This document contains questions asked by students who are entering the Department of Computer Science. Answers are given by faculty members of the department. Information is presented in several sections:

If your question about the department is not in this document, please, don't hesitate to contact the Chair of the department, Dr. Cezary Janikow at janikowc@umsl.edu

Degrees and Certificates:

- ***What is the difference between Computer Science and Computing Technology in terms of studying and opportunities after graduation?***
  - Depending on the choice of electives, the differences are minor. Our Computer Science is aligned with national expectations, and it also provides everything needed to enter about any graduate CS program. Computing Technology is less known nationally so everyone will look at your transcript to conclude your match to a specific need, and you may need some extra coursework for some graduate CS programs. But on the other hand, there are many Computer Science BS programs that teach less than our Computing Technology program. So, at some point, your transcript, school reputation, and your demonstrated skillset are most important.
- ***I am majoring in Computer Science and I'm thinking about getting a degree in Cyber Security. My question is: are there jobs that you would need both degrees? or just be very helpful?***
  - Computer Science with a certificate (or concentration) in Cybersecurity is the best blend. BS in Cybersecurity with Computer Science focus is also very similar just more focused on cybersecurity. There is no need to get both bachelors.
- ***I am currently earning my bachelor in computer science but I'm not sure if I should go for a masters or a PhD in computer science, is getting a bachelor enough for apply for jobs related to computer science?***
  - Definitely. You can review the Career Outlook pages on our website which lists various groups of CS/IT jobs and the specific degree requirements.
- ***How common is it for computer science students go on to pursue a master's degree?***
  - Based on exit interviews, about 5-10% of our BS students go on to a graduate school, mostly here but also elsewhere. Nationally the fraction is likely similar. It is also more common to come back for MS after some experience, and employers usually cover the cost.
- ***What types of certificates are offered and what are the benefits?***

    - We have multiple certificates, and they are about equivalent to "emphasis" or "concentration". They are listed on your transcript so that everyone knows you have a deeper specialization in the particular area.
- ***Are the CMPSCI classes designed to help me earn certificates such as CISSP, security+, etc.?***
    - We do not provide training specific to any certification, but we cover material that is needed for many certifications. However, we do not have an exact mapping. If you are interested in certification, you should review the scope and talk to your advisor about the specifics.
- ***What is a "2+3 Program"?***
  The Integrated BS/MS ("2+3") dual degree program involves dual credit for qualified undergraduate students majoring in Computer Science or Computing Technology. It allows the students to concurrently earn credit for some graduate courses while working on their undergraduate degree, reducing the total hours needed for the subsequent MS degree by up to 12 credit hours. More information may be found at the page of the program.

Courses, Programming Languages:

- ***Would a student who is learning to program benefit from learning how to use Unix? Is it still relevant in programming today as compared to 10 or more years ago?***
    - Today, variants of Unix such as Linux are very popular. MS Windows (based on DOS) traditionally had a different focus and the differences remain. Windows started as single-task, single-user, un-networked, with the main focus on small programs (memory was the primary focus) and ease of use (for the general public). Unix started as a multi-tasked, multi-user, networked system, with a primary focus on speed and tools for developers.
- ***How do math and programming relate?***
    - The same way as Math related to Physics, Economics, etc. It provides the base for discussion of the analysis of very important concepts. For example, at some point, everyone will know how to sort some data, but based on different circumstances there could be huge implications of the chosen method. Artificial Intelligence is also heavily based on Math understanding, including statistics. Overall, the most important Math concepts are logic, relations, sets, and statistics.
- ***Why does the Computer Science Major require a large number of math classes?***
    - Because some traditional CS courses require mathematical tools, and virtually any concept is better understood and analyzed using proper tools.
- ***As I continue school, are there more advanced classes for specific coding languages or should I expect to do advanced learning on my own after my classes?***
    - You learn both concepts and also specific languages to apply the concepts. After knowing 2-3 main languages, picking another one is rather easy. Some courses teach more language-specific or platform-specific concepts, but most teach general concepts as well. For example, the reason we teach Java is that it provides an understanding of any object-oriented language and its application, and also all

Internet/Web-related frameworks/tools are based on Java. The reason we teach C/C++ is that virtually all languages borrow those concepts, and the number of existing applications remains huge and many areas use their derivates.

- ***Which programming language is the most important to learn that is offered here at UMSL?***
    - C/C++ and Java are the base languages and you need to cover them. Beyond that, there are no courses focused on just a specific language, but by graduation time you will have (or mastered depending on some electives) HTML, JavaScript, PHP. Python, Swift, and an endless number of frameworks and technologies. Remember that a language is just a language. It is the concepts that are important, and the ability to use multiple tools, languages, technologies.

Internships, Career Opportunities:

- ***Does the college offer any job opportunities/ internships? If so, what are the requirements/ process of signing up for that?***
    - We offer credit, if needed or desired, for an internship, as it is a great opportunity to link your education and career. We do not arrange those, but we pass the information if available on opportunities.
- ***What resources are there for students seeking internships?***
    - UMSL Career Services, and notices sent by the department to students. See more info here.
- ***During what year of the undergraduate degree should I start seeking an internship?***
    - The earlier, the better as it may help you better decide on your career choices.
- ***What is the average rate of students that have careers lined up after graduating UMSL with a computer science degree?***
    - We collect this information for graduating seniors and it is posted. Typically, about 45% have jobs or offers, with an average of about $60k depending on specialization and experience.
- ***What minor is best to get along with the CS major to make me marketable in the current job market, considering all the changes with working from home and focus on tech in companies?***
    - We do not require related areas as a CS degree can take you anywhere. We had students doing MBA after a CS degree and now running large corporations. Most just specialize in something they started at school or learned on the job.
- ***What careers in CS are available other than the conventional jobs like programming and software development, and how can I maximize my education at UMSL to be qualified for these roles?***
    - Technically everything involves programming. Just not everyone "writes" code. For example, software development implies being able to analyze needs and work with customers. Also, with the huge amount of existing software, many jobs relate to maintenance, upgrades, updates, re-engineering, etc. The number of frameworks (prebuilt tools that just need to be customized and applied to a specific need) grows exponentially so abilities to analyze the needs and apply

them are becoming very important. You will learn about them in many 4xxx-level courses.

- ***Does the college help with finding employment after graduation?***
    - We do not match students with employers, but we do pass information on specific opportunities to students.

Some Department and University Resources:

- ***What resources are available to us in the Computer Science Department?***
    - The most important are tutoring, advising, student-focused events, and scholarships.
- ***Are there research opportunities (at the department)?***
    - Definitely, see the research experiences page, research areas, and current projects.
- ***What kinds of computer-science related activities are there at UMSL?***
    - Review the events page, the students clubs as listed on the department front page.

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