PHYSICS 365000BS

Attention students who were admitted to this program prior to Fall 2015, please refer to the curriculum guide found on page 5. The curriculum guide below on this page is for students admitted to this program for Fall 2015 or later.

The following information has official approval of the **Department of Physics**, but is intended only as a supplemental guide. Official degree requirements are established at the time of admission to the degree-granting college. Students should refer to the Degree Auditing Reporting System (DARS) which is definitive for graduation requirements. *Completion of this degree within the identified time frame below is contingent upon many factors, including but not limited to: class availability, total number of required credits, work schedule, finances, family, course drops/withdrawals, successfully passing courses, prerequisites, among others.* The transfer process is completed through an appointment with your academic advisor.

Italicized courses fulfill General Education requirements. Unless a course is specified, refer to the General Education guide at http://www.uakron.edu/advising/docs/General_Education_Guide.pdf.

CURRICULUM GUIDE FOR STUDENTS ADMITTED TO THIS PROGRAM FOR FALL 2015 OR LATER:

1st Year	Fall Semester	Credit Hours	Prerequisites
3450:221	Analytical Geometry Calculus I (Note d)	4	3450:149 (Precalculus) or placement
3150:151	Principles of Chemistry I Lecture	3	Placement in 3450:149 or higher or permission
3150:152	Principles of Chemistry I Lab	1	3150:151 prerequisite or corequisite
	English Composition I Requirement (Note c)	3	Appropriate placement by advisor
7700:101	Beginning Language I **-OR-** American Sign Language I (Note b)	4 **or** 3	
	Physical Education/Wellness Requirement	1	
Total		**15 – 16**	

1st Year	Spring Semester	Credit Hours	Prerequisites
3650:291	Elementary Classical Physics I Lecture & Lab	4	3450:221 with C- or better
3450:222	Analytical Geometry Calculus II	4	3450:221 with C- or better
3150:153	Principles of Chemistry II Lecture	3	3150:151
	English Composition II Requirement (Note c)	3	3300:111 or equivalent
7700:102	Beginning Language II **-OR-** American Sign Language II (Note b)	4 **or** 3	Beginning Language I **or** 7700:101
Total		**17 – 18**	

2nd Year	Fall Semester	Credit Hours	Prerequisites
3650:292	Elementary Classical Physics II Lecture & Lab	4	3650:291
3450:223	Analytical Geometry Calculus III	4	3450:222 with C- or better
3460:209	Computer Science I	4	3450:149 or equivalent
	Speech/Oral Communication Requirement	3	
7700:201	Intermediate Language I **-OR-** American Sign Language III	3	Beginning Language II **or** 7700:102
Total		**18**	

2nd Year	Spring Semester	Credit Hours	Prerequisites
3650:322	Intermediate Lab I	3	3650:292
3650:340	Thermal Physics	3	3650:292
3650:350	Modeling and Simulation	4	3650:292, 3640:209 or instructor permission
3450:335	Introduction to Ordinary Differential Equations	3	3450:223 with C- or better
  7700:202 7700:222	Intermediate Language II **-OR-** American Sign Language IV **- AND** Survey of Deaf Culture in America	3 **or** 3 2	Intermediate Language I **or** 7700:201 Sign Language students only
Total		**16 – 18**	

3rd Year	Fall Semester	Credit Hours	Prerequisites
3650:323	Intermediate Lab II	3	3650:292
3650:301	Elementary Modern Physics	3	3650:292
3650:431 **or** 3650:441	Mechanics I **-OR-** Quantum Physics I	3	3650:291, 350 and 3450:335 **or** 3650:301, 350 and 3450:335 or instructor permission
xxx:3/4xx	Upper Level Elective (Note e)	2	
	Social Science Requirement	3	
Total		**14**	

3rd Year	Spring Semester	Credit Hours	Prerequisites
3650:436 **or** 3650:4xx	Electromagnetism I **-OR-** Upper Level Physics Elective (Note a)	3	3650:291, 350 and 3450:335 or instructor permission **or** 3650:441 or instructor permission
3650:3/4xx	Upper Level Physics Elective (Note a)	3	
3400:210 3400:221	*Humanities in the Western Tradition I* ***-OR-*** *Humanities in the World Since 1300*	4	32 credits & 3300:112 or equivalent 32 credits & 3300:112 or equivalent
	Social Science Requirement	3	
Total		**13**	

4th Year	Fall Semester	Credit Hours	Prerequisites
3650:441 **or** 3650:431	Quantum Physics I **-OR-** Mechanics I	3	3650:301, 350 and 3450:335 or instructor permission **or** 3650:291, 350 and 3450:335
3650:3/4xx	Upper Level Physics Elective (Note a)	3	
xxxx:3/4xx	Upper Level Elective (Note a)	3	
	Area Studies/Cultural Diversity Requirement	2	
	Humanities Requirement	3	
Total		**14**	

4th Year	Spring Semester	Credit Hours	Prerequisites
3650:4xx **or** 3650:436	Upper Level Physics Elective (Note a) **-OR-** Electromagnetism I	3	3650:441 or instructor permission **or** 3650:291, 350 and 3450:335 or instructor permission
xxxx:3/4xx	Upper Level Elective (Note a)	3	
	Area Studies/Cultural Diversity Requirement	2	

	Humanities Requirement	3	
Total		**11**	

	Total Credits for Degree	**Min 120**	

ALERT: 1) By the end of your first 48 credit hours attempted, you must have completed your General Education English, Math, and Communications (Speech) requirements; 2) By the end of your first 48 credit hours attempted, you must have declared a major and transferred to (been accepted by) a degree granting college at The University of Akron.

NOTES:

a. Students pursuing the Bachelors of Science in Physics must take at least 7 credits to fulfill the Upper Level Physics course requirements. Recommended electives: 3650:406 Optics, 3650:451 Advanced Lab I, 3650:470 Introduction to Solid State Physics, 3650:481 Methods of Mathematical Physics I, 3650:488 Selected Topics: Physics, 3650:399 Undergraduate Research in Physics, 3450:312 Linear Algebra
b. Demonstration of ability to use another language by completion of the second year of a foreign language or sign language is required. See your advisor for placement. Please note that all four semesters must be completed in the SAME language and it is recommended you begin your first language class as soon as possible.
c. For English Composition I, 3300:111 (English Composition I) or 3300:113 (African-American Language and Culture I) are the recommended classes to meet the General Education English requirement. 2020:121 (English) fulfills the English Composition I requirement. For English Composition II, 3300:112 (English Composition II) or 3300:114 (African- American Language and Culture II) are the recommended classes to the meet the General Education English requirement. 2020:222 (Technical Report Writing) fulfills the English Composition II requirement.
d. Students entering the program with credit for Calculus I or placing into Calculus II should take the following courses earlier than in the proposed schedule: Fall of 1st year: Elementary Classical Physics I and Calculus II; Spring of 1st year: Elementary Classical Physics II and Calculus III, Fall of 2nd year: Elementary Modern Physics, Intermediate Lab II.
e. General electives can be any course not already required by your major and upper level (300/400) electives can be any course in or outside your major excluding workshops.

Department of Physics: (330) 972-7078

Interim Department Chair: Dr. David Steer, A&S Dean's office, (330) 972-2099

Department Coordinator: Dr. Jutta Luettmer-Strathmann, Ayer Hall, (330) 972-8029

Undergraduate Advisor: Dr. Robert R. Mallik, Ayer Hall, (330) 972-7145

GENERAL INFORMATION: Physics is the fundamental science that deals with the properties of matter, energy, space and time.

At The University of Akron, you will receive an education designed to prepare you for both theoretical and experimental work. A degree in physics provides you with solid math skills, strong analytical and problem solving skills, and a good work ethic that will open numerous pathways to success. You will gain a thorough knowledge of physical principles and their applications as you study classical and modern physics, thermal physics, mechanics, electromagnetism, modeling and simulation, and quantum physics; and you will learn important measurement techniques in introductory, intermediate, and advanced physics laboratories. By adding a few elective courses, you can enhance your program in two research areas — chemical physics and polymer physics – and you can prepare for graduate school in physics. As a graduate of The University of Akron program, you will be ready to pursue graduate studies or a successful career in the workplace.

PLACEMENT: A student is encouraged to check with his/her major department and with the Career Center, Student Union 211, regarding employment opportunities in the field.

COLLEGE OF ARTS & SCIENCES:

Degree requirements in Arts & Sciences include the demonstration of ability to use another language by completion of the second year of a foreign language or sign language and a minimum of 40 credits of 300/400 level courses (excluding workshops) consisting of either:

- Upper level (300/400) courses both in and outside the student's major
- Any courses outside the major department as specified in and approved by the student's major department chair (permission should be obtained prior to enrollment) except workshops (3450:221, 222, 223 will be counted towards the 40 credits)

TRANSFER TO COLLEGE OF ARTS & SCIENCES: Students should apply to the college upon the attainment of:

- ✓ a cumulative GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ a major GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ 30 credits completed including both required English composition courses and 3 credits of mathematics or statistics that meets the General Education requirement

Students can arrange inter-college transfers through an appointment with their academic advisor; advisor contact information is listed in "My Akron."

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Italicized courses fulfill General Education requirements. Unless a course is specified, refer to the General Education guide at http://www.uakron.edu/advising/docs/General_Education_Guide.pdf.

CURRICULUM GUIDE FOR STUDENTS ADMITTED TO THIS PROGRAM PRIOR TO FALL 2015:

1st Year	Fall Semester	Credit Hours	Prerequisites
3450:221	Analytical Geometry Calculus I (Note d)	4	3450:149 (Precalculus) or placement
3150:151	Principles of Chemistry I Lecture	3	Placement in 3450:149 or higher or permission
3150:152	Principles of Chemistry I Lab	1	3150:151 prerequisite or corequisite
	English Composition I Requirement (Note c)	3	Appropriate placement by advisor
7700:101	Beginning Language I **-OR-** American Sign Language I (Note b)	4 **or** 3	
	Physical Education/Wellness Requirement	1	
Total		**15 – 16**	

1st Year	Spring Semester	Credit Hours	Prerequisites
3650:291	Elementary Classical Physics I Lecture & Lab	4	3450:221 with C- or better
3450:222	Analytical Geometry Calculus II	4	3450:221 with C- or better
3150:153	Principles of Chemistry II Lecture	3	3150:151
	English Composition II Requirement (Note c)	3	3300:111 or equivalent
7700:102	Beginning Language II **-OR-** American Sign Language II (Note b)	4 **or** 3	Beginning Language I **or** 7700:101
Total		**17 – 18**	

2nd Year	Fall Semester	Credit Hours	Prerequisites
3650:292	Elementary Classical Physics II Lecture & Lab	4	3650:291
3450:223	Analytical Geometry Calculus III	4	3450:222 with C- or better
3460:209	Computer Science I	4	3450:149 or equivalent
	Speech/Oral Communication Requirement	3	
7700:201	Intermediate Language I **-OR-** American Sign Language III	3	Beginning Language II **or** 7700:102
Total		**18**	

2nd Year	Spring Semester	Credit Hours	Prerequisites
3650:322	Intermediate Lab I	3	3650:292
3650:340	Thermal Physics	3	3650:292
3650:350	Modeling and Simulation	4	3650:292, 3640:209 or instructor permission
3450:335	Introduction to Ordinary Differential Equations	3	3450:223 with C- or better
  7700:202 7700:222	Intermediate Language II **-OR-** American Sign Language IV **- AND** Survey of Deaf Culture in America	3 **or** 3 2	Intermediate Language I **or** 7700:201 Sign Language students only
Total		**16 – 18**	

3rd Year	Fall Semester	Credit Hours	Prerequisites
3650:323	Intermediate Lab II	3	3650:292
3650:301	Elementary Modern Physics	3	3650:292
3650:431 **or** 3650:441	Mechanics I **-OR-** Quantum Physics I	3	3650:291, 350 and 3450:335 **or** 3650:301, 350 and 3450:335 or instructor permission
xxx:3/4xx	Upper Level Elective (Note e)	3	
	Social Science Requirement	3	
Total		**15**	

3rd Year	Spring Semester	Credit Hours	Prerequisites
3650:436 **or** 3650:4xx	Electromagnetism I **-OR-** Upper Level Physics Elective (Note a)	3	3650:291, 350 and 3450:335 or instructor permission **or** 3650:441 or instructor permission
3650:3/4xx	Upper Level Physics Elective (Note a)	3	
xxx:3/4xx	Upper Level Elective (Note e)	3	
3400:210 3400:221	*Humanities in the Western Tradition I* ***-OR-*** *Humanities in the World Since 1300*	4	32 credits & 3300:112 or equivalent 32 credits & 3300:112 or equivalent
	Social Science Requirement	3	
Total		**16**	

4th Year	Fall Semester	Credit Hours	Prerequisites
3650:441 **or** 3650:431	Quantum Physics I **-OR-** Mechanics I	3	3650:301, 350 and 3450:335 or instructor permission **or** 3650:291, 350 and 3450:335
3650:3/4xx	Upper Level Physics Elective (Note a)	3	
3650:3/4xx	Upper Level Physics Elective (Note a)	3	
	Area Studies/Cultural Diversity Requirement	2	
	Humanities Requirement	3	
Total		**14**	

4th Year	Spring Semester	Credit Hours	Prerequisites
3650:4xx **or** 3650:436	Upper Level Physics Elective (Note a) **-OR-** Electromagnetism I	3	3650:441 or instructor permission **or** 3650:291, 350 and 3450:335 or instructor permission
3650:3/4xx	Upper Level Physics Elective (Note a)	3	
xxx:3/4xx	Upper Level Elective (Note e)	4	
	Area Studies/Cultural Diversity Requirement	2	

	Humanities Requirement	3	
Total		**15**	

	Total Credits for Degree	**Min 128**	

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PLACEMENT: A student is encouraged to check with his/her major department and with the Career Center, Student Union 211, regarding employment opportunities in the field.

COLLEGE OF ARTS & SCIENCES:

Degree requirements in Arts & Sciences include the demonstration of ability to use another language by completion of the second year of a foreign language or sign language and a minimum of 47 credits of 300/400 level courses (excluding workshops and General Education courses) consisting of either:

- Upper level (300/400) courses both in and outside the student's major
- Any courses outside the major department as specified in and approved by the student's major department chair (permission should be obtained prior to enrollment) except workshops and General Education courses (3450:221, 222, 223 will be counted towards the 47 credits)

TRANSFER TO COLLEGE OF ARTS & SCIENCES: Students should apply to the college upon the attainment of:

- ✓ a cumulative GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ a major GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ 30 credits completed including both required English composition courses and 3 credits of mathematics or statistics that meets the General Education requirement

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