

MS IN COMPUTING: **GRAPHICS & VISUALIZATION**

A student may pursue an MS with (1) a course-only option, (2) a project option, or (3) a thesis option. The minimum number of credits for any option is 31 with 30 from graduate level (6000 level for CS courses) and 1 hour of either CS 7942 Visualization Seminar or CS 7933 Graphics Seminar. Seminars may not replace required or elective courses.

TRACK FACULTY

Martin Berzins, Elaine Cohen, **Charles Hansen (Track Director)**, Chris Johnson, Ladislav Kavan, Mike Kirby, Alexander Lex, Miriah Meyer, Valerio Pascucci, Bill Thompson, Cem Yuksel

COURSE REQUIREMENTS (COURSE ONLY OPTION) Required courses:	
CS 6610	Interactive Computer Graphics
CS 6630	Visualization
CS 6640	Image Processing
CS 6670	Computer-Aided Geometric Design
CS 7933 Graphics Seminar (or) CS 7942 Visualization Seminar (one credit hour maximum)	
A minimum of a B- or greater is required for any of the required courses.	

Three courses from the following list are required:	
CS 6160	Computational Geometry
CS 6170	Computational Topology
CS 6320	3D Computer Vision
CS 6360	Virtual Reality
CS 6540	Human/ Computer Interaction
CS 6600	Mathematics of Computer Graphics
CS 6620	Ray Tracing for Graphics
CS 6650	Perception for Graphics
CS 6660	Physics-based Animation
CS 6665	Character Animation
CS 6680	Computer-Aided Geometric Design II
Elective courses (to equal 30 total credit hours):	
Graduate level CS courses and independent study (a maximum of three hours of independent study is allowed). Thesis research hours are not counted toward the degree in the course-only option.	

COURSE-ONLY OPTION

With approval of the supervisory committee, a student may take two elective courses at the graduate level or higher from other departments including 5000 or 6000 level courses, excluding independent study, seminars and research credit.

MS IN COMPUTING: **GRAPHICS & VISUALIZATION**

COURSE REQUIREMENTS (PROJECT OPTION) Required courses:	
CS 6610	Interactive Computer Graphics
CS 6630	Visualization
CS 6640	Image Processing
CS 6670	Computer-Aided Geometric Design
CS 7933 Graphics Seminar (or) CS 7942 Visualization Seminar (one credit hour maximum)	
A minimum of a B- or greater is required for any of the required courses.	
Three courses from the following list are required:	
CS 6160	Computational Geometry
CS 6170	Computational Topology
CS 6320	3D Computer Vision
CS 6360	Virtual Reality
CS 6540	Human/ Computer Interaction
CS 6600	Mathematics of Computer Graphics
CS 6620	Ray Tracing for Graphics
CS 6650	Perception for Graphics
CS 6660	Physics-based Animation
CS 6665	Character Animation
CS 6680	Computer-Aided Geometric Design II
Elective courses (to equal 30 total credit hours):	
Students must take at least 3 and up to 6 credits (no more than 6 credits) of independent study for their MS project. Thesis research hours are not counted toward the degree in the project option.	

PROJECT OPTION

With approval of the supervisory committee, a student may take two elective courses at the graduate level or higher from other departments including 5000 or 6000 level courses, excluding independent study, seminars, research credit.

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COURSE REQUIREMENTS	
(THESIS OPTION)	
Minimum 21 hours classroom courses and six hours of thesis research are required. Three of the following regular courses are required in addition to the seminar:	
CS 6610	Interactive Computer Graphics
CS 6630	Visualization
CS 6640	Image Processing
CS 6670	Computer-Aided Geometric Design
CS 7933 Graphics Seminar (or) CS 7942 Visualization Seminar (one credit hour maximum)	
A minimum of a B- or greater is required for any of the required courses.	
Three courses from the following list are required:	
CS 6160	Computational Geometry
CS 6170	Computational Topology
CS 6320	3D Computer Vision
CS 6360	Virtual Reality
CS 6540	Human/ Computer Interaction
CS 6600	Mathematics of Computer Graphics
CS 6620	Ray Tracing for Graphics
CS 6650	Perception for Graphics
CS 6660	Physics-based Animation
CS 6665	Character Animation
CS 6680	Computer-Aided Geometric Design II
Elective courses (to equal 30 total credit hours):	
For the thesis option, students can take up to 9 thesis hours and no independent study.	
A minimum of six hours of thesis research (CS 6970) is required.	

THESIS OPTION

With approval of the supervisory committee, a student may take two elective courses at the graduate level or higher from other departments including 5000 or 6000 level courses, excluding independent study, seminars, research credit.

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Course work listed on the approved Program of Study form must comprise at least 50 semester hours of graduate course work and dissertation research, exclusive of independent study. Graduate course work applied toward an MS degree may be included. At least 14 semester hours of dissertation research (CS 7970) and 30 semester hours of graduate course work must be included. Up to 20 hours of graduate level course work already applied to other degrees may be used in the program of study.

PhD students must demonstrate core knowledge in computer graphics and visualization by passing three required courses, prior to the start of their fifth semester of study, with grades of B or better in each course and an overall GPA in the required courses greater than 3.5.

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COURSE REQUIREMENTS	
Three of the following four courses are required:	
CS 6610	Interactive Computer Graphics
CS 6630	Visualization
CS 6640	Image Processing
CS 6670	Computer-Aided Geometric Design

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ELECTIVE COURSES

School of Computing Computer Science courses on the Program of Study must be at the 6000 level or above, excluding independent study, and research credits. Of the required 30 semester hours, up to nine credit hours may be graduate courses outside of the School of Computing. Admissible elective courses within the School of Computing are the following:

CS 6160	Computational Geometry
CS 6170	Computational Topology
CS 6210	Advanced Scientific Computing I
CS 6220	Advanced Scientific Computing II
CS 6320	3D Computer Vision
CS 6360	Virtual Reality
CS 6540	Human/ Computer Interaction
CS 6600	Mathematics of Computer Graphics
CS 6620	Ray Tracing for Graphics
CS 6650	Perception for Graphics
CS 6660	Physics-Based Animation
CS 6680	Computer-Aided Geometric Design II
CS 7650	Realistic Image Synthesis

Courses not on the list above must be approved by the student's committee to count toward the elective requirements. Independent study (CS 6950 and CS 7950) can not be included in the Program of Study for the PhD degree.