**College of Computing & Informatics**

**Degree Program Student Learning Outcomes**

**Ph.D. in Bioinformatics and Computational Biology**

BIG\_BCB01 Students will be able to demonstrate the following ranges of knowledge: Molecular Sequence Analysis, Structural Bioinformatics, and Bioinformatics Methods.

BIG\_BCB02 Students will be able to demonstrate independent research conclusions and outcomes.

BIG\_BCB03 Students will be able to demonstrate effective writing skills.

BIG\_BCB04 Students will be able to demonstrate effective oral communication skills.

**PSM Bioinformatics**

BIG\_PSM01 Students will possess strong Scientific Communication Skills.

BIG\_PSM02 Students will identify the goals, approach and outcome of their internship based-project.

BIG\_PSM03 Students will possess fundamental computer programming skills.

BIG\_PSM04 Students will possess knowledge of descriptive and inferential statistics related to bioinformatics problems.

BIG\_PSM05 Students will possess understanding of fundamental concepts of genomics.

**BA Computer Science**

CSBA Human Computing Interaction Concentration: Students will demonstrate knowledge of human computer interaction design concepts and related methodologies.

CSBA Information Technology Concentration: Students will demonstrate the ability to combine hardware and software to create an IT infrastructure.

CSBA01 Students will demonstrate competence in programming skills.

CSBA02 Students will demonstrate fundamental knowledge of data structures and algorithms.

CSBA03 Students will demonstrate an ability to analyze a problem, identify and define the computing requirements appropriate to its solution, and develop an efficient software solution for the problem.

CSBA04 Students will demonstrate acceptable teamwork skills.

CSBA05 Students will demonstrate acceptable oral communications skills.

CSBA06 Students will demonstrate acceptable written communications skills.

CSBA07 Students will demonstrate knowledge of professional and ethical responsibilities.

**BS Computer Science**

CSBS AI, Robotics, and Gaming Concentration: Students will demonstrate fundamental skills in artificial intelligence, machine learning, and design intentional user experiences.

CSBS Bioinformatics Concentration: Students will demonstrate knowledge of the data and computational tools and procedures used in the field of bioinformatics.

CSBS Cyber Security Concentration: Students will be able to identify the most common attacks to security protocols and procedures associated with software systems.

CSBS Data Science Concentration: Students will demonstrate knowledge of data mining, database design, and deep analytics.

CSBS Software Engineering Concentration: Students will demonstrate the ability to document the requirements for a software project in narrative and graphical form.

CSBS Software Systems and Networks Concentration: Students will possess programming skills in parallel and distributed computing.

CSBS Web and Mobile Applications Concentration: Students will demonstrate the ability to create static Web pages using HTML and JavaScript.

CSBS01 Students will demonstrate competence in programming skills.

CSBS02 Students will demonstrate fundamental knowledge of data structures and algorithms.

CSBS03 Students will demonstrate an ability to analyze a problem, identify and define the computing requirements appropriate to its solution, and develop an efficient software solution for the problem.

CSBS04 Students will demonstrate acceptable teamwork skills.

CSBS05 Students will demonstrate acceptable oral communications skills.

CSBS06 Students will demonstrate acceptable written communications skills.

CSBS07 Students will demonstrate knowledge of professional and ethical responsibilities.

**MS Computer Science**

CSMS01 Computer Science MS Students will possess knowledge of design and analysis of computer algorithms and data structures at the graduate level, requiring critical analysis and study.

CSMS02 Computer Science MS Students will possess programming skills at the graduate level.

CSMS03 Computer Science MS Students will possess in-depth knowledge in at least one computer science area.

CSMS04 Computer Science MS Students will demonstrate oral communication skills applicable to the computer science profession.

CSMS05 Computer Science MS Students will demonstrate written communication skills applicable to the computer science profession.

CSMS06 Computer Science MS Students will possess skills needed to work successfully as a team.

**Ph.D. in Computing and Information Systems**

CAIS01 Students will be able to demonstrate the following ranges of knowledge with respect to the tracks they are enrolled in.

CAIS02 Students will be able to demonstrate independent research skills and written communication skills.

CAIS03 Students will be able to demonstrate effective oral communication skills.

**Master of Science in Cyber Security**

MSCyber01 Students will demonstrate core knowledge in security attacks, mechanisms, policy, threats, and systems.

MSCyber02 Students will demonstrate ability to build a system that is secure against network based attacks.

MSCyber03 Students will demonstrate knowledge of key cryptographic algorithms.

**Master of Science in Information Technology**

MSIT01 MSIT students will demonstrate a graduate-level ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

MSIT02 MSIT students will demonstrate a graduate-level ability to design a computer-based system, process, component, or program to meet desired needs.

MSIT03 MSIT students will demonstrate an ability to function effectively on teams to accomplish a common Information Technology project goal.

MSIT04 MSIT students will demonstrate an ability to use effective oral communication in the domain of Information Technology.

MSIT05 MSIT students will demonstrate graduate-level knowledge and skills in applying databases to solve practical problems.

MSIT06 MSIT students will demonstrate knowledge of the best practice design principles for system integration.