

Online M.S. In Biological Sciences for Teachers and
Other Science Educators



Department of

BIOLOGICAL SCIENCES

Clemson[®] University

Overview: Online, non-thesis M.S. Degree in Biological Sciences for Science Educators.

Program webpage: [BIOL Online](#)

Our program is designed specifically for teachers and other science educators who want to improve their science-content knowledge in biological sciences. There are no education courses in this program. Ninety-five percent of our students are employed teachers at all levels as well as scientists from museums, field stations, and research laboratories.

Our program is fully in a distance-learning format and lectures are available 24/7. You do not need to attend any classes or meetings on campus. Each course provides students with three hours of graduate credit from the Clemson University Department of Biological Sciences. All courses are open to both degree and non-degree seeking students.

We offer **two** academic paths to accommodate your needs: one for advanced students not seeking additional degrees, and one for students wishing to attain a non-thesis Masters in Biological Sciences degree.

Advanced Student Status (non-degree-seeking): Admission to the non-degree category is restricted primarily to those who may benefit professionally from additional study at the graduate level. For example, current primary, middle grades and secondary education teachers wishing to gain recertification most commonly apply as non-degree-seeking students. Regardless of the student's reason for applying non-degree, in all cases the non-degree student must receive permission from the program coordinator or the department chair before enrolling in any graduate course. Please note that if you have been previously enrolled at Clemson anytime in the past six years as a non-degree student in the same area you wish to apply to, then you do NOT need to complete this application. Rather, please complete the [Graduate Application for Re-Entrance](#).

Non-degree-seeking students may complete courses in our program curriculum before applying as a degree-seeking student. Students who have taken courses from our program curriculum before their admission to the graduate program may transfer 9 credits of those courses into the non-thesis degree program.

Please note that the tuition rate is higher for Advanced Student Status students (see [Finances](#).) Non-degree-seeking students may benefit financially by applying to the degree-seeking program even though they do not intend to complete the program.

Non-Thesis Masters for Science Educators in Biological Sciences (degree-seeking students): This option requires a total of 30 semester hours of graduate course work. At least 18 of the 30 hours must be at the 800 level. Degree-seeking students may transfer up to 9 credits of graduate courses into the degree program from accredited degree-granting institutions whose scholastic reputation is acceptable to Clemson University. To transfer, the graduate course content must be similar to one of our required courses with a grade of B or above. Transfer credits must not have been used to satisfy the requirements for any other degree and must have been completed within the six-year period preceding the date the graduate degree will be awarded. Transfer courses cannot be revalidated for graduate credit. The program coordinator must approve all transfer courses. There are no exceptions to this requirement.

A research proposal and project whose results are presented in written format is also a requirement of the non-thesis Master's degree. The scope of the research project is not as extensive as the regular master's thesis degree option. However, it is expected that a non-thesis student will conduct original scientific research (one semester of data collection during BIOL 8480) and write a research report (BIOL 8490) that is of the caliber of a manuscript suitable for submission to a peer-reviewed journal. The student and instructor will determine the research project. Teachers may choose a research project that involves using their students to collect and analyze data.

Class Regulations for Online Courses at Clemson University: All Clemson online courses and programs should include a provision for instructor-student interaction on at least a weekly basis and the interaction should be identified as a part of the course requirements. This provision will help to ensure benefits to Clemson students receiving Veteran Administration Educational benefits, which require the University to certify weekly contact for online courses. Additionally, federal guidelines have been updated for distance education courses that now include both synchronous and asynchronous modalities. Regular and substantive interaction of instructors with online students is required and includes two or more of the following activities:

- Holding an online synchronous class, lecture, lab, etc., where there is an opportunity for instructor and student interaction
- Instructors providing feedback on students' academic assignments
- Required discussion board activities with instructor facilitation
- Taking an assessment or an exam with instructor providing feedback
- Computer-assisted educational opportunities that provide feedback
- Participation in a study group or group project assigned by the instructor with instructor participation
- Interacting with an instructor regarding academic matters via email or other electronic method (with all students).

Admission Requirements

All students must be admitted to CU's Graduate School as a degree or non-degree seeking student. The Program Name is Bio Science - Non-thesis for Science Educators and the Program Code is MS-BIOS-G-AAC for degree seeking students and ND-SCI-G code for non-degree seeking students. Students do not need an undergraduate degree in biology to be considered for admission. An overall undergraduate GPA of at least 2.75 is recommended by the Graduate School. GRE scores are not required for teachers with 1 or more years teaching experience.

Steps to Admission for the online MS in Biological Sciences

1. Application to the graduate school is online at the [Graduate School webpage](#). Apply to our college (College of Science) as a degree- (the program code is MS-BIOS-1-AAC) or non-degree-seeking student. Please note that the tuition rate is higher for non-degree seeking students.
2. Depending on their decision, the Graduate School may send an email asking if you accept their offer. You must click and accept!
3. Once accepted, you will need to [contact Clemson Computing and Information Technology](#) — CCIT — to set up a Clemson University user ID and email, as all

correspondence will go through your Clemson account. Make sure to check for Graduate School emails as they may have additional requirements and payment reminders.

Advanced Student Status (non-degree-seeking) — This status is designed for applicants who are not immediately interested in seeking a degree, but who wish to enroll in graduate-level courses. No letters of recommendation are required of those seeking Advanced Student Status. If you are interested in applying for this status, you must hold a baccalaureate degree from a regionally accredited institution. Students do not need an undergraduate degree in biology to be considered for admission. Apply under the ND-AFLN-1 code. We are pleased to announce that there is **NO APPLICATION FEE** for anyone applying for Summer or Fall 2023 and on.

Should you decide to pursue a degree, you will need to submit a new, degree-seeking application and be accepted into the program.

Up to 12 credits from your non-degree studies may apply toward your degree, pending department approval.

Degree-seeking students wishing to pursue a graduate degree at Clemson University should apply for admission using the degree-seeking application for admission. This includes all applicants seeking a master's doctoral or any professional degree. In general, degree-seeking applications should be received no later than five weeks prior to the first day of class.

Admission to the graduate program requires a suitable undergraduate education, two letters of recommendation, a resume and suitable GRE scores (GRE scores are not required for teachers with one or more years of teaching experience). Students do not need an undergraduate degree in biology to be considered for admission. An overall undergraduate GPA of at least 2.75 is recommended. A satisfactory TOEFL score (550 from paper exam, or 213 from online exam, or 80 from internet exam, or 6.5 or higher on the IELTS test) is required for international students whose native language is not English. We are pleased to announce that there is **NO APPLICATION FEE**. Apply for Non-Thesis for Science Educators — Bio Science, code MS-BIOS-1-AAC.

Transfer courses — Degree and non-degree seeking student may transfer up to 9 credits of graduate courses into the degree program. To transfer, the graduate course content must be similar to one of our required courses with a grade of B or above. Transfer credits must not have been used to satisfy the requirements for any other degree and must have been completed within the six-year period preceding the date the graduate degree will be awarded.

All credits transferred to Clemson's graduate programs must have been completed at a regionally-accredited institution and must be verified by submission of an official transcript. You must then have an official transcript sent from the institution(s) where credit was earned to the Office of Enrolled Student Services, 104D Sikes Hall. Only when courses have been verified by Enrolled Services to meet all Graduate School requirements will they be approved for application toward the degree.

Grades earned for courses taken at institutions other than Clemson University will not be included in the student's grade point ratio.

Requirements for Degree

The Program Curriculum consists of 10 courses. Seven of the ten required courses are science content courses. The other three courses cover how to design an experiment and statistically

analyze data, how to write publications and grant proposals, and how to conduct research, respectively. Lectures and assignments are available via Clemson's online student information platform, Canvas, and are available 24/7. A brief description of required courses (3 credit hours each) is as follows:

BIOL 8400 Understanding Biological Inquiry – This online course is designed for teachers and those who want to understand the methods and approaches to biological inquiry. It provides a broad background into the scientific methods utilized in the biological sciences and the application of inquiry-based teaching methods in the classroom. **Instructor note:** BIOL 8400

Understanding Biological Inquiry will be more difficult if it is the first course taken in the online MS program. This course requires students to develop lesson plans which will be easier if they have taken 1-2 content courses

BIOL 8410 Understanding Ecology and Ecosystems – This online course is designed for teachers and for those who want to understand ecological interactions and systems. It provides a broad background in ecology that includes populations, habitats, communities, trophic interactions, and ecosystems. It provides a foundation for understanding interactions between organisms and their environments.

BIOL 8420 Understanding Cellular Processes – This online course is designed for teachers and for those who want to increase their knowledge about cell biology. Students will study how and where intracellular and extracellular molecules control cellular functions such as gene expression, secretion, motility, signaling, cell-cycle control, and differentiation.

BIOL 8430 Understanding Genetics and Evolutionary Biology – This online course is for teachers who want to increase their content knowledge in the areas of genetics and evolution. The course will focus on Mendelian genetics, molecular genetics, gene expression and regulation, population genetics, forces of evolutionary change, and the role of evolutionary change in the origin of new species and the diversity of life.

BIOL 8440 Understanding the Human Body – This online course is designed for teachers and for those who want to increase their content knowledge about the anatomy and physiology of the 11 organ systems in humans. Studies will include food processing and nutrient allocation, circulation and respiration, excretion, communication via hormones and nervous transmission, reproduction, behavior, locomotion and support.

BIOL 8450 Understanding Animal Biology – This online course is designed for teachers and for those who want to increase their content knowledge about the taxonomy, morphology, adaptations, and evolution of vertebrates.

BIOL 8460 Understanding Plant Biology – This online course is designed for teachers who want to increase their content knowledge about plants and includes the study of plants from bryophytes to angiosperms, including growth, photosynthesis, nutrition, reproduction, ecology, and evolution.

BIOL 8470 Understanding Microbiology – This online course is designed for teachers and for those who want to increase their knowledge about microorganisms. Topics include prokaryotic cell structure and function, microbial growth and growth control, food microbiology, bacterial genetics, immunology, virology, microbial diseases, and epidemiology. Laboratory concepts will be emphasized.

BIL 8480 Understanding Scientific Research – Research problems for teachers in selected areas of biological sciences to provide an introduction to research planning and techniques. Teachers will undertake either an instructor approved, individual project or participate in a group creative inquiry project involving their classroom during the academic year. Both are assisted by and under the supervision of the instructor. **Instructor note:** 8400 Understanding Biological Inquiry and BIOL 8490 Understanding Scientific Communication are strongly recommended before enrolling in BIOL 8480 because BIOL 8400 covers experimental design and data analyses and BIOL 8490 covers writing scientific manuscripts.

BIOL 8490 Understanding Scientific Communication – This online graduate course will help teachers develop their ability to write grant proposals, scientific manuscripts, and conference presentations on biological topics, and to communicate about biological issues with public audiences.

Optional Course –We offer BIOL 8710 Current Topics in Biology for students whose financial aid requires 5 or 6-credit hours minimum and they have only one required course to take during a semester. BIOL 8710 Special Topics in Biology is offered for 2 or 3 credit hours. The course requires a research paper on recent advances in biology. You would pick your topic and have it approved by the course instructor. The final paper has a 2500 (2 credit) or 3500 (3 credit) word minimum (not including cover page or references) and should demonstrate a thorough understanding of a particular topic. The paper must be 90% or above original. You should be prepared to review a minimum of 8 relevant references that relate specifically to your topic. We will give you a Guide for Citing Resources and the assessment rubric for the paper. You would have to pay tuition for the 2- or 3- credit hours. This course does not replace a course listed on your GS2.

Courses per Semester: Most of our students have other responsibilities, which dictates how many courses they take each semester. Many enroll in one class, others enroll in two classes, and some do a combination of one or two classes per semester. Students may, after they understand the workload, enroll in three classes. . Each course runs for a full semester (15 weeks). The anticipated course load for each 3-hour course is approximately 9 hours per week, which includes ~3 hours at lecture, ~3 hours assigned reading, and ~3 hours study/assignments.

Course Schedule: Our ten courses are offered on a fixed schedule because of instructor availability. **Note:** BIOL 8400 Understanding Biological Inquiry will be more difficult if it is the first course taken in the online MS program. This course requires students to develop lesson plans which will be easier if they have taken 1-2 content courses. BIOL 8400 Understanding Biological Inquiry and BIOL 8490 Understanding Scientific Communication are recommended before enrolling in BIOL 8480.

Fall Semester Schedule

BIOL 8400 Understanding Biological Inquiry
 BIOL 8420 Understanding Cellular Processes
 BIOL 8440 Understanding the Human Body
 BIOL 8460 Understanding Plant Biology
 BIOL 8480 Understanding Scientific Research

Spring Semester Schedule

BIOL 8430 Understanding Genetics and Evolutionary Biology

BIOL 8450 Understanding Vertebrate Biology
 BIOL 8470 Understanding Microbiology
 BIOL 8480 Understanding Scientific Research

Summer Semester Schedule

BIOL 8400 Understanding Biological Inquiry
 BIOL 8410 Understanding Ecology and the Environment
 BIOL 4860 Understanding Plant Biology
 BIOL 8490 Understanding Scientific Communication
 BIOL 8480 Understanding Scientific Research

Canvas is the course management system used in all courses to share documents, submit assignments, and assign grades for individual students.

Course Registration and iROAR

Students use iROAR to register for classes. After you decide which course or courses you will take, please do the following:

iROAR website.

- Click "Student Registration Services."
- Click "Register for Classes."
- Select the appropriate term
- Enter your CU ID and Password
- Click "Continue."
- Click "Find Classes."
- Enter subject and course number (example, BIOL 8410).
- Select section 001.
- Click "Add Class."
- Click "Submit." Note that students are NOT registered for classes by clicking "Add." Students must click the submit button under their class summaries to be registered. This button is located in the bottom right of the page. A schedule is saved when "Submit" is clicked.
- Click "Find Classes" if you plan to take more than one course.

Paying Your Bill:

Student bills are available exclusively online through **iROAR**. Students can login using their userid and password. Authorized users can also access the student bill using their unique userid and password. The online bill reflects the student's current registration and billing information. Because the bill is real-time, students can verify that all fees are satisfied before the payment deadlines.

- Students may add a parent or other designee as an authorized user via TouchNet. Students can click on the "Authorized users" link via TouchNet, enter their parent or other designee's email address. An email with login instructions will then be sent to the parent or designee. Authorized users may view the bill, make a tuition payment and sign up for a payment plan. Authorized users cannot enroll for eRefund. Authorized users have a **unique login**.
- If you cannot access your bill online, please call 864-656-5592 or **email**.

- If your fees change for any reason after your initial payment is made (i.e. housing adjustment, meal plan addition, change in schedule, etc.), it is the student's responsibility to ensure prompt payment of the balance is made. Login to [iROAR](#) to view your current charges and payment status.
- A \$150 late reinstatement fee is charged for paying and/or registering after the published dates. The late registration fee is non-refundable.

Payment Due Date:

If you add a course after the due date, payment must be made immediately.

Plan of Study (GS2) – Plan of Study Information:

Degree-seeking master's students **must submit the GS2 by the middle of their second semester.** The GS2 is online and accessible through iROAR.

Following are the steps to navigate the GS2 online:

- Go to the iRoar portal and log in.
- Click Student Self-Service.
- Under Student Records are several options including the GS2 links.

From here you have access to both the GS2 committee selection and to the GS2 plan of study. . Submitting a GS2 is a 2-step process that includes (A) Committee Selection and (B) Plan of Study.

Non-thesis MS degrees do NOT require a committee: however, they do require a faculty advisor. The faculty advisor for the online M.S. degree in Biological Sciences (MS-BIOS-G-AAC) is Dr. Robert Ballard, C88357337. Once Dr. Ballard is selected, click the submit button to trigger the approval process. *You will receive an email when the process has been completed. DO NOT submit a Plan of Study until your faculty advisor is approved.*

Issues with GS2 — Plan of Study Help

No GS7 Form: A GS7 form is not required.

Leave of Absence: The Graduate School no longer requires continuous enrollment so no leave of absence paperwork is required. Please refer to the Graduate School's policies and procedures in the [Graduate School Policies & Procedures Handbook](#).

Degree-seeking graduate students in good standing at Clemson University who take one or more semesters off can continue their degree program by completing the [Request for Re-Entrance form](#).

Legal Presence: This law applies to all students and faculty (US citizens, permanent residents, and international visitors). It applies to all institutions in South Carolina. In accordance with section 59-101-430 of the SC Code of Laws, also known as the South Carolina Illegal Immigration Reform Act, those unlawfully present in the United States are prohibited from attending a public institution of higher education in South Carolina. Those unlawfully present in the United States are also prohibited from receiving a public higher education benefit including scholarships, financial aid, grants or resident tuition.

What documents will be accepted as proof of U.S. citizenship?

- SC driver's license if you were born after January 1, 1987
- U.S. Passport

- U.S. or U.S. Territory Birth Certificate
- Certificate of Naturalization
- U.S. Government Issued Consular Report of Birth Abroad
- Certificate of Citizenship
- Social Security Approval via Federal Application for Student Financial Aid (FAFSA)

You may e-mail a scanned copy of one of the approved documents above to [Registration Services](#)

Instructor position at a college: Our online M.S. in Biological Sciences has qualified students for instructor positions at colleges that require a M.S. degree in Biological Sciences and admission to graduate programs where research experience (a thesis) is not a requirement. However, this depends upon the college and how they perceive non-thesis programs. Our non-thesis Master of Biological Sciences is designed specifically for teachers and other science educators who want to improve their science-content knowledge in biological sciences. Since there are no education courses in this program, our graduates do not have the credentials to teach in K-12 schools.

Accreditation: Clemson University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award the bachelor's, master's, educational specialist and doctoral degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia, 30033-4097 or call 404-679-4500 for questions about the status of Clemson University.

State Authorization Reciprocity Agreement: South Carolina is a member of the State Authorization Reciprocity Agreement (SARA) and Clemson University is an approved SARA institution, which means we adhere to established standards for offering post-secondary e-learning programs in all member states. Please review our [state authorizations](#) to see if this program is offered in your state and our process for student complaints against the university.

Information about licensure/ teacher certification: Our non-thesis Master of Biological Sciences is designed specifically for in-service teachers and other science educators who want to improve their science-content knowledge in biological sciences. It is intended for individuals who (a) already have the required licensure, or (b) who do not want or need teaching certification or licensure. There is currently no option to obtain licensure or certification through this program. Potential applicants should ensure this program meets their personal and/or professional goals prior to applying.

Resources:

[Program webpage](#) Here you will find information about admission, committee selection (GS2), curriculum, course schedule, and course registration.

[Program Article](#)

[Student Resources Links](#)

[Financial assistance](#)

[Online Clemson](#)

[Graduation Deadlines](#)

[Student Disability Services](#)

[Academic Calendar](#)

[Technology Help \(CCIT\)](#)