Second Semester
5 - BIOL 1110 Principles of Biology II
4 - CH 1020 General Chemistry
3 - ENGL 1030 Composition and Rhetoric
4 - MATH 1080 Calculus of One Variable II
16

Sophomore Year
First Semester
3 - CH 2230 Organic Chemistry
1 - CH 2270 Organic Chemistry Lab.
1 - COMM 1500 Intro. to Human Comm., or
3 - COMM 2500 Public Speaking
3 - GEN 3020 Molecular and General Genetics
3 - PHYS 1220 Physics with Calculus I
1 - PHYS 1240 Physics Lab.
1
14

Second Semester
3 - BCHM 3010 Molecular Biochemistry
3 - CH 2240 Organic Chemistry
1 - CH 2280 Organic Chemistry Lab.
2 - GEN 3040 Molecular Biology Lab.
3 - STAT 2300 Statistical Methods I
3 - Arts and Humanities (Literature) Requirement
3 - Social Science Requirement
18

Junior Year
First Semester
3 - GEN 4200 Molecular Genetics and Gene Reg.
2 - GEN 4210 Molecular Genetics and Gene Regulation Lab.
3 - GEN (BCHM) 4420 Bioinformatics
3 - Science Requirement
3 - Social Science Requirement
14

Second Semester
3 - BIOL 4610 Cell Biology
3 - GEN 4100 Population and Quantitative Gen.
2 - GEN 4110 Population and Quantitative Gen. Lab.
3 - PHIL 3260 Science and Values
3 - Genetics Requirement
3 - Elective
17

Senior Year
First Semester
3 - GEN 4500 Comparative Genetics
3 - Genetics Requirement
3 - Science Requirement
6 - Elective
15

Second Semester
2 - GEN 4930 Senior Seminar
3 - Genetics Requirement
3 - Science Requirement
6 - Elective
14

122 Total Semester Hours

*Medical, veterinary, and graduate school requirements often include two semesters of physics with calculus and the physics laboratory. Students are encouraged to check requirements for admission to professional graduate programs.

*See General Education Requirements. Three of the Social Science Requirement credit hours must also satisfy the Cross-Cultural Awareness Requirement.

*BIOL 2220, 2230, PHYS 2080, 2100, 2210, 2230, or any courses at 3000 level or above in BCHM, BIOE, BIOL, CH, GEN, MATH, MICR, PHYS, and STAT. Other courses must be approved by advisor. A maximum of nine credit hours from undergraduate research courses (4930, creative inquiry or similar courses) may be used towards the combined science and genetics requirements.

*AVS 4700, BCHM 4100, 4120, 4130, 4140, 4360, 4430, 4910, BIOC, 3350, 4430, 4500, (PLPA) 4540, 4560, 4700, GEN
3 - Elective
3 - Second Major Requirement
3 - Second Major Requirement
3 - Second Major Requirement
3 - Second Major Requirement
3 - Second Major Requirement
3 - Second Major Requirement
3 - Cross-Cultural Awareness Requirement
14

Sophomore Year
First Semester
4 - MATH 1060 Calculus of One Variable I
3 - Modern Language Requirement
6 - Social Science Requirement
1 - Elective
14

Second Semester
3 - ENGL 1030 Composition and Rhetoric
4 - MATH 1080 Calculus of One Variable II
3 - Computer Science Requirement
3 - Modern Language Requirement
3 - Science and Technology in Society Req.
16

Junior Year
First Semester
3 - MATH 2500 Intro. to Mathematical Sciences
3 - MATH 3600 Intermed. Math. Computing or
3 - EDSC 4570 Technology in Soc. Math.
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Minor Requirement or
3 - Second Major Requirement
16

Second Semester
1 - Elective
3 - Modern Language Requirement
3 - Computer Science Requirement
3 - Natural Science Requirement
3 - Elective
16

Senior Year
First Semester
3 - MATH 4390 Introduction to Proof
3 - Advanced Writing Requirement
3 - Math Science Requirement
4 - Natural Science Requirement
3 - Elective
16

Second Semester
3 - COMM 2500 Public Speaking
3 - MATH 4120 Introduction to Modern Algebra
3 - Minor Requirement or
3 - Second Major Requirement
4 - Natural Science Requirement
3 - Elective
16

Senior Year
First Semester
3 - MATH 4330 Advanced Calculus I
3 - Capstone Experience
3 - Minor Requirement or
3 - Second Major Requirement
3 - Math Science Requirement
3 - Elective
15

Combined Bachelor’s/Master’s Plan
Under this plan, students may reduce the time necessary to earn both degrees by applying up to 12 graduate credits to both undergraduate and graduate program requirements. Students are encouraged to obtain the specific requirements for pursuing the combined degree from the Department of Mathematical Sciences www.clemson.edu/ces/departments/math. as early as possible in their undergraduate program. Enrollment guidelines and procedures can be found under Academic Regulations in this catalog.

Bachelor of Arts
Freshman Year
First Semester
4 - MATH 1060 Calculus of One Variable I
3 - Modern Language Requirement
6 - Social Science Requirement
1 - Elective
14

Second Semester
3 - ENGL 1030 Composition and Rhetoric
4 - MATH 1080 Calculus of One Variable II
3 - Computer Science Requirement
3 - Modern Language Requirement
3 - Science and Technology in Society Req.
16

Sophomore Year
First Semester
4 - MATH 2060 Calculus of Several Variables
1 - MATH 2500 Intro. to Mathematical Sciences
3 - MATH 3600 Intermed. Math. Computing or
3 - EDSC 4570 Technology in Soc. Math.
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Cross-Cultural Awareness Requirement
14

Second Semester
4 - MATH 2080 Intro. to Ordinary Diff. Equations
3 - MATH 3020 Statistics for Science and Engr.
3 - MATH 3110 Linear Algebra
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Minor Requirement or
3 - Second Major Requirement
16

Junior Year
First Semester
3 - MATH 3190 Introduction to Proof
3 - Advanced Writing Requirement
3 - Math Science Requirement
4 - Natural Science Requirement
3 - Elective
16

Second Semester
3 - COMM 2500 Public Speaking
3 - MATH 4120 Introduction to Modern Algebra
3 - Minor Requirement or
3 - Second Major Requirement
4 - Natural Science Requirement
3 - Elective
16

Senior Year
First Semester
3 - MATH 4330 Advanced Calculus I
3 - Capstone Experience
3 - Minor Requirement or
3 - Second Major Requirement
3 - Math Science Requirement
3 - Elective
15

Combined Bachelor’s/Master’s Plan
Under this plan, students may reduce the time necessary to earn both degrees by applying up to 12 graduate credits to both undergraduate and graduate program requirements. Students are encouraged to obtain the specific requirements for pursuing the combined degree from the Department of Mathematical Sciences www.clemson.edu/ces/departments/math. as early as possible in their undergraduate program. Enrollment guidelines and procedures can be found under Academic Regulations in this catalog.
Second Semester
1. MATH 4920 Professional Development
2. EDSC 3260 Practicum in Secondary Math.
3. Capstone Experience
4. Math Science Requirement
5. Minor Requirement or
6. Second Major Requirement
7. Elective
8. 15-17

Junior Year
First Semester
1. MATH 4000 Theory of Probability
2. MATH 4400 Linear Programming
3. MATH 4530 Advanced Calculus I
4. Advanced Writing Requirement
5. Technical Requirement
6. 17

Second Semester
1. MATH 4120 Introduction to Modern Algebra
2. MATH 4540 Advanced Calculus II
3. Emphasis Area Requirement
4. Technical Requirement
5. Elective
6. 15

Senior Year
First Semester
1. Capstone Experience
2. Emphasis Area Requirement
3. Oral Communication Requirement
4. Science and Tech. in Society Requirement
5. 15

Second Semester
1. MATH 4920 Professional Development
2. Capstone Experience
3. Emphasis Area Requirement
4. Mathematical Sciences Requirement
5. Elective
6. 13

122 Total Semester Hours

Notes:
1. For graduation, a candidate for the BA degree in Mathematical Sciences will be required to have a 2.0 or higher cumulative grade-point average in all required MATH courses.
2. Students who change majors to Mathematical Sciences must have achieved the Minimum Cumulative Grade-Point Average (MC GPA) by Total Credit Hour Level as defined in the Academic Regulations section of the Undergraduate Announcements and must have received a grade of C or better in all MATH courses taken.

MATH SCIENCES Bachelor of Science

Freshman Year
First Semester
1. MATH 1060 Calculus of One Variable I
2. Arts and Humanities (Non-Lit.) Requirement
3. Modern Language Requirement
4. Social Science Requirement
5. 16

Second Semester
1. ENGL 1030 Composition and Rhetoric
2. MATH 1080 Calculus of One Variable II
3. PHYS 1220 Physics with Calculus
4. Computer Science Requirement
5. Cross-Cultural Awareness Requirement
6. 16

Sophomore Year
First Semester
1. MATH 2060 Calculus of Several Variables
2. MATH 2500 Intro. to Mathematical Sciences
3. MATH 3190 Introduction to Proof
4. MATH 3600 Intermediate Math. Computing
5. Natural Science Requirement
6. 15

Second Semester
1. MATH 2080 Intro. to Ordinary Diff. Equations
2. MATH 3020 Statistics for Science and Engr.
3. MATH 3110 Linear Algebra
4. Arts and Humanities (Literature) Requirement
5. Natural Science Requirement
6. 17
Second Semester
- BIOL 1110 Principles of Biology II
- ENGL 1030 Composition and Rhetoric
- MATH 1080 Calculus of One Variable II
- Computer Science Requirement

Sophomore Year
First Semester
- CH 1010 General Chemistry
- MATH 2060 Calculus of Several Variables
- PHYS 2070 General Physics I
- PHYS 2090 General Physics I Lab.
- Arts and Humanities (Non-Lit.) Requirement

Second Semester
- CH 1020 General Chemistry
- MATH 2120 Calculus of Several Variables
- PHYS 2080 General Physics II
- PHYS 2100 General Physics II Lab.

Junior Year
First Semester
- CH 2230 Organic Chemistry
- CH 2270 Organic Chemistry Lab.
- MATH 3190 Introduction to Proof
- MATH 3600 Linear Programming
- Arts and Humanities (Non-Lit.) Requirement

Second Semester
- CH 2240 Organic Chemistry
- MATH 3020 Statistics for Science and Engr.
- MATH 4400 Linear Programming
- Mathematical Sciences Requirement
- Oral Communication Requirement

Senior Year
First Semester
- MATH 4000 Theory of Probability
- MATH 4530 Advanced Calculus I
- Animal or Plant Diversity Requirement
- Capstone Experience
- Social Science Requirement

Second Semester
- MATH 4120 Introduction to Modern Algebra
- MATH 4540 Advanced Calculus II
- MATH 4920 Professional Development
- Biological Sciences Requirement
- Capstone Experience

Freshman Year
First Semester
- BIOL 1010 Frontiers in Biology I
- BIOL 1100 Principles of Biology I
- CH 1010 General Chemistry
- MATH 1060 Calculus of One Variable I
- Oral Communication Requirement

Second Semester
- BIOL 1110 Principles of Biology II
- CH 1020 General Chemistry
- ENGL 1030 Composition and Rhetoric
- Mathematical Sciences Requirement

Sophomore Year
First Semester
- CH 2230 Organic Chemistry
- CH 2270 Organic Chemistry Lab.
- ENGL 3150 Scientific Writing and Comm.
- Arts and Humanities (Literature) Requirement
- Social Science Requirement
- Elective

Second Semester
- BIOL 4540 Advanced Micro Lab I
- Microbiology Requirement
- Elective

Junior Year
First Semester
- MATH 4010 Microbial Diversity and Ecology
- PHYS 2070 General Physics I
- Physics 2090 General Physics I Lab.
- Microbiology Requirement
- Elective

Second Semester
- MATH 4120 Bacterial Physiology
- Microbiology Requirement
- Social Science Requirement
- Elective

Senior Year
First Semester
- BIOL 4610 Cell Biology
- MATH 4150 Microbial Genetics
- MATH 4540 Advanced Micro Lab II
- Microbiology Requirement
- Elective

Second Semester
- BIOL 4930 Senior Seminar or
- MATH 4930 Senior Seminar
- Microbiology Requirement
- Elective

124 Total Semester Hours

Microbiology
Bachelor of Science
Microbiology deals with the study of bacteria, viruses, yeasts, filamentous fungi, protozoa, and unicellular algae. Microbiologists seek to describe these organisms in terms of their structures, functions, and processes of reproduction, growth, and death at both the cellular and molecular levels. They are also concerned with their ecology, particularly in regard to their pathological effects on man, and with their economic importance.

The Microbiology major provides a thorough training in the basic microbiological skills. Further, students receive instruction in mathematics, physics, chemistry, and biochemistry, all essential to the training of a modern microbiologist. Students can prepare for a variety of careers through a wide choice of electives. Microbiology graduates may enter graduate school in microbiology, biochemistry, bioengineering, or related disciplines; they may enter medical or dental schools or pursue careers in one of the many industries or public service departments dependent upon microbiology. Some of these are the fermentation and drug industries, medical and public health microbiology, various food industries, and agriculture.

Microbiology majors planning to apply for admission to a medical or dental school should inform their advisors immediately upon entering the program.

Sophomore Year
First Semester
- CH 2230 Organic Chemistry
- CH 2270 Organic Chemistry Lab.
- ENGL 3150 Scientific Writing and Comm.
- Arts and Humanities (Literature) Requirement
- Social Science Requirement
- Elective

Second Semester
- BIOL 4540 Advanced Micro Lab I
- Microbiology Requirement
- Elective

Junior Year
First Semester
- MATH 4010 Microbial Diversity and Ecology
- PHYS 2070 General Physics I
- Physics 2090 General Physics I Lab.
- Microbiology Requirement
- Elective

Second Semester
- MATH 4120 Bacterial Physiology
- Microbiology Requirement
- Social Science Requirement
- Elective

Senior Year
First Semester
- BIOL 4610 Cell Biology
- MATH 4150 Microbial Genetics
- MATH 4540 Advanced Micro Lab II
- Microbiology Requirement
- Elective

Second Semester
- BIOL 4930 Senior Seminar or
- MATH 4930 Senior Seminar
- Microbiology Requirement
- Elective

124 Total Semester Hours

BIOL 1100 and 1110 are strongly recommended; however, BIOL 1030/1050 may substitute for BIOL 1100, and BIOL 1040/1060 may substitute for BIOL 1110. The remaining 1-2 credits required must be satisfied by completing 1-2 extra credits.

See General Education Requirements.

MATH 1080 or STAT 2300 or other approved coursework. See advisor. Medical and dental schools have different mathematics requirements. The Medical Colleges Admissions Test (MCAT) includes questions on statistics.

See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements. The Medical Colleges Admissions Test (MCAT) includes questions on psychology and sociology. Elective hours may be used toward satisfying the requirements of a minor.

BCHM 3010 may be substituted.