GOLISANO COLLEGE OF COMPUTING AND INFORMATION SCIENCES
PROGRAM GOALS AND STUDENT LEARNING OUTCOMES

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Overview

The Golisano College of Computing and Information Sciences at RIT is home to a diverse community of people and programs helping drive education, research and innovation in computing.

RIT's Golisano College of Computing offers undergraduate, graduate, and Ph.D. degrees in fields that include accessibility, bioinformatics, computer science, cybersecurity, game design and development, and software engineering. Our students co-op and go on to work for some of the biggest names in tech, and our faculty drive computing-based solutions to effectively address challenges faced by individuals, organizations, and a global society.

As home to the first IT and SE undergraduate programs in the nation, and forward-thinking initiatives like the ESL Global Cybersecurity Institute (opened in 2020), Golisano College has fostered a legacy of leadership in computing education and research. The college is the largest at RIT, which is the 10th largest private university in the United States and offers programs both on campus in Rochester, NY and at our global campuses in Croatia and Dubai.

Computing and Information Technologies (BS)

Student Learning Outcomes:

1. Analyze a problem, and to identify and define the computing requirements appropriate to its solution
2. Design, implement and evaluate a computer-based solution to meet a given set of computing requirements in the context of the discipline
3. Communicate effectively with a range of audiences about technical information
4. Make informed judgments in computing practice based on legal and ethical principles
5. Function effectively on teams to establish goals, plan tasks, meet deadlines, manage risk, and produce deliverables
6. Identify and analyze user needs and take them into account in selection, integration, evaluation and administration of computer-based systems

Computer Science (BS)

Program Goal #1: Students will possess the necessary background in the principles and practice of computer science to pursue advanced study in computing or participate in modern software development

1. Apply computer science theory and software development fundamentals to produce computing-based solutions
2. Design, implement, and evaluate a computing based solution to meet a given set of computing requirements in the context of the program's discipline
3. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions
4. Demonstrate advanced knowledge of a selected area within the computer science discipline

Program Goal #2: Students will possess effective communication and teamwork skills that contribute to successful collaboration with colleagues and clients

5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
6. Communicate effectively in a variety of professional contexts

Program Goal #3: Students will possess the ability to work as ethical and responsible members of the computing profession and society

7. Recognize professional responsibilities and make informed judgements in computing practices based on legal and ethical principles

Cybersecurity (BS)

Student Learning Outcomes:

1. Apply the theory and principles of computing security
2. Demonstrate fluency in developing software to help solve computing security problems
3. Demonstrate understanding of adversarial thinking, threats, and vulnerabilities, and developing defensive strategies
4. Demonstrate advanced knowledge of a selected area within the computing security discipline
5. Assess the ethical considerations that arise in the computing security field
6. Work effectively in teams to accomplish a goal
7. Write clear technical documents and make effective oral presentations

Game Design and Development (BS)

Students Learning Outcomes:

1. Identify, analyze, and resolve game design problems using industry-established game design and gameplay concepts
2. Apply knowledge of programming, math, physics, and game design to the field of game design and development
3. Integrate game design and technology concepts in the practice of game creation
4. Identify and solve production pipeline issues related to the game design and development process
5. Apply technology to develop media-centric experiences
6. Identify, critique and apply knowledge of media theory, mediated communication and aesthetics towards the construction of media-centric apps
7. Identify critical legal and ethical challenges in the design and production of games
8. Effectively communicate technical and design concepts through writing, speech, and formal presentation
9. Effectively participate and contribute to multidisciplinary design and development teams

Human-Centered Computing (BS)

Student Learning Outcomes:

1. Gather user, client, and system needs/data and translate into technical and aesthetic specifications and requirements
2. Design interfaces and interactions based on research principles and aesthetic practice, design principles, or accessibility
3. Develop and assess prototypes that meet the aesthetic and functional requirements of a client
4. Evaluate user interfaces and user experiences, through a variety of techniques and methodologies
5. Communicate via written reports, visualizations, and presentations
6. Describe emerging technologies and explore possibilities for their use

New Media Interactive Development (BS)

Student Learning Outcomes:

1. Apply knowledge of technology, math, programming, and media design to the field of new media interactive development
2. Apply technology to develop media-centric experiences
3. Identify, critique, and apply knowledge of media theory, mediated communication and aesthetics to the construction of media centric apps
4. Identify critical legal and ethical challenges in the design and production of media-centric creations
5. Effectively communicate technical and design concepts through writing, speech, and formal presentations
6. Effectively participate and contribute to multidisciplinary design and development teams

Software Engineering (BS)

Student Learning Outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Web and Mobile Computing (BS)

Student Learning Outcomes:

1. Communicate effectively with a range of audiences about technical information
2. Identify and analyze user needs and take them into account in the selection, integration, and evaluation of computer-based systems
3. Analyze a problem and define the computing requirements appropriate to its solution
4. Design, implement, and evaluate a computer-based solution to meet a given set of computing requirements
5. Make informed judgements determined by legal, ethical, societal and security principles involved in computing practices
6. Function effectively on teams to establish goals, plan tasks, meet deadlines, manage risk, and produce deliverables

Artificial Intelligence (MS)

Program Goal #1: Demonstrate skills in artificial intelligence

- Describe and apply Artificial Intelligence techniques using data sources, algorithmic theory, and programming
- Use and deploy machine learning algorithms on Artificial Intelligence platforms
- Design a data collection methodology and conduct data processing, including identification and critique of biases in AI systems

Program Goal #2: Apply artificial intelligence skills within a specified domain area

- Demonstrate in-depth knowledge of Artificial Intelligence

Program Goal #3: Evaluate and investigate an active area of research in artificial intelligence

- Analyze the ethical issues in developing and deploying responsible AI technologies using effective written communication
- Utilize verbal (or signed), written, and visual communication techniques to effectively convey information on a current AI research topic

Computer Science (MS)

Program Goal #1: Maintain the technical skills necessary to be successful practitioners in the discipline

- Demonstrate a breadth of knowledge across the discipline
- Demonstrate a depth of knowledge in a selected area in the discipline

Program Goal #2: Possess the skills necessary for successful professional collaborations

- Communicate effectively in a professional environment through writing, speech, and formal presentation

Program Goal #3: Act as ethical practitioners of the discipline

- Comprehend and analyze ethical issues related to the use of computing in society

Cybersecurity (MS)

Student Learning Outcomes:

1. Demonstrate ability in critical thinking and problem-solving in computing security
2. Demonstrate a depth of knowledge in a selected area of computing security
3. Communicate and write effectively in areas of computing security
4. Comprehend and analyze regulatory and ethical issues related to computing security
5. Describe technologies, theories, and methodologies emerging in the field of computing security

Data Science (MS)

Program Goal #1: Demonstrate foundational skills in data science

- Programmatically demonstrate the ability to create an end-to-end data science project pipeline that uses large volume, heterogeneous, database
- Implement data structures and algorithms in a modern programming language

Program Goal #2: Apply data science skills within a specified domain area

- Design and develop professional software that meets the requirements for a specific domain context
- Identify and analyze security, ethical, and privacy issues related to data science

Program Goal #3: Evaluate and investigate an active area of research in data science

- Use written and oral communication techniques to effectively convey information
- Write scientific documents to effectively convey information

Game Design and Development (MS)

Student Learning Outcomes:

1. Apply knowledge of game design, game development processes, gameplay theory and prototyping to the field
2. Identify, analyze, and resolve game design problems using industry established game design and gameplay concepts
3. Integrate emerging design and technology concepts in the practice of game creation
4. Apply core industry processes in the construction of game systems and entertainment technology applications
5. Apply current technology in a media-centric context
6. Identify critical legal and ethical challenges in the design and production of games
7. Demonstrate how design and development applies to both a local and global industrial practice and research
8. Effectively communicate technical and design concepts through writing, speech, and formal presentation
9. Effectively participate and contribute to multidisciplinary design and development teams
10. Conduct applied and integrative research in the field of game design and development

Health Informatics (MS)

Student Learning Outcomes:

1. Promote the adoption of the Electronic Health Record (EHR)
2. Analyze and document clinical processes and information system requirements
3. Evaluate, compare, and select appropriate Clinical Information Systems (CIS) that meet medical, economic, and technological constraints
4. Develop computer-based medical applications using new and existing technologies
5. Support medical research practice and patient care through clinical decision support systems
6. Communicate professionally through writing, presentation, and visual techniques

Human-Computer Interaction (MS)

Student Learning Outcomes:

1. Select and use appropriate cognitive theories and techniques to explain and describe user behavior and model user requirements
2. Create prototypes based on user requirements, can perform formative and summative evaluations, and make design recommendations
3. Describe the domain terminology, list the problems and issues, and demonstrate technical skills within an application area
4. Create a research proposal that integrates knowledge from several areas, develops hypotheses and appropriately addresses data
5. Demonstrate effective written communication skills

Information Technology and Analytics (MS)

Student Learning Outcomes:

1. Summarize and explain, in written form, current trends and practices within academic or professional communities in the field of information technology and analytics.
2. Apply specialized analytical and technical skills to a domain of work
3. Design information services to enhance the value of information
4. Explore and extend creative uses of emerging information technologies

Software Engineering (MS)

1. Select and apply accepted software engineering processes, techniques and frameworks to the development of software as part of the software development lifecycle
2. Select and implement data structures and algorithms in a modern programming language.
3. Design and develop professional software that meets the requirements for a specific domain context.
4. Use communication techniques to effectively convey information to team mates and stakeholders
5. Write, present, and discuss scientific documents to effectively convey information
6. Consult with a client to design and implement a project that follows a complete software engineering lifecycle or research methodology

Computing and Information Science (PhD)

Student Learning Outcomes:

1. Describe and explain the general literature of the discipline of computing and information sciences
2. Apply knowledge from the literature of their area of specialization
3. Critically evaluate existing research, propose new viable research directions and perform original work
4. Explain technical material via written reports and oral presentations