

# MATHEMATICS/NATURAL SCIENCE, ASSOCIATE IN SCIENCE (MNS)

Effective: Fall 2016

The Mathematics and Natural Science Program provides a strong foundation for students who plan to attend a four-year institution and major in mathematics or one of the natural sciences. Students who complete the program requirements will be prepared to continue their education in order to pursue academic, research, or industrial careers in such diverse areas as biology, biotechnology, ecology, wildlife biology, chemistry, biochemistry, astronomy, geology, physics, mathematics and applied mathematics. Students are strongly encouraged to meet with a mathematics or natural science faculty advisor and consult with the DCCC Transfer Office prior to course selection to determine the appropriate sequence and level of courses.

## Program Outcomes

Upon successful completion of this program, students should be able to:

- Demonstrate an understanding of mathematical principles and concepts.
- Apply mathematical principles and concepts to the solution of problems.
- Demonstrate an understanding of scientific principles and concepts.
- Apply scientific principles and concepts to the solution of problems.
- Perform selected tasks relative to laboratory experiments in the natural sciences.

## Full-Time Academic Plan

The College Transfer Office (<https://www.dccc.edu/admissions-financial-aid/transfer/transfer-office/>) is set up to help Delaware County Community College students transfer to four-year colleges and universities. If you are planning to transfer, you are strongly encouraged to meet with a transfer advisor within your first two semesters (or before you reach 30 transferable college credits from all institutions attended).

First Semester		Hours
ENG 100	English Composition I	3
CS 100 or CS 101	Introduction to Information Technology or Introduction to Computer Science	3
Select one of the following Scientific Inquiry Elective:		4
BIO 110	General Biology I	
CHE 110	General Chemistry I	
ESS 110	Physical Geology	
PHY 110	College Physics I	
PHY 131	University Physics I	
Select one of the following Quantitative Reasoning Mathematics Elective:		4
MAT 151	College Algebra	
MAT 152	Precalculus	
MAT 160	Calculus I	
Any transferable Diversity and Social Justice (DJ) designated Social Science course		3
<b>Hours</b>		<b>17</b>
Second Semester		Hours
ENG 112	English Composition II: Writing About Literature	3
Laboratory Science Elective		4
Mathematics Elective		3-4

Any transferable Global Understanding designated Humanities course		3
Behavioral & Social Science Elective		3
<b>Hours</b>		<b>16-17</b>
Third Semester		
COMM 100 or COMM 111	Interpersonal Communication or Public Speaking	3
Mathematics/Laboratory Science Elective		3-4
Mathematics/Laboratory Science Elective		3-5
Behavioral & Social Science Elective		3
Open Elective		3-4
<b>Hours</b>		<b>15-19</b>
Fourth Semester		
Mathematics/Laboratory Science Elective		3-4
Mathematics/Laboratory Science Elective		3-5
Open Electives		6-8
<b>Hours</b>		<b>12-17</b>
<b>Total Hours</b>		<b>60-70</b>

## Notes

**Diversity and Social Justice designated courses** ([https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#DJ\\_Course\\_List](https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#DJ_Course_List)).

**Global Understanding designated courses.** ([https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#GU\\_Course\\_List](https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#GU_Course_List))

### Behavioral and Social Science

This list does not indicate College Academic Learning Goal designation (<https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/>). Refer to your program curriculum for more information.

The subject areas listed are generally transferable to most institutions. However, transferability is always determined by the college or university you are planning to transfer to. Depending on the program at the transfer institution, the courses may only be accepted as free electives. Be sure to meet with a transfer advisor before making your course selections.

- ADJ - Administration of Justice (<https://catalog.dccc.edu/courses/course-descriptions/adj/>)
- ECE - Early Childhood Education (<https://catalog.dccc.edu/courses/course-descriptions/ece/>)
- ECO - Economics (<https://catalog.dccc.edu/courses/course-descriptions/eco/>)
- EDU - Education (<https://catalog.dccc.edu/courses/course-descriptions/edu/>)
- HIS - History (<https://catalog.dccc.edu/courses/course-descriptions/his/>)
- INT - Interdisciplinary (<https://catalog.dccc.edu/courses/course-descriptions/int/>)
- POL - Political Science (<https://catalog.dccc.edu/courses/course-descriptions/pol/>)
- PSY - Psychology (<https://catalog.dccc.edu/courses/course-descriptions/psy/>)
- SOC - Sociology (<https://catalog.dccc.edu/courses/course-descriptions/soc/>)
- SWO - Social Work (<https://catalog.dccc.edu/courses/course-descriptions/swo/>)

- TSC - Trauma Studies (<https://catalog.dccc.edu/courses/course-descriptions/tsc/>)

### Mathematics Electives (3-4 credits) from:

Code	Title	Hours
MAT 151	College Algebra	4
MAT 152	Precalculus	4
MAT 160	Calculus I	4
MAT 161	Calculus II	4
MAT 200	Linear Algebra	3
MAT 210	Statistics	3
MAT 230	Foundations of Discrete Mathematics	3
MAT 260	Calculus III	4
MAT 261	Differential Equations	3

### Laboratory Science Electives (4 credits) from:

Code	Title	Hours
BIO 110	General Biology I	4
BIO 111	General Biology II	4
BIO 115	Field Ecology	4
BIO 200	General Zoology	4
BIO 210	General Botany	4
BIO 240	General Microbiology	4
BIO 250	Genetics	4
CHE 110	General Chemistry I	4
CHE 111	General Chemistry II	4
ESS 110	Physical Geology	4
ESS 112	Historical Geology	4
PHY 110	College Physics I	4
PHY 111	College Physics II	4
PHY 131	University Physics I	4
PHY 132	University Physics II	4

### Mathematics/Laboratory Science Electives (12-18 credits):

Code	Title	Hours
BIO 110	General Biology I	4
BIO 111	General Biology II	4
BIO 115	Field Ecology	4
BIO 200	General Zoology	4
BIO 210	General Botany	4
BIO 240	General Microbiology	4
BIO 250	Genetics	4
CHE 110	General Chemistry I	4
CHE 111	General Chemistry II	4
CHE 200	Organic Chemistry I	5
CHE 201	Organic Chemistry II	5
ESS 110	Physical Geology	4
ESS 112	Historical Geology	4
MAT 151	College Algebra	4
MAT 152	Precalculus	4
MAT 160	Calculus I	4
MAT 161	Calculus II	4

MAT 200	Linear Algebra	3
MAT 210	Statistics	3
MAT 230	Foundations of Discrete Mathematics	3
MAT 260	Calculus III	4
MAT 261	Differential Equations	3
PHY 110	College Physics I	4
PHY 111	College Physics II	4
PHY 131	University Physics I	4
PHY 132	University Physics II	4
PHY 230	Modern Physics	3

### Open Electives:

(9-12 credits for at least 60 total program credits) from any transferable college level course.

Requirements vary between transfer institutions. Students are strongly encouraged to consult with both the DCCC Transfer Office as well as their academic advisor **before** registering for classes.

### Part-Time Academic Plan

Course	Title	Hours
<b>First Semester</b>		
ENG 100	English Composition I	3
CS 100 or CS 101	Introduction to Information Technology or Introduction to Computer Science	3
Select one of the following Scientific Inquiry Elective:		4
BIO 110	General Biology I	
CHE 110	General Chemistry I	
ESS 110	Physical Geology	
PHY 110	College Physics I	
PHY 131	University Physics I	
<b>Hours</b>		<b>10</b>
<b>Second Semester</b>		
Select one of the following Quantitative Reasoning Mathematics Elective:		4
MAT 151	College Algebra	
MAT 152	Precalculus	
MAT 160	Calculus I	
Any transferrable Diversity and Social Justice (DJ) designated course ( <a href="https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#diversityandsocialjusticetext">https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#diversityandsocialjusticetext</a> )		3
<b>Hours</b>		<b>7</b>
<b>Third Semester</b>		
ENG 112	English Composition II: Writing About Literature	3
Laboratory Science Elective		4
Mathematics Elective		3-4
<b>Hours</b>		<b>10-11</b>
<b>Fourth Semester</b>		
Any Global Understanding (GU) designated Arts Humanities course ( <a href="https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#globalunderstandingtext">https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#globalunderstandingtext</a> )		3
Behavioral Social Science Elective ( <a href="https://catalog.dccc.edu/courses/electives/#socialsciencetransfertext">https://catalog.dccc.edu/courses/electives/#socialsciencetransfertext</a> )		3
COMM 100 or COMM 111	Interpersonal Communication or Public Speaking	3
<b>Hours</b>		<b>9</b>
<b>Fifth Semester</b>		
Mathematics/Laboratory Science Elective		3-4
Mathematics/Laboratory Science Elective		3-5
Open Elective		3-4
<b>Hours</b>		<b>9-13</b>

**Sixth Semester**

Behavioral Social Science Elective ( <a href="https://catalog.dccc.edu/courses/electives/#socialsciencetransfertext">https://catalog.dccc.edu/courses/electives/#socialsciencetransfertext</a> )	3
Mathematics/Laboratory Science Elective	3-4
<b>Hours</b>	<b>6-7</b>

**Seventh Semester**

Mathematics/Laboratory Science Elective	3-5
Open Electives	6-8
<b>Hours</b>	<b>9-13</b>
<b>Total Hours</b>	<b>60-70</b>

**Diversity and Social Justice designated courses ([https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#DJ\\_Course\\_List](https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#DJ_Course_List)).**

**Global Understanding designated courses. ([https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#GU\\_Course\\_List](https://catalog.dccc.edu/academic-programs/college-academic-learning-goals/#GU_Course_List))**

**Behavioral and Social Science**

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The subject areas listed are generally transferable to most institutions. However, transferability is always determined by the college or university you are planning to transfer to. Depending on the program at the transfer institution, the courses may only be accepted as free electives. Be sure to meet with a transfer advisor before making your course selections.

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- SOC - Sociology (<https://catalog.dccc.edu/courses/course-descriptions/soc/>)
- SWO - Social Work (<https://catalog.dccc.edu/courses/course-descriptions/swo/>)
- TSC - Trauma Studies (<https://catalog.dccc.edu/courses/course-descriptions/tsc/>)

**Mathematics Electives (3-4 credits) from:**

Code	Title	Hours
MAT 151	College Algebra	4
MAT 152	Precalculus	4
MAT 160	Calculus I	4
MAT 161	Calculus II	4
MAT 200	Linear Algebra	3

MAT 210	Statistics	3
MAT 230	Foundations of Discrete Mathematics	3
MAT 260	Calculus III	4
MAT 261	Differential Equations	3

**Laboratory Science Electives (4 credits) from:**

Code	Title	Hours
BIO 110	General Biology I	4
BIO 111	General Biology II	4
BIO 115	Field Ecology	4
BIO 200	General Zoology	4
BIO 210	General Botany	4
BIO 240	General Microbiology	4
BIO 250	Genetics	4
CHE 110	General Chemistry I	4
CHE 111	General Chemistry II	4
ESS 110	Physical Geology	4
ESS 112	Historical Geology	4
PHY 110	College Physics I	4
PHY 111	College Physics II	4
PHY 131	University Physics I	4
PHY 132	University Physics II	4

**Mathematics/Laboratory Science Electives (12-18 credits):**

Code	Title	Hours
BIO 110	General Biology I	4
BIO 111	General Biology II	4
BIO 115	Field Ecology	4
BIO 200	General Zoology	4
BIO 210	General Botany	4
BIO 240	General Microbiology	4
BIO 250	Genetics	4
CHE 110	General Chemistry I	4
CHE 111	General Chemistry II	4
CHE 200	Organic Chemistry I	5
CHE 201	Organic Chemistry II	5
ESS 110	Physical Geology	4
ESS 112	Historical Geology	4
MAT 151	College Algebra	4
MAT 152	Precalculus	4
MAT 160	Calculus I	4
MAT 161	Calculus II	4
MAT 200	Linear Algebra	3
MAT 210	Statistics	3
MAT 230	Foundations of Discrete Mathematics	3
MAT 260	Calculus III	4
MAT 261	Differential Equations	3
PHY 110	College Physics I	4
PHY 111	College Physics II	4
PHY 131	University Physics I	4

PHY 132	University Physics II	4
PHY 230	Modern Physics	3

### **Open Electives:**

(9-12 credits for at least 60 total program credits) from any transferable college level course.

Requirements vary between transfer institutions. Students are strongly encouraged to consult with both the DCCC Transfer Office as well as their academic advisor **before** registering for classes.

## **Career**