

# BIOLOGY MAJOR FOR SECONDARY TEACHING

*Updated April 2017*

The **major in Biology for Secondary teachers** (State code: DA) consists of a minimum of 30 credits.

Teacher candidates for certification in Biology at the Secondary level must pass the Michigan Test for Teacher Certification (MTTC) in Biology (Test #017). 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\\_field017\\_SG.pdf](http://www.mttc.nesinc.com/PDFs/MI_field017_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 Percentage of Questions on Test
1. Foundations of Scientific Inquiry	19%
2. Cellular Function	15%
3. Heredity and Evolutionary Changes	22%
4. Organization of Living Things	22%
5. Ecological Systems	22%

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**

## **CORE COURSES IN BIOLOGY** (8 credits)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
BIO 105	Introduction to Biology I	3		
BIO 106	General Biology II	3		
BIO 107 and BIO 108	Introduction to Biology I Lab and General Biology II Lab	1  1		
Or	Or			
BIO 207*	Honors Lab in Cells and Genetics I	2		
Or	Or			
BIO 208*	Honors Lab in Cells and Genetics II	2		

\*By invited application only

## **Required Cognate Support, not totaled in major credits** (12 credits)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
CHEM 125	General Chemistry I	3		
CHEM 126	General Chemistry II	3		
CHEM 127	Laboratory of General Chemistry I	1		
CHEM 128	Laboratory of General Chemistry II	1		
One semester of Mathematics (4 credits)				
MATH ____		4		

**ADVANCED COURSES IN BIOLOGY** (22 additional credits selected from the following advanced courses in Biology. **One of these courses MUST be from the list of flagged \*Biodiversity courses.**)

SUBJECT/ COURSE	TITLE	CREDIT HOURS	SEMESTER	GRADE
BIO 221	Human Physiology – <b>Strongly Recommended</b>	4		
<b>BIO 301</b>	<b>General Microbiology*</b>	<b>4</b>		
BIO 315	Topics in Ecology	4		
BIO 320	Plant Physiology	4		
<b>BIO 330</b>	<b>Marine Biology and Biophysics</b>	<b>4</b>		
<b>BIO 332</b>	<b>Comparative Anatomy of Vertebrates*</b>	<b>4</b>		
<b>BIO 340</b>	<b>Topics in Plant Biology</b>	<b>4</b>		
<b>BIO 343</b>	<b>Vascular Plant Systematics*</b>	<b>4</b>		
BIO 348	Topics in Cell Biology-Lecture	3		
BIO 349	Topics in Cell Biology-Lab	1		
BIO 355	Developmental Biology	4		
BIO 356	Genetics	3		
BIO 357	Genetics lab	1		
BIO 366	Molecular Biology	4		
BIO 370	Animal Behavior	4		
<b>BIO 374</b>	<b>Biology of Insects*</b>	<b>4</b>		
<b>BIO 380</b>	<b>Field Studies in Biology*</b>	<b>1-4</b>		
BIO 390	Independent Study of Biology	1-3		
BIO 421	Evolutionary Biology	4		
<b>BIO 422</b>	<b>Invertebrate Zoology*</b>	<b>4</b>		
<b>BIO 432</b>	<b>Vertebrate Zoology*</b>	<b>4</b>		
BIO 442	Topics in Physiology	4		
BIO 490	Independent Research	1-2		
BIO 495	Advanced Topics in Biology	1-4		

**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**