PHYSICS MAJOR FOR SECONDARY TEACHING

Updated May 2015

The **Physics major** (State Code: DE) for Secondary teachers consists of a minimum of 30 credits in Physics. Cognate courses are also required beyond the 30 hours.

Teacher candidates for certification in Physics at the Secondary level must pass the Michigan Test for Teacher Certification (MTTC) in Physics (Test #019). MTTC content exams should not be taken until 90% of course work in the subject area has been completed. A study guide is available at the MTTC website: (http://www.mttc.nesinc.com/PDFs/MI_field019_SG.pdf).

The courses below meet State standards and have been selected so that teacher candidates will be well prepared for the test. Knowledge must be demonstrated in the following categories in order to successfully pass the MTTC subject area exam:

	Subarea	Approximate % of Questions
1.	Foundations of Scientific Inquiry	12%
2.	Mechanics	24%
3.	Electricity and Magnetism	24%
4.	Waves, Acoustics, and Optics	20%
5.	Nature of Matter, Thermodynamics, and Modern Physics	20%

The following chart is intended to provide you a guide for scheduling your semesters and for keeping track of your grade point average.

PLEASE REFER TO YOUR DEGREE EVALUATION IN KNOWHOPE PLUS IN ADDITION TO THIS DOCUMENT TO DETERMINE FULFILLMENT OF COURSE REQUIREMENTS

PHYSICS REQUIRED CORE (20 credits)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
PHYS 121	General Physics I	3		
PHYS 141	Physics Lab I	1		
PHYS 122	General Physics II	3		
PHYS 142	Physics Lab II	1		
PHYS 270	Modern Physics	4		
PHYS 361	Analytical Mechanics	4		
PHYS 280	Introduction to Mathematical Physics	2		
PHYS 281	Intermediate Physics Lab	2		

OTHER PHYSICS AND ENGINEERING COURSES (10 credits)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
GEMS 151 OR GEMS 206	Science and Technology for Everyday Life The Night Sky	4 2		
At least one 300/400 Level Course				
PHYS 342	Electricity and Magnetism	4		
PHYS 362	States of Matter	4		
PHYS 372	Quantum Theory	4		
PHYS 382	Advanced Physics Lab	2		

Remaining credits may be filled by any other Physics courses:

PHYS_____ _____

PHYS_____ _____

REQUIRED COGNATE COURSES

MATH (16 credits)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
MATH 131	Calculus	4		
MATH 132	Calculus II	4		
MATH 231	Multivariable Math I	4		
MATH 232	Multivariable Math II	4		

SCIENCE LAB COURSE (4 credits)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
May choose a Biology, Chemistry, or Geology lab course. With **PRIOR** permission of the department a GEMS course may be substituted for a departmental course.				
Course: _____	_____			

A SCIENCE METHODS COURSE - REQUIRED (4 credits)

(The Science methods course is considered pedagogy and will be counted with your education courses for certification.)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
EDUC 331*	Teaching of Science in the Secondary School (offered Fall Semester only)	3		
EDUC 332	Teaching of Science in the Secondary School Field Placement (offered Fall Semester only)	1		

This MUST be completed prior to the student teaching semester!

***Effective for students entering Fall 2015, EDUC 331 changed from a 2 credit course to a 3 credit course**