

College of Technology  
Department of Computer Graphics Technology  
Area of Specialization in Applied Computer Graphics

Plan of Study (M.S. Thesis Option)  
*33 credit hours (minimum)*

**Primary Area Core: 9 credit hours\***

CGT 511	The Development of Graphics in Technology
TECH 507	Measurement and Evaluation in Industry and Technology
TECH 646	Analysis of Research in Industry and Technology

**Primary Area Required Selectives: 3-9 credit hours**

CGT 512	Human Factors of Computer Interface Design
CGT 513	Interactive Multimedia Development and Research
CGT 514	Product Lifecycle Management

**Primary Area Content Selectives: 0-9 credit hours**

CGT 519P	Pre-Production & Special Effects for Computer Animation
CGT 581P	Production in Animation and Visual Effects
CGT 519A	Post-production in Animation and Visual Effects
CGT 519B	The Business of e-Commerce
CGT 519C	Computer Graphics Programming
CGT 519V	Introduction to Virtual Environments
CGT 519R	Augmented or Mixed Realities
CGT 519D	Product Design Using Virtual Environments
CGT 519E	Collaborative Virtual and Augmented Environments
CGT 581R	Advanced Digital Lighting and Rendering

**Related Area Options: 6 credit hours (minimum)**

Examples of related areas on plans of study include Management, Instructional Design, Art & Design, Curriculum and Instruction, Landscape Architecture, Civil Engineering, Industrial Engineering, Human Factors, Kinesiology, Theatre, and Perceptual Psychology, or one of the disciplines within the College of Technology (e.g., CIMT, MET, CPT, BCM, etc.).

*See attached list for possible course options.*

**Thesis Research Work: 6 credit hours**

CGT 698	Thesis Research
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\* All students pursuing a CGT Area of Specialization must take these courses.

Students must complete at least 21 credit hours from the Primary Area course lists.

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Potential Courses for CGT Related Areas Outside the College of Technology

**Aeronautics and Astronautics**

507 Principles in Dynamics

567 Introduction to Applied Stochastic Processes

**Audiology and Speech Sciences**

AUS 501 Neural Bases of Speech and Hearing – Sem. 1. Class 3, cr. 3. Prerequisite: AUS 304 or consent of instructor.

AUS 502 Fundamentals of Speech Production and Perception – Sem. 1. Class 2, lab 2, cr. 3

AUS 503 Fundamentals of Hearing – Sem. 1. Class 2, lab 2, cr. 3.

AUS 505 Computer Methods for Studying Speech and Hearing Processes

AUS 507 (BIOL 562, PSY 512) Neural Systems

AUS 540 (EDPS 562) Augmentative and Alternative Communication

AUS 567 Advanced Study of Evoked Responses

AUS 612 Psychoacoustics

**Linguistics**

AUSL 589 (ANTH 519, COM 507, ENGL 570, FLL 570) Introduction to Semiotics

**General Biology**

504 (BMS 533) Human Neuroscience

511 Introduction to X-ray Crystallography (GEOS 511) – Sem. 1, Class 3, cr. 3. Prerequisite: CHM 115 and MA 162, or consent of instructor

512 Electron Microscopy and Image Analysis – Sem. 2. Class 3, cr. 3. Prerequisite: PHYS 220, 221, and BTNY 502A, or consent of instructor.

553 Human Physiology I

562 Neural Systems (AUS 507, PSY 512)

**Chemical Engineering**

684 Advances in Computer Aided Process Design – Sem. 1, Class 3, cr. 3. Prerequisite: CHE 450 or consent of instructor.

**Civil Engineering**

502 Analytical Methods in Geometrics

503 Photogrammetry I – Sem. 1. Class 2, lab. 3, cr. 3. Prerequisite: CE 200 or consent of instructor.

506 Data Adjustment

508 Digital Mapping for Geographic Information Systems – Sem. 2, Class 2, lab 3, cr. 3.  
Prerequisite: CE 200 and 392, or equivalent, or consent of instructor.

510 Map Projections and Geometric Geodesy – Sem. 1. Class 2, lab 3, cr. 3. Prerequisite: CE 304 or equivalent.

562 Geometric Design of Highways – Sem. 2. Class 2, lab 3, cr. 3. Prerequisite: CE 303 and 463, or equivalent.

563 Airport Design – Sem. 2. Class 3, cr. 3. Prerequisite: CE 361 or 564 or consent of instructor. A field trip is required.

595 Finite Elements in Elasticity – Sem. 1, Class 3, cr. 3. Prerequisite: CE 474 or consent of instructor.

603 Photogrammetry II – Sem. 2. Class 2, lab 3, cr. 3. Prerequisite: CE 503.

675 Finite Element Analysis – Sem 2. Class 3, cr. 3. Prerequisite: CE 577 or 578 or consent of instructor.

### **Computer Science**

510 Software Engineering

CS 530 Introduction to Scientific Visualization – Sem. 1. Class 3, cr. 3. Prerequisite: CS 435 and 481, or equivalent. CS 251 is recommended.

CS535 Interactive Computer Graphics (ME 573) – Sem. 1. Class 3, cr. 3. Prerequisite: knowledge of programming.

CS 574 Advanced Computer Graphics Applications (ME 574) – Sem. 2, Class 3, cr. 3. Prerequisite: CS 535 (ME 573).

### **Earth & Atmospheric Sciences**

GEOS 518 Aerogeology and Remote Sensing – Class 1, lab 6, cr. 3. Prerequisite: PHYS 251, GEOS 111, CE 567, or consent of instructor.

### **Electrical & Computer Engineering**

522 Problems in the Measurement of Physiological Events

538 Digital Signal Processing I

544 Digital Communications

547 Introduction to Computer Communication Networks

569 Introduction to Robotic Systems

570 Artificial Intelligence

574 Software Engineering Methodology

576 Image Synthesis – Sem. 1, Class 3, cr. 3. (Offered in alternate years). Prerequisite: EE 301 or graduate standing.

585 Real-Time Robot Control Laboratory

600 Random Variables and Signals

624 Multimedia Systems – Sem. 1, Class 3, cr. 3. Prerequisite: EE 547 and 562 or equivalent, or consent of instructor.

628 Computer Graphic Simulation & Visualization – Class 3, cr. 3. (offered every 3<sup>rd</sup> semester). Prerequisite: EE 569 or ME 573 or knowledge of homogeneous transformations.

637 Digital Image Processing I – Class 3, cr. 3. (offered every 3<sup>rd</sup> semester). Prerequisite: EE 302, and 638, or equivalent.

641 Digital Image Processing II – Class 3, cr. 3. (Offered every 3<sup>rd</sup> semester). Prerequisite: EE 660 and 637.

661 Computer Vision – Sem. 2, Class 3, cr. 3. Prerequisite: EE 570 or consent of instructor (C, I).

### **Food Science**

520 Image Recovery – Sem 1, Class 3, cr. 3. (offered in alternate years). Prerequisite: MA 261 and CS 156 or equivalent, and consent of instructor.

551 Magnetic Resonance for Food and Agriculture – Sem. 1, Class 3, cr. 3. (offered in alternate years). Prerequisite: CHM 224 and 372, or consent of instructor.

### **Foods and Nutrition**

534 Human Sensory Systems and Food Evaluation

### **Forestry & Natural Resources**

558 Digital Remote Sensing and GIS – Sem 1, Class 2, lab 3, cre 3. Prerequisite: FNR 357 or consent of instructor.

579 Remote Sensing Seminar – Sem 2. Class 1, cr. 1. (Offered in alternate years). Prerequisite: FNR 558 or AGRY 545 or EE 577 or consent of instructor.

658 Advanced Geographic Information Systems (GIS) Concepts – Sem 1. Class 2, cr. 2. Prerequisite: FNR 558 or consent of instructor.

### **Health, Kinesiology, and Leisure Studies**

PE 558 Principles of Perceptual Motor Learning – Sem 1. Class 3. cr 3.

PE 568 Advanced Exercise Physiology – Sem 1. Class 3. cr. 3. Prerequisite: PE 268 or equivalent.

### **Industrial Engineering**

559 Cognitive Engineering of Interactive Software

575 Computer Aided Manufacturing I – Sem 1 and 2. Class 3, cr 3. Prerequisite: IE 370 or equivalent.

577 Human Factors In Engineering (PSY 577) – Sem 1 and 2. Class 3, cr. 3.

580 Systems Simulation – Sem 1. Class 3, cr. 3. Prerequisite: IE 336 or equivalent.

581 Simulation Design & Analysis – Sem 2, Class 3, cr. 3. Prerequisite: CS 156, IE 330, and 336

659 Human Aspects in Computing

675 Computer Aided Manufacturing II – Sem 2, Class 3, cr 3. Prerequisite: IE 575

### **Management**

MGMT 560 Manufacturing Planning and Control – Sem 1 or 2. Class 2-3, cr 2-3. Prerequisite: MGMT 660; or MGMT 460 and consent of instructor; or consent of instructor.

### **Mechanical Engineering**

560 Kinematics – Sem 1, Class 3, cr. 3. Prerequisite: ME 352 (C)

562 Advanced Dynamics

573 Interactive Computer Graphics (CS 535). Sem 1, Class 3, cr. 3. Prerequisite: knowledge of programming.

574 Advanced Computer Graphics Applications (CS 574) Sem 2, Class 3, cr 3. Prerequisite: ME 573

**Psychological Sciences**

627 Advanced Topics in Visual Perception

628 Perceptual Processes – Sem 2, class 3, cr. 3 (I)

**Statistics**

501 Experimental Statistics I

502 Experimental Statistics II

514 Design of Experiments

598M Statistical Data Mining

**Art & Design**

A&D 605 Problems in Industrial Design – Class 1, studio 5, cr. 3. (May be repeated for credit).

**Theatre**

THTR 562 Advanced Light Design – Sem 2, Class 3, lab 1 (with 2 hours experiential), cr 3.

Prerequisite: THTR 362 or consent of instructor (FW).

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Potential Courses for CGT Related Areas Within the College of Technology

AT 572 Human Error Class 3, cr. 3.

Prerequisites: AT 454 and consent of instructor.

AT 573 Managing the Risk of Organizational Accidents Class 3, cr. 3.

Prerequisites: AT 454 and consent of instructor.

CPT 550 Organizational Impact of Information Technology Class 3, cr. 3.

Prerequisite: Graduate status or consent of Instructor.

CPT 551 Information Technology Economics Class 3, cr. 3.

Prerequisite: Consent of instructor.

CPT 552 Information Technology Project Management Class 3, cr. 3.

Prerequisite: Consent of instructor.

CPT 554 Management of Information Technology Resources Class 3, cr. 3.

Prerequisite: Instructor approval required for enrollment.

CPT 555 Advanced Network Security Class 3 credit 3

ECET 525 Applications in Forensic Engineering Technology Class 3, cr. 3.

IT 507 Measurement and Evaluation in Industry and Technology Class 3, cr. 3.

Prerequisite: Graduate standing or consent of Instructor.

IT 510 Developing Courses for Industry and Technology Class 3, cr. 3.

IT 560 Microcomputer Applications in Industry and Technology Class 3, cr. 3.

Prerequisite: Consent of Instructor.

IT 566 Developing Instructional Programs for Industry and Technology Class 3, cr. 3.

Prerequisite: TECH 510 or consent of instructor.

IT 568 Developing Instructional Materials for Industry and Technology Class 2-3, cr. 3.

Prerequisite: TECH 510 or consent of instructor.

IT 570 Function and Structure of Industry and Distribution Class 3, cr. 3.

Prerequisite: Consent of Instructor.

IT 571 Project Management in Industry and Technology Class 3, cr. 3.

Corequisite: TECH 507.

IT 668 Administering Technical Programs Class 3, cr. 3.

Admission by consent of instructor.

MET 530 Facilities Engineering Technology Class 2, lab. 2, cr. 3.

Prerequisite: undergraduate physics and calculus and senior standing or BS degree in engineering technology or engineering, or equivalent industrial experience.

MET 535 Optimization of Metalcasting Design Class 2, lab. 2, cr. 3 or arranged hours, cr. 3.

Prerequisite: senior standing or BS degree in engineering technology, engineering, or consent of instructor.

MET 546 Industrial Applications of Computer Integrated Manufacturing Class 3, cr. 3.

Prerequisite: CIMT 446 or consent of instructor.

OLS 567 Supervised Field Practice in Industrial Training Cr. 3.

OLS 574 Managerial Training and Development Class 3, cr. 3.

Prerequisite: OLS 374 and 375. Open to seniors and graduate students only.

OLS 576 Advanced Topics in Human Resource Management Class 3, cr. 3.

Prerequisite: graduate student status and OLS 376, or consent of instructor.

OLS 577 Organization and Administration of Training and Development Class 3, cr. 3.

Prerequisite: OLS 375; prerequisite or corequisite: OLS 574. Open to seniors and graduate students only.

OLS 578 Leadership in International Human Resources Class 3, cr. 3.

OLS 579 Emerging World-class Leadership Strategies Class 3, cr. 3.

OLS 580 Interpersonal Skills for Leaders Class 3, credit 3

OLS 582 Leadership and Organizational Change Class 3 Cr. 3.

OLS 590 Individual Research Problems in Supervision and Personnel Cr. 1-6.  
Admission by consent of department. (May be repeated for credit.)

TECH 508 Quality and Productivity in Industry and Technology Class 3, cr. 3.

TECH 581 Workshop in Technology Cr. 0-8.  
(May be repeated for credit.)

TECH 590 Special Problems in Technology Cr. 1-6.  
Admission by consent of department. (May be repeated for credit.)

TECH 621 Seminar in Technology Class 1-3, cr. 1-3.  
(May be repeated once for credit.)

TECH 623 Contemporary Technology Problems Class 3, cr. 3.  
Admission by consent of instructor.

TECH 696 Design of Research in Industry and Technology Class 3, cr. 3.  
Prerequisite: TECH 646.