



SHENANDOAH®
UNIVERSITY

College of Arts & Sciences

DIVISION OF APPLIED TECHNOLOGY



2022 Undergraduate Programs



DIVISION OF APPLIED TECHNOLOGY

Learn to become a leader in one of the world's largest and fastest-growing industries through Shenandoah's Division of Applied Technology (DAT). Government, businesses, health care and nonprofits all require applied technology skills for everyday operations. We take a humanistic approach to technology at Shenandoah, meaning that you'll always consider how technology is used and how it benefits others.

Majors

- **Computer Science**
- **Cybersecurity**
- **Data Science & Applied Mathematics**
- **Information Technology**
- **Mathematics**
- **Virtual Reality Design**

Minors

- **Artificial Intelligence**
- **Computer Science**
- **Data Science**
- **Information Technology**
- **Mathematics**
- **Virtual Reality Design**

Certificates

- **History & Immersive Technology**
- **IT/Cybersecurity Technician**
- **Virtual Reality Design**

Cybersecurity

The Bachelor of Science in Cybersecurity

provides a strong foundation in computer science and mathematics as well as practical digital security knowledge and skills. This applied program provides students with hands-on experience using the latest tools and technologies to protect digital information, computing systems and networks from cyber attacks.

Students receive a MacBook that contains the vital cyber tools used in virtual cyberlabs with access to our on-campus networking equipment and other hardware for hands-on activities and professional preparation. They will be prepared to earn security certifications and enter professional fields or graduate programs in cybersecurity.

Job Outlook: Nationally, 32% employment growth is expected through 2028.

Job Titles: Cybersecurity specialist, information security analyst, cybersecurity engineer, security administrator

Computer Science

The Bachelor of Science in Computer Science program brings together students across many disciplines. Our programming students will also have the opportunity to work with robots to make programming fun. Students will learn the Python programming language and will learn about emerging areas such as artificial intelligence.

Computer science and programming skills are becoming increasingly necessary in many fields. In science fields, the ability to program is becoming essential in many areas of research. Programming and computer science skills also increase earning potential for new graduates.

Job Outlook: Nationally, computer science majors can expect to start at \$89,000 per year on average, according to the Bureau of Labor Statistics' Occupational Outlook for 2021.

Job Titles: Application developer, computer scientist, programmer, software developer





Data Science & Applied Mathematics

The Bachelor of Science in Data Science and Applied Mathematics provides an interdisciplinary foundation in computer science, statistics and mathematics along with an in-depth look at using data and mathematics in the real world. Students work on problems in the community and region, gaining hands-on experience in applied math and data science. These fields are critical in the modern workforce, across all industries.

Job Outlook: Nationally, 28% employment growth is expected through 2028.

The Minor in Data Science provides students with the decision-making skills required to meet the demands of the data-driven workplace. This minor is an excellent complement, with marketable skills, to almost any major. Students enter the workforce not only with increased quantitative abilities but with a strong foundation in the pillars of data science — statistical analysis, computer science and real-world experience.

Information Technology

The Bachelor of Science in Information Technology prepares students to work in a wide range of technical fields, including robotics/the internet of things, e-commerce applications, network and telecommunications support, IT security support, virtual reality and data analysis. In addition to access to the cyber lab and Shenandoah Center for Immersive Learning (SCiL) lab, IT students have the opportunity to work with drones and computer hardware kits.

Job Outlook: Depending on the area, job growth may be 10% or more through 2028.

The Minor in Information Technology augments any major by giving students the technical abilities needed to be competitive in today's information-based workplace. Classes are based on hands-on activities designed to build real-world skills.

The applied nature of the degree prepares graduates to follow a range of technical career paths including IT administration, network administration, product development, client support, project planning and project management, as well as graduate programs in information technology.

The Information Technology/ Cybersecurity Certificate gives students pursuing an IT major or minor, cybersecurity major or virtual reality major a credential that they can use to apply for entry-level tech jobs. Classes are based on hands-on activities designed to build real-world technology skills.

Mathematics

The Bachelor of Science in Mathematics provides students with analytic reasoning, applied mathematics knowledge and problem-solving skills. The degree complements additional coursework in computer science, data science, cybersecurity, statistics, business and many other majors. The program prepares students to enter a graduate program or seek employment in industry or research.

The Bachelor of Arts in Mathematics surveys all branches of mathematics. This applied degree complements coursework in the humanities, arts and sciences. Students are prepared for careers in teaching and other fields requiring a background in quantitative reasoning.

Job Outlook: Employment of mathematicians is projected to grow 26% from 2018 to 2028, much faster than the average for all occupations.

Job Titles: Mathematician, statistician, analyst, actuary, operations research analyst, teacher

The Mathematics Minor offers students a modern view of mathematics and its applications in the real world. The program complements a multitude of majors across the university, including business and pre-health programs.

"With small class sizes, knowledgeable professors and staff, and a great lab space for learning, experimenting and working, the virtual reality design program at Shenandoah University is beyond anything I could have thought. I learn more every day about the major and field of virtual reality and could not ask for more."

– Cole Herndon '22,
Virtual Reality Design

Notable Student Projects

Our very first Virtual Reality Design graduate designed, tested and built a virtual reality application to diagnose attention deficit disorders like ADHD.

Other students are working on a historically accurate recreation of the Constitutional Convention of 1787 under the direction of our VR and History faculty using state-of-the-art motion capture technology.



Virtual Reality Design

Immersive experiences are transforming various types of businesses and organizations, creating exciting workforce opportunities.

At SU, students may choose either a Bachelor of Science or Bachelor of Arts in Virtual Reality Design. Both BA and BS students complete a common set of foundation courses, two lab courses, immersive technology electives, and a two-semester capstone sequence in which they complete a real project working with a client or as part of an internship. All students gain practical experience using industry-standard equipment and design tools.

The Bachelor of Science in Virtual Reality Design prepares students for careers working as technical specialists, developers, and/or programmers in emerging immersive technologies. Students gain practical experience working with widely used software development environments, game engines, and virtual worldbuilding tools using state-of-the-art equipment.

The Bachelor of Arts in Virtual Reality Design prepares students for careers producing high-quality content for emerging immersive technologies. This degree track prepares students to specialize in 360 video or AR/VR content production. Students gain experience writing, filming, editing and directing immersive content.

Job Outlook: Skills in augmented/virtual/mixed realities are continuously being sought after:

Demand for AR/VR developers grew 1,400% from 2018 to 2019. *[Hired]*

Global VR to reach ~\$26.89 billion by 2022, 54.01% growth between 2017 and 2022 *[Zion Market Research]*

Demand for 3D talent is growing 600% faster than the labor market. *[Burning Glass Technologies]*

National average salary of an extended reality developer is ~\$85,000/year, and reaches \$156,000/year in some cities. *[Zip Recruiter]*

Job Titles: Software developer/engineer, graphics designer/engineer, AR/VR maintenance/technical support specialist, VR project manager (and similar titles)

The Virtual Reality Minor enhances many majors by giving students experience with this emerging technology. Students learn how to use the equipment and software necessary to design and build immersive experiences.

The Virtual Reality Certificate gives students a broad foundation in AR/VR tools, systems and methods. Students gain practical experience working on real projects. This program is designed for students who are majoring in another field and/or who have already graduated with another degree in a different field and are seeking an additional credential in this exciting new discipline.

“Paired with state-of-the-art and fully equipped labs and facilities, academic programs in Shenandoah's Division of Applied Technology allow students to engage in cutting-edge, creative, and competitive learning and scholarship.”

– Mohammad F. Obeid, Ph.D.
Assistant Professor and Program Coordinator,
Virtual Reality Design



SHENANDOAH CENTER FOR IMMERSIVE LEARNING

“Hands-on project experience with the latest equipment means our students graduate ready to step into the workplace and harness their creativity.”

– Anne Marchant, PhD,
Director, Division of
Applied Technology

The Shenandoah Center for Immersive Learning (SCiL)

is a research and teaching laboratory at SU that focuses on extended reality (XR) applications, 3D user interfaces, human-to-human connectivity within mixed realities, and transforming ideas into living experiences through immersive technology.

SCiL is actively building a culture of inclusiveness and opportunity. As students progress, they are given the opportunity to bring their own ideas to life as they work on real-world projects using state-of-the-art tools.

Currently, our students are contributing to a wide range of projects that support education and the community, including:

- An initiative to support regional entrepreneurs.
- A historically accurate virtual reality experience, "The Great Experiment," that transports students back in time to reenact the Constitutional Convention Debates of 1787
- The augmented reality app, "Through Their Eyes," that allows students to explore the personal experiences of soldiers in the aftermath of the Civil War Battle of Cool Spring and can be downloaded for free onto Apple and Android devices.



COLLEGE OF ARTS & SCIENCES HONORS PROGRAM

The College of Arts & Sciences Honors Program fosters the continued intellectual and personal growth of students who excel academically and creatively by providing them with rigorous and engaging learning experiences within a cohesive multidisciplinary community. All honors courses complement Shenandoah's General Education program and the College of Arts & Sciences' dedication to advancement in knowledge, critical thinking and communication. Each course emphasizes the multidisciplinary nature of any career or scholarly activity and provides advanced instruction in communication, reflection and ethical reasoning. Additionally, three honors seminars focus on how to make a difference within global and local communities.

su.edu/honors



Contact the Office of Admissions

Call: 540-665-4581 | Text: 540-592-4518 | Email: admit@su.edu



su.edu/admissions • su.edu/applied-technology
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