Where Do Our Graduates Go?

For our computer science students, graduating from Missouri S&T opens up a world of opportunity — Miner alumni can be found working at top corporations across the U.S. and abroad. Among our most recent graduates, you’ll find our computer science alumni employed by the following industry leaders, to name just a few:

- 3M
- Accenture
- Adtran
- Alcatel-Lucent
- Alcoa
- Amazon
- Andersen
- Anheuser-Busch
- AT&T
- Bank of America
- BASF
- Boeing
- Cadence
- Caterpillar
- Cerner
- Cisco
- ConocoPhillips
- DOW
- DST Systems
- Ford
- Garmin
- Dental Centers
- General Motors
- GMAC Insurance
- Google
- Hallmark
- Honeywell
- HP
- IBM
- IEEE
- Intel
- John Deere
- Los Alamos
- National Laboratory
- MasterCard
- Microsoft
- Monsanto/Bayer
- Motorola
- Naval Research Laboratory
- PPG Industries
- Purina
- Raytheon
- Rockwell Automation
- Sandia National Laboratories
- Sprint
- Texaco
- Texas Instruments
- The Harris Foundation
- Toshiba
- TRW
- Union Pacific
- US Bank
- USG
- Verizon
- Weyerhaeuser

Job Outlook for Computer Science

With the advent of computers has come an enormous number of new types of jobs. Some require extensive training but not a college degree (e.g., data entry device operators and computer operators). On the other hand, a large number of business and scientifically oriented computer jobs do require a B.S., M.S., or Ph.D. degree. Computers have found their way into every type of business imaginable; consequently, job opportunities are essentially unlimited.

At the B.S. level, there are opportunities for business and scientific applications programmers, system integrators, and software designers. At the M.S. level, opportunities exist in even more areas. Those completing the Ph.D. degree will have employment opportunities in both industry and academia. The Missouri S&T Career Opportunities Center provides several services aimed at helping students find the “right” job.

Computer Science graduates from Missouri S&T work in a variety of environments not only around the world but also in space. Some work for large companies, others prefer the atmosphere of a smaller company. Many of our graduates have started their own successful businesses.

Regardless of company size, Computer Science graduates from Missouri S&T are in high demand as evident by the number of companies who specifically recruit our graduates. Average starting salaries for BS graduates in Comp Sci from Missouri S&T range upwards from $64,000 (as of 2016-2017 reported figures) at major companies like Boeing, Cerner, Garmin, Microsoft, Accenture, Lockheed Martin, and Union Pacific Railroad, as well as many consulting firms and startup companies with senior level salaries topping $110K.

A Bachelor of Science degree in Computer Science prepares the student for graduate school or industry to work as a software engineer, systems programmer, systems integrator, or as an applications programmer.
BY THE NUMBERS

85.5% Percentage of Missouri S&T computer science graduates who report being employed or entering graduate school within 60 days of graduation.

1,001 Number of companies seeking to hire Missouri S&T computer science students through MinerJobs.

$70,995 Average starting salary for B.S. in Computer Science.

$3,546 Average monthly salary for undergraduate co-ops.

$3,551 Average monthly salary for undergraduate summer interns.

A LEADER IN INFORMATION ASSURANCE EDUCATION AND RESEARCH

Missouri S&T is a member of an elite group of universities that meet the federal government’s criteria for providing educational and research opportunities in cyber-security.

A National Center of Academic Excellence in Information Assurance Education and in research, S&T was the first in the state to earn this designation jointly by the U.S. National Security Agency and Department of Homeland Security.

The program is designed to reduce vulnerabilities in the national information infrastructure by promoting the study of “information assurance” in U.S. colleges and universities. The program also is designed to promote information assurance expertise in various disciplines.

Missouri S&T offers a unique contribution to the information assurance field with our focus on developing ways to protect the nation’s electric power grid, oil, gas and water distribution systems, and transportation systems from terrorist attack.

$70,995

Average starting salary for B.S. in Computer Science.
WHY STUDY COMPUTER SCIENCE AT S&T?

Computer science is an exciting, dynamic field with critical demand and is at the core of the modern world. Computer scientists are involved in various aspects of computing, including the development of algorithms (techniques for solving problems with computers), software development, and hardware implementations.

As a computer science major at Missouri S&T, you’ll learn all the aspects of computing in an undergraduate program accredited by the Computing Accreditation Commission of ABET. You’ll study techniques for computer problem solving (algorithms), developing software, and implementing software-hardware solutions. You’ll take courses that provide a sound basis in “classic” computer science, including:

- Algorithms
- Computer Organization/Architecture
- Data Structures
- Database and File Structures
- Discrete Mathematics & Automata
- Object-Oriented Design
- Operating Systems
- Programming Languages


All senior Comp Sci majors take the capstone course. This course gives you actual experience working with teams comprised of fellow students and practicing computer scientists. The teams design, test, and maintain a variety of software systems. Whether you’re solving problems in science, business, industry, engineering, or in the lab, you’ll be prepared with a computer science degree from Missouri S&T.
COMPUTER SCIENCE CURRICULUM BY DISCIPLINE

COMPUTER SCIENCE
- Discrete Math for Computer Science (Comp Sci 1200)
- Computational Problem Solving (Comp Sci 1500)
- Introduction to Programming (Comp Sci 1570)
- Data Structures (Comp Sci 1575)
- Introduction to Programming Lab (Comp Sci 1580)
- Data Structures Lab (Comp Sci 1585)
- Theory of Computer Science (Comp Sci 2200)
- Introduction to File Processing (Comp Sci 2300)
- Algorithms (Comp Sci 2500)
- Software Engineering I (Comp Sci 3100)
- Programming Languages/Translators (Comp Sci 3500)
- Computer Networking (Comp Sci 3610)
- Introduction to Operating Systems (Comp Sci 3800)
- Software Systems Development I (Comp Sci 4096)
- Computer Security (Comp Sci 4610)
- Elective I
- Elective II
- Elective III
- Elective IV
- Elective V

FRESHMAN ENGINEERING
- Study and Careers in Engineering (FRENG 1100)

COMPUTER ENGINEERING
- Introduction to Digital Logic (CpE 2210)
- Introduction to Microcontrollers and Embedded System Design (CpE 3150)

MATHEMATICS/STATISTICS
- Calculus for Engineers I (1214)
- Calculus for Engineers II (1215)
- Linear Algebra (Math 3108)
- Statistics (Stat 3113 or 3115 or 3117 or 5643)

COMMUNICATION
- Exposition and Argumentation (Eng 1120)
- Writing and Research (Eng 1160 or Eng 3560)
- Speech (Sp/MS 1185 or Sp/MS 3282)

LABORATORY SCIENCE
Select one lecture/lab combo from the following list
- Bio Science 1113, 1219
- Chemistry 1310, 1319, 1100
- Physics 1505, 1509
- Geology 1110, 1119 or 1129

SCIENCE & ENGINEERING
- Engineering Physics I (Phys 1135 or Phys 1111-1119)
- Engineering Physics II (Phys 2135 or Phys 2111-2119)
- Elective I
- Elective II
- Elective III

CONSTITUTIONAL REQUIREMENT
- Elective (History 1200 or 1300 or 1310 or Pol Sc 1200)

HUMANITIES/SOCIAL SCIENCE
- Humanities/Social Science Elective I
- Humanities/Social Science Elective II
- Humanities/Social Science Elective III
- Humanities/Social Science Elective IV

ETHICS
- Philosophy 3225 or 3235 or 4340 or 4368

LITERATURE
- Elective I

FREE ELECTIVES
To bring total hours to 128
- Elective I
- Elective II
- Elective III

BIOINFORMATICS MINOR CURRICULUM

“Bioinformatics is the rapidly-developing field that applies computational methods to address biological questions, and includes new advances in computer science, mathematics, and biology. Students entering the field of bioinformatics should have some training in each of these fields.”

The minor is designed for students pursuing a BS who would have the necessary prerequisites for the required courses. Students pursuing a BA may participate if the prerequisites for the required courses are fulfilled. Each department (Biological Sciences, Computer Science, Mathematics) will designate a minor advisor. The student’s minor advisor will be chosen from outside of their major area of study.

Required courses:
- BIO 1113 General Biology (3 hrs)
- BIO 2213 Cellular Biology (4 hrs) or BIO 2223 General Genetics (3 hrs)
- BIO 4323 Molecular Genetics (3 hrs)
- CMP SC 1570, 1580 Introductory Programming, Introductory Programming Lab (4 hrs)
- CMP SC 1575 Data Structures I (3 hrs)
- CMP SC 2300 File Structure and Introduction to Database Systems (3 hrs)
- BIO 5323 /CMP SC 5789 Bioinformatics (3 hrs) (It is strongly recommended that this course be taken after the other BIO and CMP SC requirements)
- STAT 5425 Biostatistics (4 hrs) or STAT 5346 Regression Analysis (3 hrs) or STAT 5353 Statistical Data Analysis (3 hrs)

One additional course, 2000or above in MATH, or 3000 or above in BIO or CMP SC, outside of the major area of study, and as agreed upon by the minor advisor (3+ hrs)
## SUGGESTED COURSE OF STUDY

### BACHELOR OF SCIENCE IN COMPUTER SCIENCE

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>CR</th>
<th>Spring Semester</th>
<th>CR</th>
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</thead>
<tbody>
<tr>
<td>Freng 1100 Study and Careers in Engineering 14</td>
<td>1</td>
<td>Comp Sci 1200 Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>(Prerequisite: Comp Sci 1500 and Math 1214)</td>
<td></td>
<td>(Prerequisite: Comp Sci 1500 and Math 1214)</td>
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</tr>
<tr>
<td>Comp Sci 1500 Computational Problem Solving</td>
<td>3</td>
<td>Comp Sci 1570 Intro to Programming</td>
<td>3</td>
</tr>
<tr>
<td>(Prerequisite: Comp Sci 1500, Accompanied by CS 1580)</td>
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<td>ChenSci 1580 Intro to Programming Lab</td>
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<tr>
<td>Laboratory Science course(s)</td>
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<td>(Accompanied by Comp Sci 1570)</td>
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<tr>
<td>Eng 1120 Exposition and Argumentation</td>
<td>3</td>
<td>English 1160 Writing and Research 13</td>
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<tr>
<td>Math 1214 Calculus for Engineers I</td>
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<td>Math 1215 Calculus for Engineers II</td>
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<td></td>
<td>Social Science Elective 2</td>
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<td><strong>Total Credit Hours</strong> 16</td>
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<td><strong>Total Credit Hours</strong> 17</td>
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#### SOPHOMORE YEAR

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<tbody>
<tr>
<td>Comp Eng 2210 Intro to Comp Eng 12</td>
<td>3</td>
<td>Comp Eng 3150 Digital Systems Design 12</td>
<td>3</td>
</tr>
<tr>
<td>(Prerequisite: At least Sophomore standing)</td>
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<td>(Prerequisite: Comp Eng 2210 and Comp Sci 1570)</td>
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<tr>
<td>Comp Sci 1575 Data Structures</td>
<td>3</td>
<td>Comp Sci 2500 Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>(Prerequisite: Comp Sci 1570)</td>
<td></td>
<td>(Prerequisite: Comp Sci 1200 and Comp Sci 1575)</td>
<td></td>
</tr>
<tr>
<td>Comp Sci 1585 Data Structures Lab</td>
<td>1</td>
<td>Comp Sci 2200 Theory of Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>(Accompanied by 1575)</td>
<td></td>
<td>(Prerequisite: Comp Sci 1200 and Comp Sci 1575)</td>
<td></td>
</tr>
<tr>
<td>Physics 1135</td>
<td>4</td>
<td>Physics 2135</td>
<td>4</td>
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<tr>
<td>Statistics Elective 5</td>
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<td>Literature Elective 5</td>
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</tr>
<tr>
<td>Social Science Elective 2</td>
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<tr>
<td><strong>Total Credit Hours</strong> 17</td>
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<td><strong>Total Credit Hours</strong> 16</td>
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</tbody>
</table>

#### Notes

1) Any science lecture-laboratory course or course pair totaling at least four hours credit. The laboratory is mandatory in all cases. These course(s) may be selected from: CHEM 1310 and CHEM 1319; CHEM 1351; BIO SCI 1113 and BIO SCI 1219; PHYSICS 1505 and PHYSICS 1509; GEOLOGY 1110 and GEOLOGY 1119; GEOLOGY 1120 and GEOLOGY 1129; BIO SCI 1223 and BIO SCI 1229; BIO SCI 2353 and BIO SCI 2359.

2) Any nine credit hours of social science courses approved on the list maintained on the Computer Science website. One course must satisfy the Missouri and U.S. Constitution requirement. CS 4700 may be counted as a Social Science elective.

3) Either PHYSICS 1135 or PHYSICS 1111-PHYSICS 1119; either PHYSICS 2135 or PHYSICS 2111-PHYSICS 2119.

4) Sp & MS 1185 or Sp & MS 3282.

5) Any literature and one humanities course approved on the list maintained on the Computer Science website.

6) One of STAT 3113, STAT 3115, STAT 3117 or STAT 5643.

7) MATH 3103 or MATH 3108

8) Courses chosen from any field so that 128 hours are completed. These and only these courses may be taken pass/fail and only one course may be taken pass/fail each semester. Some courses such as algebra, trigonometry, MATH 1214, MATH 1215, MATH 1221, PHYSICS 1111, PHYSICS 1119, PHYSICS 1135, PHYSICS 2135, PHYSICS 2111, PHYSICS 2119, PHYSICS 1145, PHYSICS 2145 and the first two years of ROTC do not count toward the free electives.
### JUNIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>CR</th>
<th>Spring Semester</th>
<th>CR</th>
</tr>
</thead>
</table>
| **Comp Sci 2300 File Struct and Intro Database Sys**  
(Prerequisite: Comp Sci 1575) | 3 | **Comp Sci 3500 Languages and Translators**  
(Prerequisite: Comp Sci 2200) | 3 |
| **Comp Sci 3800 Intro to Operating Systems**  
(Prerequisite: Comp Sci 1575 and Comp Eng 3150) | 3 | **Comp Sci 3610 Computer Networking**  
(Prerequisite: Comp Sci 3800) | 3 |
| **Math 3108 Linear Algebra I**  
(Prerequisite: Math 1215 or 1221) | 3 | **SP&MS 1185 Intro to Speech**  
(Prerequisite: Math 1215 or 1221) | 3 |
| **History Elective ²** | 3 | **Eng/Science Electives ¹⁰** | 3 |
| **Ethics Elective¹¹** | 3 | **Social Science Elective ²** | 3 |
| **Total Credit Hours** | 15 | **Total Credit Hours** | 15 |

### SENIOR YEAR

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>CR</th>
<th>Spring Semester</th>
<th>CR</th>
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</thead>
</table>
| **Comp Sci 4090 Software Engineering Capstone I**  
(Prerequisite: Comp Sci 2300, Comp Sci 3610, Comp Sci 2500,  
and one Ethics Elective) | 3 | **Comp Sci 4091 Software Engineering Capstone II**  
(Prerequisite: Comp Sci 4090 and Comp Sci 4610) | 3 |
| **Comp Sci Electives ⁹** | 6 | **Social Science Elective ²** | 3 |
| **Eng/Science Electives ¹⁰** | 3 | **Free Elective ⁸** | 8 |
| **Comp Sci 4610 Computer Security**  
(Prerequisite: Comp Sci 3610) | 3 | **Comp Sci Electives ⁹** | 3 |
| **Total Credit Hours** | 15 | **Total Credit Hours** | 17 |

---

9) Fifteen hours of elective Comp Sci courses excluding COMP SCI 2002, COMP SCI 4700, Comp Sci 2001 – Domain Exploration and Innovation Methods, Comp Sci 3001 – Skill Development for Entrepreneurs and Innovators, and all Comp Sci x9xx courses. At least nine hours must be 5000-level or higher. At least nine hours must be lecture courses.

10) Any nine hours chosen from departments that offer a degree associated with either the Discipline Specific Curricula Committee for Sciences or the Discipline Specific Curricula Committee for Engineering, excluding computer science. These may not be MATH 1208, MATH 1214, MATH 1215, MATH 1221, PHYSICS 1111, PHYSICS 1119, PHYSICS 1135, PHYSICS 2135, PHYSICS 2111, PHYSICS 2119, PHYSICS 1145, or PHYSICS 2145.

11) One of PHILOS 3225 or PHILOS 3235 or PHILOS 4340 or PHILOS 4368.

12) Laboratory not required.

13) ENGL 1160 or ENGL 3560.

14) One of Comp Sci 1010, BIO SCI 1201, CHEM 1110, PHYSICS 1101, MATH 1101, or FR ENG 1100.
CO-OP AND INTERNSHIP PROGRAMS

Students seeking Computer Science co-op academic credit (Comp Sci 2002) must receive pre-approval from the departmental co-op coordinator and register for it in the semester they are on co-op for the number of credit hours agreed to by the coordinator. Upon completion of the co-op, students need to submit a 1-2 page report to the coordinator as well as to the COC. The report must include the following:

- Student information
- Employer information
- Period of employment
- A detailed account of all computer science related work done during the co-op
- Supervisor’s name and signature indicating approval of this report

Comp Sci 2002 credits can only be awarded for co-ops with significant Comp Sci content, and count only towards free electives. The number of co-op credits a student can get depends on the intensity of the co-op as determined by the coordinator. Normally credits are granted for a co-op experience full-time work.

Please also note that before you take up a co-op position, COC may need the following documents from you:

- A copy of the acceptance letter from the company with the salary and the hours
- Fill out some forms to formally get into the co-op program at the COER.

HONORS ACADEMY

The Missouri S&T Honors Academy offers students the opportunity to be a part of a community of outstanding scholars who are seeking an enhanced educational experience. This program is designed to instill honors habits to explore ways to search for answers beyond the norm of course syllabi descriptions. The rewards are earning the distinction of “Honor’s Academy Fellow” at graduation, which is noted on the diploma, transcript and commencement program.

At Missouri S&T, Honors Academy students are recognized for their academic excellence and are provided with individualized attention and opportunities to establish leadership development skills, interact with faculty members and participate in special projects including service learning, undergraduate research and other beneficial experiences.

Incoming freshmen are eligible to apply if:

- Their ACT score is a 29 or higher/SAT is 1440 or above, &
- They rank in the top 10% of their high school class or have a minimum GPA of 3.5.

Incoming transfer students and current S&T students are eligible to apply if:

- They have a minimum GPA of 3.5, and
- A minimum of 24 graded, college-level credits.

UNDERGRADUATE RESEARCH

There are many opportunities to join in research with faculty, graduate students, and undergraduates. In undergraduate research, you can explore a topic of individual interest and get credit (Comp Sci 4099) for your work. Some of the past projects have included developing visualizations for power systems, creating software for elementary school students to learn about Computer Science, helping build evolutionary algorithms to defend against cyber attacks, and building custom interfaces for lab equipment. Undergraduate research is a great resume builder and can be a gateway into a graduate program.

The Opportunities for Undergraduate Research Experience (OURE) program, through the Office of Undergraduate Studies, has been established to expand opportunities for a more active form of learning by students, encourage the interaction of undergraduate students with faculty, expand the level of research activity on the campus, help recruit superior students into our graduate program, and demonstrate that teaching and research are compatible and mutually reinforcing.
THE ASSOCIATION FOR COMPUTING MACHINERY (ACM)
The Missouri University of Science and Technology student chapter of the Association for Computing Machinery was organized in 1962, the second in the nation. The purpose of this active student organization is to provide information on the science and art of information processing, including the views of prominent speakers on many different Computer Science oriented topics. Topics of discussion at meetings include the study, design, development, and application of modern technology, computing techniques, and appropriate languages for general information processing, storage, retrieval, transmission/communication, and processing data of all kinds. Membership is available to any student interested in the organization's activities, becoming involved in numerous campus computing activities, and sponsoring several informal social events each year.

ACM WOMEN
ACM-W is the Association for Computing Machinery Committee on Women in Computing. It celebrates, informs and supports women in computing, and works with the ACM-W community of computer scientists, educators, employers and policy makers to improve working and learning environments for women.

ACM SECURITY
Our ACM Special Interest Group on Security is a local ACM branch whose mission is to help develop the cybersecurity profession for the student body of Missouri University of Science and Technology by sponsoring high-quality workshops and lectures from both local and national industry professionals, as well as hosting on campus security events and competitions.

ACM GAME
ACM Game is a student operated software development organization. Each semester we develop a unique game aimed at AI vs AI gameplay, and launch it at the MegaMinerAI competition. There we invite students, alumni, employers, and anyone interested to compete for 24 hours to see who can code the best AI!

ACM HACK
ACM Hack introduces students to the world of hackathons: weekend long events where students come together to turn ideas into reality. We organize travel and attendance to these events, which take place across the Midwest and the country. We also run PickHacks, the annual student-run hackathon held at S&T in March. Alongside hackathons, we also host events about various design thinking concepts, hackathon preparation, and much more. Skill level and major doesn't matter here — as long as you like building new things and meeting awesome people, ACM Hack is right for you.

ACM COMPETITION
ACM Competition is a special interest group within Missouri S&T’s ACM that focuses primarily on competitive programming. With weekly lectures from Dr. Morales we tackle challenge problems from many online judge websites such as Kattis (https://open.kattis.com/) and UVA (https://uva.onlinejudge.org/). We also hold our own programming contests on campus where people can win the admiration of their peers and some great prizes.

ACM DATA
ACM Data is a data focused org covering topics like Data Science, Data Mining, Data Analytics, and Data Engineering. Data Science, commonly seen as a combination of most data professions, is a new field with an infinite landscape. Our goal is to catalyze a new era of Data Science by using our curiosity to explore this landscape and push new standards. In SIG-Data, we participate in competition sites such as Kaggle, tell stories using data, learn what’s new in Data Science, and whatever is necessary to be cutting edge.

ACM WEB
Interested in software engineering, web development, or development operations? In ACM Web, we attempt to build production-grade websites using software engineering skills and development patterns with weekly development meetings. Currently, ACM Web is developing the https://acm.mst.edu/ website. Moreover, we host workshops on various foundational skills such as Python, Git, HTML, CSS, and many others.
In the department, you’ll have access to high-performance computers running Linux and Windows, and a distributed computing cluster for running parallel algorithms as well as computationally expensive sequential tasks. The department supports many programming languages including C, C++, Java, Perl, Python, and packages such as database systems (Oracle). Computer Learning Centers (CLCs) across campus are open 24/7, and high-speed Internet access is available in Missouri S&T residence halls, most Greek houses and in the community. The Computer Science Department at Missouri S&T makes use of both its own laboratories as well as the University Computer Facilities. The Department maintains the laboratories described next. Additional information for some of these laboratories can be found on the department’s web page at cs.mst.edu.

**CReWMaN Laboratory**

The mission of the CReWMaN Lab is to conduct innovative research in networking (core, wireless, sensors), mobile and pervasive computing, distributed and grid computing, privacy and security, biological networks, and social networks. This is accomplished by creating a stimulating learning environment through teaching, research, mentoring and service excellence, with focus on teaching cutting-edge courses and establish multi-disciplinary collaborations.

**Smart Healthcare**
- Monitoring activities of daily living through sensors, wearable, and smart chair for wellness management and early detection of cognitive impairment.

**Smart Grid**
- Characterizing complex dependency between communication networks and electrical grid to optimize energy consumption and control cascade failures.

**Disaster Response**
- Establishing post-disaster communication network infrastructures.

**Critical Infrastructure Protection Laboratory**

This lab does research in advanced methods of security applied within the realm of critical cyber and cyber-physical infrastructures. The focus is on the use of rigorous mathematics through formal methods to create and analyze fault-tolerant and secure real-time distributed computing systems applied to critical infrastructure protection. The laboratory supports undergraduate, graduate, and faculty researchers. Students in the laboratory participate in the campus Center for Academic Excellence in Information Assurance and Research, the Intelligent Systems Center, and the Energy Research and Development Center.

**Cyber-Physical Systems (CPS)**
- Large complex distributed Critical Infrastructures
- Ensure correctness through distributed invariant monitoring

**Security**
- Mitigate cyber-physical attacks
- Determine a unified cyber-physical information flow model to determine potential attack vectors

**Smart Living**
- Develop Sustainable Cyber-Physical living environments
- Develop Privacy and Security for smart living environments

Point of Contact: Sajal K. Das
sdas@mst.edu
http://web.mst.edu/~sdas

Point of Contact: Bruce McMillin
ff@mst.edu
http://mst.edu/~ff
@bmcmillinSandT
Web and Wireless Computing (W2C) and Pervasive & Mobile Laboratory

Is designed to carry out cutting edge research in different aspects of data management (security, compression, replication, caching, query processing, aggregation, fusion) in wireless networks and cloud computing environment. Our focus is on scientific research to advance the state of art in these areas. The current projects are supported by NSF, DOE, ARL, ARO, AFRL, NIST, UM System, etc. The current researchers in the lab are pursuing their PhD/MS degree in different areas of interest. The lab is well-equipped with over 50 3.2 Ghz PCs, 5 Dell Server, linux machines, laptops etc. The lab also has sensor network test-beds consists of Crossbow sensor motes like Telosb, Mica2 and Missouri S&T motes. Lab has also developed a DTN testbed for disseminating information securely for battlefield environment.

<table>
<thead>
<tr>
<th>Security and Risk Assessment in Cloud Computing (NIST, NSF, AFRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Off-line Risk Assessment in Cloud Computing</td>
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<tr>
<td>• Data Security and Assess Control in Cloud Computing</td>
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<tr>
<td>• Combat Clouds and Edge Clouds</td>
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<td>• Cloud-assisted Cyber Physical System</td>
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<thead>
<tr>
<th>Delay-Tolerant networks and Big Data Mgmt (DoE, AFRL, ORNL)</th>
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<tbody>
<tr>
<td>• Sensor Cloud Security</td>
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<tr>
<td>• Situational-awareness in Delay-tolerant Networks</td>
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<tr>
<td>• Task scheduling in UAV Networks</td>
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<td>• Ride-sharing, and Transport Management for Smart City Applications</td>
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<td>• Big Data Management for Disaster Recovery</td>
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<table>
<thead>
<tr>
<th>Machine Learning (AFRL, NGC)</th>
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</thead>
<tbody>
<tr>
<td>• Identifying objects of interests and anomalies in real time from images and videos</td>
</tr>
</tbody>
</table>

Point of Contact: Sanjay Madria
madrias@mst.edu
mst.edu/~cswebdb

Applied Computational Intelligence Laboratory

Students working in the laboratory gain many advantages, including collaboration in a work environment, continued involvement with research, the positive influence of role models and mentors, and, more often than not, an opportunity to publish. (Publishing is required for all graduate students.) The ACIL welcomes small and large business cooperative ventures in intelligent computing.

- Large complex distributed Critical Infrastructures
- Ensure correctness through distributed invariant monitoring

<table>
<thead>
<tr>
<th>Cyber-Physical Systems (CPS)</th>
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<tbody>
<tr>
<td>• Mitigate cyber-physical attacks</td>
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<tr>
<td>• Determine a unified cyber-physical information flow model to determine potential attack vectors</td>
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<th>Smart Living</th>
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<td>• Develop Sustainable Cyber-Physical living environments</td>
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<td>• Develop Privacy and Security for smart living environments</td>
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Point of Contact: Donald Wunsch II
dwunsch@mst.edu
**BRUCE M. MCMILLIN**  
Interim Department Chair, Professor  
*Areas of Interest:* Cyber-Physical Systems, CyberSecurity and Smart Grid

**NAN CEN**  
Assistant Professor  
*Areas of Interest:* Internet of Things, Visible-Light Ad-Hoc Networks, Compressed Sensing

**SAJAL K. DAS**  
Daniel St. Clair Endowed Chair  
*Areas of Interest:* Wireless and Sensor Networks, Mobile and Pervasive Computing, Smart Living and Smart Healthcare, Applied Graph Theory and Game Theory

**MICHAEL GOSNELL**  
Assistant Teaching Professor  

**JENNIFER LEOPOLD**  
Associate Professor  
*Areas of Interest:* Data Mining, Automated Spatial Reasoning and Scientific Visualization

**TONY LUO**  
Associate Professor  
*Areas of Interest:* Internet of Things, Machine Learning, Cyber-Physical Systems, Security, Smart Living

**SANJAY MADRIA**  
Curators’ Distinguished Professor  
*Areas of Interest:* Cloud Computing, Security, Wireless Computing and Mobile Data Management

**GEORGE MARKOWSKY**  
Associate Chair for Graduate Studies, Professor  
*Areas of Interest:* CyberSecurity

**A. RICARDO MORALES**  
Assistant Teaching Professor  
*Teaching Interest:* Introduction to Programming with C++, Data Structures, Discrete Mathematics For Computer Science, Algorithms
CHAMAN SABHARWAL
Professor
Areas of Interest: Spatial Reasoning, Graphics, Robotics, Vision & Parallel Algorithms

PATRICK TAYLOR
Assistant Teaching Professor
Teaching Interests: Data Structures, Introduction to Computer Security, Introduction to Programming, Bioinformatics

COSTAS TSATSOULIS
Vice Chancellor of Research & Dean of Graduate Studies, Professor
Areas of Interest: Artificial Intelligence

SAN YEUNG
Assistant Teaching Professor
Teaching Interests: Operating Systems, Databases

JOINT APPOINTMENT FACULTY

JAGANNATHAN SARANGAPANI
Rutledge Emerson Endowed Chair Professor in Electrical Engineering
Areas of Interest: Systems and control, Neural network control, Event triggered control/cyber-physical systems, Resilience/prognostics, Autonomous systems/robotics

SAHRA SEDIGH
Associate Professor in Computer Engineering
Areas of Interest: Cyber-physical systems, Critical infrastructure protection, Simulation and analytical modeling of complex networked systems, System and information assurance

DONALD WUNSCH
Mary Finley Endowed Chair Professor in Computer Engineering
Areas of Interest: Clustering, Neural networks, Reinforcement learning

SID NADENDLA
Assistant Professor
Areas of Interest: Design and Analysis of Multiagent Systems special focus on Statistical Inference & Machine Learning, Security & Privacy in Networks, Behavioral Control & Human Decision Making, Digital/Wireless Communication & Information Theory

CLAYTON PRICE
Associate Teaching Professor
Teaching Interests: Introduction to Computer Science, Introduction to Programming with C++, C++ Programming Lab, Data Structures I, Introduction to Numerical Analysis, Object Oriented Numerical Modeling I

PEIZHEN ZHU
Assistant Teaching Professor
Teaching Interests: Introduction to MATLAB Programming, Discrete Mathematics for Computer Science, Introduction to Numerical Methods and Algorithms

SAN YEUNG
Assistant Teaching Professor
Teaching Interests: Operating Systems, Databases
ADJUNCT FACULTY

Sammie Bush

Specialization: Department budgets, grants, payroll, travel authorizations, eRecruit & faculty hiring, assistant to the department chair, staff support for the CS Academy and CS Advisory Board.

Karl Lutzen

Specialization: Undergraduate studies, experiential learning, senior assessment, undergraduate forums, undergraduate advisors, department accreditations, post doc hiring, faculty travel, and student hiring.

Josh Wilkerson

Specialization: Graduate studies, graduate applications, graduate forms, seminar speaker arrangements, department website & publications, 2 year course schedule, textbook requests, logistics for summer camps, faculty travel, student hiring and non-PO vouchers.

Rhonda Grayson

Business Support Specialist II

Specialization: Department budgets, grants, payroll, travel authorizations, eRecruit & faculty hiring, assistant to the department chair, staff support for the CS Academy and CS Advisory Board.

Elaina Manson

Office Support Assistant IV

Specialization: Undergraduate studies, experiential learning, senior assessment, undergraduate forums, undergraduate advisors, department accreditations, post doc hiring, faculty travel, and student hiring.

Brianna Kalbfleisch

Office Support Assistant IV

Specialization: Graduate studies, graduate applications, graduate forms, seminar speaker arrangements, department website & publications, 2 year course schedule, textbook requests, logistics for summer camps, faculty travel, student hiring and non-PO vouchers.

csdept@mst.edu
573-341-4491
325 Computer Science Building
500 W. 15th Street
Rolla, MO 65409-0350