

Physics, B.S. (120 Units)

Valid for Catalog Years: 2018/2019 to 2019/2020

*Official planning guide approved by the College of Science & Math

For assistance or to schedule an advising appointment, please contact the

the **CSM Advising and Resources Center** at 559-278-4150, Science I 136

Department of Physics:
559-278-2371, McLane Hall 173

	Freshman		Sophomore		Junior		Senior	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Units	15	16	14-16	15-17	15-20	16	15-16	14-15
Milestones	MATH 75	PHYS 4A; 4AL	PHYS 4B;4BL	PHYS 4C	PHYS 102	PHYS 115	PHYS 110	
General Education	A2 (3 Units) Written Communication *Must pass with a C or better; ENGL 10 recommended	B2 (3-4 Units) Life Sciences	C1 (3-4 Units) Arts	C2 (3-4 Units) Humanities	C1/C2 (3-4 Units) Arts or Humanities	D3 (3 Units) Social Science	E1 (3 Units) Lifelong Understanding & Self Development	ID (3-4 Units) Social, Political, & Economic Institutions
	A3 (3 Units) Critical Thinking *Must pass with a C or better; NSCI 4 recommended		D1 (3 Units) American History		D2 (3 Units) American Government	IB (3 Units) Physical Universe & Its Life Forms	IC (3-4 Units) Arts & Humanities	
	A1 (3 Units) Oral Communication *Must pass with a C or better							
Major	GE Area B1 CHEM 1A (3 Units) Physical Sciences *See course catalog for prerequisite requirements	CHEM 1B (3 Units) [Pre-Req: CHEM 1A & 1AL (both passed with a C or better); CHEM 1BL (may be taken concurrently)]	PHYS 4B (3 Units) [Pre-Req: PHYS 4A; MATH 77 (may be taken concurrently)] {Must pass with a C or better}	MATH 81 (3 Units) [Pre-Req: MATH 77] {Must pass with a C or better}	PHYS 102 (3 Units) [Pre-Req: PHYS 4C; MATH 81 (may be taken concurrently)] {Must pass with a C or better}	PHYS 140 (3 Units) [Pre-Req: PHYS 102; MATH 81]	PHYS 110 (3 Units) [Pre-Req: PHYS 4C; MATH 81]	UD Elective (5-6 Units) *PHYS 136, 137, 150, 151,155,156,157,158, 162,163,168S,,171

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	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
	15	16	14-16	15-17	15-20	16	15-16	14-15
Major	GE Area B3 CHEM 1AL (2 Units) Lab [Pre-Req: CHEM 1A (may be taken concurrently)]	CHEM 1BL (2 Units) [Pre-Req: CHEM 1B (may be taken concurrently)]	PHYS 4BL (1 Unit) [Co-Req: PHYS 4B]	PHYS 4C (3 Units) [Pre-Req: PHYS 4B; MATH 77] {Must pass with a C or better}	PHYS 105B (3 Units) [Pre-Req: PHYS 105A]	PHYS 104 (4 Units) [Pre-Req: PHYS 4C]	UD Elective (3 Units) *PHYS 136, 137, 150, 151,155,156,157,158, 162,163,168S,,171	
	GE Area B4 MATH 75 (4 Units) Quantitative Reasoning *See course catalog for prerequisite requirements. {Must pass with a C or better}	PHYS 4A (3 Units) [Pre-Req: GE B4; MATH 76 (may be taken concurrently)] {Must pass with a C or better}	CSCI 40 (4 Units) [Pre-Req: ELM or College Intermediate Algebra (C or better); trigonometry] or ECE 71 (3 Units)	PHYS 105A (3 Units) [Pre-Req: PHYS 4C; MATH 81 (may be taken concurrently)] {Must pass with a C or better}	PHYS 107A (3 Units) [Pre-Req: PHYS 105A; MATH 81]	PHYS 115 (3 Units) [Pre-Req: PHYS 102, 105A; MATH 81; PHYS 170A strongly recommended]		
		PHYS 4AL (1 Unit) [Co-Req: PHYS 4A]	MATH 77 (4 Units) [Pre-Req: MATH 76] {Must pass with a C or better}	UD Elective (3 Units) *PHYS 170A recommended				
		MATH 76 (4 Units) [Pre-Req: MATH 75 or MATH 75A & B] {Must pass with a C or better}						

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	Freshman		Sophomore		Junior		Senior	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Units	15	16	14-16	15-17	15-20	16	15-16	14-15
Additional Graduation Requirements					UDWS (0-4 Units) *Upper Division Writing Exam OR "W" Course (must pass with a C or better)			MI (3 Units) Multicultural/International

FOOTNOTES:

Prerequisites/Corequisites: Other restrictions may apply. Please see your course catalog for detailed prerequisite/corequisite requirements.

Grade Requirements: CR/NC grading is not permitted in the Physics major. Additional requirements, however, may be taken CR/NC.

UD Electives (11 units): Includes courses in Physics and, with approval, related fields. Students planning to pursue graduate study in physics are strongly encouraged to take courses from the following list: PHYS 170A,107B, 135, 136,137,150,151,155,156,157,158, 162,163,168S,171 and 180. Courses outside the Department of Physics may be substituted for physics upper-division electives with prior approval of the department chair.

Upper Division Writing Skills requirement (UDWS): All undergraduate students must demonstrate competency in writing skills by passing the Upper Division Writing Exam (UDWE) or by obtaining a C or better in an approved upper division writing course, identified by the letter "W."

Substitutions: If substitutions/exceptions/waivers are made for any major courses that also meet GE and/or the Multicultural/International graduation requirement, the student is responsible for completing additional courses to satisfy the respective areas (GE and/or MI). This also includes the upperdivision writing requirement.

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	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Units	15	16	14-16	15-17	15-20	16	15-16	14-15
Milestones	MATH 75	PHYS 4A; 4AL	PHYS 4B;4BL	PHYS 4C	PHYS 102	PHYS 115	PHYS 110	
General Education	A2 (3 Units) Written Communication *Must pass with a C or better; ENGL 10 recommended	B2 (3-4 Units) Life Sciences	C1 (3-4 Units) Arts	C2 (3-4 Units) Humanities	C1/C2 (3-4 Units) Arts or Humanities	D3 (3 Units) Social Science	E1 (3 Units) Lifelong Understanding & Self Development	ID (3-4 Units) Social, Political, & Economic Institutions
	A3 (3 Units) Critical Thinking *Must pass with a C or better; NSCI 4 recommended		D1 (3 Units) American History		D2 (3 Units) American Government	IB (3 Units) Physical Universe & Its Life Forms	IC (3-4 Units) Arts & Humanities	MI (3 Units) Multicultural/ International
	A1 (3 Units) Oral Communication *Must pass with a C or better							
Major	GE Area B1 CHEM 1A (3 Units) Physical Sciences *See course catalog for prerequisite requirements	CHEM 1B (3 Units) [Pre-Req: CHEM 1A & 1AL (both passed with a C or better); CHEM 1BL (may be taken concurrently)]	PHYS 4B (3 Units) [Pre-Req: PHYS 4A; MATH 77 (may be taken concurrently)] {Must pass with a C or better}	MATH 81 (3 Units) [Pre-Req: MATH 77] {Must pass with a C or better}	PHYS 102 (3 Units) [Pre-Req: PHYS 4C; MATH 81 (may be taken concurrently)] {Must pass with a C or better}	PHYS 140 (3 Units) [Pre-Req: PHYS 102; MATH 81]	PHYS 110 (3 Units) [Pre-Req: PHYS 4C; MATH 81]	UD Elective (5-6 Units) *PHYS 136, 137, 150, 151,155,156,157,158, 162,163,168S,,171

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	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
	15	16	14-16	15-17	15-20	16	15-16	14-15
	GE Area B3 CHEM 1AL (2 Units) Lab [Pre-Req: CHEM 1A (may be taken concurrently)]	CHEM 1BL (2 Units) [Pre-Req: CHEM 1B (may be taken concurrently)]	PHYS 4BL (1 Unit) [Co-Req: PHYS 4B]	PHYS 4C (3 Units) [Pre-Req: PHYS 4B; MATH 77] {Must pass with a C or better}	PHYS 105B (3 Units) [Pre-Req: PHYS 105A]	PHYS 104 (4 Units) [Pre-Req: PHYS 4C]	UD Elective (3 Units) *PHYS 136, 137, 150, 151,155,156,157,158, 162,163,168S,,171	
Major	GE Area B4 MATH 75 (4 Units) Quantitative Reasoning *See course catalog for prerequisite requirements. {Must pass with a C or better}	PHYS 4A (3 Units) [Pre-Req: GE B4; MATH 76 (may be taken concurrently)] {Must pass with a C or better}	CSCI 40 (4 Units) [Pre-Req: ELM or College Intermediate Algebra (C or better); trigonometry] or ECE 71 (3 Units)	PHYS 105A (3 Units) [Pre-Req: PHYS 4C; MATH 81 (may be taken concurrently)] {Must pass with a C or better}	PHYS 107A (3 Units) [Pre-Req: PHYS 105A; MATH 81]	PHYS 115 (3 Units) [Pre-Req: PHYS 102, 105A; MATH 81; PHYS 170A strongly recommended]		
		PHYS 4AL (1 Unit) [Co-Req: PHYS 4A]	MATH 77 (4 Units) [Pre-Req: MATH 76] {Must pass with a C or better}	UD Elective (3 Units) *PHYS 170A recommended				
		MATH 76 (4 Units) [Pre-Req: MATH 75 or MATH 75A & B] {Must pass with a C or better}						

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	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Units	15	16	14-16	15-17	15-20	16	15-16	14-15
Electives					UDWS (0-4 Units) *Upper Division Writing Exam OR "W" Course (must pass with a C or better)			

FOOTNOTES:

Prerequisites/Corequisites: Other restrictions may apply. Please see your course catalog for detailed prerequisite/corequisite requirements.

Grade Requirements: CR/NC grading is not permitted in the Physics major. Additional requirements, however, may be taken CR/NC.

UD Electives (11 units): Includes courses in Physics and, with approval, related fields. Students planning to pursue graduate study in physics are strongly encouraged to take courses from the following list: PHYS 170A,107B, 135, 136,137,150,151,155,156,157,158, 162,163,168S,171 and 180. Courses outside the Department of Physics may be substituted for physics upper-division electives with prior approval of the department chair.

Upper Division Writing Skills requirement (UDWS): All undergraduate students must demonstrate competency in writing skills by passing the Upper Division Writing Exam (UDWE) or by obtaining a C or better in an approved upper division writing course, identified by the letter "W."

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	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
	15	16	14-16	15-17	15-16	16	15-16	14-19
General Education	A2 (3 Units) Written Communication *Must pass with a C or better; ENGL 10 recommended	A1 (3 Units) Oral Communication *Must pass with a C or better	C1 (3-4 Units) Arts	B2 (3-4 Units) Life Sciences	C1/C2 (3-4 Units) Arts or Humanities	D3 (3 Units) Social Science	IB (3 Units) Physical Universe & Its Life Forms	ID (3-4 Units) Social, Political, & Economic Institutions
	A3 (3 Units) Critical Thinking *Must pass with a C or better; NSCI 4 recommended			C2 (3-4 Units) Humanities	D2 (3 Units) American Government	E1 (3 Units) Lifelong Understanding & Self Development	IC (3-4 Units) Arts & Humanities	MI (3 Units) Multicultural/International
				D1 (3 Units) American History				
Major	GE Area B1 CHEM 1A (3 Units) Physical Sciences *See course catalog for prerequisite requirements	CHEM 1B (3 Units) [Pre-Req: CHEM 1A & 1AL (both passed with a C or better); CHEM 1BL (may be taken concurrently)]	PHYS 4B (3 Units) [Pre-Req: PHYS 4A; MATH 77 (may be taken concurrently)]	MATH 81 (3 Units) [Pre-Req: MATH 77]	PHYS 102 (3 Units) [Pre-Req: PHYS 4C; MATH 81 (may be taken concurrently)]	PHYS 105B (3 Units) [Pre-Req: PHYS 105A]	PHYS 107A (3 Units) [Pre-Req: PHYS 105A; MATH 81]	PHYS 115 (3 Units) [Pre-Req: PHYS 102, 105A; MATH 81; PHYS 170A strongly recommended]
	GE Area B3 CHEM 1AL (2 Units) Lab [Pre-Req: CHEM 1A (may be taken concurrently)]	CHEM 1BL (2 Units) [Pre-Req: CHEM 1B (may be taken concurrently)]	PHYS 4BL (1 Unit) [Co-Req: PHYS 4B]	PHYS 4C (3 Units) [Pre-Req: PHYS 4B; MATH 77]	PHYS 105A (3 Units) [Pre-Req: PHYS 4C; MATH 81 (may be taken concurrently)]	PHYS 104 (4 Units) [Pre-Req: PHYS 4C]	PHYS 140 (3 Units) [Pre-Req: PHYS 102; MATH 81]	PHYS 171 (2 Units) [Pre-Req: PHYS 102, 110, 105A, 107A, 140; PHYS 105B, 115 (may be taken concurrently)]

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Major	GE Area B4 MATH 75 (4 Units) Quantitative Reasoning *See course catalog for prerequisite requirements	PHYS 4A (3 Units) [Pre-Req: GE B4; MATH 76 (may be taken concurrently)]	CSCI 40 (4 Units) [Pre-Req: ELM or College Intermediate Algebra (C or better); trigonometry] or IT 52 (3 Units)		PHYS 110 (3 Units) [Pre-Req: PHYS 4C; MATH 81]	UD Elective (3 Units) *PHYS 170A recommended	UD Elective (3 Units) *PHYS 107B, 135, or 180 recommended	UD Elective (3 Units) *PHYS 136, 137, 150, 151, 162, or 180 recommended
		PHYS 4AL (1 Unit) [Co-Req: PHYS 4A]	MATH 77 (4 Units) [Pre-Req: MATH 76]					
		MATH 76 (4 Units) [Pre-Req: MATH 75 or MATH 75A & B]						
Electives							UDWS (0-4 Units) *Upper Division Writing Exam OR "W" Course (must pass with a C or better)	

FOOTNOTES:

Prerequisites/Corequisites: Other restrictions may apply. Please see your course catalog for detailed prerequisite/corequisite requirements.

Grade Requirements: CR/NC grading is not permitted in the Physics major. Additional requirements, however, may be taken CR/NC.

UD Electives (9 units): Includes courses in Physics and, with approval, related fields. Students planning to pursue graduate study in physics are strongly encouraged to take courses from the following list: PHYS 107B, 135, 136, 137, 162, and 170A. Courses outside the Department of Physics may be substituted for physics upper-division electives with prior approval of the department chair.

Upper Division Writing Skills requirement (UDWS): All undergraduate students must demonstrate competency in writing skills by passing the Upper Division Writing Exam (UDWE) or by obtaining a C or better in an approved upper division writing course, identified by the letter "W."