS 300-499</u> <i>or</i> <u>PHYS 300-499</u> (except 378)	3
3 additional hours from <u>PHYS 300-499</u> (except 378)	3
TOTAL	25
SUPPLEMENT FOR MAJOR	
Chemistry/Computer Science/Mathematics	
<u>CHEM 133/131</u> General Chemistry I Lecture/Lab	4
<u>PHYS 497/498</u> Capstone I/II	4
<u>CS 120</u> Programming I	3
<u>MATH 186</u> Calculus II	3
<u>MATH 286</u> Calculus III	3
<u>MATH 361</u> Ordinary Differential Equations	3
TOTAL	20
ELECTIVES	
Physics Track (PHYS)	10
Applied Physics (PHYA)	1
Engineering Physics (PHYN)	1
Computational Physics (PHYC)	1
Minimum Electives	1-
	10

TOTAL MAJOR HOURS	72
OTHER GRADUATION REQUIREMENTS	
Minimum grade for PHYS courses	C
Minimum GPA for graduation	2.00
Minimum advanced hours	33
Minimum total hours	128
<i>Courses numbered 0** do not count in minimum hours required for degree.</i>	

Proposed Degree Plan

PHYSICS (BS)

BS: Physics degree plan (PHYS)

University Requirements: See the university requirements sections of the catalog.

MAJOR REQUIREMENTS

ENGR 115, 116	Intro to Engineering and Physics	4
PHYS 120, 121, 122, 123	Engineering Physics I, II w/ labs	(8)
PHYS 230, 231	Modern Physics w/ lab	4
PHYS 362,363	Optics w/ lab	4
PHYS 379	Philosophy of Religion and Science	(3)
PHYS 497,498	Capstone I, II	4
MATH 185	Calculus I	(3)
MATH 186	Calculus II	3
Total		19

Concentrations (Choose one)

• Physics Track (PHYS)

PHYS 335/336	Intro to Electronics w/ lab	3
PHYS 360	Electricity & Magnetism	3
PHYS 371	Classical Mechanics	3
PHYS 385	Math of Physics and Engineering	3
PHYS 461	Nuclear	3
PHYS 472	Solid State	3
PHYS 481	Thermodynamics	3
PHYS 491	Quantum Mechanics	3
PHYS 493	General Relativity	3
MATH 286	Calculus III	3
MATH 325	Linear Algebra	3
MATH 361	Ordinary Differential Equations	3
CHEM 131, 133	General Chemistry I w/ lab	4
CS 120	Programming I	3

Total	43
Electives	10

- **Medical Physics (PHYM)**

PHYS 335/336 Intro to Electronics w/ lab	3
PHYS 360 Electricity & Magnetism	3
PHYS 385 Math of Physics and Engineering	3
PHYS 461 Nuclear	3
CS 120 Programing I	3
MATH 123 Intro to Statistics	3
MATH 286 Calculus III	3
MATH 361 Ordinary Differential Equations	3
BIOL 112/114, 113/115 General Biology I,II w/ labs	8
CHEM 131, 132, 133, 134 General Chemistry I,II w/ labs	8
CHEM 221, 223, 324, 322 Organic Chemistry I,II w/ labs	8
CHEM 453, 463 Biochemistry I w/ lab	4
Total	52
Electives	1

- **Engineering Science Technology (PHYA)**

PHYS 335/336 Intro to Electronics w/ lab	3
3 additional hours of PHYS	3
ENGR 140 Engineering Computer Based Design	3
CS 115 or above	3
Total	12
Electives	41

- **Engineering Physics (PHYN)**

PHYS 335/336 Intro to Electronics w/ lab	3
PHYS 360 Electricity & Magnetism	3
PHYS 371 Classical Mechanics	3
PHYS 385 Math of Physics and Engineering	3
PHYS 481 Thermodynamics	3
PHYS 491 Quantum Mechanics	3

PHYS 342,343 Instrumentation OR PHYS 388 Network	3
ENGR 140 Engineering Computer Based Design	3
ENGR 220 Statics	3
ENGR 222 Dynamics	3
MATH 286 Calculus III	3
MATH 341 Numerical Methods OR MATH 377 Stat Meth	3
MATH 361 Ordinary Differential Equations	3
CS 120 Programing I	3
CS 130 Programing II	3
CHEM 131, 133 General Chemistry I w/ Lab	4
Total	49
Electives	4

Changes to Physics (PHYS) track.

PHYSICS (BS)

BS: PHYSICS DEGREE PLAN (PHYS)

UNIVERSITY REQUIREMENTS

Please see the [University Requirements](#) section of this catalog.

MAJOR REQUIREMENTS

Mathematics

MATH 185 Calculus I

(3)¹

Physics

PHYS 120 Engineering Physics I

(3)¹

PHYS 121 Engineering Physics I Lab

(1)¹

PHYS 122 Engineering Physics II

(3)¹

PHYS 123 Engineering Physics II Lab

(1)¹

PHYS 230/231 Modern Physics Lecture/Lab

4

PHYS 360 Electricity and Magnetism

3

PHYS 362/363 Optics

4

PHYS 371 Classical Mechanics

3

PHYS 385 Math of Physics and Engineering

3

PHYS 481 Thermodynamics

3

PHYS 491 Quantum Mechanics

3

Other Required Course

PHIL 379 Philosophy, Religion and Science

(3)¹

TOTAL

26

¹Hours (in parentheses) may also fulfill university requirements
and are not included in total major hours

CONCENTRATIONS (CHOOSE ONE)

Physics Track (PHYS)

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ENGR 115/116 Introduction to Engineering and Physics	4
Phys 335/336 Intro to Electronics Lecture/Lab	3
PHYS 461 Nuclear	3
PHYS 472 Solid State	3
PHYS 493 General Relativity	3
MATH 325 Linear Algebra	3
TOTAL	19
Applied Physics (PHYA)	
CS 130 Programming II and Data Structures	3
DSGN 232 Digital Design Communication	3
ENGR 115/116 Introduction to Engineering and Physics	4
MATH 341 Numerical Methods <i>or</i>	
MATH 325 Linear Algebra <i>or</i>	
MATH 377 Statistical Methods I	3
PHYS 335/336 Introduction to Electronics Lecture/Lab	3
PHYS 342/343 Instrumentation Lecture/Lab	3
PHYS 388 Network Analysis	3
3 additional hours from PHYS 300-499 (except 378)	3
TOTAL	25
Engineering Physics (PHYN)	
CS 130 Programming II and Data Structures	3
ENGR 115/116 Introduction to Engineering and Physics	4
DSGN 232 Digital Design Communication	3
ENGR 220 Engineering Mechanics: Statistics	3
ENGR 222 Engineering Mechanics: Dynamics	3

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<u>MATH 341</u> Numerical Methods <i>or</i>	
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 335/336</u> Introduction to Electronics Lecture/Lab	3
<u>PHYS 342/343</u> Instrumentation Lecture/Lab <i>or</i>	
<u>PHYS 388</u> Network Analysis	3
TOTAL	25
Computational Physics (PHYC)	
<u>CS 130</u> Programming II and Data Structures	3
ENGR 115/116 Introduction to Engineering and Physics	4
<u>MATH 341</u> Numerical Methods	3
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 451</u> Computational Physics I: Simulation and Modeling	3
<u>PHYS 453</u> Computational Physics II: Pattern Recognition	3
3 additional hours from <u>CS 300-499</u> <i>or</i>	
<u>PHYS 300-499</u> (except 378)	3
3 additional hours from <u>PHYS 300-499</u> (except 378)	3
TOTAL	25
SUPPLEMENT FOR MAJOR	
Chemistry/Computer Science/Mathematics	
<u>CHEM 133/131</u> General Chemistry I Lecture/Lab	4
<u>PHYS 497/498</u> Capstone I/II	4
<u>CS 120</u> Programming I	3
<u>MATH 186</u> Calculus II	3
<u>MATH 286</u> Calculus III	3
<u>MATH 361</u> Ordinary Differential Equations	3
TOTAL	20
ELECTIVES	

Physics Track (PHYS)	7
Applied Physics (PHYA)	1
Engineering Physics (PHYN)	1
Computational Physics (PHYC)	1
Minimum Electives	1
	10
TOTAL MAJOR HOURS	72
OTHER GRADUATION REQUIREMENTS	
Minimum grade for PHYS courses	C
Minimum GPA for graduation	2.00
Minimum advanced hours	33
Minimum total hours	128
<i>Courses numbered 0** do not count in minimum hours required for degree.</i>	

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Medical Physics Track (PHYM) – New –

Chemistry and Biology: Total 28 hours

General Biology I & II with lab	8 hrs (BIOL 112/114, BIOL 113/115)
General Chemistry I & II with lab	8 hrs (CHEM 131/133, CHEM 132/134)
Organic Chemistry I & II with lab	8 hrs (CHEM 223/221, CHEM 324/322)
Biochemistry I & lab	4 hrs (CHEM 453, 463)

Engineering, Physics, CS: total 39

Intro	ENGR 115/116	4
Engineering Physics	PHYS 120,121,122,123	8
Modern	PHYS 230,231	4
Optics	PHYS 362,363	4
Nuclear	PHYS 461	3
Intro to Electronics	PHYS 335, 336	3
Capstone	PHYS 497,498	4
Philosophy of Religion&Sci	PHIL 379	3
E&M	PHYS 360	3
Programing	CS 120	3

Math: total 18

Cal 1, 2, 3	9
ODE, PDE	6
Intro to Stats	3

General Education: Total 56-14=42

Minus

General ed	2
Math	3
Social Science	3
Science	6

Total number of hours required: 28+39+18+42=127 leaves 1 hours of electives.

Changes to PHYA including name change to “Engineering Science Technology”

PHYSICS (BS)

BS: PHYSICS DEGREE PLAN (PHYS)

UNIVERSITY REQUIREMENTS

Please see the [University Requirements](#) section of this catalog.

MAJOR REQUIREMENTS

Mathematics

MATH 185 Calculus I

(3)¹

Physics

PHYS 120 Engineering Physics I

(3)¹

PHYS 121 Engineering Physics I Lab

(1)¹

PHYS 122 Engineering Physics II

(3)¹

PHYS 123 Engineering Physics II Lab

(1)¹

PHYS 230/231 Modern Physics Lecture/Lab

4

PHYS 362/363 Optics and lab

4

Other Required Course

PHYS 379 Philosophy, Religion and Science

(3)¹

TOTAL

8

¹Hours (in parentheses) may also fulfill university requirements and are not included in total major hours

CONCENTRATIONS (CHOOSE ONE)

Physics Track (PHYS)

ENGR 115/116 Introduction to Engineering and Physics

4

12 additional hours from PHYS 300-499 (except 378)

12

TOTAL

16

Engineering Science Technology (PHYA)

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<u>ENGR 140</u> Engineering Computer Aided Design	3
ENGR 115/116 Introduction to Engineering and Physics	4
<u>PHYS 335/336</u> Introduction to Electronics Lecture/Lab	3
3 hours of PHYS	3
	13
TOTAL	
Engineering Physics (PHYN)	3
<u>CS 130</u> Programming II and Data Structures	4
ENGR 115/116 Introduction to Engineering and Physics	3
<u>DSGN 232</u> Digital Design Communication	3
<u>ENGR 220</u> Engineering Mechanics: Statistics	3
<u>ENGR 222</u> Engineering Mechanics: Dynamics	3
<u>MATH 341</u> Numerical Methods <i>or</i>	3
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 335/336</u> Introduction to Electronics Lecture/Lab	
<u>PHYS 342/343</u> Instrumentation Lecture/Lab <i>or</i>	3
<u>PHYS 388</u> Network Analysis	25
TOTAL	
Computational Physics (PHYC)	3
<u>CS 130</u> Programming II and Data Structures	4
ENGR 115/116 Introduction to Engineering and Physics	3
<u>MATH 341</u> Numerical Methods	3
<u>MATH 377</u> Statistical Methods I	3
<u>PHYS 451</u> Computational Physics I: Simulation and Modeling	3
<u>PHYS 453</u> Computational Physics II: Pattern Recognition	

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3 additional hours from <u>CS 300-499</u> or	3
PHYS 300-499 (except 378)	3
3 additional hours from <u>PHYS 300-499</u> (except 378)	25
TOTAL	
SUPPLEMENT FOR MAJOR	
Chemistry/Computer Science/Mathematics	
PHYS 497/498 Capstone I/II	4
<u>CS 115</u> or above	3
<u>MATH 186</u> Calculus II	3
TOTAL	10
ELECTIVES	
Physics Track (PHYS)	10
<u>Engineering Science Technology (PHYA)</u>	41
Engineering Physics (PHYN)	1
Computational Physics (PHYC)	1
Minimum Electives	10
TOTAL MAJOR HOURS	72
OTHER GRADUATION REQUIREMENTS	
Minimum grade for PHYS courses	C
Minimum GPA for graduation	2.00
Minimum advanced hours	33
Minimum total hours	128
<i>Courses numbered 0** do not count in minimum hours required for degree.</i>	

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PHYS 371 Classical Mechanics

PHYS 385 Math of Physics and Engineering

PHYS 481 Thermodynamics

PHYS 491 Quantum Mechanics (writing-intensive course)

3

3

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MATH 341 Numerical Methods *or*

MATH 325 Linear Algebra *or*

MATH 377 Statistical Methods I

PHYS 342/343 Instrumentation Lecture/Lab

PHYS 388 Network Analysis

3

3

3

3

3

MATH 286 Calculus III

MATH 361 Ordinary Differential Equations