

CPSC 6050	Computer Graphics	Computational, mathematical, physical and perceptual principles underlying the production of effective three-dimensional computer graphics imagery. Students are expected to have completed coursework in data structures and linear algebra.
CPSC 6140	Human & Computer Interaction	Survey of human and computer interaction, its literature, history, and techniques. Covers cognitive and social models and limitations, hardware and software interface components, design methods, support for design, and evaluation methods. Students are expected to have completed coursework in data structures before enrolling in this course.
CPSC 6770	Distributed and Cluster Computing	Introduction to the basic technology of and programming techniques for distributed and cluster computing. Standard techniques for developing parallel solutions to problems are introduced and implemented. Software systems that provide high-level abstractions for data communications are considered. Students are expected to have completed coursework in data structures, algorithms and networking before enrolling in this course.
CPSC 6820	Special Topics in Computing	In-depth treatment of topics not fully covered in regular courses. Topics vary from semester to semester. May be repeated, but only if different topics are covered.
CPSC 8040	Data Visualization	Introduction to material on the theory and practice of designing effective visualizations of data from numerous sources. A broad overview of the field is presented, covering principles, methods and techniques foundational to both information and scientific visualization. Students are expected to have basic programming skills and introductory knowledge of linear algebra and calculus before enrolling in this course. Previous coursework in computer graphics is helpful but not required.
CPSC 8110	Technical Character Animation	Introduction to state-of-the-art character animation algorithms and techniques and motion perception insights. Instruction begins with fundamental methods in computer animation, including transformations, kinematics, motion capture, and motion graphs, and moves into providing an overview of current research in topics such as animation controllers, emotions, gestures and facial animation. Preq: CPSC 6050.
CPSC 8190	Physically Based Visual Effects	The use of physically-based dynamic simulation techniques in the production of digital special effects. Course emphasizes tools, techniques and pipeline. Laboratory assignments are done using both commercial software and student's custom code. Preq: CPSC 6050.
CPSC 8400	Design & Analysis of Algorithms	Basic techniques for design and analysis of algorithms; models and techniques for obtaining upper and lower time and space bounds; time/space trade-offs; inherently difficult problems. Students are expected to have completed coursework in discrete mathematics before enrolling in this course.
CPSC 8570	Security in Advanced Networking Technologies	Security issues in emerging networking technologies, including Software-Defined Networking (SDN) and Network Function Virtualization (NFV). Students are expected to have completed coursework in computer networking before enrolling in this course.

CPSC 8650	Data Mining	Study of principles of data mining: concepts and techniques of data analysis including regression, clustering, classification, association, prediction, etc.; efficient data mining algorithms; data mining applications in various areas including market analysis and management, WWW mining, bioinformatics, etc. Course projects for designing and using data mining algorithms in the applications are required. Students are expected to have knowledge of statistics and database systems before enrolling in this course.
CPSC 8750	Software Architecture	Creation, analysis and maintenance of architectures for software systems. Basic principles, patterns and techniques. Quality attributes of the architecture are used to make a quantitative analysis. Students create and analyze two architectures from different domains.
CPSC 8810	Selected Topics	Advanced topics from current problems of interest in computer science. Topics vary from semester to semester. May be repeated for credit, but only if different topics are covered.
CPSC 8880	Directed Projects in Computer Science	Directed individual project supervised by department faculty. To be taken Pass/No Pass only.
CPSC 8910	Master's Thesis Research	Master's Thesis Research
CPSC 9500	School of Computing Seminar	Study of advanced topics from current problems of interest in computer science. May be repeated for a maximum of 12 credits, but only if different topics are covered. To be taken Pass/No Pass only.
CPSC 9910	Doctoral Dissertation Research	Doctoral Dissertation Research