What competencies do computer science students gain?

Computer Science
Program-specific competencies

Competencies are the skills, knowledge and attributes gained through every work, educational, volunteer and life experience. UVic students in the Computer Science program develop the following program-specific competencies.

Networks, hardware and communications

*Understands computer networking principles and engineering*

- Understands layered network architecture
- Uses different digital communication networks to transmit data
- Works with LANs and WANs
- Applies different network protocols at different layers
- Protects networks from unauthorized access using the appropriate policies in conjunction with the underlying computer network infrastructure
- Identifies mobile wireless communications techniques and issues affecting multimedia quality of service
- Implements different types of buses, interrupts, families of processors and instruction sets

Software development, practice and theory

*Employs knowledge of software life cycles and developmental phases*

- Works within the different software development lifecycle stages
- Takes business, product and process requirements into consideration
- Applies different software development methodologies
- Implements process improvement models, such as ISO 9000
- Solves software development problems using formal methods
- Considers software evolution issues during development

Computer hardware and systems

*Demonstrates knowledge of the architecture of computer systems and the interrelationship between the OS and the architecture*

- Utilizes the necessary tools to improve system performance
- Understands the transfer of information from one system component to another
- Compares performance of similar systems using common metrics
- Identifies the optimal system for given problem
- Works with different CPU architectures
- Uses different operating systems
- Utilizes different memory management methods
Computer information processing and algorithms

Understands the theoretical foundations of computer science and the practice of abstracting known methods to new problems

- Designs automated software test tools
- Displays an ability to manipulate information
- Creates solutions from user specifications, given known system constraints
- Optimizes solutions to improve performance using coding best practices
- Acknowledges the practical limits of a system for problem solving

UVic Co-op and Career worked with the UVic Faculty of Engineering of to develop this competency document.

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