



Bachelor of Science in Computer Science - Concentrations

There are four different ways to satisfy the requirements of the Bachelor of Science in Computer Science. In this packet you will find five distinct curriculum flow charts representing the different program requirements for concentrations in:

- Scientific Software Development
- Game Software Development
- Business Software Development
- Software Engineering

Having four concentrations to pick from ensures that the degree you eventually earn will be ideally suited to your personal interests, career goals, and unique skill set.

As a starting point, we recommend the *Scientific Software Development* concentration because it gives the computer science graduate maximum flexibility. Many computer applications are designed for use by engineers and scientists. Having a background in calculus and physics is essential to understand these applications well enough to develop, test, and debug them. Since computer science is based, to a large degree, on mathematics, the more mathematics you understand the easier computer science courses will be for you. If you are interested in application development or the science of computing and your mathematical skills are sufficient, this concentration is your best choice.

A variation of the Scientific Software Development concentration has been developed for students interested in pursuing *Game Software Development*. Open electives are replaced by specific courses selected to give the student more experience in software development related to the video game industry.

Many web, database and business applications require less mathematical knowledge and skill to develop. Even some portions of engineering or scientific applications can be developed without having to understand the full application (e.g., user interface). For students interested in application development but sometimes struggle with higher level mathematics, the *Business Software Development* concentration may be the ideal choice.

The demand for *Software Engineering* expertise is increasing throughout the world. Software engineers develop & apply innovative processes, methodologies, and tools to improve the production, quality, performance, and reliability of computer software systems. Through hands-on software project development & management experiences coupled with testing, verification and validation techniques, graduates of this concentration have the expertise to satisfy the most exacting customer requirements, optimum efficiency in software design, reduced production and maintenance costs, improved system reliability, and enhanced system security. This concentration does not require high level mathematics either.

You may use the open electives in any of these concentrations to further customize your degree. Your advisor can help you construct a program specifically designed to fit your needs. If you are having difficulty making a selection or none of the options sound quite right for you, please ask to speak with an advisor. There are many more computer-related options available at LTU.

Please speak with an advisor if you have any questions about the computer science program or the specific classes recommended for you. Initial class recommendations are based on the preferred concentration indicated at the time of your placement assessments.