

# COMPUTER SCIENCE

Chair	Assistant Chair	Secretary	Location	Department Phone
Dr. Sam Thangiah	Dr. Raed Seetan	Vicki Sparano	275 Advanced Technology and Science Hall	724-738-2040

Department Web Site URL (<https://www.sru.edu/academics/colleges-and-departments/ches/departments/computer-science/>)

## Graduate Coordinator

Dr. Abdullah Wahbeh

## Faculty

### **Naresh Adhikari**

Assistant Professor  
Computer Science  
Ph.D., Mississippi State University  
M.S., Mississippi State University  
B.E., Pokhara University

### **Alice Gretch**

Instructor  
Computer Science  
M.B.A., Robert Morris College  
B.S., University of Pittsburgh

### **Kwang Lee**

Assistant Professor  
Computer Science

### **Daniel Miller**

Instructor  
Computer Science  
M.S., Boston University  
B.S., Slippery Rock University

### **Raed Seetan**

Associate Professor  
Computer Science  
Ph.D., North Dakota State University  
M.S., Jordan University of Science and Technology  
B.S., Jordan University of Science and Technology

### **Nitin Sukhija**

Associate Professor  
Computer Science  
D.C.Sc., Mississippi State University  
M.C.S., National University  
M.B.A., San Diego State University  
B.E., Maharshi Dayanand University

### **Sam Thangiah**

Professor  
Computer Science  
Ph.D., North Dakota State University  
M.S., North Dakota State University  
B.S., Slippery Rock University

### **Abdullah Wahbeh**

Assistant Professor  
Computer Science  
D.S., Dakota State University  
M.S., Dakota State University  
M.S., Yarmouk University  
B.S., Yarmouk University

### **Deborah Whitfield**

Professor  
Computer Science  
Ph.D., University of Pittsburgh  
M.S., University of Pittsburgh  
B.S., Youngstown State University

### **Hongbo Zhou**

Associate Professor  
Computer Science  
Ph.D., Michigan State University  
M.S., Xi'an Jiaotong University (China)  
B.S., Xi'an Jiaotong University (China)

## Programs

### Majors

- Health Informatics, Master of Science (MS) (<https://catalog.sru.edu/graduate/health-engineering-sciences/computer-science/health-informatics-ms/>)

### Certificates

- Data Science, Certificate (<https://catalog.sru.edu/graduate/health-engineering-sciences/computer-science/data-science-certificate/>)
- Health Informatics, Certificate (<https://catalog.sru.edu/graduate/health-engineering-sciences/computer-science/health-informatics-certificate/>)

## Courses

### **CPSC 590 - Experimental**

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Graduate.

### **CPSC 595 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Graduate or Post Baccalaureate.

**CPSC 598 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Graduate or Post Baccalaureate.

**CPSC 602 - Introduction to Health Informatics**

This course is an introduction to the healthcare system and the role of health informatics. It examines clinical, research and administrative applications of information technology applications used by healthcare professionals.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Enrollment is limited to Graduate level students.

**CPSC 605 - Data Mining and Data Analysis**

This course provides a survey of data analysis and data mining techniques for finding patterns in data. It will emphasize using data models, data gathering and storage, selection and preparing of data, model building and testing, and interpreting and validating results. If the student takes CPSC 405 for the undergraduate program, he/she can take CPSC 605 for additional credits.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Enrollment is limited to Graduate level students.

**CPSC 606 - Data Visualization**

This course provides a survey of techniques for visualizing patterns in data. The course will emphasize modern and traditional methods for data visualization, including interactive visualization for data sets too large to display statically. If the student takes CPSC 406 for the undergraduate program, he/she can take CPSC 606 for additional credits.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Enrollment is limited to Graduate level students.

**CPSC 620 - Healthcare Ethics, Law, Privacy and Information Assurance**

This course explores the protection of information resources within an organization. Topics include information security practices and policies, the relationship between information privacy and security within an IT department, information security planning and the assessment and management of information assurance.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Enrollment is limited to Graduate level students.

**CPSC 623 - Database Systems, Modeling and Security**

The course covers the fundamental concepts related to the design, use and implementation of relational database systems, with emphasis on creation of data models based on the entity relationship data model. In addition, students will receive in-depth training of the languages and facilities provided by database management systems with query languages, specifically SQL. Additional topics include a survey of techniques related to database recovery, database security, database management in various environments and distributed databases.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Enrollment is limited to Graduate level students.

**CPSC 680 - Topics in Computer Science: Machine Learning**

This course provides an overview of concepts, techniques, algorithms and applications in machine learning, including supervised learning (e.g.: classification and regression), unsupervised learning (e.g.: clustering and dimensionality reduction), and learning theory (e.g.: bias/variance; regularization and feature selection). Moreover, the course will include research projects that will require writing computer code, conducting experiments, and writing papers. If the student takes CPSC 480 for the undergraduate program, he/she can take CPSC 680 for additional credits.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Enrollment is limited to Graduate level students.

**CPSC 685 - Big Data Analytics**

This is a project driven course designed to provide techniques for acquiring, managing and analyzing massive unstructured data. Consideration will be given to both batch mode processing and real time analytics. Specific topics include the MapReduce parallel computing paradigm, distributed file systems, the Hadoop Ecosystem and its components such as Pig, Hive, HBase, Oozie, Yarn and Mahout, NoSQL databases, cloud computing, techniques for clustering and visualizing big data, Web analysis, machine learning in a big data setting and data setting and data security issues. Applications in business, engineering, health care and social networks will also be covered. If the student takes CPSC 485 for the undergraduate program, he/she can take CPSC 685 for additional credits.

Prerequisite: CPSC 605<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Enrollment is limited to Graduate level students.

**CPSC 688 - Software Engineering and Project Management**

Software Engineering and Project Management deals with Software Development Life-Cycle Methodologies. SDLC methodologies consist of gathering requirements on, implementation, testing, documentation, deployment and maintenance of software. The software development life cycle (SDLC) is a framework defining tasks performed at each step in the software development process. SDLC is a structure followed by a development team within the software organization. It consists of a detailed plan describing how to develop, maintain and replace specific software. The life cycle defines a methodology for improving the quality of software and the overall development process.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Enrollment is limited to Graduate level students.

**CPSC 690 - Experimental**

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Graduate.

**CPSC 695 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Enrollment is limited to Graduate level students.

**CPSC 698 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment is limited to Graduate level students.

**CPSC 700 - Independent Study**

Independent Study courses give students the opportunity to pursue research and/or studies that are not part of the university's traditional course offerings. Students work one on one or in small groups with faculty guidance and are typically required to submit a final paper or project as determined by the supervising professor.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment is limited to Graduate level students.

**CPSC 720 - Health Informatics Capstone**

This is a capstone course that requires students to complete a health informatics project. The project must be approved by MSHI faculty by no later than the end of the first week of the course. Students will be invited to propose their own projects or create one in collaboration with MSHI faculty.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Enrollment is limited to Graduate level students.

**CPSC 750 - Informatics Internship**

This course offers an individually designed health informatics experiential learning opportunity within a cooperating enterprise. The experience provides an opportunity to integrate, apply and expand upon the skills acquired in health informatics coursework. Learning objectives, specific activities and an anticipated timeline must be approved by the professional supervisor and faculty supervisor prior to registering for the course.

Credits: 3-9

Term(s) Typically Offered: Offered as Needed

Enrollment is limited to students with a program in Health Informatics.

Enrollment is limited to Graduate level students.

**CPSC 790 - Experimental**

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Graduate.

**CPSC 795 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Enrollment is limited to Graduate level students.

**CPSC 798 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment is limited to Graduate level students.