COLLEGE OF LIBERAL ARTS AND SCIENCES (CLAS) ACADEMIC ADVISING CENTER 2017-2018

PHYSICS-BS-SECONDARY EDUCATION (WITH EDUCATION MAJOR & TEACHABLE MINOR REQUIRED)

THIS IS A **GENERAL** CURRICULUM GUIDE AND IS NOT APPLICABLE TO EVERY STUDENT. IT IS IMPORTANT TO MEET WITH YOUR ADVISOR.

A 2.7 cumulative GPA in the Physics major is required for admission to the College of Education

Year One			
[1]MTH 201 Calculus I Prerequisites: MTH 122 and MTH 123, MTH 124, or proficiency through math placement	4	MTH 202 Calculus II Prerequisite: MTH 201	4
		PHY 230 Principles of Physics I Prerequisite: MTH 201, MTH 202 recommended as a corequisite	5
[10]CHM 115 Principles of Chemistry I Prerequisites: High school chemistry, MTH 110 or 122 or 125 or 201	4	PSY 101 Introductory Psychology	3
Gen Ed or WRT 098 Writing with a Purpose – Optional[9]	3/4	WRT 150 Strategies in Writing[9]	4
EDF 100 Introduction to Education **(optional – see below)** or minor course	2/3		
Total	*13/15*	*Total*	*16**
Spring/Summer			
Minor Course	3		
Year Two			
MTH 203 Calculus III Prerequisite: MTH 202	4	PHY 302 Introduction to Modern Physics Prerequisite: PHY 231	4
MTH 227 Linear Algebra I (required if taking MTH 304 – see note) Prerequisite: MTH 202	3	[8]MTH 302 Linear Algebra & Differential Equations Prerequisite: MTH 203	4
PHY 231 Principles of Physics II Prerequisites: MTH 202 and PHY 230	5	[8]***OR*** MTH 304 Analysis of Differential Equations Prerequisites: MTH 203 and MTH 227	3
EDF 315 Diverse Perspectives for Education	3	[5]CIS 261 Structured Programming in C Prerequisite: MTH 201 or concurrent enrollment	3
		BIO 120 General Biology I *Gen Ed* Prerequisites: High school chemistry, CHM 109 or 115 strongly recommended	4
Total	*15*	*Total*	*14-15*
Spring/Summer			
HSC 201 The Scientific Revolution	3	Minor Course	3
OR HSC 202 The Technological Revolution	3	Gen Ed	3
Minor Course	3		
Year Three			
PHY 309 Experimental Methods in Physics Prerequisites: PHY 302 and one SWS course	4	[2]PHY 311 SWS Advanced Laboratory II Prerequisites: PHY 309 and one SWS course	2
PHY 330 Intermediate Mechanics Prerequisites: PHY 230 or permission of instructor, and MTH 302 or 304	4	PHY 340 Electromagnetic Fields Prerequisites: PHY 231, MTH 302 or MTH 304	4
[7]MTH 401 Mathematics for the Physical Sciences Prerequisites: MTH 302 or 304, PHY 231, or permission of instructor	4	[3]PHY 105 Descriptive Astronomy	3
		PSY 301 Child Psychology Prerequisite: PSY 101	3
OR [7]MTH 300 Applied Analysis I Prerequisite: MTH 203	3		
		EDI 337 Introduction to Learning and Assessment	3
Gen Ed	3		
Total	*14-15*	*Total*	*15*
Spring/Summer			
Minor Course	3	Issue	3
Minor Course	3	Gen Ed	3
Year Four			
PHY 350 Introduction to Quantum Mechanics Prerequisites: PHY 302, MTH 302 or 304 (MTH 300 recommended)	4	PHY 360 Statistical Thermodynamics Prerequisite: PHY 231	4
PHY 485 Senior Physics Project (Capstone) Prerequisite: Senior physics students in good academic standing	1	PHY 486 Senior Physics Project (Capstone) Prerequisites: PHY 485	2
[4]Ethics in Science Requirement	3	[3]Science Elective Course	3
Issue	3	[6]EDS 379 Universal Design for Learning: Secondary Sophomore Standing, EDF 315, and EDI 337. B- or better required.	3
Minor Course	3		3
		Minor Course	
Total	*14*	*Total*	*15*
Teacher Assisting **Teacher Certification Professional Program**		**Student Teaching**	
EDI 331 Methods and Strategies of Secondary Teaching	5	EDI 431 Student Teaching: Secondary	8
EDF 310 Organizing and Managing Classroom Environments	3	EDI 432 Student Teaching: Secondary Content	2
EDR 321 Content Area Literacy	3	EDF 485 The Context of Educational Issues Must be taken with or after EDI 431	3
EDT 370 Technology in Education Must be taken with or after EDI 331 but before EDI 431	3		
Total	*14*	*Total*	*13*

See reverse for notes

* The block tuition rate is for 12-15 credits. You will pay additional tuition for any credits over 15.

EDF 100 is an exploratory elective for students uncertain about pursuing teacher certification. It can be taken in either the fall or winter semester.

It is imperative to meet with your faculty advisor and an advisor in the CLAS Academic Advising Center regularly.

Academic Advisor: Nick Woodward, woodwani@gvsu.edu

The CLAS Academic Advising Center is located in C-1-140 MAK, 616-331-8585.

Online at: http://www.gvsu.edu/clasadvising

[1] **Students must take MTH 110, MTH 122 and MTH 123, or MTH 124, or place out of these courses through Grand Valley math placement. These courses do not count towards the completion of the Physics major. MTH 124 is the suggested pre-requisite to MTH 201, though MTH 122 and 123 would also satisfy the pre-requisite requirements.**

[2] Students must complete a total of two courses with an SWS attribute

[3] Students must complete 6 hours of science electives with a minimum grade of C (2.0) in each. Must be chosen from the following: PHY 105 (requirement for secondary education majors); any 300 or 400 level physics elective (excluding PHY 303, 306, and 307); CHM 351, 352, 356, or 358

[4] Students must take BIO 328: Biomedical Ethics **OR** BIO 338: Environmental Ethics.

[5] See faculty advisor for additional option for CIS 261.

[6] EDS 379 may be taken prior to the Teacher Assisting Semester but must be completed prior to Student Teaching. Permit required (COE – 616-331-6650).

[7] MTH 401 is recommended unless student does not intend to pursue graduate school, please see faculty advisor for assistance in choosing appropriate course

[8] MTH 304 is recommended unless student does not intend to pursue graduate school, please see faculty advisor for assistance in choosing appropriate course.

[9] Students who self-place into WRT 098 should take this course in the fall semester and then take WRT 150 in the winter semester of their first year. Students who self-place into WRT 150 should normally take this course in the winter semester of their first year. Students will not need to take WRT 150 if they have earned credit for the course through AP/Dual Enrollment. A grade of C or better is required in WRT 150 in order to satisfy the WRT 150 requirement at GVSU.

[10] CHM 180 is recommended prior to CHM 115 if the ACT science subscore is below 23, but high school chemistry was taken. Students who have not had high school chemistry should take CHM 109 (not CHM 180) prior to CHM 115. However, CHM 180 and CHM 109 do NOT count toward the Physics major.

-Thirty (30) total hours as a lab assistant (setting up and tearing down equipment and/or serving as teaching assistant) are required of students seeking secondary certification. Contact the department for further details.

Declaring the Physics and Education Major with Teachable Minor:

1. Log into myBanner from the GVSU homepage
2. Once logged in select "Student", "Student Records", and then, "Change Major"
3. Click on the "Change Major 1/Program" box
4. Click on the down arrow in the box next to "New Major 1/Program," from here scroll down and choose "Physics Teaching – BS Secondary Education"
5. Click "Submit." The system will automatically declare your 2nd major in "Education" and give you the option to declare a minor. Choose an appropriate minor from the list and then click "Change to New Program"

Teachable Majors and Teachable Minors for Secondary Education

Teachable Majors		Teachable Minors	
Biology	Mathematics	Applied Linguistics - ESL	German-Teaching
Chemistry	Music (K-12)	Biology-Teaching	History-Teaching
Earth/Space Science	Physical Education (K-12)	Chemistry-Teaching	Mathematics-Secondary Education
English	Physics	Computer Science-Teaching	Physical Education-Teaching
French	Social Studies	Earth/Space Science-Teaching	Physics-Teaching
German	Spanish	Economics-Teaching	Political Science-Teaching
History	Visual Arts (K-12)	English-Teaching	Psychology-Teaching
Latin		French-Teaching	School Health Education
		Geography-Teaching	Spanish-Secondary Teaching

General Education Overlap

General Education Categories fulfilled by the Physics Major for Secondary Education:	
Mathematical Sciences: MTH 201	Physical Science with Lab: CHM 115
Social and Behavioral Sciences: PSY 101	Life Science with Lab: BIO 120
U.S. Diversity: EDF 315	Historical Perspectives: HSC 201 or 202

Second Major in Education

Education Major Prerequisites (9 credits)
A 2.7 cumulative GPA in the Education Major Prerequisites is required with no grade lower than a C

— **EDF 315 Diverse Perspectives on Education** (3)
— **EDI 33I Introduction to Learning and Assessment** (3)
— **PSY 301 Child Development** (3)
Prerequisite: PSY 101

Teacher Assisting (17 credits)	Student Teaching (13 credits)
— **EDI 331 Teacher Assisting-Secondary** (5)	— **EDI 431 Student Teaching, Secondary** (8)
— **EDF 310 Organizing and Managing Classroom Environments** (3)	— **EDI 432 Student Teaching, Secondary Content** (2)
— **EDR 321Content Area Literacy** (3)	— **EDF 485 The Context of Educational Issues** (3)
— **EDT 370 Technology in Education** (3)	Must be taken with or after EDI 431
Must be taken with or after EDI 331 but before EDI 431	
— **EDS 379 Universal Design for Learning: Secondary** (3)**	
EDS 379 may be taken prior to the Teacher Assisting Semester. Please consult with your College of Education Advisor to determine an appropriate time to take this course.	