

What is MATHEMATICS?

Mathematics is the science of structure, order, and relation that has evolved from counting, measuring, and describing the shapes of objects.

The profession of mathematics encompasses much more than the basic problem-solving foundation students are taught before college. It deals with logical reasoning and quantitative calculation and is considered the underlying language of science. Students majoring in college math develop strong transferable skills in critical thinking, problem diagnosis, and computer skills that make math applicable to a wide variety of professions.

What are the DEGREE OPTIONS?

Bachelor of Science (B.S.) in Mathematics

(Please see the Secondary & Special Subject Education Major Map for information regarding the B.S. Ed in Mathematics option)

What are the CONCENTRATIONS?

There are five concentrations from which to choose:

- **Actuarial Science:** This concentration includes courses that prepare students for professional examinations Exam P/1 and Exam FM/2, and includes coursework that meets learning objectives for Validation by Educational Experience (VEE) in Mathematical Statistics, Accounting and Finance, and Economics.
- **Applied Mathematics:** This concentration prepares students to use mathematics to solve problems in a wide range of fields. Students must complete a second major or minor with computer science, chemistry, and electrical engineering being common second fields.
- **Data Science:** This concentration prepares students to use coursework



in mathematics, computer science and statistics to solve problems using real-world data. The significant overlap with computer science makes this concentration an excellent selection for a student to double major in mathematics and computer science.

- **Mathematics Education:** This concentration prepares a student to obtain a North Carolina teaching license and to teach mathematics in the North Carolina secondary schools. There is a serious shortage of secondary school mathematics teachers, so employment prospects are excellent.
- **Traditional Mathematics:** This concentration allows the student to delve deeply into mathematics with the most extensive set of mathematics courses of any of the options. This strong foundation is then supplemented by a required second major or minor.

What is the ADMISSION PROCESS?

Students may also declare a Mathematics major by visiting the Department of Mathematics and Computer Science office or any (math) professor. Please make an appointment

with your advisor via your MyWCU student portal.

What JOBS ARE AVAILABLE?

Depending on the concentration and other qualifications, our graduates are prepared to become a variety of professionals including statisticians, physicists, astronomers, bio-mathematicians, economists, database administrators, demographers, educators, investment analysts, psychometricians, software developers, materials scientists, computational biologists, and more. *NOTE: Advanced degrees may be required for some of the listed professions.*

Who employs MATHEMATICS graduates?

Our graduates gain employment with a variety of employers including accounting firms, aerospace and defense agencies, private & corporate business firms, construction companies, school systems, higher education institutions, consulting firms, engineering firms, and federal or state government agencies.

MAJOR MAP

How to use this map: Review the four categories and suggestions of activities and when you should consider engaging in them. Remember, these are just suggestions! There is a fillable space for you to add in any other ideas you have to set yourself up for success in life after college.

1st YEAR

2nd YEAR

EXCEL IN ACADEMICS

Many first-year students in the Mathematics major will focus on the liberal studies requirements as well as introductory mathematics courses. [Check out the 8-semester plan for your concentration](#) and make an appointment with your advisor. For placement in the Calculus pathway, please visit [Math Placement and ALEKS](#).

Students in their second year will likely continue with liberal studies electives, intermediate Math courses, as well as introductory courses with their minor. [Check out the 8-semester plan for your concentration](#) and make an appointment with your advisor.

GET HANDS-ON EXPERIENCE

Check out [WCU's DegreePlus program](#) and choose which events in any of the four categories you want to attend. Categories include: Professionalism, Teamwork, Leadership, or Cultural Responsiveness.

See what on-campus employment opportunities are available by logging in to JobCat via your MyWCU.

Get involved with the Math Club, NCCTM Student Chapter, and FEM in STEM.

If you are thinking about attending a graduate school, start engaging in hands-on experiences required in graduate school admissions.

Engage deeper with [DegreePlus](#); choose an additional competency to complete

BE PART OF THE COMMUNITY

Connect with the [Center for Service Learning](#) and ask about the [Spark Award](#), a program aimed to encourage students to be connected with their community.

Job shadow with professionals in the career area you wish to pursue.

Volunteer with area non-profits or organizations which interest you.

Consider the [study abroad programs related to mathematics](#). Talk with a study abroad advisor about targeted experience for your concentration.

PREPARE FOR LIFE AFTER COLLEGE

Further explore your career options or career interests using the [Center for Career and Professional Development's](#) online resources, [Focus 2](#), and [Onet Online](#).

Connect with a career counselor early on to explore opportunities and experiences you can do while in college to further develop your professional resume.

Check out [CCPD's list of career-building activities](#) and participate in an activity this year, such as attending Career Fair Plus.

Start a spreadsheet of graduate schools you wish to apply to in a few years with their admission requirements so that you are aware of the expectations.

Looking for a minor? Consider these options:

Accounting

Biology

Business Administration and Law

Chemistry

Computer Information Systems

Computer Science

Economic Analysis

Finance

Management

3rd YEAR

Third level courses focus on upper-level Math courses, special topics relating to your career path, or your chosen minor. [Check out the 8-semester plan for your concentration](#) and make an appointment with your advisor.

Consider internship experiences that will give you practical and hands-on experience to put on a resume.

Consider networking with professionals in your field at national or regional professional conferences.

Develop deeper relationships with the organizations for which you volunteer. Ask for special projects or responsibilities that you can highlight on a resume.

Connect with alumni in your field through [LinkedIn](#)

Visit the CCPD to hone your professional resume and cover letter. Apply for internships. Utilize the [Writing and Learning Commons](#) for GRE and other professional exam preparation sessions. Use [Big Interview](#) to learn more about professional interviews.

Schedule a visit to tour medical/ graduate schools of your choice, if applicable.

4th YEAR

Courses in your final year will complete the major coursework requirement, concentration courses, as well as your chosen minor electives. Be sure to [check out the 8-semester plan for your concentration](#), make an appointment with your advisor, complete your degree audit, and [apply for graduation!](#)

Investigate requirements for full-time jobs. Assess what skills or experiences you're lacking and invest time in seeking additional opportunities such as certification programs, classes, or professional development workshops during your last year to fill that gap. Connect with your faculty advisor or career counselor.

Join professional Mathematics organizations such as the Mathematical Association of America.

Network with employers and non-profits at the annual Career Fair Plus event, held each October and February.

Apply to graduate schools, if applicable.

Look for and apply for jobs between 4 and 6 months before graduation.

Polish your resume, cover letter, and interview skills by using the [CCPD](#).

Internships are still the number-one educational experience employers look for in a recent college graduate resume. (Chronicle of Higher Education's study on 59,000 employers)

DID YOU KNOW?

MORE INFORMATION

INTERNSHIP Information

At Western Carolina University there are numerous internship opportunities for students. In some cases internships are established through a faculty member in the student's major. Oftentimes students find part-time jobs in an area related to their field of study. When this happens, students should discuss with their academic advisor the possibility of receiving college credit. Generally, three hours of general elective credit can be earned for a minimum of 200 hours of experience.

SKILLS LEARNED in the classroom

The core competencies will center on developing skills, knowledge, and attitudes such as:

- information handling and organization
- curiosity and creativity
- critical thinking and evaluation
- problem solving
- data collection
- written and oral communication
- professional teamwork

KNOWLEDGE Base

This program will prepare students to:

- Able to effectively use inductive and deductive reasoning, with the ability to formulate mathematical conjectures and then use appropriate mathematical methods and logically valid arguments to prove or disprove those conjectures.
- Communicate basic mathematical concepts correctly and clearly, both orally and in writing.
- Use mathematics to analyze events and solve problems that occur in numerous areas of the human endeavor.

Professional RESOURCES

- National Council of Teachers of Mathematics: www.nctm.org
- Mathematical Association of America: www.maa.org
- American Mathematical Society: www.ams.org

QUESTIONS?

For questions, please call the Mathematics program at 828-227-7245 or visit math.wcu.edu.

To schedule an appointment with a career counselor, contact the Center for Career and Professional Development, 828-227-7133 or careerservices@wcu.edu.