



## **Science and Mathematics G.A.**

Career Community: Science and Mathematics

Curriculum Code: 1831

Effective: Fall 2024 – Summer 2029

### **Purpose of Major**

This degree is designed for students interested in pursuing a career in mathematics, engineering, or a broad range of scientific fields. This Career Community includes the following pathways: Biology, Biotechnology, Chemical Technology, Chemistry, Computer Science, Conservation and Sustainability, Engineering-Physics, Geography, Geology, Pre-Medical Studies, and Mathematics. The degree includes a common set of courses applicable to the Science and Mathematics majors listed above and to many transfer institutions. Students beginning college in this degree program are encouraged to work with academic and program advisors throughout their first few semesters of study to determine their specific major area and, if transfer is a goal, the specific requirements of the transfer institution.

Not all courses in this pathway transfer to all colleges.

### **Milestone**

In addition to the required General Education courses in Math and English, completion of CHEM 151 and CHEM 161 with a 2.0 or higher, is a key component for success in completing this program. Knowledge obtained in these courses is the foundation for learning in other required courses. Students are encouraged to contact their faculty if they need additional assistance with learning the concepts presented in this course.

### **Additional Information**

A student must earn a minimum grade of 2.0 in all courses.

### **Contact Information**

For further information, including career options, course substitutions and waivers, etc., contact the Science and Mathematics Department, Arts and Sciences Building, Room 3203, telephone number 517-483-1092.

### **General Education – Applied Degrees - Recommended Courses**

Select courses as indicated for specific transfer institutions and majors. These courses are preferred General Education courses listed on Transfer Articulation agreements. The recommended courses in each General Education category also meet Michigan Transfer Agreement (MTA) requirements. If no course is indicated, choose from the list of options under [General Education](#). A minimum grade of 2.0 is required for each General Education course.

- English Composition or Applied English  
Science and Mathematics Career Community Courses meet this requirement.

- English Composition (second course)/Communication or Applied Communication Science and Mathematics Career Community Courses meet this requirement.
- Humanities and Fine Arts or Social Sciences or Applied Social Sciences Science and Mathematics Career Community courses meet this requirement.
- Mathematics or Applied Mathematics Science and Mathematics Career Community Courses meet this requirement.
- Natural Sciences Lab or Applied Sciences and Technology Lab Science and Mathematics Career Community Courses meet this requirement.

**Science and Mathematics Career Community Courses**—*These courses are required for all Science and Mathematics programs. They should be taken before other Program Required or Limited Choice Courses. Some courses meet General Education requirements for Michigan Transfer Agreement (MTA). A minimum of 2.0 is required to meet LCC degree requirements for General Education courses and for all courses to transfer to other colleges (some colleges, and some programs within colleges, require a higher grade in a course.)*

Course Code	Course Title	Credit / Billing Hours
ACAD 100	First-Year Experience	1 / 1
ANTH 270 or	Cultural Anthropology	3 / 3
ANTH 271 or	Medical Anthropology	3 / 3
ANTH 276 or	Introduction to Archaeology	3 / 3
CHDV 101 or	Child Growth/Develop: 0-12 Yrs	4 / 4
COMM 270 or	Mass Communication	3 / 3
COMM 280 or	Intercultural Communication	3 / 3
ECON 120 or	Power, Authority and Exchange	4 / 4
ECON 201 or	Principles of Economics-Micro	4 / 4
ECON 202 or	Principles of Economics-Macro	4 / 4
EDUC 204 or	Educational Psychology	3 / 3
EDUC 220 or	Introduction to Education	3 / 3
GEOG 120 or	Introduction to Geography	3 / 3
GEOG 200 or	World Regional Geography	4 / 4
GEOG 202 or	Geography of North America	3 / 3
GERO 100 or	Introduction to Human Aging	4 / 4
POLS 120 or	American Political System	4 / 4
POLS 121 or	State and Local Government	4 / 4
POLS 201 or	Intro to Political Science	3 / 3
POLS 240 or	Introduction to Public Policy	3 / 3
POLS 250 or	Campaigns & Elections	3 / 3
POLS 260 or	Comparative Political Systems	3 / 3
POLS 270 or	International Relations	3 / 3
PSYC 200 or	Introduction to Psychology	4 / 4
SOCL 120	Introduction to Sociology	4 / 4
BIOL 127 or	Cell Biology	4 / 6
GEOG 221 or	Physical Geography	4 / 4

Course Code	Course Title	Credit / Billing Hours
GEOL 221 or PHYS 251	Physical Geology Physics I with Calculus	4 / 6 5 / 7
CHEM 151	General Chemistry Lecture I	4 / 4
CHEM 161	General Chemistry Lab I	1 / 3
COMM 120 or COMM 130 or COMM 200 or COMM 240 or COMM 260 or ENGL 122 or ENGL 132	Dynamics of Communication Fundamentals Public Speaking Small Group Communication Interpersonal Communication Non-Verbal Communication Composition II Honors Composition II	3 / 3 3 / 3 3 / 3 3 / 3 3 / 3 4 / 4 4 / 4
ENGL 121 or ENGL 131	Composition I Honors Composition I	4 / 4 4 / 4
MATH 120 or MATH 126 or MATH 151	College Algebra Precalculus Calculus I	4 / 4 5 / 5 4 / 4

Notes:

ACAD 100 may be waived when students meet one of the following College-approved waiver criteria:

- Completion of 12 college-level credits with minimum grades of 2.0 shown on the LCC transcript (including transfer, if applicable), or
- Employment in the field of, or a field related to, the degree being sought, or
- For Health Careers students, successful completion of CHSE 100.

In addition to CHEM 151 and CHEM 161, select Science courses as follows:

- Students interested in Biology, Biotechnology, Chemical Technology, Chemistry, Conservation and Sustainability, or Pre-Medical Studies choose BIOL 127.
- Students interested in Computer Science choose BIOL 127 or PHYS 251.
- Students interested in Engineering/Physics or Mathematics choose PHYS 251.
- Students interested in Geography choose GEOG 221.
- Students interested in Geology choose GEOL 221.

Students considering adding Secondary Education Certification in Mathematics or Science in order to teach in Michigan Public Schools are strongly encouraged to select an EDUC course as listed below.

For future transfer (Secondary Education Certification) to:

- Central Michigan University, Ferris State University, or Michigan State University choose EDUC 204.
- Eastern Michigan University, Grand Valley State University, University of Michigan Flint, or Western Michigan University choose EDUC 220.

**Program of Study Required Courses – Limited Choices** – *Select 32 credits. Work with an Academic Advisor or Program Advisor to select the most appropriate courses or to select a field-specific major or transfer major that meets your educational and career goals. Some courses meet General Education requirements for Michigan Transfer Agreement (MTA). A minimum of 2.0 is required to transfer to other colleges (some colleges, and some programs within colleges, require a higher grade in a course.)*

**Humanities and Fine Arts** – Select no more than two courses, each from different disciplines, from [LCC General Education, Transfer Degrees \(MTA\), Humanities and Fine Arts](#).

**Social Sciences** - Select no more than one course, from a discipline different than what was chosen for the Science and Mathematics Career Community block of courses, from [LCC General Education, Transfer Degrees \(MTA\), Social Sciences](#).

Course Code	Course Title	Credit / Billing Hours
ANTH 270	Cultural Anthropology	3 / 3
ASTR 201	Introductory Astronomy	4 / 5
BIOL 120	Environmental Science	4 / 6
BIOL 127	Cell Biology	4 / 6
BIOL 128	Organismal Biology	4 / 6
BIOL 203	Microbiology	3 / 3
BIOL 204	Microbiology Laboratory	1 / 3
BIOL 210	Natural Resource Conservation	4 / 6
BIOL 260	Botany	4 / 6
BIOL 265	Zoology	4 / 6
BIOL 270	Human Genetics	3 / 3
BIOL 275	Molecular Biology I	4 / 6
BIOL 276	Molecular Biology II	4 / 6
CHEM 120	Gen Organic & Biological Chem	4 / 4
CHEM 125	Basic Chemistry	4 / 4
CHEM 152	General Chemistry Lecture II	3 / 3
CHEM 162	General Chemistry Lab II	1 / 3
CHEM 182	Introductory Organic Chemistry	3 / 3
CHEM 192	Intro Organic Chem Lab	1 / 3
CHEM 251	Organic Chemistry Lecture I	4 / 4
CHEM 252	Organic Chemistry Lecture II	4 / 4
CHEM 262	Quantitative Analysis	3 / 6
CHEM 272	Organic Chemistry Laboratory	2 / 6
CITF 110	Intro Computer Info Systems	3 / 3
CJUS 210	Intro to Forensic Science	3 / 3
COMM 240	Interpersonal Communication	3 / 3
CPSC 101	Intro to Computer Science	3 / 3
CPSC 131	Numerical Methods and MATLAB	3 / 4
CPSC 230	Algorithms and Computing w/ C++	4 / 4
CPSC 231	Computing and Data Structures	4 / 4
CPSC 260	Computing Science Structures	4 / 4

Course Code	Course Title	Credit / Billing Hours
ECON 120	Power, Authority and Exchange	4 / 4
ECON 202	Principles of Economics-Macro	4 / 4
ENVR 121	Environmental Rules and Regs	3 / 3
ENVR 122	Enviro Sampl & Instrumentation	4 / 6
ENVR 131	Industrial Process Safety	3 / 3
GEOG 120	Introduction to Geography	3 / 3
GEOG 200	World Regional Geography	4 / 4
GEOG 202	Geography of North America	3 / 3
GEOG 220	Weather, Forecasting & Climate	4 / 4
GEOG 221	Physical Geography	4 / 4
GEOLOGY 221	Physical Geology	4 / 6
GEOLOGY 222	Historical Geology	4 / 6
GEOLOGY 230	Environmental Geology	4 / 6
GSCI 100	Intro to Geospatial Tech	3 / 3
GSCI 110	Beginning ArcGIS	3 / 5
GSCI 120	Advanced ArcGIS	3 / 5
GSCI 210	Global Positioning Systems	3 / 4
GSCI 240	Cartography in GIS	3 / 4
GSCI 241	Remote Sens/AirPhoto Interpret	3 / 4
ISCI 121	Physical Science Concepts	4 / 6
ISCI 122	Integrated Sci for Education II	4 / 6
ISCI 131	Integrated Physical Science	4 / 6
ISCI 245	S.T.E.M. Workplace Practices	4 / 6
MATH 126	Precalculus	5 / 5
MATH 141	Calculus with Applications	4 / 4
MATH 151	Calculus I	4 / 4
MATH 152	Calculus II	4 / 4
MATH 253	Calculus III	4 / 4
MATH 254	Intro to Differential Equation	4 / 4
MATH 260	Linear Algebra	4 / 4
PHIL 151	Intro to Logic & Critical Think	4 / 4
PHYS 120	The Art of Physics	4 / 5
PHYS 200	Intro to Applied Physics	4 / 5
PHYS 221	Introductory Physics I	4 / 6
PHYS 222	Introductory Physics II	4 / 6
PHYS 251	Physics I with Calculus	5 / 7
PHYS 252	Physics II with Calculus	5 / 7
PHYS 260	Statics for Engineers	3 / 3
POLS 120	American Political System	4 / 4
POLS 260	Comparative Political Systems	3 / 3
PSYC 200	Introduction to Psychology	4 / 4
SCIN 287	Science Technology Internship	2-4 / 2-4

Course Code	Course Title	Credit / Billing Hours
SOCL 120	Introduction to Sociology	4 / 4
STAT 170	Introduction to Statistics	4 / 4
STAT 215	Intro to Probability and Stats	4 / 4

### Additional Credits

After completing the course and credit requirements as noted on this pathway, students who fall short of the 60-credit minimum required for an Associate Degree may select any course(s) needed to reach 60 credits, except those courses noted in number 7 in the [Institutional Requirements for Associate Degrees](#). Students are encouraged to use Degree Works and meet with an Advisor to ensure all requirements are met and for course recommendations.

### Minimum Total Credit Hours

60 credits / 62 billing hours

### Recommended Course Sequence

#### College-ready Full-time

Semester I
ACAD 100 (if waived, substitute Career Community course)
ANTH 270 or ANTH 271 or ANTH 276 or CHDV 101 or COMM 270 or COMM 280 or ECON 120 or ECON 201 or ECON 202 or EDUC 204 or EDUC 220 or GEOG 120 or GEOG 200 or GEOG 202 or GERO 100 or POLS 120 or POLS 121 or POLS 201 or POLS 240 or POLS 250 or POLS 260 or POLS 270 or PSYC 200 or SOCL 120
BIOL 127 or GEOG 221 or GEOL 221 or PHYS 251
ENGL 121 or 131
MATH 120 or MATH 126 or MATH 151

Semester II
Students who have decided on an academic program within the Science and Math Career Community should select that program through the Change of Program Request form and follow the coursework outlined for the associated pathway.
CHEM 151
CHEM 161
COMM 120 or COMM 130 or COMM 200 or COMM 240 or COMM 260 or ENGL 122 or ENGL 132
Limited Choice courses for students completing the Science and Mathematics GA

Semester III
Students who have decided on an academic program within the Science and Math Career Community should select that program through the Change of Program Request form and follow the coursework outlined for the associated pathway.
Limited Choice courses for students completing the Science and Mathematics GA

Semester IV
Limited Choice courses for students completing the Science and Mathematics GA

**College-ready Part-time**

Semester I
ACAD 100 (if waived, substitute Career Community course)
ANTH 270 or ANTH 271 or ANTH 276 or CHDV 101 or COMM 270 or COMM 280 or ECON 120 or ECON 201 or ECON 202 or EDUC 204 or EDUC 220 or GEOG 120 or GEOG 200 or GEOG 202 or GERO 100 or POLS 120 or POLS 121 or POLS 201 or POLS 240 or POLS 250 or POLS 260 or POLS 270 or PSYC 200 or SOCL 120
MATH 120 or MATH 126 or MATH 151

Semester II
CHEM 151
CHEM 161
ENGL 121 or 131

Semester III (Summer – optional)
Students who have decided on an academic program within the Science and Math Career Community should select that program through the Change of Program Request form and follow the coursework outlined for the associated pathway.
BIOL 127 or GEOG 221 or GEOL 221 or PHYS 251
COMM 120 or COMM 130 or COMM 200 or COMM 240 or COMM 260 or ENGL 122 or ENGL 132

Semester IV
Students who have decided on an academic program within the Science and Math Career Community should select that program through the Change of Program Request form and follow the coursework outlined for the associated pathway.
BIOL 127 or GEOG 221 or GEOL 221 or PHYS 251 (if no Summer enrollment)
COMM 120 or COMM 130 or COMM 200 or COMM 240 or COMM 260 or ENGL 122 or ENGL 132 (if no Summer enrollment)
Limited Choice courses for students completing the Science and Mathematics GA

Semester V
Limited Choice courses for students completing the Science and Mathematics GA

*LCC makes every effort to limit revisions to the pathways during their effective timeframe. However, the College reserves the right to update certificate and degree title changes, and make course changes as needed, without prior notice.*