



**THE MASTER OF SCIENCE IN COMPUTER GRAPHICS  
TECHNOLOGY**

**M.S. GRADUATE STUDENT HANDBOOK**

Assembled by  
the CGT Graduate Faculty  
in the  
College of Technology

**PURDUE**  
UNIVERSITY

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# Computer Graphics Technology M.S. Graduate Student Handbook

*NOTE: This document supersedes the Graduate School Policies & Procedures Guide and the College of Technology Graduate Handbook.*

## TABLE OF CONTENTS

	Page
<b>FORWARD:HOW TO USE THIS HANDBOOK?</b> .....	<b>1</b>
Contact Information .....	1
<b>SECTION 1.0. INTRODUCTION</b> .....	<b>2</b>
1.1. <u>Background</u> .....	2
1.2. <u>Mission</u> .....	2
1.3. <u>Degrees</u> .....	2
<b>SECTION 2.0. ADMISSION PROCESS</b> .....	<b>4</b>
2.1. <u>Requirements</u> .....	4
2.2. <u>English Requirement</u> .....	5
2.3. <u>Conditional Admission</u> .....	6
2.4. <u>Deadlines</u> .....	7
2.5. <u>Time Limitation</u> .....	7
2.6. <u>Financial Assistance</u> .....	7
2.6.1. Availability .....	7
2.6.2. Assistantship Appointments .....	7
<b>SECTION 3.0. POLICY ON MONITORING, PROBATION, AND DISMISSAL</b> .....	<b>9</b>
3.1. <u>Minimum Cumulative GPA Requirements (in graduate courses)</u> .....	9
3.2. <u>Monitoring</u> .....	9
3.3. <u>Probation</u> .....	10
3.4. <u>Dismissal</u> .....	10
3.5. <u>Appeal</u> .....	10
<b>SECTION 4.0. MASTER’S DEGREE PROGRAM STRUCTURE</b> .....	<b>11</b>
4.1. <u>Program Credit Hour Requirements</u> .....	11
4.2. <u>Residency Requirements</u> .....	11
4.3. <u>Appointment of a Major Professor/Advisor</u> .....	12
4.4. <u>Graduate Advisory Committee</u> .....	12
4.5. <u>Course Load Recommendations and Requirements</u> .....	12
4.5.1. Reduced Course Loads for International Students .....	13
4.6. <u>Registering for Courses as a Graduate Student</u> .....	13
4.7. <u>Dropping and Adding Courses</u> .....	13
<b>SECTION 5.0. ELECTRONIC PLAN OF STUDY REQUIREMENTS</b> .....	<b>15</b>
5.1. <u>Primary Area</u> .....	16
5.2. <u>Plan of Study Guidelines</u> .....	16
5.3. <u>Related Area</u> .....	17

	Page
5.3.1. Undergraduate Credit in a Related Area .....	17
5.3.2. Sources for Related Area Courses .....	18
5.4. <u>Credit Limitations</u> .....	18
5.4.1. Undergraduate Excess Credit .....	18
5.4.2. Transfer Credit .....	18
5.4.3. Post-baccalaureate Registrant Credit .....	18
5.4.4. Independent Study Credit .....	19
5.5. <u>EPOS Acknowledgement of Thesis Requirement</u> .....	19
5.6. <u>Examination Requirement</u> .....	19
5.7. <u>Examining Committee</u> .....	19
5.8. <u>Publication Requirement</u> .....	19
<b>SECTION 6.0. REGISTRATION FOR AN INDEPENDENT STUDY COURSE (CGT 590 of CGT 690) .....</b>	<b>21</b>
<b>SECTION 7.0. THE CGT THESIS .....</b>	<b>23</b>
7.1. <u>The Master's Thesis</u> .....	23
7.1.1. Key Points about the Thesis .....	23
<b>SECTION 8.0. THESIS PROCEDURES .....</b>	<b>25</b>
8.1. <u>Thesis CGT 698 Research MS Thesis Enrollment</u> .....	25
8.2. <u>Grades for CGT 698 Research MS Thesis</u> .....	25
8.3. <u>Thesis Proposal Defense</u> .....	26
8.4. <u>APA and Formatting Requirements Theses</u> .....	26
8.4.1. Notes about the Templates .....	26
8.5. <u>Preparing Thesis Proposals</u> .....	27
8.6. <u>Thesis Proposal Contents</u> .....	28
8.6.1. Thesis Cover Page .....	28
8.8.2. Abstract .....	28
8.8.3. Chapter 1: Introduction .....	28
8.8.3.1. Statement of the Problem .....	28
8.8.3.2. Research Question/Hypotheses .....	29
8.8.3.3. Significance of the Problem .....	29
8.8.3.4. Statement of Purpose/Scope .....	29
8.8.3.5. Definitions .....	30
8.8.3.6. Assumptions .....	30
8.8.3.7. Limitations .....	31
8.8.3.8. Delimitations .....	31
8.8.4. Chapter 2: Review of Literature .....	31
8.8.5. Chapter 3: Methodology .....	32
8.8.6. List of References .....	33
8.7. <u>Obtaining Permissions to Conduct Research</u> .....	33
8.8. <u>Preparing the Final Thesis</u> .....	33
8.8.1. Final Thesis Contents .....	34
8.8.2. Chapter 4: Presentation of the Data and Findings .....	35
8.8.3. Chapter 5: Conclusions, Discussion, and Recommendations ...	35

	Page
8.8.4. Appendices .....	35
8.9. <u>Plagiarism, Falsification, and Fabrication</u> .....	36
8.9.1. Plagiarism .....	36
8.9.2. Strategies for Avoiding Plagiarism .....	36
8.9.3. Guidelines for Quoting and Citing .....	37
8.9.4. Purdue University Form 20: Research Integrity and Copyright Disclaimer .....	37
8.10. <u>Self-Checking for Plagiarism</u> .....	37
8.10.1. Rules Governing Usage .....	37
8.10.2. Procedure for Using Check Yourself .....	38
8.11. <u>Copyright Issues with Figures</u> .....	38
<b>SECTION 9.0. POST-PROJECT/THESIS ACTIVITIES .....</b>	<b>40</b>
9.1. <u>Appointment Of the Examining Committee &amp; Scheduling the         Final Oral Examination</u> .....	40
9.2. <u>Declaring Graduation Candidacy</u> .....	40
9.3. <u>Completing the CGT 698 Requirement</u> .....	40
9.4. <u>Formatting Review for Theses</u> .....	41
9.4.1. Formatting .....	41
9.4.2. Formatting Your Thesis .....	41
9.4.3. Scheduling and Attending the Meeting .....	42
9.4.4. Thesis Pre-review .....	42
9.5. <u>The Oral Defense of the Thesis</u> .....	42
9.6. <u>University Deposit of the Thesis</u> .....	42
9.7. <u>Departmental Deposit of the Thesis</u> .....	43
9.7.1. For Assistance with Submitting to the Purdue e-Pubs Site .....	43
9.8. <u>Copies of Final Thesis for Graduate Committee</u> .....	43
9.9. <u>Additional Requirements for Graduation</u> .....	44
9.10. <u>Participating in Commencement</u> .....	44
<b>SECTION 10.0. OVERALL MASTER'S DEGREE PROCEDURAL CHECKLIST .....</b>	<b>45</b>
10.1. <u>First Semester</u> .....	45
10.2. <u>Succeeding Semesters</u> .....	45
10.3. <u>Final Semester</u> .....	46
<b>SECTION 11: CGT DEPARTMENTAL EXPECTATIONS FOR GRADUATE STUDENTS .....</b>	<b>47</b>
<b>SECTION 12: GRADUATE FACULTY IN COMPUTER GRAPHICS TECHNOLOGY .....</b>	<b>48</b>
<b>SECTION 13: POTENTIAL COURSES FOR CGT RELATED AREAS OUTSIDE THE COLLEGE OF TECHNOLOGY .....</b>	<b>58</b>

	Page
<b>SECTION 14: POTENTIAL COURSES FOR CGT RELATED AREAS WITHIN THE COLLEGE OF TECHNOLOGY .....</b>	<b>62</b>
APPENDIX A: REQUEST FOR REDUCED COURSE LOAD .....	65
APPENDIX B: SAMPLE PLAN OF STUDY .....	67
APPENDIX C: FLOWCHART OF EPOS PROCESS .....	70
APPENDIX D: INDEPENDENT STUDY REQUEST FORM AND INSTRUCTIONS	72
APPENDIX E: FORM 23 .....	75
APPENDIX F: CGT FORM 1: ACCEPTANCE OF GRADUATE PROPOSAL .....	77
APPENDIX G: THESIS COVER PAGE .....	79
APPENDIX H: FORM 20: RESEARCH INTEGRITY AND COPYRIGHT DISCLAIMER .....	81
APPENDIX I: CHECK YOURSELF REQUEST FORM .....	83
APPENDIX J: GS FORM 8: REQUEST FOR APPOINTMENT OF EXAMINING COMMITTEE .....	86
APPENDIX K: GS FORM 7: REPORT OF MASTER'S EXAMINING COMMITTEE .....	88
APPENDIX L: GS FORM 9: THESIS ACCEPTANCE .....	90
APPENDIX M: GS ETD FORM 9: ELECTRONIC THESIS DEPOSIT .....	93
APPENDIX N: GS FORM 19: MASTERS THESIS AGREEMENT .....	97
APPENDIX O: GS FORM 15: REQUEST FOR CONFIDENTIALITY .....	101

## **FORWARD: HOW TO USE THIS HANDBOOK?**

This document is intended to clarify and emphasize the expectations that the CGT Department has relative to the pursuit of graduate studies. You will find that content in this Handbook is similar to that of the College in most cases. Where there are differences, the Department of Computer Graphics Technology has typically established procedures and rules that fall within, or are more stringent than, those of the College. Especially with regard to credit hours, courses to be taken, and important milestones towards graduation, the policies and procedures in this document vary from that of the College. If you have questions about how to interpret what is in this Handbook, please consult with your major professor, the CGT Graduate Program Chair, or the Graduate Coordinator.

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## **SECTION 1.0. INTRODUCTION**

Section 1.0 of this document provides an overview to general information concerning graduate study in Computer Graphics Technology.

### **1.1. Background**

Since the beginning of the information age and the evolution of the computer, computer graphics has emerged and has been recognized by the U.S. government's Directory of Occupational Titles as a professional occupational field. The wide range of applications for computer graphics is creating the need for individuals who are highly skilled in the technology of computer graphics and broadly educated in related interdisciplinary skills, such as instructional design, engineering, graphic design, cognitive psychology, human factors, visualization, and management to name a few. In an effort to promote intellectual inquiry and to stimulate a recognized body of applied research, graduate study in computer graphics in the Department of Computer Graphics Technology at Purdue is designed to focus on four (4) broadly based, interrelated branches including spatial cognition, imaging, geometry, and the technology related to computer graphics.

The subject matter of these four interrelated branches comprises an emerging field of study called Visual Science. All theses in computer graphics technology will likely relate to one or more of these recognized branches and areas. In addition, for those wanting to specialize in education and training, another fifth option would be to enroll in related coursework and engage in applied research related to learning through the College of Education.

### **1.2. Mission**

The mission of the graduate program in Computer Graphics Technology is to prepare graduates for leadership positions in computer graphics professions and to advance the knowledge in the application and teaching of computer graphics through applied research, publishing, presentations, and teaching.

### **1.3. Degrees**

Graduate study leading to the Master of Science in Computer Graphics Technology is offered through the Department of Computer Graphics Technology in the College of Technology at Purdue University. This degree program requires a thesis concentrating on applied research, development, and production of computer graphics. A "3+2" combined program is also available for outstanding undergraduates in their third year of study in the CGT Bachelor of Science. The combined degree allows a student to obtain the B.S. and M.S. in CGT within five years.



A Ph.D. degree program is offered through the College of Technology, which has a more general technological focus. This program option allows opportunities for curriculum development and professional development in educational applications of computer graphics. A separate handbook provides detailed information for the doctoral program. It can be found at the following web address:  
<http://www.tech.purdue.edu/Graduate/phd/>.

Specific information about graduate study in Computer Graphics Technology may be obtained directly from the Department of Computer Graphics Technology, 401 North Grant Street, Kroy Hall 363, Purdue University, West Lafayette, IN 47907. The telephone number is 1 (765) 494 7505. You may also visit us on the web at  
<http://www.tech.purdue.edu/cgt/academics/graduate/>.

## SECTION 2.0. ADMISSION PROCESS

Section 2.0 of this document provides an overview to the requirements, types of admission, time limits and opportunities for financial assistance relative to graduate study in the Computer Graphics Technology.

### 2.1. Requirements

The Department of Computer Graphics Technology graduate committee reviews several important criteria in a holistic fashion when evaluating an application for graduate study in the CGT department. The following criteria are considered when reviewing an applicant's request for admission:

- *GRE Scores:* The committee looks at GRE scores in two different ways. Scores at or above the 50<sup>th</sup> percentile (or at least 400 (verbal) and 600 (quantitative)) serve as a goal for admission. The Analytical score on the GRE should be at or above 4.0 for the revised version of the GRE, or at or above the 50<sup>th</sup> percentile for the older version.
- *Statement of Purpose:* This document should include the applicant's professional goals and objectives as they relate to applied research and advanced coursework in computer graphics. It should not appear that an applicant wants to simply take content similar to the CGT undergraduate curriculum and receive graduate credit for such work.
- *Previous GPA:* There is no minimum GPA required for admission outside those set by the Graduate School at Purdue University and the College of Technology, which is 3.0. The CGT graduate committee uses a GPA of 3.2 as a goal for admission. A lower GPA will not disqualify a candidate but may lead to a more in-depth examination of the applicant in regards to the other admissions materials or it may lead to conditional admission.
- *Letters of Recommendation:* Letters of recommendation should come from at least three (3) people that can attest to the applicant's professional abilities, goals, and background as it relates to computer graphics. These letters should also speak to the applicant's professional maturity and academic ability. For applicants that have been in the workforce for several years, positive letters of recommendation attesting to the candidate's knowledge gained while on the job are also helpful.
- *Professional Experience:* Consideration will be given for any internship, co-ops, or professional work experience and its relationship to the applicant's undergraduate degree program and the candidate's Statement of Purpose for admission to graduate school. Work experience that addresses any potential deficiencies in their academic background will be noted.

- *Nature of Academic Coursework:* Consideration will be given to the applicant's academic major and its inherent rigor. An applicant's profile should contain examples of proficiency within the CGT department's areas of core competency: creativity, technology, visualization, and communication. The CGT Graduate Review Committee may use this record as a guide for determining any potential conditions for admission related to coursework.
- *Graduate Core Competencies:* The applicant should appear to possess the ability to become proficient within the CGT department's graduate core competencies during their course of study. These include:
  - Research (investigate / explore via qualitative, quantitative or mixed modes of inquiry)
  - Methodology (procedures / logic / structure)
  - Application (of knowledge and skills)
  - Leadership potential
- *Portfolio Samples:* The applicant should provide at least four (4) examples of their CG-related work, and the work should be presented in a professional manner and of the highest quality. The samples presented should emphasize the applicant's area(s) of interest. These may be provided via a CD, DVD or URL for review by the committee.
- *Writing Sample:* The writing sample should exhibit the applicant's ability to develop a coherent and concise thought process, and it should clearly emphasize the applicant's area(s) of interest. The writing sample should be written at a level beyond the Statement of Purpose, such as a term paper, a conference article, or a journal article.
- International applicants must also submit TOEFL scores. While there are no minimum GRE requirements, the University's Graduate School's web site lists the specific TOEFL score requirements for language proficiency.

Only after all the necessary materials have been assembled by the CGT Graduate Studies Office, they are forwarded as a complete package to the review committee.

Admission recommendations from the CGT Graduate Review Committee may be one of the following:

- Admit without conditions,
- Admit with conditions (and these conditions must be specified), or
- Deny.

## **2.2. English Requirement**

The Graduate School of Purdue University requires that all students demonstrate proficiency in the English language before a graduate plan of study may be filed. There are three ways to meet this requirement.

1. Earn no grade lower than “B” in all undergraduate English composition courses;  
or
2. Obtain a score of 500 or higher on the Verbal Aptitude Section of the Graduate Record Examination (GRE); or
3. Satisfactory performance in ENGL 059 (ENGL 009 for international students), an essay test administered by the Office of Writing Review.

Non-native English speaking applicants must take the Purdue TOFEL exam before applying. If a student is admitted with the condition that the English proficiency requirement must be satisfied, work must begin during the first semester of enrollment with registration in ENGL 050 (ENGL 009 for international students). If the requirement is not met during the first semester, the student will be registered in ENGL 050 or ENGL 009 for the second semester. **The English proficiency requirement must be satisfied by the end of the second enrollment period, or eligibility to register for additional course work will be withdrawn.**

### **2.3. Conditional Admission**

Occasionally, a student who does not meet the standard for unconditional admission may be recommended for conditional admission, provided evidence is presented (e.g., a high performance on the Graduate Record Examination or a strong professional portfolio) which indicates that the student’s potential for success is not adequately reflected in their academic record.

An applicant having interest in the computer graphics discipline may not have the technical, artistic, or mathematical foundations necessary to go directly into the graduate program. A prospective applicant for study in CGT that does not have formal education, training, or relevant experience in computer graphics may be required to complete prescribed **undergraduate** courses in CGT as part of his or her graduate study requirements as directed by the CGT Graduate Review Committee. Such courses **will not** be available for use on the Master’s degree plan of study and must be taken **before** enrolling in graduate-level computer graphics courses.

Conditional admission requires that certain minimum performance standards be established, such as “must achieve at least a 3.00/4.00 graduate index at the completion of the first twelve (12) credits following admission to the Master’s degree program.” Any conditions placed on the applicant’s acceptance into the program will be monitored by the student’s major professor and the CGT departmental Graduate Coordinator. Failure to meet conditions of acceptance will result in actions taken by the CGT Graduate Committee to place the student in probationary academic status. Such status will also be communicated to the Graduate School such that each semester the Graduate School will remove the eligibility to register for future sessions for all students who failed to satisfy their conditions of admission in the previous session. (Thus, there is a grace period of one semester). **Failure to improve academic performance once placed on probation will result in the dismissal of the student from the CGT graduate program (see section 3.0 for information regarding probation and dismissal).**

The CGT department will justify and indicate any conditions under which a student should have his or her eligibility to register restored allowing continuation of degree study. The justification is requested by a memo from the chair of the CGT Graduate Program and routed through the Departmental Graduate Coordinator, detailing reasons why the student should be permitted to continue. Upon Graduate School approval, the eligibility to register will be restored.

#### **2.4. Deadlines**

The deadlines for completed applications are shown in table 2.1.

Table 2.1.  
*Deadlines for Graduate Program Application.*

<b>Domestic Applicants</b>	<b>International</b> (outside the U.S.)	<b>International</b> (within the U.S.)
Fall - April 1	Fall - April 1	Fall - April 1
Spring - October 1	Spring - September 1	Spring - October 1
Summer - April 1	Summer - February 1	Summer - April 1

#### **2.5. Time Limitation**

A candidate for the Master's degree is expected to complete all requirements for the degree **within five years** from the completion of the oldest course on the plan of study.

#### **2.6. Financial Assistance**

The following two sections describe the availability of financial assistance and information about assistantship appointments.

##### **2.6.1. Availability**

A limited number of graduate teaching and research assistantships within CGT are available. All assistantship applications are to be directed to the CGT Department Head. Additional appointments are available from other departments of the University, such as the Information Technology at Purdue (ITaP), the library system and student housing. Details on assistantships and fellowships outside the CGT department are available at Purdue University's Graduate School web site at <http://www.gradschool.purdue.edu/funding/>. Additional information may be available from other of the College of Technology's Department Heads as well.

##### **2.6.2. Assistantship Appointments**

In order to provide an opportunity for the student to progress satisfactorily toward the degree objective, graduate appointments will ordinarily be for no more than one-half time and for a maximum of two (2) academic years. Renewal of graduate appointments for additional time will be based on satisfactory performance in the position and academic performance toward plan of study requirements, as well as availability of positions.

Teaching assistantships (TA) and Research Assistantships (RA) include a tuition waiver during the semester the student has the assistantship. Normally teaching assistantships are not available in the summer. However, if a student has a teaching assistantship in the spring and the following fall semester, a tuition waiver for the summer is still available to the student.

***NOTE:** Assistantships DO NOT cover the cost of student fees assessed each semester.*

## SECTION 3.0 POLICY ON MONITORING, PROBATION, AND DISMISSAL

Section 3.0 provides an overview to the monitoring, probation, dismissal and appeal policies in the department of Computer Graphics Technology.

### 3.1. Minimum Cumulative GPA Requirements (in graduate courses)

The department of Computer Graphics Technology has specific GPA requirements for graduation as shown in Table 3.1. Typically these mimic the University requirements. Also shown are the GPA requirements for probation and dismissal relative to the department's programs. Sections 3.2 thru 3.5 outline the policies and procedures relative to probation and dismissal.

Table 3.1. *Graduation, Probation and Dismissal GPA Thresholds*

Graduation	3.00/4.00
Probation	2.75/4.00
Dismissal	2.50/4.00

***NOTE:** University requirements state that no grade of "D" or "F" is allowed in a course on the plan of study. Any plan of study course in which a grade of "D" or "F" is received must be repeated and completed successfully; it cannot be dropped from the plan of study.*

### 3.2. Monitoring

Each semester graduate student performance is evaluated to ensure that the student is performing well and will graduate with a 3.00/4.00. Procedurally this is done in the following way:

- Graduate student grades and academic progress will be monitored at the CGT's Office of Graduate Studies.
- Monitoring will begin after six (6) credit hours have been attempted and every semester thereafter in which the student is enrolled.
- Students are expected to maintain a cumulative grade point average of at least 3.00 /4.00 with no grade less than "B" and earn grades of "Satisfactory" in thesis research credit hours.

***NOTE:** The grade "B-" (B minus) is below the expected grade graduate student should earn in his or her courses.*

- If a student has a **semester** GPA less than 2.75/4.00 or a **cumulative** GPA less than 3.00/4.00, a letter will be drafted by the Chair of the CGT Graduate Program to the student, with a copy to the major professor, to the CGT Department Head, to the Graduate School, and to the student's file, indicating the last semester was determined unsatisfactory and that they are being placed on probation.

***NOTE:** Graduate students that receive an incomplete in a course will have one semester and 12 weeks into the following semester to complete the course. If that is not done, the Registrar automatically makes the grade a failure.*

### **3.3. Probation**

Probation occurs when a student performs below the CGT standards in an individual semester. Procedurally probation means:

- If a student's **semester** GPA falls below 2.75 or if a student's **cumulative** GPA falls below 3.00/4.00, the student will be placed on academic probation.
- The CGT Graduate Studies Office will generate a letter informing the student, major professor, and department head of the probationary status. A copy will also be forwarded to the Graduate School and placed in the student's permanent record.
- **The student will have one semester to raise their cumulative GPA to the required level and return to good standing.** If they do not, they will not be able to register for classes the subsequent semester and will be dismissed from the program.
- While on probation, students are ineligible for a CGT assistantship.

### **3.4. Dismissal**

- If a student's **semester** GPA is below a 2.50 or if a student's **cumulative** GPA falls below 2.75, the student will be immediately dismissed from the program.
- A student will be dismissed from the program if they remain on probation for two consecutive semesters without improvement. This policy is independent of any assistantship the student may hold.

### **3.5. Appeal**

- A student may appeal their probationary or dismissal status by contacting the CGT Graduate Studies Office in writing within thirty (30) days of the date of the requisite notification letter. The appeal should include the student's specific reasons for exception to the aforementioned policies.
- The appeal will be reviewed by a subcommittee of at least three (3) members of the CGT Graduate Education Committee, chaired by the CGT Graduate Program Head.
- If the review committee recommends reinstating the student, the student's graduate advisor/chair must approve. If the graduate advisor does not approve, the CGT Department Head will render a final decision.
- In cases where a student is reinstated without approval of the graduate advisor, a new advisor may need to be assigned.
- The decision of the appeal subcommittee and/or CGT Department Head will be considered final and will be delivered within thirty (30) days of the student's request for exception to probation.



## **SECTION 4.0. MASTER'S DEGREE PROGRAM STRUCTURE**

Typically the Master of Science in CGT degree requires that each student complete the requisite number of courses and successfully execute a thesis. Typically proposal of the thesis occurs in the next to last semester of study (but this can vary). As a process, the Master of Science experience includes:

1. Coursework (28 credit hours)
  - a. Appointment of major professor
  - b. Selection of a committee (two people in addition to a chair)
  - c. Filing of the Electronic Plan of Study (EPOS)
    - i. Draft of the Plan of Study must be submitted by the end of the first semester of study.
    - ii. A final Plan of Study must be submitted by the end of the second semester of study.
  - d. Successful completion of all courses
2. Thesis
  - a. Thesis proposal and proposal defense meeting
  - b. Obtain appropriate certifications for research (CITI, HIPAA, FERPA, etc.).
  - c. Execution of thesis
  - d. Final oral defense of thesis

### **4.1. Program Credit Hour Requirements**

The Master's degree program administered through the department of Computer Graphics Technology requires a minimum of 28 credit hours of course work and six (6) hours of thesis research (CGT 698). The thesis must be defended through a public oral defense and examination meeting with the faculty advisory committee and any other interested parties.

### **4.2. Residency Requirements**

The total number of hours of academic credit used to satisfy residency requirements consists of all course credit hours that appear on the plan of study, other graduate course credit hours with grades of "C" or better that appear on the Purdue transcript, and research credit hours with grades of "S" that appear on the Purdue transcript. In fulfilling these requirements, a maximum of 18 credit hours will be allowed from any one semester (maximum hours are proportional to length of summer session = 9 credit hours).

### **4.3. Appointment of a Major Professor/Advisor**

Each graduate degree plan of study is unique to the individual student and his/her background, experience, and degree objectives. To guide in the development of a degree plan, a major professor (advisor) will be appointed to chair the student's advisory committee and will assist the student through the program. A student may request a major professor in their application materials; but this request may not always be possible, based on advisement load, research commitments, and other factors. The major professor will become the most important contact person, and the major professor/student relationship

must be a mutually acceptable one. The major professor serves concurrently as advocate, mentor, and supervisor of the graduate student.

***NOTE:** A student may change major professor if their research topic changes significantly as a result of their course of study.*

#### **4.4. Graduate Advisory Committee**

Each student, with assistance and approval from the major professor, is responsible for establishing an advisory committee for his or her program. The duties of that committee are to advise the student in the preparation of the plan of study and to offer advice and assistance during the period of graduate work.

The committee consists of the major professor, one other member of the CGT graduate faculty (refer to section 4.3 and 4.4 of this handbook), and an advisor for each related area (who must also be a member of the Purdue University graduate faculty). Members of the committee need not be faculty with whom the student has taken course work. However, in practice this is usually the case. The request for appointment of the advisory committee is made on the same form (GS Form 8), and at the same time, as the request for approval of the student's plan of study (refer to section 5.0). In addition, each graduate student is encouraged to explore other areas outside the College of Technology as it relates to their professional goals and development.

The advisory committee is selected and established **once the student has a firm idea of their potential research direction**. This typically occurs in the first semester. The committee will then be in place to help the student develop the plan of study and review and approve the student's thesis proposal, which must be approved before actual work on the project or research may begin.

***NOTE:** The thesis proposal must be approved prior to the semester the student intends to graduate.*

The student should discuss the plan of study with the selected advisory committee members and must get their permission to list them on the plan of study before the plan is submitted to the CGT Graduate Studies Office. Should the need arise; changes in the advisory committee after the plan of study has been submitted will be handled on an individual basis through the Electronic Plan of Study form (EPOS) (refer to section 5.0).

#### **4.5. Course Load Recommendations and Requirements**

The maximum course load for graduate students is 18 credits (and occasionally 19 credit hours with special permission). Typically 18 credit hours translate into six (6) courses. Eight (8) credit hours is considered the full-time certification standard for graduate students by the Graduate School.

***NOTE:** To maintain full time status, international graduate students must take eight (8) credit hours per semester.*

Most students inquire as to how many classes they should take when they have an

assistantship. Table 4.2 provides some recommendations as to how many credit hours are typical when also working as a teaching or research assistant.

Table 4.2. *Recommended Course Loading for Assistants*

<b>Assistantship Load</b>	<b>Recommended Course Load</b>
¼-time assistant	12 to 15 cr. hrs.
½-time assistant*	9 to 12 cr. hrs.
¾-time assistant	6 to 9 cr. hrs.

\*Assumes ½-time is equivalent 20 working hours.

**NOTE:** A candidate for the Master's degree is expected to complete all requirements for the degree within five years from the completion of the oldest course on the plan of study.

#### **4.5.1. Reduced Course Loads for International Students**

To maintain visa status, international students are expected maintain a fulltime load. Purdue's Office of International Students and Scholars (ISS) provides information about this requirement and offers a means for international students to request permission to take a reduced courses load. Appendix A provides a visual example of the form. Graduate students desiring a reduced course load should work with ISS to request this before their course load is reduced below that required by U.S. Immigration rules. See the ISS web site for more information: <http://www.iss.purdue.edu/>.

#### **4.6. Registering for Courses as a Graduate Student**

Purdue University provides online scheduling of courses for all of its students via the *myPurdue* system. The software used for this system is called *Banner*. Typically the student works with his or her advisor to determine the appropriate courses to take for a given semester. Then the student works with the Graduate Coordinator in CGT to sign up for courses. Typically students can self-register. A registration PIN number is required to perform self- registration. You will be informed of your PIN number at the time of admission from the CGT Graduate Office. However, at times students may need an 'override' to be able to register for certain courses. More information about registering for classes can be found at the Registrar's web site: [http://www.purdue.edu/registrar/Registration%20%26%20Recor/Registration\\_Procedu.html](http://www.purdue.edu/registrar/Registration%20%26%20Recor/Registration_Procedu.html).

It is the graduate student's responsibility to keep track of specific dates relative to course scheduling. These include deadlines for registration, deadlines for dropping courses and the like. The Graduate School announces these dates on its web site and typically the deadlines are emailed to students each semester at appropriate times.

#### **4.7. Dropping and Adding Courses**

To drop or add a course, the student uses the *myPurdue* systems. Changes in variable credit courses will require the CGT Graduate Office to enter the changes. Subsequently, be sure to confirm that a dropped or added course has been officially recorded by checking *myPurdue*.

Courses dropped during the first two weeks of classes will not appear on your permanent record. Courses dropped during weeks three and four will be recorded as a “W” grade on your permanent record (withdraw). Courses dropped during weeks five through nine require the signature of both the instructor and the CGT Graduate Coordinator or Chair. In such a case, the instructor must assign a grade of “W,” “WF,” or “WN.” The end of this period is the final deadline for withdrawing from a class.

***NOTE:** A “W” simply records the fact that the student withdrew after the second week of the semester. A “WF” records that the student was failing a graded course. “WF” grades are not included in computing the GPA. A “WN” records failing status in a course being taken Pass/No Pass. “W,” “WF,” and “WN” grades are recorded on your permanent record.*

Courses added during weeks two through four require the approval and signature of the instructor and the CGT Graduate Program Chair. Courses may be added during weeks five through nine, but only under extraordinary circumstances. Courses added after the fourth week requires the approval and signature of the instructor, the CGT Graduate Program Chair, and the head of the department where the course is offered (for non-CoT courses).

***NOTE:** Graduate students that receive an incomplete in a course will have one semester and 12 weeks into the following semester to complete the course. If that is not done, the Registrar automatically makes the grade a failure.*

## **SECTION 5.0. ELECTRONIC PLAN OF STUDY REQUIREMENTS**

The philosophy of the Graduate School of Purdue University is that advanced study should be tailored to the individual and his/her professional and intellectual objectives. Thus, the plan of study is unique to each student's needs and desires. To facilitate such an individually tailored program, each Master's degree plan of study consists of a primary area and one or more related areas. Both the primary area and the related area(s) are based on the relationship of the course content and not on the departmental course prefix.

The development of the plan of study begins as part of the initial course registration. The major professor will discuss the student's background, interests, and degree objectives as part of the preparation for the first enrollment. The major professor will also recommend possible related areas and advisors.

In addition to course work requirements, each student must complete and successfully defend a research project known as Thesis (CGT 698 Research MS Thesis). The plan of study should be developed to support this research requirement.

The plan of study must list all courses the student will take to meet the degree requirements. These include the names for the primary and related areas of study; the course number, course title, and credits for each course; the date when the course was or will be completed; and the research area. Research credits are listed in the notes field of the EPOS. The plan of study is signed by each member of the advisory committee and the student. After review, the plan is signed by the CGT Graduate Studies office. The plan is then submitted to the Graduate School for formal approval. It is important that the major professor access the approved plan of study and periodically review progress of its completion with the graduate student. After an approved Plan of Study is on file, committee and course changes can be made at any time up until graduation. This can be accomplished by clicking on the Create Change Request link available next to an Approved plan of study. The Change Request link will initiate a Change Request form. These procedures all occur electronically via the EPOS procedure. Refer to the following link:

[https://ias.itap.purdue.edu/gradsch/HELP\\_PAGES/pos\\_student\\_instructions.doc](https://ias.itap.purdue.edu/gradsch/HELP_PAGES/pos_student_instructions.doc)

Also, be sure to review the CGT Plan of Study Checklist to verify completeness of your EPOS before submitting it in final form:

[http://www.tech.purdue.edu/cgt/academics/graduate/documents/CGT\\_MS\\_POS\\_Checksheet\\_2009.pdf](http://www.tech.purdue.edu/cgt/academics/graduate/documents/CGT_MS_POS_Checksheet_2009.pdf)

Upon approval by the Graduate School, the plan of study becomes a contract among the student, the CGT department, and the Graduate School. When all requirements of the plan of study are completed satisfactorily, the student is awarded the

Master of Science (M.S.) degree. Refer to the sample plan of study form in Appendix B. Appendix C shows a flowchart of the EPOS creation and approval process.

***NOTE:** If a course in the plan of study is not available when the student needs it, or if the direction of the student's research topic changes, students can submit an EPOS change of plan of study. Once filed, the change request requires prior signatories to approve the requested change.*

### **5.1. Primary Area**

All plans of study will have a primary area focused in Computer Graphics Technology. The primary area will have an applied research, management, or teaching emphasis. The plans of study require 34 semester hours (including the six (6) semester hours in CGT 698 Research MS Thesis), with a minimum of 13 semester hours in courses from CGT (three of which are core courses). The primary area for the Master of Science in Computer Graphics Technology must include the following core courses (or acceptable equivalents):

Number	Credits	Title
CGT 501	1	Seminar in CGT
CGT 511	3	The Development of Graphics in Technology
CGT 611	3	Pipeline Development Course
STAT 501	3	Experimental Statistics I (or IT 507, STAT 511, or PSY 600)
TECH 646	3	Analysis of Research in Industry and Technology

Courses included in the primary area (other than the four required core courses above) should be selected to enhance the career goals of the student. Undergraduate courses may not be included in the primary area of the plan of study without special permission from the CGT Graduate Education Committee. In addition to these required courses, students must include required CGT Primary Area Selectives in their EPOS (refer to the section Plan of Study Guidelines for CGT Area of Specialization below). Courses currently being offered by the faculty in Computer Graphics Technology include:

CGT 512	Human Factors of Computer Interface Design
CGT 513	Interactive Multimedia Development and Research
CGT 514	Product Lifecycle Management
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 581R	Advanced Digital Lighting and Rendering
CGT 600	Spatial ability Research and Assessment

### **5.2. Plan of Study Guidelines**

Table 5.1 Provides guidelines for the Plan of Study.

Table 5.1

*Plan of Study Guidelines*

<b>CGT Primary Area Core:</b>	<i>13 credit hours</i>
CGT 501	Seminar in CGT
CGT 511	The Development of Graphics in Technology
CGT 611	Pipeline Development Course
IT 507 (or equivalent)	Measurement and Evaluation in Industry and Technology
TECH 646	Analysis of Research in Industry and Technology
<b>CGT Primary Area Selectives:</b>	<i>6 credit hours</i>
CGT 512	Human Factors of Computer Interface Design
CGT 513	Interactive Multimedia Development and Research
CGT 514	Product Lifecycle Management
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 581R	Advanced Digital Lighting and Rendering
CGT 600	Spatial Ability Research and Assessment
<b>CGT Related Area Options:</b>	<i>9 credit hours (minimum)</i>
<b>Thesis Research</b>	<i>6 credit hours</i>

### **5.3. Related Area**

Each plan of study must include a related area of at least nine (9) semester hours from an area other than Computer Graphics Technology. In some cases, there may be two related areas, if such a plan will enhance the student's professional goals. 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., MET, CIT, BCM, etc.). Each related area must have a faculty representative on the student's advisory committee.

#### **5.3.1. Undergraduate Credit in a Related Area**

A related area may include undergraduate courses (300 or 400 level) **only when followed by appropriate 500- and 600-level courses**, and are subject to the approval of

the student's advisory committee and the CGT Chair for Graduate Studies. Undergraduate courses listed in the related area must be in excess of the baccalaureate degree requirements. Graduate School policy stipulates that 100- and 200-level courses may not appear on a plan of study and that no more than six (6) semester hours of 300- and 400-level courses may be applied to graduate work and a grade of "B" or better is required.

### **5.3.2. Sources for Related Area Courses**

Courses for the related area may be drawn from other colleges, schools and departments throughout Purdue University, or from other departments within the College of Technology.

### **5.4. Credit Limitations**

The combination of undergraduate excess credit, transfer credit, post-baccalaureate registrant credit, and independent study credit included in a Master's Degree plan of study must not exceed 15 semester hours. These credit categories are defined as follows.

***NOTE:** For students obtaining two M.S. degrees, a maximum of nine Purdue credit hours (at the 50000- and 60000-level) are allowed to overlap between coursework required in the two degrees.*

#### **5.4.1. Undergraduate Excess Credit**

Undergraduate students attending Purdue University who have time available to take courses in excess of their undergraduate degree course requirements may earn a maximum of 12 semester hours of credit in 500 and 600-level courses which were taken and declared as graduate work on Registrar's Form 350 at the time that grades were filed for that semester. Undergraduate excess credit will be certified by the Registrar only if the student:

1. took the course during the senior year;
2. received a grade of at least "B" in the course;
3. the course was designated as a graduate course; and
4. the student's work in the course was performed at the level required for graduate students in the course.

#### **5.4.2. Transfer Credit**

A maximum of half the required course credit hours completed at another institution may be included in the Master's Degree plan of study. Graduate School policy states that transfer credit will be allowed only for courses in which a grade of "B" or better was obtained. A catalog description of the course and an official transcript showing completion of the course and the grade received must be submitted with the plan of study.

#### **5.4.3. Post-baccalaureate Registrant Credit**

The Graduate School has created an enrollment category known as "post-baccalaureate registrant" to enable those who have a Bachelor's degree to enroll in courses that are considered appropriate to the registrant's personal objectives. A limited amount of credit earned in this category is available for inclusion on a plan of study at the



discretion of the advisory committee, the recommendation of the Associate Dean for Graduate Studies, and the approval of the Graduate School.

A maximum of 12 semester hours of graduate credit earned as a post-baccalaureate registrant may be included in a plan of study; no post-baccalaureate course in which a grade of less than "B" was earned will be permitted on the plan of study.

***NOTE:** The sum of credits earned as undergraduate excess credit and in post-baccalaureate registrant status that may be used on a plan of study is limited to 12 semester hours.*

#### **5.4.4. Independent Study Credit**

A maximum of six (6) semester hours of independent study credit (e.g., CGT 590, CGT 519, or EDCI 590) may be included in a plan of study. Registration for independent study courses will be permitted **only after the plan of study is initiated** (see section 6.0).

#### **5.5. EPOS Acknowledgement of Thesis Requirement**

When completing the EPOS, CGT 698 is not shown in the list of courses. Instead, this course (and associated credits) is acknowledged in the notes field. For example, the notes field may include the following:

“The student will complete 6 credit hours of CGT 698 to satisfy the thesis requirement.”

#### **5.6. Examination Requirement**

Each thesis candidate must pass a final oral examination in order to graduate. The final oral examination is considered public and is taken during the session in which candidacy is declared. The candidate's examining committee will conduct the examination and evaluate mastery of content related to the plan of study. A second purpose of this oral examination is for the student to defend the thesis. The final oral examination must be scheduled through the CGT Office of Graduate Studies no less than three weeks prior to the date of the examination. If the student's performance is not acceptable in one or more areas, the examining committee will specify what the student must do in order to eliminate any deficiencies.

#### **5.7. Examining Committee**

An examining committee will normally include the members of the student's advisory committee. Additional members may be appointed by the CGT Graduate Program Chair. The advisory committee chairperson (the major professor) may recommend additional members for appointment also (refer to the section 9.0).

#### **5.8. Publication Requirement**

Scholarship plays a very important role in the preparation of MS and PhD students in the College of Technology. Graduate students need to understand the role of scholarship in higher education as well as its importance in disseminating new

knowledge. CGT values the role and contribution of its faculty and students in its efforts to engage in discovery with impact. It is important that graduate students learn how to create and present scholarship as part of their academic training. For these reasons, CGT requires all PhD students and MS thesis students to engage in scholarship.

MS students are required to have at least one of the following in “in review” or “published” status before they undertake their final thesis oral examination:

- Refereed or reviewed journal article
- Refereed or reviewed trade journal article
- Refereed or reviewed conference presentation
- Reviewed conference poster

Exceptions to the above requirements have to be approved by the student’s committee chair and the CGT Graduate Program Chair. Some other form of scholarship should be substituted for the above if the student requests an exception.

## SECTION 6.0. REGISTRATION FOR AN INDEPENDENT STUDY COURSE (CGT 590 or CGT 690)

Independent study courses may be included in a graduate plan of study. A copy of the final product or a complete report of the study must be submitted to the professor in charge of the independent study. Failure to do so may result in an incomplete or failing grade. This work must be independent of other required course studies (previous, existing, or future). ***Registration in CGT 590 or CGT 690 may not be initiated until all of the following procedures have been satisfied. (Note CGT refers to departmental prefix code.)***

***NOTE: CGT 690 is limited to doctoral plans of study only and can only be offered by faculty holding an earned doctorate.***

To enroll in an independent study the student must:

1. Obtain an independent study authorization form from the CGT Graduate Studies web site at [http://www.tech.purdue.edu/cgt/academics/graduate/cgt\\_forms.cfm](http://www.tech.purdue.edu/cgt/academics/graduate/cgt_forms.cfm). This form is a request for permission to enroll in an independent study course (refer to the sample form in Appendix D for an example of the CGT 590 form).
2. Meet with the major professor to discuss the proposed study and secure his/her approval.
3. Prepare a detailed prospectus (typed or word processed, APA format, title page) including the following sections:
  - a) Problem: Describe the problem you propose to address clearly, delimit the problem area, and provide a rationale for its significance.
  - b) Purpose and Objectives: Provide a numbered listing of all educational objectives to be accomplished.
  - c) Define how the course relates to your degree objectives, i.e., what it will do for you.
  - d) Procedures: Explain the methods to be used and any unusual requirements for materials, equipment, or facilities. A graphic time line and two progress reports must be submitted by the student to the professor in charge between weeks three and ten of the semester. Provide a narrative, flow chart, or outline of step-by-step procedures used to complete the study. If applicable, provide a supply and materials cost worksheet.
  - e) Outcomes: Itemize and describe the deliverables/products, i.e., tangible results (software source code, papers, reports, products, or summaries) of the study and list whom will receive copies (office, professor in charge, student).

**NOTE:** *This prospectus should be about one to three pages in length. A good way to prepare a prospectus is to subhead it using the above categories and present the information below each subheading.*

- f) 16-week outline: The 16 week outline should include a week-by-week listing of any meetings, milestones or other deliverables that the student will undertake.
4. Meet with the professor (the professor in charge) who will guide the study to discuss the prospectus.
5. Revise the prospectus as necessary. Complete the Independent Study Authorization Form (refer to the sample in Appendix D), attach it to the prospectus, and secure the signatures of the major professor (academic advisor), the professor in charge, and the CGT Graduate Program Chair.
6. Submit the signed copy of the request to the CGT Graduate Studies Office along with a completed Form 23. The Form 23 **MUST NOT** be submitted for processing prior to securing the necessary approvals for the prospectus (see Appendix E for an example Form 23).

**NOTE:** *Independent study credit may not be used for graduate research credit (i.e., as a substitute for required CGT 698 credit hours).*

## **SECTION 7.0. THE CGT THESIS**

The following sections describe in detail information related to the thesis requirements within CGT.

### **7.1 The Master's Thesis**

A Master's thesis in CGT is a significant piece of original work, typically involving research, a formal written description of that research, and an oral defense of the research. Typically, the thesis contributes new knowledge to the discipline against the backdrop of what others have contributed to the topic as well (via the literature review). The tone should be scholarly, with a primary audience of other researchers. The thesis is more than a term paper but less than a doctoral dissertation. For example, a synthesis and description of others' research and writings alone may be appropriate as a term paper. While a comprehensive "review of the literature" must be included as a section of the thesis, it is not sufficient by itself. On the other hand, a doctoral dissertation might use an experimental or survey methodology involving large numbers of subjects on a national or international level. A Master's thesis may be narrower in scope, being restricted to a local problem, a smaller number of subjects, or a conceptual model. A thesis should not just be an expression of your opinions; conclusions and opinions must be based on research results and analysis.

To pursue the development of a thesis, students must first develop a thesis proposal and secure its approval by their graduate committee. A formal meeting of the student's graduate committee is required to evaluate the proposal and CGT's Graduate Studies Office is to be provided a copy of the approved proposal with a CGT Form 2 carrying the signatures of each committee member. Proposals are developed pursuant to student enrollment in one (1) to three (3) credit hour(s) of CGT 698 Research MS Thesis. Subsequent enrollment in CGT 698 for the additional required credits is contingent upon filing of the approved proposal. Students may receive no more than six (6) credits for CGT 698 on their EPOS.

#### **7.1.1. Key Points about the Thesis**

1. A thesis typically addresses a theory or knowledge gap. Often it does so by testing or evaluating or by developing and validating a concept or methodology.
2. Theses require documentation of the significance of the problem or gap in knowledge they address (i.e., they make a contribution to the discipline).
3. All theses result in a clearly identifiable new (requires documentation of originality) knowledge of significance.
4. Generally theses involve the use of one or more of the accepted research paradigms and established research techniques. They may be quantitative or qualitative in nature. They may involve historical or philosophical, scientific or technological perspectives. They may be experimental, descriptive or developmental in methodology. Other forms/paradigms of research scholarship may also be employed if approved by the committee.

5. The Thesis format must follow the *Purdue Graduate School Thesis Guidelines* as supplemented and detailed in this handbook. The format is APA citation format with some specific differences (see section 8.4 and 8.5).
6. Theses demonstrate a high level of reasoning, effective written communication, and are documented in a form that permits replication.
7. Theses are necessarily filed in Purdue's library (via the E-pubs section). Theses containing intellectual property are marked as confidential and not made publicly available.
8. Theses are filed with the University and the *ProQuest* Repository (<http://www.proquest.com/>). Theses containing intellectual property are marked as confidential and not made publicly available.

## **SECTION 8.0. THESIS PROCEDURES**

Section 8.0 outlines specific procedures related to completing the thesis requirement. Procedurally a student must:

- a) Enroll in CGT 698 (typically one (1) to three (3) credit hours) to generate and successfully defend the thesis proposal. Proposals typically include chapters 1 (introduction) thru 3 (methodology).
- b) Defend proposal in front of graduate committee. The graduate committee is typical comprised of three faculty. Students typically do a 20 to 30 minute presentation with sufficient time remaining for committee members to ask questions and help guide the proposed project.
- c) Obtain appropriate approvals (if applicable) to conduct research (CITI, IRB, HIPAA, FERPA, etc).
- d) If approved, execute the thesis (during this time students enroll in subsequent required hours of CGT 698).
- e) Upon completion of the thesis students must meet with the CGT Thesis Advisor for approval of their format and then defend project in front of graduate committee.
- f) Upon successful defense of the thesis students must deposit thesis with the University, deposit thesis with the department, and deposit thesis with committee.

### **8.1. Thesis CGT 698 Research MS Thesis Enrollment**

Exact enrollment procedures can vary, but at least two consecutive enrollments in CGT 698 are required. Typically, **the first enrollment is for one (1) to three (3) semester hour(s) of credit in the next-to-last academic term** (but earlier enrollment is permitted if appropriate). During this academic session, a proposal is developed and approved by the advisory committee. Subsequent registration in CGT 698 is not permitted until the approved and signed proposal has been filed in the Graduate Studies Office. **The second CGT 698 enrollment is for three (3) to five (5) semester hours of credit**, in which the study is conducted, the final thesis written, and the study defended in an oral examination.

***NOTE:** The thesis proposal defense and the thesis final defense CANNOT occur in the same semester.*

Should the student not complete the project in the two enrollment periods, s/he is required to enroll for one (1) semester hour of credit each term until the project has been completed. The candidate must be enrolled in CGT 698 for at least one (1) semester hour of credit in the academic session in which the degree is awarded.

### **8.2. Grades for CGT 698 Research MS Thesis**

Performance in any CGT 698 Research MS Thesis course is graded using the following scale:

- Satisfactory – used where the student has met or exceeded requirements for satisfactory progress.
- Unsatisfactory – used where the student has not met requirements and has not invested appropriate amounts of effort.
- Incomplete – used where the student has invested appropriate amounts of satisfactory effort but the project is not yet finished.

### **8.3. Thesis Proposal Defense**

Once the thesis proposal has been completed (the proposal typically includes the first three chapters of the thesis), the student works with the graduate chair to establish a meeting of the graduate advisory committee for defense and approval of the proposal. Typically the student does a 20 to 30 minute presentation, with sufficient time left to answer questions. Once the proposal is approved by the committee, a copy of the CGT Form 1 (signed by all committee members and the graduate student) and the final proposal are deposited in the CGT Graduate Studies Office. See Appendix F for an example of the CGT Form 1.

### **8.4. APA and Formatting Requirements Theses**

Theses in the CGT follow the university guidelines for formatting. Generally the formatting is aligned with the APA parenthetical citation format with some specific additions.

Theses (for both proposals and final documentation) should utilize the document templates provided by the university and/or college. Templates for Word 2007 and Latex exist. Templates are provided on the following two URLs:

- University Templates: <http://www.gradschool.purdue.edu/thesis2.cfm>
- CoT Templates: [http://www.tech.purdue.edu/Graduate/forms\\_documents.cfm](http://www.tech.purdue.edu/Graduate/forms_documents.cfm)

Most students use the Microsoft Word templates as the basis for formatting their proposals and final documentation. The templates include styles for heading elements, tables, figures, captions, et cetera. It is recommended that students use the templates for formatting their proposals and final documents.

#### **8.6.1. Notes about the Templates**

The following lists some things to note about using the templates and formatting in general:

- In the required course, TECH 646, students will be familiarized with the templates and use them to generate their projects in the course. Most students take TECH 646 in the same semester that they intend to defend their proposal.
- The University template will not automatically format all elements as needed within CGT. Specific elements such as: figure captions, table captions, table verticals, table of contents, and list of tables and figures will require some manual adjustments to get them to format correctly.



- All students will have a thesis format meeting prior to their final oral defense of their thesis. Dr. James Mohler, Thesis Format Advisor for CGT, is willing to meet with any student who needs an introduction to the thesis templates prior to the creation of their proposal. Students may email him to set up a meeting or to get examples of prior formatted theses.
- The Graduate School at Purdue typically hosts workshops on the use of the thesis templates each semester. Consult the Graduate School web site for the dates and times of these workshops.
- Other specifics of the format can be seen in an example document that can be used as a guide for formatting theses ([http://www.tech.purdue.edu/cgt/academics/graduate/mohler\\_dissertation.pdf](http://www.tech.purdue.edu/cgt/academics/graduate/mohler_dissertation.pdf)).

### **8.5. Preparing Thesis Proposals**

Generally each proposal has similar sections, but the order of the sections may vary as every individual and every proposed project is unique. The exact approach that the student takes is ultimately at the discretion of the major professor (advisor) and the student's graduate committee.

Proposals must be succinct and direct. Clear, jargon-free prose that establishes the need for the study and a proposed method of solution are required—nothing more (or less). While CGT faculty have not established specific proposal length requirements, a proposal should be sufficiently detailed to enable the graduate committee to render effective judgment and share appropriate advice on how to proceed. Typically, proposals are 20-30 pages (including figures, tables, and references but not counting appendices) to communicate essential detail.

Beyond content, there are two important factors in the writing of any professional paper, be it a proposal or a final report. One factor is format; the other is style. Format is the physical layout of a paper. Rules for indentation, type face, line length, etc., are considered format issues. Style requirements are created to facilitate clear communication. Globally, style indicates the manner of expression and the sequence in which material is organized. At a micro level, style concerns formality, person, tense, spelling, and abbreviation standards. Both format and style are important, and both have their place. Most publication manuals include both style and format guidelines.

Proposals are always written in future tense. Thus, statements that refer to procedures should be stated as, "This proposed study will collect data using . . ." or "Results of this study will be used to . . ." Similarly, CGT standards recommend that the proposal be written in third person. However, depending on the type of work being executed, first person writing may be acceptable. For example, most quantitative research projects use third person. Most qualitative research projects use first person. Students should consult with their graduate chair and discuss which is appropriate based upon the direction of their research and the methodology they intent to employ.

## **8.6. Thesis Proposal Contents**

The following sections provide an overview of the major parts of a thesis proposal.

### **8.6.1. Thesis Cover Page**

The thesis cover page is established based upon the University formatting guidelines. Appendix G shows an example of the thesis cover page. Note that the thesis and dissertation use the same page format. The thesis template (if macros are turned on) will allow the user to select the appropriate elements from a drop down list. Students should fill in the thesis title, type (Thesis), name, and graduate month and year of the thesis cover page.

Once approved, the thesis proposal is filed with the Office of Graduate Studies in the CGT following the proposal defense meeting. This original document then becomes the contract for the thesis. Students must also submit CGT Form 1: *Acceptance of Graduate Proposal* (see Appendix F).

### **8.8.2. Abstract**

The student must prepare a one (maximum) page abstract that succinctly describes the proposed problem to be addressed, purpose for the study, the significance of the proposed study, an overview of the proposed methods to be employed and of the anticipated deliverables. Typically this section is less than 400 words.

### **8.8.3. Chapter 1: Introduction**

The form of the introduction will vary with the nature of the proposed project; however it usually does not have a heading. Typically it ranges from one to two pages in length. It is important to remember that this is the sole chance to establish a frame of reference in the reader's mind. Appropriate introductions are brief and designed to establish the need for a study. There is no "right way" to write an introduction. There are, however, several possible ways to craft an introduction that will accomplish its intended goal. One common method is to identify the problem in a global way (without specifics). This approach creates an overall frame of reference that makes it much easier for the reader to focus on the more detailed portions of the proposal.

#### **8.8.3.1. Statement of the Problem**

There is no section of a proposal that gives beginning proposal writers more challenge than the "Statement of the Problem" section. Too often early drafts present either a restatement of the introduction, a detailed description of the methods to be used, or a suggested solution. None of these are appropriate statements of the problem. A problem is something that is wrong. Therefore, the statement of the problem is merely a brief description of what is wrong, written in specific enough terms that the reader can see the problem and not simply a problem space. One test of the quality of a problem statement is always, "Could the problem be recognized if the statement were being read for the first time?"

### **8.8.3.2 Research Question/Hypotheses**

Once the statement of the problem is generated, where applicable, the research question and hypotheses follow. The research question is a testable statement of the problem. For example, maybe the statement of the problem acknowledges that a new method of learning is needed within a particular class. The research question would then be phrased, "What is the effect of learning technique X on scores in class Y?" This statement would be used to generate hypotheses that could then be tested statistically.

Another example might be that a new algorithm is needed to solve a problem on in some computer domain. The research question might be, "Can an algorithm be developed to solve computer security in educational environments?" In this example, rather than statistics being used, the student might create the algorithm, test it, to see if it works or does not work.

A final example might be that company X needs to solve a workflow issue in a manufacturing process. The research question might be, "Can software X be used to make the workflow in company ABC more efficient and effective?" In this example, maybe the student will implement the software and then report on the effect related to efficiency and effectiveness.

While these are merely examples (and should not be assumed to fully define the wide range of CGT theses), nearly all projects should have a defined research question that is derived from the statement of the problem. Such a question should also be testable. Whether a thesis has hypotheses will depend on the type of research being conducted (quantitative or qualitative).

### **8.8.3.3. Significance of the Problem**

Once the problem has been stated, the significance of the problem must be established. The significance section should be drafted in a manner that removes any question of the importance of the proposed study. This is the part of the proposal in which the proposed project can be tied to the student's overall plan of study and career goals. Generally, this section should "sell" the project as being worthy of doing in the business/industry and/or academic/disciplinary context. Often students will also deal with how or why this is important beyond the confines of Purdue. What contribution will be made to industry, academia or the world at large as a result?

One of the effective methods of strengthening this section is to highlight key citations from credible sources that indicate that the problem is real and that things would be better if it were solved. However, this should not be overdone. Selection of two or three major supporting pieces of literature is sufficient.

### **8.8.3.4. Statement of the Purpose/Scope**

Once the problem and its significance have been stated, the purpose of the project must be described. Here is where the student indicates what they propose to do about the problem, that is, what part of it they wish to address and what the deliverables of their work will be. Often this section will also be used to define and limit (generally) the scope

of the project. Typically the nouns and verbs that are a part of the statement of the problem or research question will be clarified and bounded. Later in the proposal the assumptions, limitations and delimitations provide further insight related to the scope and outline specific details related to scope limitation.

#### **8.8.3.5. Definitions**

Definitions must be included in a proposal whenever it is necessary to inform the reader of the unique way in which the terms are to be used in the proposed research. For example, if learning is to be defined as "a change in behavior", both the entering and terminal behaviors must be defined. But, when terms are used in standard ways, it is not necessary to include the definitions.

An important issue to remember related to definitions is that each definition should have an associated citation. The students use (and definition) of terms should be based upon the academic or industrial literature. As such, because definitions usually use the words of others, most definitions are typically directly quoted source material. When this is the case, the citation should include source, date as well as page number where the material occurs.

Definitions lists usually also include acronyms and abbreviations. Be sure to spell out all acronyms or abbreviations not only in the definitions list, but also in the first instance of their use in the body text of the proposal. The sample paragraph below is what you should NOT do.

What would happen if the president of the BBB requested the assistance of the FTC in order to convince the DOC that it should investigate the effect of WSJ interference with NAFTA signatories regarding concerns about the impact of UL standards on GATT?

The preceding paragraph demonstrates the inappropriate and excessive use of acronyms. If acronyms are used to reduce volume/repetition in a proposal, convention requires the term to be spelled out in full the first time it is used and then followed by the acronym in parentheses. Thereafter, the acronym may be used in lieu of the full term. Even when spelled out on first use, abbreviations or acronyms should appear in the definition list.

#### **8.8.3.6. Assumptions**

Every study requires some assumptions; they will vary with the type of problem. Typically assumptions are things that could affect the results of the project, but are beyond the researcher's control. For example, one assumption could be that all members of the group being studied know Windows-based operating systems. Another assumption may be that employees will be willing to participate in the training exercise being proposed. Assumptions, of course, must be established as part of the proposal writing stage and they must be approved by the major professor and committee.

### 8.8.3.7. Limitations

Limitations are descriptions of potential weaknesses of a study. If the student knows about these at the time of generating the proposal they are advised to reveal them explicitly in advance. Often, however, in addition to any weaknesses known in advance of conducting a project, some invariably arise during the course of project execution. When this occurs, these new limitations are to be added to the limitations section of the final project report and they must be taken into account when discussing the project conclusions.

*NOTE: The approved proposal is the contract for the study. If the proposal were ambiguous about its limits, the student could be required to gather further information to fill in missing gaps. It is very important to outline limitations in the proposal as they often assist in making sure committee expectations and student expectations match.*

### 8.8.3.8. Delimitations

Delimitations are restrictions in the scope of a project, that is, specific statements about things that you will NOT address. There are always constraining factors in a study. This is particularly true of projects in which time, money, and other resources are limited to those that the individual student can bring to the study.

A delimitation is a factor that will narrow the scope of the study being proposed. This is a factor that is known about before the study is performed. For example, one delimitation may be that time does not allow a follow-up after the initial treatment or evaluation. Will the study be limited to a single facility of Corporation X, or will it be conducted at multiple sites? Clearly, a multiple-site study is more generalizable than a study at a single location. However students must strike appropriate balance between generalizability and resource limits.

*NOTE: Delimitations are distinctly different from limitations. A limitation is a potential weakness in a study. A delimitation is a specific, conscious limit in scope. Limits affect inference; delimits affect breadth of study.*

## 8.8.4. Chapter 2: Review of Literature

The review of literature serves several important functions. First, it is a method to indicate that the problem is more universal than the specific proposal. Second, it serves as a justification for the proposed study in that others have addressed related problems. Third, it positions the work in the field giving context to what has and has not been done and where this thesis is positioned therein. Fourth, it identifies possible methods for the conduct of the study by identifying possible data collection strategies, statistical procedures, or sources of other procedural information.

There are three principle justifications for additional investigation of a problem. One justification is that there are plausible alternative hypotheses to conclusions reported in existing studies. That is, there may be another possible variable that is influencing the results of existing studies. The second reason for proposing a new study is to determine if

the reported study can be duplicated (replicated) in a new environment. A third reason for conducting a study accounts for the introduction of new data or procedures that have become available. In this case, the review of literature serves to demonstrate that no examples of the use of new techniques could be found.

Typically reviews of the literature sections include some appropriate description of four sections:

- A description of the problem and its significance
- A description of the methodology and terms employed to conduct the review of the literature itself
- A description of the literature pertinent to choices of data collection and analysis
- A summary of the review of the literature section

For the purposes of a proposal, the review of literature should focus on the key studies. These cannot be determined without extensive review of the literature prior to the preparation of the proposal. The review must be sufficiently extensive to insure that all sides of an issue have been researched and that a balanced evaluation of the problem area has been accomplished. Only the most germane or seminal studies should be included.

Committee members will typically ask discipline- and literature-based questions regarding the problem, significance, purpose and procedure sections. While it is imperative that the proposal's literature review be summarized, it is equally important that extensive literature review be done before undertaking the writing of the proposal. It is infinitely easier to do a thorough research review prior to the writing of the proposal for another reason: the more the problem is studied, the more possible solutions will be discovered. Also, it should be noted that reviewing of the literature does not cease after a proposal is accepted. Typically, effective researchers/developers continue to review the most pertinent literature throughout their conduct of the study. Subsequently, all appropriate literature will be integrated into the final report/thesis, so the time and effort will not be lost.

The review should generally concentrate on the current literature. For example, if the student is interested in a "Hawthorne effect" study, reference to the original work is only appropriate in a historical context. Failure to review the current literature can fatally flaw the proposal. A study that has recently been conducted may inadvertently be proposed.

### **8.8.5. Chapter 3: Methodology**

All procedures to be used in the proposed study should be defined. Whenever possible, the proposed procedure should be justified by reference to other published studies that were used and recommend the steps defined. This will insure that the advisory committee understands the steps the student wishes to take and establishes those steps as appropriate in other published studies.

Theses in CGT typically include the creation of something and an assessment of it. The “something” might be an intervention to be used on humans, an apparatus, a new process, a new technology and so forth. However, this alone is not sufficient for a thesis. The thing created must also be assessed or evaluated. This assessment could be a physical test (such a testing the new thing to see how it performs) or a statistical test (such as comparing measures before and after and executing statistics on it to evaluate how it performs).

Most theses can be classified along multiple dimensions as to the type of research being done. Projects can fall in to the following classifications:

- Quantitative, qualitative or mixed methods
- Clinical or technical
- Human subjects or “things and stuff”
- Theoretical or applied

The important thing to note about research in the CGT is that there is not one type or only one class of research. Research in CGT is as varied as the physical attributes of the students who choose to pursue their degree within it.

#### **8.8.8. List of References**

The reference list should include only the publications cited in the body of the proposal. All reference citations within the body of the proposal and the reference list must comply with the standards of the most recent edition of the Publication Manual of the American Psychological Association.

#### **8.7. Obtaining Permissions to Conduct Research**

To conduct research often requires various types of permission, depending on the type of research being conducted. For example, use of human subjects (even for what many consider innocuous research such as anonymous surveys) requires IRB approval. Purdue University’s Office for the Vice President for Research (VPR) provides information on the necessary approvals needed for various types of research (<http://www.purdue.edu/research/vpr/>). Graduate students are encouraged to discover the type of permissions they might need to obtain by reviewing the materials provided online via the VPR’s web site, discussing it with the chair of their graduate committee, and reviewing the available workshops provided by the Graduate School’s Responsible Conduct of Research (RCR) web site (<http://www.gradschool.purdue.edu/RCR/>).

#### **8.8. Preparing the Final Thesis**

Students must become very familiar with the Purdue Graduate School’s Thesis Manual and template even before they begin writing the final thesis. It is good practice for the student and their major professor to confer and agree on an initial outline for their thesis. Furthermore, to make it easier to establish consistency throughout their document, students are advised to also become comfortable with the paragraph heading style and outlining features of their word processor.

*NOTE: Color figures may be used within the thesis.*

*NOTE: If a thesis is greater than 350 pages, it must be separated into two volumes. Consult with the Graduate School for how this is done.*

### **8.8.1. Final Thesis Contents**

The exact structure of a thesis is subject to committee approved adaptations as long as the resulting document still meets the requirements of CGT. The typical thesis consists of five chapters which are supplemented by some preliminary and appendix materials as shown in the outline below:

- Cover Page
- Abstract
- Dedication & Acknowledgements
- Table of Contents
- List of Tables
- List of Figures
  - Chapter 1: Introduction
    - Statement of the Problem
    - Research Question/Hypotheses (if applicable)
    - Significance of the Problem
    - Purpose of the Study
    - Definition
    - Assumptions
    - Limitations & Delimitations
    - Summary
- Chapter 2: Review of the Literature
- Chapter 3: Procedures and Data Collection - The outline of this chapter is highly variable, but typically it includes sections describing:
  - The methods employed to conduct the study
  - Justification for selection of the chosen methods
  - Instrument and data collection process development and validation
  - Description of the data collection
  - Chapter 4: Presentation of Data & Findings - The outline of this chapter is highly variable, but typically it includes sections describing:
    - Description of data conditioning and analyses
    - Presentation of the data
    - Discussion as needed
- Chapter 5: Conclusions, Discussion and Recommendations
  - Conclusions
  - Discussion
  - Recommendations
  - Summary
- List of References
- Appendices
- Vita



### **8.8.2. Chapter 4: Presentation of the Data and Findings**

Chapter 4 of the thesis provides a presentation of the data. Typically chapter 4 does not include interpretations or conclusions; it simply presents the facts of what the data say. In quantitative research, this may be elaboration on the results of statistical tests, or the results of tests of an apparatus or new device. In qualitative research, this chapter typically presents the narratives from interviews, raw documents or other artifacts discovered. Interpretation of what the data mean, that is, conclusions made from the data, are typically reserved for chapter 5 of the thesis.

### **8.8.3. Chapter 5: Conclusions, Discussion, and Recommendations**

Chapter 5 of the thesis focuses on the conclusions that can be drawn from the data, as well as discussion (where the conclusions are typically tied back or compared to the literature in the field and the existing findings in the field). At the end of this chapter are recommendations; usually this is a discussion of parts of the thesis that could be expanded to form entire studies in their own right. Recommendation may also include things the researcher would have done differently in the current study.

There are different ways to structure chapter 5. Sometimes the writer will take each research question and its associated hypotheses and deal with them in turn (in the conclusions). At other times, other structures can be used. Ultimately, chapter 4 and 5 should be written as dictated by the research, the researcher, and the graduate committee.

***NOTE:** There are times when a thesis might have more than five chapters. Depending on the scope or breadth of the study, more chapters may be necessary. Typically chapters one (1) thru three (3) are standardized in the contents they contain. However subsequent chapters vary in title and contents depending on the research being conducted.*

### **8.8.4. Appendices**

The appendices of a thesis are used to provide supporting materials to the work. There is no set number of appendices, nor is there a common structure. Related to structure, appendices are usually ordered in the manner in which they are referenced in the body of the material (and, indeed, all appendices should be referenced in the text body that occurs in the chapters). Some examples of items that might be included in the appendix of a thesis include:

- IRB or other approval documents that establish the ability to conduct the research or conduct it in a legal manor.
- Tests, surveys, or other instruments used in the study.
- Examples of code, programs or images used in the study.
- Transcripts of interviews, focus groups or other qualitative data.
- Raw quantitative data gathered during the study.

***NOTE:** With anything included in the thesis, the writer must insure that they maintain anonymity (where applicable) and do not break copyright agreements (for example, most tests are copyrighted).*

With all of these items, the goal is to provide enough detail in the thesis that someone else could take the thesis and replicate it.

### **8.9. Plagiarism, Falsification, and Fabrication**

Purdue University maintains the highest academic and ethical standards research conducted by faculty and graduate students. It is important to note that the university sees the acts of plagiarism, falsification and fabrication as equal as acknowledged by the following university policy on research conduct:

"Research misconduct" shall mean, for the purposes of this policy, fabrication, falsification, plagiarism, or other practices that seriously deviate from those that are commonly accepted within the scientific and academic community for proposing, conducting, or reporting research. It does not include honest error or honest differences in interpretations or judgments of data (Excerpt from the *Purdue University Policy on Research Misconduct (VIII.3.1)*).

#### **8.9.1. Plagiarism**

Plagiarism is serious violation of research conduct and every researcher, faculty and graduate student needs to be conscious of what it is, and how to avoid it. Plagiarism is to steal or pass off the words, ideas, or intellectual product of another as one's own. It is essentially literary theft as it regards works of a written nature. Plagiarism is typically defined as the use of four or more adjacent words from a specific source.

To avoid plagiarism, you must give credit whenever you use:

- Another person's idea, opinion, or theory;
- Any facts, statistics, graphs, drawings—any pieces of information—that are not common knowledge;
- Quotations of another person's actual spoken or written words; or
- Paraphrase of another person's spoken or written words.

#### **8.9.2. Strategies for Avoiding Plagiarism**

The following are some general strategies to avoid unintended plagiarism:

1. Put in quotations everything that comes directly from the text, **especially when taking notes.**
2. Paraphrase, but be sure you are not just rearranging or replacing a few words (which is conscious plagiarism). Instead, read over what you want to paraphrase carefully; cover up the text with your hand, or close the original source so you can't see any of it (and so aren't tempted to use the text as a "guide"). Write out the idea in your own words without peeking.
3. Check your paraphrase against the original text to be sure you have not accidentally used the same phrases or words, and that the information is accurate.

### 8.9.3. Guidelines for Quoting and Citing

The following are some guidelines that can be used for determining when to quote and when to cite material from other sources:

- If paraphrasing or writing about the ideas presented by another, citation is necessary (Mohler, 2008).
- If using four or more words (even with “permission to use”), quotation and citation is necessary. Quotations over 40 words long should be “blockquoted” as per APA format specifications.
- All quotations require a page number following the quotation or integrated into the citation.
- **If you are in doubt how to give credit, quote and cite the source.**

### 8.9.4. Purdue University Form 20: Research Integrity and Copyright Disclaimer

Appendix H shows the required form that all graduate students are required to complete and include in theses. This is typically the second page of the thesis document. This form verifies that the material submitted as the thesis is original and that the student has the right to include it. Section 9.5 acknowledges the need for this form prior submission of the thesis for deposit with the university, college and graduate committee.

## 8.10. Self-Checking for Plagiarism

To assist Purdue students, the Graduate School, in partnership with the Office of the Vice President for Research, has initiated this voluntary self check service called *Check Yourself*. The software checks submitted documents against thousands of articles that are published in journals and conference proceedings as well as text that appears on the Web. A similarity report is generated that highlights excerpts in the submitted document that match similar text in documents found in print and on the Web. Similarity reports can be helpful in detecting occurrences of inadvertent replication and neglect in referencing.

### 8.10.1. Rules Governing Usage

*Check Yourself* is expressly for use as a tool for checking documents before submission to committees, journals, publishers, and archives, to help students prevent incidences of unintended plagiarism. The service is free for Purdue graduate students and is only for individual use.

Use of the service by students is limited to individual work authored or co-authored by the student for the purpose of screening for potential plagiarism violations prior to submission. The screening service is not to be used for checking the work of others; screening articles of any kind previously submitted for publication; or screening documents of any kind previously submitted for deposit with the Graduate School, for review by an academic committee, or for archiving within the University.

Because the report generated by *iThenticate* only provides citations of language similarity, judgment on the part of the student is often necessary as to whether the submitted text is substantively different from similar text found in the literature. Students

are encouraged to seek assistance from their advisors and to consult the Graduate School resources— <http://www.gradschool.purdue.edu/RCR/>.

### **8.10.2. Procedure for Using Check Yourself**

Each department has been asked to identify a *Check Yourself* administrator who will receive electronic copies of student work, run an *iThenticate* similarity report, and return the report results to the student. A list of the *Check Yourself* administrators for each school and college can be found at <http://www.gradschool.purdue.edu/programs/contacts.cfm>.

*Check Yourself* is a courtesy provided by the University and is only to be used for the purposes described herein. Documents for screening should be sent to the *Check Yourself* administrator by email, along with a completed submission request form (see Appendix I for an example), which should be included in the body of the email. Acceptable submission document formats include Microsoft Word, searchable pdf, LaTeX, postscript, and plain text. Scanned documents converted to pdf or encapsulated in Word or LaTeX are not acceptable.

*NOTE: As of the revision of the CGT Graduate Handbook in the summer of 2010, the above information is all that is available relative to the Check Yourself software and the process for using it. Students should check the Graduate School web site or consult with the CGT Graduate Coordinator for addition information or procedures related to the use of this self-check service.*

### **8.11. Copyright Issues with Figures**

Figures and images included in a thesis can pose significant issues for authors. Generally, any figure that is directly from another source, such as a journal, book, or other publication (including web publications) is copyrighted. Including them within one's thesis requires more than just a citation if used directly from the source. If you desire to use an image from another publication or from an online source, the safest course of action is to secure a release to do so. Otherwise, it could be classified as copyright infringement. A secondary method, albeit in certain cases it could still be considered copyright infringement, is to redraw the image. However, in many cases, redrawing or recreating the image is not enough to ensure it is still not a copyright infringement.

A release to use an image can vary from a specific legal document to a simple email. The key element of a release is that the "copyright holder" gives you permission to use the image for your thesis. Yet, determining who the copyright holder is can sometimes be quite difficult. And, often authors do not fully understand what rights they have.

If you want to use an image, the first course of action is to email the author of the source from which the image is being taken. A release from an author needs to include two things:

1. That the author has the right to grant use of the image.
2. That he or she gives permission for the image to be used in the thesis.

It is always a good idea, even if an author gives permission, to follow up with the publisher of the source from which the image is taken and ensure a release is not also needed from the publisher.

As with issues of plagiarism, copyright infringement issues resulting from the illegal use of images is a serious matter. The graduate student should do everything in his or her power to ensure the legitimacy of the use of materials in his or her thesis. It is safer to not include an image if you cannot secure appropriate permissions than run the risk of copyright infringement.

***NOTE:** Questions related to the use of images may be directed to the CGT Thesis Advisor, Dr. James Mohler.*

## **SECTION 9.0. POST-PROJECT/THESIS ACTIVITIES**

The following section outlines the specific tasks and activities that occur once the student has executed and documented her or his thesis.

### **9.1. Appointment of the Examining Committee & Scheduling the Final Oral Examination**

The examining committee will usually be the same as the student's advisory committee. The major professor and student are jointly responsible for finding a common date, time, and period when all advisory committee members can meet for the final examination and this must occur within the deadlines established by the Graduate School. The graduate student is expected to take initiative to begin this procedure in conjunction with the availability of the chair and graduate committee. Typically the Graduate Coordinator in CGT will find appropriate facilities for the meeting. The date, time, period and equipment needed for the meeting are to be transmitted to the CGT Graduate Studies Office by the student. The CGT Graduate Coordinator will then complete the GS Form 8 and sent it to the Graduate School. (Appendix J shows an example of this form).

Following the notice of final examination date, the CGT Graduate Coordinator will schedule an appropriate meeting room (equipment other than standard equipment offered by Purdue is the responsibility of the student to arrange) and prepare the necessary forms.

The day prior to the final examination date, the CGT Graduate Coordinator will forward a file of relevant student records, including Graduate School Form 7, *Report of the Examining Committee*, and candidate audit forms to the major professor (see Appendix K for an example of the Form 7). Following the oral defense, it is the major professor's responsibility to obtain all required committee member signatures and return the signed form to the CGT Graduate Coordinator in advance of the established deadlines.

### **9.2. Declaring Graduation Candidacy**

In the semester that a student intends on defending their thesis, she or he must declare candidacy as they register for classes. A Form 23 Registration Form is used to declare graduation candidacy (see Appendix E). Online self-registration is not permitted to declare candidacy. Take the completed Form 23 to the CGT Graduate Coordinator, Rebecca Lank in Room 363, Knoy Hall for processing prior to the posted deadline.

*NOTE: In order to be eligible to graduate, an approved Plan of Study must be on file with the Graduate School before the start of the final semester (see Graduation Deadlines Calendar for deadline).*

### **9.3 Completing the CGT 698 Requirement**

At the conclusion of the final oral examination, the major professor and each member of the examining committee will sign the Graduate School Form 7, *Report of the Examining Committee* form; the major professor will forward the form to the CGT Office of Graduate Studies for processing (see Appendix K).

***NOTE:** The Graduate School permits **NO EXCEPTIONS** to its published deadlines. If all degree requirements are not met in the semester in which candidacy is declared, the student must register for one (1) semester hour of CGT 698 each subsequent semester until all requirements are met.*

If any problems or deficiencies in the report are indicated by the examining committee, these must be corrected before the project or report will be approved by each committee member. In order for graduation to occur during any semester, completion of all required edits/corrections must occur and be approved before the established deadlines.

The last step involves submitting a copy of the approved project report to each of the following: University, department, and Graduate Committee. Sections 9.5, 9.6 and 9.7 cover each of these in detail.

#### **9.4. Formatting Review for Theses**

Students are required to meet with the CGT Thesis Format Advisor, Dr. Mohler, **at least two weeks** before they defend their thesis. The last date to meet with Dr. Mohler for a thesis formatting appointment is 2 weeks prior to the last day to defend the thesis. A thesis formatting appointment is mandatory. If you do not meet with Dr. Mohler and get his approval signature on the Form 9 (see Appendix L), you **will not graduate** on time.

##### **9.4.1. Formatting**

For theses, CGT has adopted the APA, parenthetical citation format as implemented by the university.

##### **9.4.2. Formatting Your Thesis**

TECH 646 (a required course for most students) assists the student in developing their proposal and therefore covers how to format the thesis. If you are not required to take that course, the following provides some guidelines you should follow to ensure your thesis are acceptably formatted.

Foremost, students should use the University Microsoft Word Thesis template which is available on the graduate school's web site (<http://www.gradschool.purdue.edu/thesis.cfm>). This template has styles included within it to make formatting less cumbersome. The Graduate School also holds seminars on use of the template and following the formatting requirements.

Note that there are a few things that the template will not do. Even when using the thesis template, students must:

1. Ensure that they do not use vertical lines in tables.
  2. Properly format captions for tables and figures (including proper italics for each).
  3. Ensure proper tabs for each paragraph and proper hanging indents on references.
- Other specifics of the format can be seen in an example document that can be

used as a guide for formatting theses ([http://www.tech.purdue.edu/cgt/academics/graduate/mohler\\_dissertation.pdf](http://www.tech.purdue.edu/cgt/academics/graduate/mohler_dissertation.pdf)).

### **9.4.3. Scheduling and Attending the Meeting**

To make a thesis formatting appointment with Dr. Mohler you will need to email the CGT Graduate Coordinator, Rebecca Lank ([lankr@purdue.edu](mailto:lankr@purdue.edu)). Once Dr. Mohler has approved your thesis you may schedule your defense. It is recommended that you make your appointment with Dr. Mohler early.

When a student goes to the format meeting, she or he should bring:

1. A 100% complete, unbound printed copy of the thesis.
2. A digital copy on a USB drive.
3. At least one copy of the GS Form 9 on 100% cotton paper for Dr. Mohler to sign.

*NOTE: It is advised that students have multiple copies of the GS Form 9 for the committee to sign (see section 9.7). Only one copy is required (for university deposit, see section 9.5).*

### **9.4.4. Thesis Pre-review**

If a student is in doubt whether their document is formatted correctly, they may email a sample from their thesis to Dr. James Mohler for review and comment ([jlmohler@purdue.edu](mailto:jlmohler@purdue.edu)). “Pre-review” meetings are also a possibility but must occur before the sixth (6th) week of each semester

### **9.5. The Oral Defense of the Thesis**

Once the format review meeting is completed, the student prepares for their final oral defense. At most oral defense meetings, the student conducts a 20 to 30 minute presentation and then the faculty committee is allowed to ask questions. If time permits, guests in the audience may also ask questions, but this is at the discretion of the chair. Students should discuss the final defense meeting with her or his chair in advance to verify the method by which the chair will conduct the meeting.

In addition to presenting and answering questions relative to the direct project or thesis, the student will need to prepare and bring to the final defense the GS Form 9, GS Form 19 and GS Form 20 on 100% cotton paper. It is advised that students have multiple copies of the GS Form 9 for the committee to sign (see section 9.7). Only one copy is required (for university deposit; see section 9.5).

### **9.6 University Deposit of the Thesis**

Following successful defense of a thesis, students must deposit their thesis with the Graduate School. The deposit meeting is a face-to-face meeting in which the graduate student provides an electronic copy of their thesis, as well as the following completed forms:

- GS Form 9: Thesis Acceptance (see Appendix L)



- GS Form 9 ETD: Electronic Thesis Deposit (see Appendix M)
- GS Form 19: Masters Thesis Agreement (see Appendix N)
- GS Form 20: Research Integrity and Copyright Disclaimer (see Appendix H)

*NOTE: All the forms to be submitted to the Graduate School must be on 100% cotton paper.*

*NOTE: The graduate chair or the student may desire to hold the thesis in confidentiality status for a certain period of time. Both graduate chair and student must agree on confidentiality status. GS Form 15: Request for Confidentiality should be filed at the time of deposit if confidentiality is desired (see Appendix O for an example of the form).*

Please note that the Graduate School no longer schedules precheck appointments. These have been replaced by the online tools available on the Graduate School's website as well as scheduled presentations to departments, organizations, and interested groups.

To schedule a final deposit appointment, please contact Mark Jaeger at 494-2600/markj@purdue.edu or Anita Park at 494-2600/apark@purdue.edu in the Graduate School.

*NOTE: Following the thesis deposit, student must pay a mandatory Proquest fee. See section 9.9.*

### **9.7. Departmental Deposit of the Thesis**

The final signature on the GS Form 9 (see Appendix L) will be the Head of the CGT Graduate Program, Dr. James L. Mohler. Please see Rebecca Lank in Knoy 363 to obtain Dr. Mohler's signature on the Form 9. After depositing your thesis electronically with the Graduate School, you will then submit the college copy electronically at the CGT Purdue Libraries e-Pubs site (<http://docs.lib.purdue.edu/tech/>).

#### **9.7.1. For Assistance with Submitting to the Purdue e-Pubs Site**

A help document for submitting to the Purdue University e-Pubs site is located at: <http://www.tech.purdue.edu/Graduate/documents/epubsInst.pdf>.

### **9.8. Copies of Final Thesis for Graduate Committee**

After depositing your thesis with the e-Pub site, it is common practice to provide a copy to each of your committee members. Most faculty prefer a traditionally printed and bound copy of the project, whereas others might prefer a digital/electronic copy. Confer with your chair to determine which he or she prefers. Typically whatever is done for the chair is also done for the rest of the committee. If your chair requests a bound copy, The Purdue University Boiler Copy Center can assist you. Typically faculty request a "case (book) bound" copy. More information about this may be found at: <http://www.purdue.edu/printingservices/services/thesis.htm>.

### **9.9. Additional Requirements for Graduation**

Additional items that M.S. students must complete for graduation include:

- *Graduate School Survey*. All students must complete the Graduate School Exit Survey if they wish to graduate. Students typically receive an email and/or notification in the *myPurdue* system that details how they complete this requirement.
- *ProQuest Fee and optional Copyright Fee*. Students who complete a thesis must pay a mandatory \$45 fee to *ProQuest*. If students would like their thesis to be officially registered with the U.S. Copyright Office, they may pay an additional \$65 fee. Typically students pay their *ProQuest* fee following the deposit of their thesis to the university (see Section 9.6). However, they may pay it early by going to the Bursar's teller window and inquiring about the fee.

### **9.10. Participating in Commencement**

All graduating students are encouraged to participate in the university's commencement ceremonies. This is a time justifiably used to reflect on your accomplishments with pride and to share in the success of others, including the faculty, as well. Information pertaining to commencement (dates, attire, etc.) is available via: <http://www.purdue.edu/registrar/>.

## **SECTION 10.0. OVERALL MASTER'S DEGREE PROCEDURAL CHECKLIST**

To help students progress through their degree requirements, the following checklist will help map a path through the Computer Graphics Technology Master of Science. Specific and official deadlines are announced each semester via the Graduate School web site.

### **10.1. First Semester**

1. If the transcripts submitted with the application for admission were not complete, arrange to have two (2) copies of the final transcript showing receipt of the baccalaureate (Bachelor's) degree sent to the CGT Graduate Program Chair, Department of Computer Graphics Technology, 401 North Grant Street, Knoy Hall 363, Purdue University, West Lafayette, IN 47907

*With the help of the major professor:*

2. Discuss your career and educational objectives and, within the framework of the CGT Master's Degree, draft a preliminary plan of study. Review the optional related areas as you work.
3. Select a Master's committee consisting of your Major Professor and at least two graduate faculty members. At least two of your committee members must be regular, CGT graduate faculty. You may select one or more additional faculty to serve on your Master's Committee and in some cases this is clearly advantageous (see section 4.3 and 4.4 of this handbook).
4. Discuss the preliminary plan of study with each of the members of the advisory committee (see section 5.0 of this handbook).
5. Using the Electronic Plan of Study (EPOS) system, submit your draft plan of study to your committee members and the College of Technology Graduate Office (see section 5.0 of this handbook).
6. Refine the plan of study, if needed, based on the committee's suggestions.
7. Using the Electronic Plan of Study (EPOS) system, submit your final plan of study to your committee members and the College of Technology Graduate Office (see section 5.0 of this handbook).
8. Identify a tentative thesis problem area.
9. Register for classes for the next semester following approval of the plan of study (see Section 4.6 of this handbook).

### **10.2. Succeeding Semesters**

1. Register for classes as appropriate for the next semester (see Section 4.6 of this handbook).
2. Register for TECH 646 (during your second or third semester) and begin planning for your thesis (see section 8.4 of this handbook).
3. During your third semester at the latest, register for one (1) semester hour of CGT 698 and begin work on the thesis proposal (see section 8.1 and 8.2 of this handbook).
4. Schedule a defense meeting for the thesis proposal. All committee members must be present. Once the committee has approved the proposal, submit the proposal and signed CGT Form 1 to the CGT Graduate Studies office (see section 8.5 of this handbook).

5. After the proposal is approved, begin work on the thesis (3 to 5 semester hours of CGT 698, to complete the actual thesis). (See sections 8.1, 8.2, and 9.3 of this handbook).

### **10.3. Final Semester**

1. Register for any remaining courses on the plan of study (see section 4.0 of this handbook).
2. Insure that any changes in your plan of study have been approved using the Change process within the electronic plan of study generator, located on *myPurdue* (see section 5.0 of this handbook).
3. Check the "Candidate" space on the Form 23 Course Request Form when registering for the semester in which graduation is expected. You must have the CGT Graduate Coordinator (Rebecca Lank) enter the candidate information into the *myPurdue* system (see section 9.2 of this handbook).
4. Register for at least one (1) semester hour of CGT 698 (or the remaining number of hours to bring your total research hours to the minimum required). (See section 9.3 of this handbook).
5. Arrange the scheduling of the final oral examination at least three weeks prior to the exam date. Thesis students must provide the meeting details to the CGT Graduate Coordinator who then submits a Request for Examining Committee (GS Form 8) to the Graduate School (see Appendix J for an example of this form; see section 9.1 of this handbook).
6. Schedule Thesis Format Advising meeting with Dr. James Mohler to occur prior to the final oral examination via the CGT Graduate Coordinator, Rebecca Lank (see section 9.4 of this handbook).
7. Schedule University deposit meeting with Mark Jaeger in the Graduate School (see section 9.6 of this handbook).
8. Use Purdue's *Check Yourself* system to check the authenticity of your thesis (see section 8.10 of this handbook).
9. Satisfy the final oral examination requirement and make any revisions to the thesis that are required by your committee (see section 9.5 of this handbook).
10. Attend university deposit meeting with Mark Jaegar (see section 9.6 of this handbook).
11. Submit a final copy of your thesis to the Purdue Library e-Pubs section prior to the deadline established by the CGT Graduate Studies office (see section 9.7 of this handbook).
12. Provide final copies of your thesis project to your chair and graduate committee (see section 9.8 of this handbook).

## SECTION 11: CGT DEPARTMENTAL EXPECTATIONS FOR GRADUATE STUDENTS

- Attend all meetings scheduled by the chair of their advisory committee.
- If awarded an assistantship, attend **all** scheduled course meetings or research meetings as outlined by the supervising faculty member.
- Submit a draft Plan of Study **before** their **first** semester is complete.
- Establish an advisory committee **before** the **second** semester is complete.
- Attend an IRB sponsored workshop when appropriate and complete the online training modules.
- Submit to the graduate advisory committee a Thesis Proposal **before** starting on the project **and** at least two weeks before the advisory committee review meeting (proposal defense).
- Successful presentation/defense of the Thesis Proposal will be completed **no later than the end of the semester prior** to the semester in which the student intends to graduate.
- Submit the final Thesis Report to the advisory committee **at least two weeks** before the scheduled presentation date (final defense date).
- Adhere to the established standards as outlined in the *CGT Graduate Student Handbook*.
- Acquire professional writing and editing support as necessary during the preparation of the research proposal and/or thesis.
- Prepare a paper for publication in a refereed/trade journal or presentation at a conference in conjunction with work done for the thesis.
- Attend another student's defense/oral examination.

## **SECTION 12: GRADUATE FACULTY IN COMPUTER GRAPHICS TECHNOLOGY**

The offering of graduate courses and the detailed supervision of graduate students is the province of the graduate faculty. Members of the University faculty are not automatically members of the graduate faculty. Authority to teach graduate-level courses and to supervise graduate students is granted by the Dean of the Graduate School upon recommendation by the Director of Graduate Study for CGT. Each faculty member desiring to serve as a graduate faculty member must make formal application to and be certified by the Graduate School of Purdue University. Each faculty member certified by the Graduate School is assigned a maximum level of participation based on academic record and professional experience.

The approved graduate faculty members in Applied Computer Graphics are listed below. A current listing of other College of Technology graduate faculty may be obtained from the office of the Director of Graduate Study for the College of Technology or the College website.

### **Graduate Faculty Research Interests in Applied Computer Graphics**

The most current information about CGT's faculty can be found at:

<http://www.tech.purdue.edu/cgt/academics/graduate/CGTFacultyResearchAreas.cfm>.

### **Adamo-Villani, Nicoletta, M.F.A., Associate Professor**

Prof. Adamo-Villani has more than 10 years of experience in 2D/3D Animation and Web Design. She has produced award-winning graphics and animations (aired on national television) for companies such as Marvel Comics and Genesis Designs, and has received public recognition for the design of several web sites. Her research interest spans two closely related areas: 3D Animation for (a) Education and (b) Human Computer Communication (HCC). She is currently focusing on the application of 3D Character Animation to teaching communicative gestures, i.e., American Sign Language (ASL), and fine manipulative skills. In addition, she is investing her research effort in the development of new character modeling/animation methods and interfaces for the advancement of Human-Computer Communication. She is also interested in the application of 3D Animation to scientific visualization.

*Research topics include:*

1. Character animation
2. HCC
3. Visualization
4. Educational Technology

**Benes, Bedrich, Ph.D., Assistant Professor**

Dr. Benes currently teaches undergraduate courses in computer animation and a graduate course about virtual reality. Prior to joining Purdue, Bedrich worked as Assistant Professor and has taught courses in the fields of 3D computer graphics and real-time rendering in ITESM CCM in Mexico City and in the CTU Prague in the Czech Republic.

*Research topics include:*

1. Animation
2. Procedural modeling
3. Artificial life
4. Real-time rendering

**Bertoline, Gary R., Ph.D., Professor and Associate Den for Graduate Studies in the College of Technology**

Dr. Bertoline's research interests are in applying computer graphics, immersive interactive environments, and virtual reality to visualize, interact, and analyze engineering and scientific data and information. Advances in computing platforms and instrumentation techniques have resulted in an exponential growth of data. Efficient interpretation of this data is fast emerging as a key challenge in science, engineering, and business. The human-computer interface has emerged as a major information bottleneck: computer speeds increase, but human comprehension does not. Novel techniques must therefore be developed to effectively utilize the information capacity available to human comprehension.

Another area of interest is in the Visualization of e-Manufacturing Environments and Product Lifecycle Management (PLM). The PLM Center of Excellence at Purdue University is an interdisciplinary center comprised of applied research laboratories, classroom facilities, e-business systems, and technical infrastructure needed to support research-based learning, simulation, and education using digital enterprise technology. A core focus is to develop e-business solutions for the manufacturing industry using emerging technologies that enable global e-

manufacturing Product Lifecycle Management (PLM).

*Research topics include:*

1. Scientific visualization
2. Immersive environments
3. STEM Education
4. Cyberinfrastructure
5. Grid computing

**Birchman, Judith A., Associate Professor**

Professor Birchman's research interests primarily focus on multimedia design and development and the issues and media components associated with it. Areas include design and layout, interface design, video effects, raster imaging and interactive design. Her interests also encompass concurrent publishing and repurposing print documents for online distribution.

*Research topics include:*

1. Graphic design
2. Publication design
3. Infographics
4. Interactive multimedia design

**Burton, Terry L., Associate Professor**

Professor Burton's applied research interest's focus on creating computer-aided communications support systems for the manufacturing and construction industries. As a result of this interest, investigation into existing and emerging pervasive technologies and their potential impact on industry is the primary goal of his endeavors. He is currently working with manufacturing and design/build companies to develop and deliver solutions in project based learning environments enabled by the department's high-end *Computer Graphics Architecture Solutions Lab*.

*Research topics include:*

1. Cognitive visualization
2. Construction and architectural graphics
3. Digital enterprise
4. 3D modeling
5. Data management in design/manufacturing
6. Research methods and applications in computer graphics

**Connolly, Patrick E., Ph.D., Associate Professor**

Professor Connolly is interested in the application of CAD and CAE in the problem



solving process. Creativity development and utilization as it applies to design methodology, problem solving, and concurrent engineering are special focus areas. Other topics of interest include product data management (PDM), visualization, virtual reality, and distance learning.

*Research topics include:*

1. Solid modeling applications
2. Visualization techniques
3. Learning styles
4. Distance learning
5. Virtual Reality

**Cory, Clark A., Associate Professor**

Clark's research interests focus on the impact of new and emerging technologies along with cognitive visualization in Architectural, Engineering and Construction (AEC) industry. As a result of his interests, he is currently working with design/build construction and automated manufacturing companies to enhance the construction and manufacturing communication links between management, laborers, and clients. Clark is also actively pursuing the integration of new technologies into the classroom and industrial training settings.

Research topics include:

1. Building Information Modeling (BIM)
2. Construction visualization and illustration
3. Construction virtual reality
4. Smart Home technology
5. 4D CAD-Scheduling
6. 5D CAD-Scheduling
7. Animation for AEC
8. Sketching for AEC
9. Visual communication information

**Dib, Hazar, Ph.D., Assistant Professor**

Research topics include:

1. Building Information Modeling, Building Information Management (BIM)
2. Application of object-oriented-modeling to life cycle project management
3. Knowledge Management
4. Construction Project Delivery
5. Collaborative Communication
6. Construction Visualization
7. Artificial Intelligence/knowledge-Based Systems
8. Effect of Technology/ Computer on Productivity and Human Factor

9. Construction Management, Maintenance and Safety
10. Sustainability in the context of (BIM) Building Information Modeling

**Finnegan, John C., Associate Professor (New Albany)**

Professor Finnegan's areas of interest are diverse, from the history of CG through traditional technical illustration and design rendering to human-computer interface design. Of particular interest is the use of CG in the area of lighting visualization for the live entertainment industry. Professor Finnegan continues as a practicing Lighting Designer and is always exploring new and emerging technologies in this field. Other areas of interest include the creation of interactive and hypermedia communication tools, explorations in human-computer interface design, usability testing and directing large-scale multimedia events.

*Research topics include:*

1. Digital and real world lighting visualization for architectural and theatrical subjects
2. Technical illustration and the combination of traditional technical illustration techniques and CG to achieve the best visual communication
3. Curriculum creation for CIT/CS/MIS in the areas of communication visualization, visual design fundamentals and the creation of interactive multimedia, web and HCI design
4. Distance education content and delivery systems

**Gabel, Michael G., Associate Professor**

Professor Gabel is a Certified Manufacturing Engineer, specializing in computer-aided design, with twenty-seven years of consulting experience for local, state, and national corporations. Professor Gabel has thirty years of University teaching experience and his current interests are directed toward solid modeling and how these models support the design-thru-manufacturing cycle. He was awarded the Hertz Foundation Excellence in Teaching Award in 1982.

*Research topics include:*

1. Parametric solid modeling applications
2. Development and Implementation of CAD training materials
3. Rapid Prototyping technologies

**Glotzbach, Ronald J., Associate Professor**

Professor Glotzbach's research interests include leading-edge technologies that expand the boundaries of dynamic and interactive content delivered and collaborated on via the graphical communication tool that is the web. Related interests include

web-enabling software, dynamic content delivery methods, programming graphics, and integration of varying media into highly technological solutions.

*Research topics include:*

1. Web programming
2. Web development
3. Mobile web programming
4. Database design and application
5. Database integration
6. WPF, Silverlight, Surface, WinForms, C# programming
7. Extending software packages via scripting (JS, Python, etc.)
8. Automation of processes
9. Mobile devices
10. e-Commerce and e-Business
11. Dynamic content deployment
12. Web-enabling software
13. Programming graphics

**Harris, La Verne Abe, Ph.D., Associate Professor**

Dr. La Verne Abe Harris teaches human computer interface design and theory, creative thinking, interactive multimedia, and communication visualization. Her research is centered in the IDEA Laboratory, a creative thinking, interactive media, and animation research and development laboratory at Purdue University.

*Research topics include:*

1. Creative thinking and innovation
2. Interactive media and serious gaming
3. Design and visualization in STEM education

**Hartman, Nathan W., Ed.D., Associate Professor and Assistant Department Head**

Dr. Hartman's current research interests include 3D data interoperability and standards, 3D solid modeling techniques, and model-based definition and enterprise. He is also a Co-Director of the Purdue University Product Lifecycle Management Center of Excellence. Dr. Hartman currently teaches undergraduate courses in engineering graphics, 3D solid and surface modeling, and graphics standards and documentation. He has also taught graduate courses covering the foundational elements of computer graphics and measurement and evaluation. Dr. Hartman has worked for a variety of companies in using and integrating computer-aided design (CAD) tools into the engineering design process through the development of custom training applications and materials.

*Research topics include:*

1. Product Lifecycle Management (PLM)
2. 3D modeling
3. CAD data exchange and interoperability
4. Graphics standards
5. Model-based definition
6. Long-term archival (LOTAR) for CAD data

**Miller, Craig L., Ph.D., Professor**

Dr. Miller's research interests are in cognitive spatial abilities and they relate to determining how humans visualize spatial information and the development of applied techniques that can be used improve performance in educational and workplace settings. In addition his applied research interests are in the development and advancement of the product lifecycle management concept through curriculum innovations and partnerships with industry.

*Research topics include:*

1. Spatial visualization
2. Product & process visualization
3. Product Lifecycle Management (PLM)
4. Engineering/Technical graphics
5. Curriculum development
6. Distance learning
7. Industry engagement
8. Adult & industry training

**Mohler, James L., Ph.D., Professor and Associate Department Head**

Dr. Mohler's research interests focus on the use of computer graphics and interactive techniques in education. With a background in CG, technology, education and educational psychology, Dr. Mohler's research areas predominantly focus on intersections of these four areas.

*Research topics include:*

1. Spatial ability, spatial assessment & visual thinking
2. Interactive media
3. Educational technology
4. STEM education

**Morales, Carlos R., Associate Professor**

Professor Morales's research interests include the application of digital video, animation, and interactive technology in the development of visual training solutions. In particular, Carlos is interested in the integration of dynamic web technologies with traditional CD-ROM/DVD technologies.

*Research topics include:*

1. Integration of digital video
2. Animation
3. Interactive technology for visual training

**Sadowski, Mary A., Ph.D., Professor of Computer Graphics and Associate Dean for Undergraduate Programs and Learning**

As Associate Dean for Undergraduate Programs and Learning, Dr. Sadowski provides leadership for the School's strategic initiatives in undergraduate education. She serves as coordinator of accrediting activities and initiatives, scholarships, and enrollment management; and provides leadership for activities related to student services and diversity. Dr. Sadowski teaches undergraduate courses in graphic design.

*Research topics include:*

1. Enhancing visualization skills
2. Creative thinking

**Sarapin, Marvin, Ph.D., Professor and Department Head**

Dr. Sarapin has over 25 years experience working with undergraduate and graduate students serving as co-chair of doctoral degree committees, chair of Master's degree committees and as a committee member for numerous students. His professional interests include instructional design, development, delivery, and assessment for technical education at all levels of the educational enterprise.

*Research topics include:*

1. Outcomes assessment and technology program continuous improvement
2. Accreditation and certification in technology
3. Formative and summative evaluation
4. Computer integrated design manufacturing
5. Applications of computing in technology education
6. STEM education
7. Technical communication
8. Higher education technology curriculum and instruction

**Short, Dennis R., Professor**

Professor Short's general research interests include an emphasis on the pre and post-production activities involved in CGI and digital cinematography as well as a broad interest in the design, development and production of interactive games. Specifically, he is interested in all aspect of the integration of CGI with live video and film, digital compositing including digital matte painting, visual effects, and the virtual studio or back lot concept. Advanced research interests include synthetic actors and environments as well as the evolution of the production process in a HDTV and digital cinematography environment.

*Research topics include:*

1. Animation and time based 3D computer graphics
2. Pre and post-production issues in CGI and cinematography
3. Development of synthetic actors and environments
4. Graphic technology assessment for cinematography
5. Interactive game design and development
6. Digital compositing and special effects

**Vorvoreanu, Mihaela, Ph.D., Assistant Professor**

Dr. Vorvoreanu's main research interest is the impact of new communication technologies, such as social media, on culture, society and organizations. Dr. Vorvoreanu brings a background in communication and public relations to the study of uses and effects of social media in organizations. She is also interested in the emergence of social norms online, the use of social media in education, and the impacts of social media use on social relationships and the self.

*Research topics include:*

1. Socio-cultural impacts of new communication technologies: social media, Web 2.0
2. Social media culture, principles, social norms
3. The use of social media in education
4. The use of social media in the enterprise
5. The use of social media for public relations
6. Online identity management
7. Web user experience

**Whittinghill, David, Ph.D., Assistant Professor**

*Research topics include:*

1. Modeling, Simulation, Visualization
2. Gaming
3. Software Engineering
4. Enterprise Application Development
5. Mobile Computing
6. Augmented/Virtual Reality
7. Distributed Computing

## **SECTION 13: 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, cre. 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 Geometronics

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).

**SECTION 14: 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.

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

Prerequisite: Graduate status or consent of Instructor.

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

Prerequisite: Consent of instructor.

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

Prerequisite: Consent of instructor.

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

Prerequisite: Instructor approval required for enrollment.

CIT 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.

**APPENDIX A:**

**REQUEST FOR REDUCED COURSE LOAD**

*(available at <http://www.iss.purdue.edu/>)*

## Reduced Course Load (RCL) Request Form

**\*\*Do not register for a course load (or drop a course) that will place you in RCL status without first obtaining DSO (Designated School Official) permission. RCL approval may be obtained by completing Sections I & II of this form and then meeting with a DSO in the Office of International Students and Scholars (ISS).**

**RCL Definition:**

- Less than 12 credits hours for international undergraduate students
  - Less than 8 credit hours for international graduate and professional students without a graduate staff appointment or employment-based fellowship
  - Less than 6 credit hours for international graduate and professional students with a graduate staff appointment or employment-based fellowship
- Exception: Students who engage in full-time Curricular Practical Training (CPT), full-time optional practical training (OPT) or academic training (AT) are not required to be registered full-time and do not need to complete this form.

**SECTION I: Student Use Only**

Complete items 1 - 5 below and then submit this form to your Academic Advisor (undergraduate students) or Chair of Departmental Graduate Committee (graduate/professional students) to complete Section II.

1. **Name:** \_\_\_\_\_

2. **PUID:** \_\_\_\_\_ (10 digit PUID Number)

3. **Semester for which RCL is Requested:** \_\_\_ Spring \_\_\_ Summer \_\_\_ Fall Year 20\_\_\_

4. **Reason for RCL Request:**

\_\_\_\_\_ Medical (must include a letter from a medical professional recommending reduced course load)

\_\_\_\_\_ Improper course placement

\_\_\_\_\_ Initial English language difficulties

\_\_\_\_\_ Initial unfamiliarity with American teaching methods

\_\_\_\_\_ Last semester of a student's academic program (Graduate level students only who will complete all degree requirements during the requested RCL semester need to apply. Undergraduate students can enroll part-time their last semester and do not need to process an RCL form.)

5. **Student Explanation** (attach additional typed sheet, if needed): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Section II: Undergraduate Academic Advisor or Chair of Departmental Graduate Committee.**

**Please mark accordingly:** \_\_\_ Undergraduate \_\_\_ Graduate (Non-Thesis) \_\_\_ Graduate (Thesis)

**Recommendation:** \_\_\_ Recommend approval \_\_\_ Do not recommend approval

**REASON: (Provide justification for decision based upon a reason listed above in Section I, #4)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Recommended by:** (Printed Name) \_\_\_\_\_

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Title:** \_\_\_\_\_ **Dept.:** \_\_\_\_\_

**\*\*Students must bring this form to ISS for approval before taking a reduced course load (RCL).**

2/8/2010



**APPENDIX B:**

**SAMPLE PLAN OF STUDY**

*(available via the Electronic Plan of Study Generator on myPurdue)*

### Graduate Plan of Study

**Status** **APPROVED** **Submitted 05/18/2005**

Student	DOE, JOHN A.	123456789
Student Email	<a href="mailto:doej@tech.purdue.edu">doej@tech.purdue.edu</a>	
Department	TECHNOLOGY	TECH
Degree Title	MASTER OF SCIENCE : NON-THESIS	21
Date Degree Expected	May 2006	
Area of Specialization	HUMAN FACTORS	000
Research Area	AVIATION HUMAN FACTORS	

**Supplemental Notes:** [Add A Supplemental Note](#) [View All Notes](#)

Subject	Type	Author	Date Added
	PUBLIC		06/08/2005
	PUBLIC		09/19/2005

Items in purple are completed. / Items in green are incomplete.  
**Courses: \*\* Grades posted here are as of the end of the semester that they were taken.  
 Late grade changes or title changes may not be reflected. If you see a discrepancy, contact the Graduate School.**

Area	Courses Title	Subj. Abbr.	Course No.	Credit Hours	Regis. Type	Grade	B or better	Transfer From	Date Completed To Be Completed
PRIMARY	MEASUREMENT AND EVALUATION IN INDUSTRY	IT	50700	3	RE		-	-	May 2004
PRIMARY	QUAL & PROD IND & TECH	AT	50800	3	RE		-	-	Dec 2005
PRIMARY	MANAG RISK OF ORG ACCI	AT	57300	3	RE		-	-	Dec 2004
PRIMARY	APPLIED RESEARCH PRACT	AT	58100	3	RE		-	-	Aug 2005
PRIMARY	SOLV IND PROB APPL RES	AT	58100	3	RE		-	-	Dec 2004
PRIMARY	ANALYSIS OF RESEARCH IN INDUSTRY AND TEC	TECH	64600	3	RE		-	-	May 2004
RELATED	HUMAN ERROR	AT	57200	3	RE		-	-	Dec 2003
RELATED	BIOMETRICS TECH&APPLIC	IT	58100	3	RE		-	-	May 2004
RELATED	HUMAN FACTORS ISSUES	AT	59000	2	RE		-	-	Dec 2003
RELATED	HUMAN FACTORS IN AVIATION	AT	59000	2	RE		-	-	Dec 2004
RELATED	SAFETY ASSESSMENT	AT	59000	2	RE		-	-	Aug 2003

**Purdue graduate course tallies:**  
 Purdue POS GPA: 4  
 Purdue Primary Area Credit Hours : 18  
 Purdue Related Area Credit Hours : 12

Purdue Area Not Specified Credit Hours: 0

**Language Requirement : None****Comments Regarding Exceptions or Requirements: None****Advisory Committee Information and Approval Status**

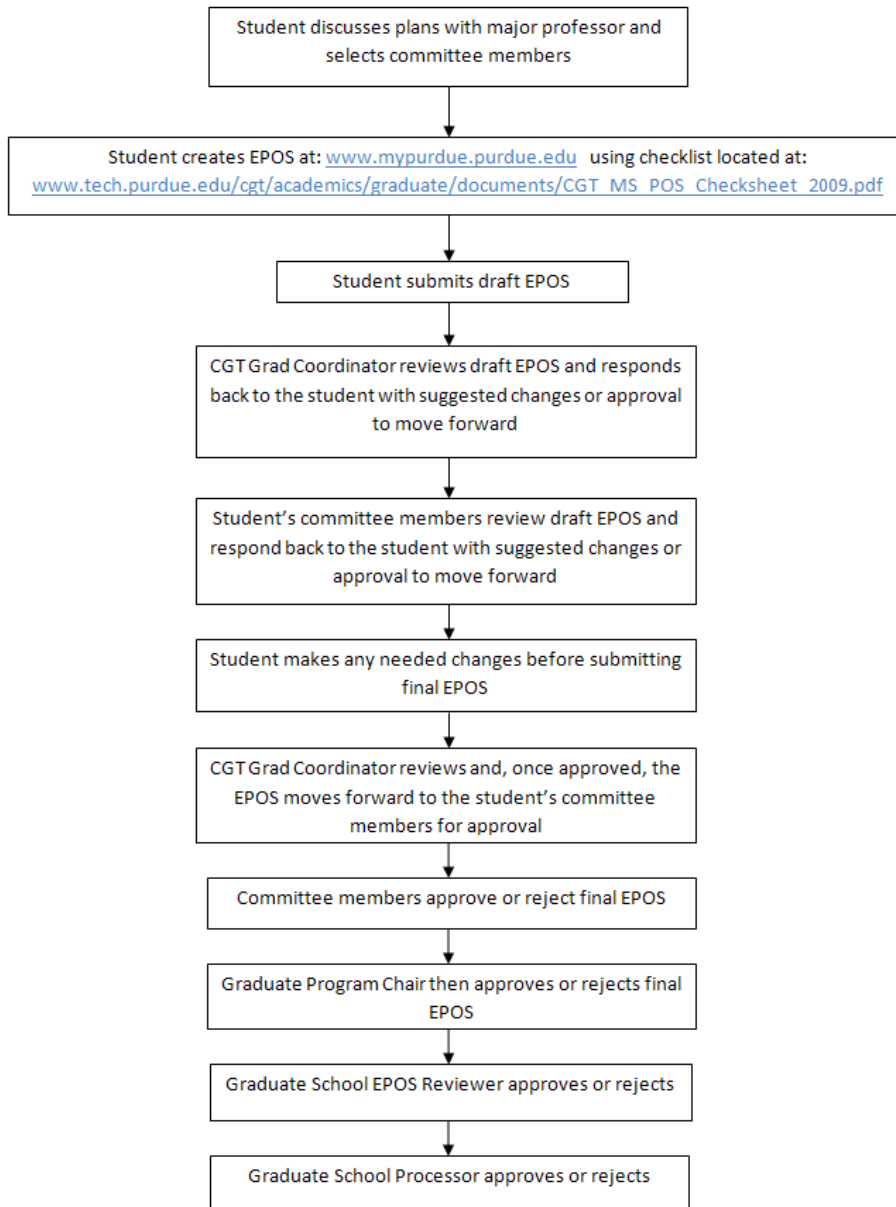
Level	Names of Advisory Committee Members	Cert	Faculty Identifier	Status	Department Code	Advisor in Area of
50	GARY M. EIFF (CHAIR)	R	C9999	APPROVED by Gary M. Eiff 10/09/2005 15:58:08	T37	TECHNOLOGY
50	DENVER W. LOPP	R	C8888	APPROVED by Denver W. Lopp 10/09/2005 16:01:49	T37	HUMAN FACTORS
50	STEPHEN J. ELLIOTT	R	C7777	APPROVED by Stephen J. Elliott 10/09/2005 13:25:00	T37	TECHNOLOGY

**Additional Authorization**

Level	Authorization	Required Signature	Status
70	Student	John Doe	SUBMITTED 09/18/2005 11:59:41
60	Plan of Study Coordinator	Debbie Hulsey	APPROVED by Debbie Hulsey 10/09/2005 11:26:39
20	Graduate Program Authorization	Gary Bertoline	APPROVED by Gary Bertoline 10/20/2005 14:17:14
10	Graduate School Authorization	<a href="#">Patricia A. Springer</a>	APPROVED by Patricia A. Springer 10/26/2005 09:20:50
0	Processor	<a href="#">Richard D. Coffman</a>	PROCESSED by Richard D. Coffman 10/27/2005 12:59:18

**APPENDIX C:**  
**FLOWCHART OF EPOS PROCESS**

### EPOS Process



**APPENDIX D:**

**INDEPENDENT STUDY REQUEST FORM AND INSTRUCTIONS**

*(available at <http://www.tech.purdue.edu/Graduate/>)*

**GRADUATE INDEPENDENT STUDY AUTHORIZATION FORM**

Computer Graphics Technology  
Purdue University

(NOTE: A maximum of 6 hours credit for CGT 59000 is permitted on any plan of study program)

(Please type or print all information clearly)

Student Name \_\_\_\_\_ Student I.D. # \_\_\_\_\_

Current or previous number of credits  
of Independent study credit: \_\_\_\_\_

I hereby request permission to enroll in CGT 59000 for \_\_\_\_\_ credits during the \_\_\_\_\_<sup>(circle one)</sup> Fall Spring Summer semester, 20\_\_-20\_\_. I plan to pursue an independent study project of the problem, \_\_\_\_\_

\_\_\_\_\_  
(Please insert title of course)

I will submit all deliverables by: \_\_\_\_\_  
Date

\_\_\_\_\_  
Student's Signature Date

I request that credit apply to: \_\_\_\_\_  
Master's Degree \_\_\_\_\_ Non-degree Study \_\_\_\_\_  
(Circle one)

I am willing to guide the independent study outlined in the attached prospectus and I agree to the deadlines indicated above.

\_\_\_\_\_  
Professor in Charge of Instruction Signature Printed Name Date

Enrollment in the above independent study is consistent with the degree objectives of this student and is  
 yes  not on his/her plan of study. This student will not exceed six (6) credit hours of CGT 59000 on his/her plan of study with this enrollment.

\_\_\_\_\_  
Major Advisor's Signature Printed Name Date

**Approved**

\_\_\_\_\_  
Department Head Signature Date

**INDEPENDENT STUDY REQUEST INSTRUCTIONS**  
**Computer Graphics Technology**  
**Purdue University**

**REQUEST FOR PERMISSION TO ENROLL IN AN INDEPENDENT STUDY COURSE**

**Procedures**

1. Meet with your professor to discuss your proposed study and secure his/her approval for the project you envision.
2. Incorporating your professor's input, prepare a detailed project prospectus (typed or word processed, use APA format, title page), including the following indicated sections.
  - a. **Problem:** Define the rationale and delimit your problem area (explain your interest in pursuing the project, why this area is of concern to you). How does this project relate to your degree objectives?
  - b. **Purpose and Objectives:** What do you hope to accomplish? Provide a physical numbered listing of all objectives you expect to accomplish.
  - c. **Procedures:** Explain the methods you expect to use and any unusual requirements for materials, equipment, or facilities. A graphical time line and two progress reports from the student must be submitted by the student to the professor in charge between weeks three and ten of the semester. Specifically, indicate key deadline dates for each progress report and deliverable. Provide a narrative, flow chart, or outline of step-by-step procedures used to complete this study. If applicable, provide a supply and material cost worksheet.
  - d. **Outcomes:** What will be the tangible results (deliverables, i.e. software source code, papers, reports, products, or summaries) of your study? Who will receive copies (office, professor, co-working professor, and student)? Will you conduct a formal presentation of your results?
  - e. **16-week outline:** The 16 week outline should include a week-by-week listing of any meetings, milestones or other deliverables that the student will undertake.
3. Meet with your professor in charge to discuss and refine your project prospectus.
4. Revise the prospectus as necessary. Complete the INDEPENDENT STUDY AUTHORIZATION FORM (reverse side of this page); attach it to the front of the prospectus; and secure the signatures of your academic advisor and the professor in charge of the independent study course you will be taking.
5. Submit the signed copy of your request to the Graduate Office, Room 363 KNOY. The prospectus must be accompanied by a completed course request (Form 23). A copy of your project -prospectus must be given to the professor in charge. **DO NOT submit the Form 23 at the Graduate Office prior to securing the department head's approval for the prospectus.** Approval criteria include: 1) total numbers of independent study courses on Plan of Study; and 2) Focus on the CGT discipline.
6. The Graduate Coordinator will make and distribute copies to appropriate persons and file the original in the departmental office. Make sure to keep a copy for yourself.

**Regulations and Restrictions in the Use of Independent Study Courses**

1. Independent study may be included in a graduate plan of study only when enrollment is scheduled after the plan of study has been approved. Check with your advisor for other restrictions which may apply to you. Typically, such courses cannot be added to your schedule after the third week of classes.
2. You must submit a copy of your final outcomes (using APA format) for the study to the department head for departmental files, and a copy to the professor in charge before the beginning of finals week. Failure to do so can result in an incomplete or a failing grade.
3. All work submitted must be independent of other course work (previous, existing, or future).

REV. 08/10



**APPENDIX E:**  
**EXAMPLE FORM 23**

OFFICE OF THE REGISTRAR **SCHEDULE REVISION REQUEST** PURDUE UNIVERSITY  
 FORM 23 (10/2008)

1. PUID 0012345678 2. NAME Smith Bill  
LAST FIRST MIDDLE

3. TERM Fall 2009 4. COLLEGE Tech 5. MAJOR GR 6. CLASSIFICATION \_\_\_\_\_  
(ex. Fall 2008)

7. CANDIDATE \_\_\_\_\_ YES \_\_\_\_\_ NO 8. REGISTRATION FOR  EXAM ONLY  DEGREE ONLY

**DROP/ADD/MODIFY REQUEST**

	A-Add D-Drop M-Modify	CRN	Subject	Course No.	Var. Credit	W/ WF	P/ NP	Instructor/Department Head Signature	Date
1	A	32680	CGT	58100	3				
2	A	36810	Tech	69000	3				
3									
4									
5									
6									
7									
8									
9									
10									

**VARIABLE TITLE COURSES**

	CRN	Subject	Course No.	Credit	P/NP	Course Title (Limit: 30 Characters)
1	12469	CNIT	59000	3		Surviving Grad School
2						

**OVERRIDE REQUEST**

	Override Code*	CRN	Subject	Course No.	Instructor/Department Head Signature	Date
1	INST PERMT	36810	Tech	699	x Debbie Husby	
2						
3						
4						

**\*OVERRIDE CODES**

CLASS	Classification Override
CLOSED	Closed Section Override
CO-REQ	Co-req Override
COLLEGE	College Restriction Override
DEGREE	Degree Override
DPT-PERMIT	Department Permission
DUP-CRSE	Duplicate Course
HONORS	Honors Permission
INST-PERMT	Instructor Permission
LEVEL	UG or GR Level Override
MAJOR	Major Restriction Override
PRE-REQ	Pre-req Override
PROGRAM	Program Override
REPEAT	Repeat Limit Override
TIME-CNFLT	Time Conflict Override

**COMMENTS**

Empty box for comments.

**AUTHORIZATIONS**

Bill Smith  
 SIGNATURE OF STUDENT DATE

Gary Bertoline  
 SIGNATURE OF STUDENT'S ADVISOR OR GRADUATE SCHOOL DATE

Gary Bertoline  
 PRINTED/TYPED NAME OF STUDENT'S ADVISOR OR GRADUATE SCHOOL

OFFICE USE

ACADEMIC ADVISING OFFICE

**APPENDIX F:**

**COT FORM 1: ACCEPTANCE OF GRADUATE PROPOSAL**

*(available at [http://www.tech.purdue.edu/Graduate/forms\\_documents.cfm](http://www.tech.purdue.edu/Graduate/forms_documents.cfm))*

CGT Grad Studies Form 1  
V 1.0

Please type or print clearly  
August 2010

Computer Graphics Technology  
Graduate Studies

Acceptance of Graduate Proposal  
(To be submitted to CGT Graduate Studies Office Following Proposal Defense Meeting)

Title of Project:

Proposal Defense Date:

Project Type:

- Thesis  
 Dissertation

\_\_\_\_\_

Chair

\_\_\_\_\_

Date (month/day/year)

\_\_\_\_\_

Member

\_\_\_\_\_

Date (month/day/year)

\_\_\_\_\_

Member

\_\_\_\_\_

Date (month/day/year)

\_\_\_\_\_

Member

\_\_\_\_\_

Date (month/day/year)

\_\_\_\_\_

Printed Name and Signature of Candidate

\_\_\_\_\_

Date (month/day/year)

**APPENDIX G:**

**THESIS COVER PAGE**

*(available at <http://www.gradschool.purdue.edu/thesis2.cfm>)*

**PLEASE ENTER TITLE HERE**

A **Select Type**

Submitted to the Faculty

of

Purdue University

by

**Your Name**

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Science

**Select Graduation Month** **Select Graduation Year**

Purdue University

West Lafayette, Indiana

**APPENDIX H:**

**FORM 20: RESEARCH INTEGRITY AND COPYRIGHT DISCLAIMER**

*(more information available at <http://www.gradschool.purdue.edu/thesis3.cfm>)*

**NOTE: This form must be completed and turned in by *all* candidates. Please carefully review the following instructions.**

**G. S. Form 20, “Research Integrity and Copyright Disclaimer”**

This form will be completed by both doctoral and master’s candidates and included with their electronic and, if applicable, printed documents. The following procedures apply:

- One (1) copy will be strictly *typed*, converted to Adobe pdf, and then attached as the second page of the electronic thesis document (i.e., following your ETD Form 9 and preceding the thesis title page).
- One (1) copy will be printed on 100% cotton paper and signed. We require “cotton paper” due to permanent archival requirements. You will turn in this form at your final deposit appointment. If you are unable to obtain cotton paper through your department, the Thesis/Dissertation can provide it to you at no charge.
- If your department also requires copies of your thesis, you will need to insert additional copies of the *signed* Form 20 in those as well.

**Please ensure you do not include this page when inserting the form into your document! When printing as a pdf, select “current page” and this will avoid your need to delete it afterwards.**

Please contact the Graduate School Thesis/Dissertation Office, 494-2600 or [markj@purdue.edu](mailto:markj@purdue.edu) if you have questions or need assistance with this form.



Graduate School Form 20  
(Revised 1/10)

**PURDUE UNIVERSITY  
GRADUATE SCHOOL**

**Research Integrity and Copyright Disclaimer**

Title of Thesis/Dissertation:

[Redacted area for Title of Thesis/Dissertation]

For the degree of

[Redacted area for degree]

I certify that in the preparation of this thesis, I have observed the provisions of *Purdue University Teaching, Research, and Outreach Policy on Research Misconduct (VIII.3.1)*, October 1, 2008.\*

Further, I certify that this work is free of plagiarism and all materials appearing in this thesis/dissertation have been properly quoted and attributed.

I certify that all copyrighted material incorporated into this thesis/dissertation is in compliance with the United States' copyright law and that I have received written permission from the copyright owners for my use of their work, which is beyond the scope of the law. I agree to indemnify and save harmless Purdue University from any and all claims that may be asserted or that may arise from any copyright violation.

[Redacted area for Printed Name and Signature of Candidate]

Printed Name and Signature of Candidate

[Redacted area for Date]

Date (month/day/year)

\*Located at [http://www.purdue.edu/policies/pages/teach\\_res\\_outreach/viii\\_3\\_1.html](http://www.purdue.edu/policies/pages/teach_res_outreach/viii_3_1.html)

**APPENDIX I:**  
**CHECK YOURSELF REQUEST FORM**

**Check Yourself Request Form**

*To submit a document for screening, send it as an email attachment to your department screening administrator. Complete the form below and copy it into the body of the email.*

A. Name:

\_\_\_\_\_

B. PUID:

\_\_\_\_\_

C. Department and name of degree program:

\_\_\_\_\_

D. Campus location: West Lafayette, IUPUI, Fort Wayne, North Central, Calumet

E. Is the submitted document

1) a thesis that has not yet been submitted to the thesis committee  
(if so, provide anticipated title)

\_\_\_\_\_

2) an unpublished journal article (if so, provide anticipated title)

\_\_\_\_\_

3) an unpublished conference paper (if so, provide anticipated title)

\_\_\_\_\_

4) an unpublished manuscript, such as a book or monograph  
(if so, provide anticipated title)

\_\_\_\_\_

5) a preliminary exam report (if so, provide anticipated title)

\_\_\_\_\_

6) other, such as clinical report, directed study report, etc. (if so, specify)

\_\_\_\_\_

F. If the submission is a co-authored document (e.g. a journal paper, conference paper, manuscript), list all co-authors.

\_\_\_\_\_

All co-authors are to be copied by email upon submission. Each will receive a copy of the similarity report.

**APPENDIX J:**

**GS FORM 8: REQUEST FOR APPOINTMENT OF EXAMINING COMMITTEE**

*(more information available at <http://www.gradschool.purdue.edu/faculty/forms.cfm>)*

Graduate School Form 8  
(Revised 2/90)

**PURDUE UNIVERSITY  
GRADUATE SCHOOL**

(Please type)

**Request for Appointment of Examining Committee  
(Adaptable for any degree)**

+ Name of Student \_\_\_\_\_ Student ID No. \_\_\_\_\_ □

Examination to be taken:  
 Preliminary Examination  
 Final Examination

Degree sought (exact title) \_\_\_\_\_

It is recommended that the following serve as members of the Examining Committee:

	Chair	Graduate Faculty Identifier	Area
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

+ It is planned to hold the examination:  
Date \_\_\_\_\_ Time \_\_\_\_\_ Building \_\_\_\_\_ Room No. \_\_\_\_\_  
Thesis Title \_\_\_\_\_ □

Recommended by: \_\_\_\_\_ Major Professor \_\_\_\_\_ Head of the Graduate Program

Department \_\_\_\_\_ Dept. Code \_\_\_\_\_  
Date Submitted \_\_\_\_\_

\_\_\_\_\_  
Graduate School Dean

Submit original plus one copy to the Graduate School

**APPENDIX K:**

**GS FORM 7: REPORT OF MASTER'S EXAMINING COMMITTEE**

*(more information available at [http://www.tech.purdue.edu/Graduate/grad\\_downloads/Form8.doc](http://www.tech.purdue.edu/Graduate/grad_downloads/Form8.doc))*

Graduate School Form 7  
(Revised 11/07)

**PURDUE UNIVERSITY  
GRADUATE SCHOOL  
Report of Master's Examining Committee**

Name of Candidate \_\_\_\_\_ PUID No. \_\_\_\_\_  
 Department \_\_\_\_\_ Department Code \_\_\_\_\_  
 Date Examination Held \_\_\_\_\_

**Degree Sought:**

- Master of Arts
- Master of Science
- Master of \_\_\_\_\_

**Basis of Recommendation:**

- Oral examination of the candidate
- Written examination
- Conference of the committee in the absence of the candidate

**Degree Recommendation:**

- Recommend that the candidate be certified to the faculty for the above degree\*
- Do NOT recommend that the candidate be certified to the faculty for the above degree

**Thesis Award (if applicable):**

- Do consider nominating this student for an outstanding thesis award
- Do NOT consider nominating this student for an outstanding thesis award

**Examination**

Approve	Disapprove	Examining Committee:	Graduate Faculty Identifier
<input type="checkbox"/>	<input type="checkbox"/>	_____, Chair	_____
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Recorded by: \_\_\_\_\_ Head of the Graduate Program \_\_\_\_\_ Date \_\_\_\_\_

This report should be forwarded to the Graduate School as soon as the examination is completed.

\*Committee certification for a master's degree requires that all members of a three-person committee concur that the student has satisfactorily completed the examination. If the committee has four or more members, a single member may withhold his or her signature of approval.

**APPENDIX L:**

**GS FORM 9: THESIS ACCEPTANCE**

*(more information available at <http://www.gradschool.purdue.edu/thesis3.cfm>)*



**NOTE: This form *must* be completed and turned in by *all* master's and Ph.D. candidates at their final thesis deposit appointment. Please do not confuse this form with the ETD Form 9, linked elsewhere on this website, which is solely used by Ph.D.'s when submitting Electronic Thesis Deposits.**

**Please carefully read the following instructions and ensure you have properly completed this form and have obtained all required signatures and dates. Failure to do so will cause needless delays in your processing.**

## **G. S. Form 9, "Thesis Acceptance"**

**The "original" copy of this form *must* be printed on 100% cotton, non-acidic paper *prior* to having it signed by your committee members, major professor, et.al.** This is due to the following:

- Ph.D. candidates submitting via Electronic Thesis Deposit must still turn in their *original, signed* "Thesis Acceptance" form at their final deposit appointment. This copy of the form will be permanently maintained on file at the Graduate School. Accordingly, the Graduate School needs an "archival quality" copy of your thesis acceptance form to ensure it remains in good condition, since wood-pulp ("acidic") paper deteriorates and fades with age.
- Ph.D. candidates who prefer to submit their dissertations in traditional "hard copy" form will also need to ensure an original completed and signed copy, printed on 100% cotton paper, is bound into the "deposit copy" they furnish at their final deposit appointment. However, please note that hard copy submissions will no longer be accepted once mandatory Electronic Thesis Deposit for doctoral candidates commences effective 23 August 2007.
- All other copies of your Thesis Acceptance form may be printed on regular copier paper, unless departmental requirements dictate otherwise.
- Candidates unable to immediately obtain 100% cotton paper from their department or workplace may contact the Thesis/Dissertation Office and it will be furnished to them at no charge.

Questions? Please contact the Thesis/Dissertation Office at 6-3157 or at [markj@purdue.edu](mailto:markj@purdue.edu)

Graduate School Form 9  
(Revised 10/07)

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GRADUATE SCHOOL  
Thesis/Dissertation Acceptance**

This is to certify that the thesis/dissertation prepared

By \_\_\_\_\_

Entitled \_\_\_\_\_

For the degree of \_\_\_\_\_

Is approved by the final examining committee:

_____ Chair	_____
_____	_____
_____	_____
_____	_____

Approved by: \_\_\_\_\_  
Head of the Graduate Program Date

To the best of my knowledge and as understood by the student in the *Research Integrity and Copyright Disclaimer (Graduate School Form 20)*, this thesis/dissertation adheres to the provisions of Purdue University's "Policy on Integrity in Research" and the use of copyrighted material.

\_\_\_\_\_ Major Professor  
\_\_\_\_\_

is  
This thesis  is not to be regarded as confidential.

\_\_\_\_\_ Major Professor  
\_\_\_\_\_

Format Approved by:

\_\_\_\_\_ or \_\_\_\_\_  
Chair, Final Examining Committee Department Thesis Format Advisor  
\_\_\_\_\_  
\_\_\_\_\_

**APPENDIX M:**

**GS ETD FORM 9: ELECTRONIC THESIS DEPOSIT**

*(more information available at <http://www.gradschool.purdue.edu/thesis3.cfm>)*

**NOTE: This form will be used by all candidates when submitting Electronic Thesis Deposits. All master's and Ph.D. candidates must still complete and turn in the G. S. Form 9, "Thesis Acceptance" linked elsewhere on this website.**

**Please carefully read the following instructions!**

## **ETD Form 9, "Thesis Acceptance"**

- Ph.D. candidates submitting via Electronic Thesis Deposit must ensure a completed ETD Form 9 is attached to the front of their Adobe pdf document. This form will be typed (not signed) and takes the place of the *original, signed* "Thesis Acceptance" form, which will instead be turned in at your final thesis deposit appointment. The reason this form is typed is to preclude potential fraud resulting from unauthorized availability and use of signatures on the Web.
- Prior to attaching this form to the front of their thesis document, candidates must ensure they first complete and save it on a computer loaded with Adobe Professional, Adobe Standard, or similar pdf conversion/merging software (e.g., PrimoPDF). Doing this ensures their document will be "stabilized," *so it cannot be edited after the fact*. Proper stabilization *cannot* be performed on machines loaded only with Adobe Reader.
- Here is a common method for saving, stabilizing, and inserting a document in Adobe pdf:
  1. After typing in the appropriate information, go to the top and select File>Print.
  - 2 You will then see a Print dialog box: go to the printer drop-down menu in the upper left-hand corner and then select the "ADOBE PDF" option.
  3. A "Save As" dialog box should then appear: type in your desired file name, as well as *where* you want to save the file, then click "OK." We suggest you select "Current Page" so you will only save the page you actually need.
  4. Your file should then immediately convert to a stabilized Adobe pdf document.

Once this is accomplished, assuming you have already converted the rest of your thesis document to Adobe pdf, you can then "drop in" your ETD Form 9 as follows:

1. At the top, select Document>Insert Pages.

2. You will then see a “Select File to Insert” dialog box requesting the name of the file you wish to insert. Select the file name for your ETD Form 9 and then click “Select.”

3. An “Insert Pages” dialog box will then appear. Select your location as “Before” and your page as “First” and then click “OK.” This will insert your stabilized ETD Form 9 into the front of your Adobe pdf document.

- Candidates *may* also be able to simply insert the ETD Form 9 into the front of their MS Word documents, and *then* run everything through the online Adobe pdf converter available at the Purdue ETD website.
- There are undoubtedly several ways to accomplish the above actions, so we encourage feedback from candidates and staff regarding different procedures that work well for them.
- All “hard” copies of your ETD Form 9, intended for your departmental library, committee members, etc. may be printed on regular copier paper, unless departmental requirements dictate otherwise. **Please insert copies of your original, signed Form 9: do not use the ETD Form 9 in your departmental copies.**

Questions? Please contact the Thesis/Dissertation Office at 6-3157 or at [markj@purdue.edu](mailto:markj@purdue.edu)

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Entitled \_\_\_\_\_

For the degree of \_\_\_\_\_

Is approved by the final examining committee:

_____	_____
Chair	_____
_____	_____
_____	_____
_____	_____

To the best of my knowledge and as understood by the student in the *Research Integrity and Copyright Disclaimer (Graduate School Form 20)*, this thesis/dissertation adheres to the provisions of Purdue University's "Policy on Integrity in Research" and the use of copyrighted material.

Approved by Major Professor(s): \_\_\_\_\_  
\_\_\_\_\_

Approved by: \_\_\_\_\_  
Head of the Graduate Program Date

**APPENDIX N:**

**GS FORM 19: MASTERS THESIS AGREEMENT**

*(more information available at <http://www.gradschool.purdue.edu/thesis3.cfm>)*



THE GRADUATE SCHOOL  
*Office of the Dean*

**TO:** Master's (Thesis Option) Candidate  
**FROM:** Phillip E. Pope, Associate Dean  
**RE:** Master's Thesis Agreement

In accordance with *Purdue University Executive Memorandum B-10*, the copyright ownership of your master's thesis resides with you, the author. In signing the *Purdue University Graduate School Master's Thesis Agreement (G.S. Form 19)*, you give permission to Purdue University to reproduce, distribute, and display, in whole or in part, your master's thesis. Please read the agreement carefully, as it is a binding agreement between you and Purdue University. You have the option to sign the agreement.

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Thank you for your attention to this important matter.

Attachment



## **PLEASE READ PRIOR TO DOWNLOADING!**

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- Once you have completed your 100% cotton copy of this form please ensure, as stated in current procedures, it is bound into the 100% cotton “deposit copy” of your thesis you are required to submit at your final deposit appointment. This copy will, in turn, be permanently shelved at the Purdue Libraries Repository.
- All other copies of your Master’s Thesis Agreement form may be printed on regular copier paper, unless departmental requirements dictate otherwise.
- Candidates unable to immediately obtain 100% cotton paper from their department or workplace may contact the Thesis/Dissertation Office and it will be furnished to them at no charge.

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Graduate School Form 19  
(9/01)

**PURDUE UNIVERSITY  
GRADUATE SCHOOL  
Master's Thesis Agreement**

Author Your name, as it appears in University records.

Thesis Title Type your complete thesis title here. If you need more than one line, tab to next line.

This information goes on the second line of your thesis. Ensure your first line is not cut off.

Department Type in the full name of your school or department.

Major Professor Type the name of your major professor(s) as they appear in your thesis abstract.

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Author's Signature

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Date

**APPENDIX O:**

**GS FORM 15: REQUEST FOR CONFIDENTIALITY**

*(more information available at <http://www.gradschool.purdue.edu/thesis3.cfm>)*

Graduate School Form 15  
(Revised 11/02)

**PURDUE UNIVERSITY  
GRADUATE SCHOOL  
Request for Confidentiality of Thesis**

Date \_\_\_\_\_

Thesis Title \_\_\_\_\_

Official Degree Title \_\_\_\_\_

Date Degree Expected \_\_\_\_\_

Author \_\_\_\_\_

Student ID No. \_\_\_\_\_

Major Professor \_\_\_\_\_

Graduate Faculty Identifier \_\_\_\_\_

Department \_\_\_\_\_

Department Code \_\_\_\_\_

**REASON FOR CONFIDENTIALITY** (Please check applicable items.)

- There may be patents resulting from research.
- Publication of the thesis or portions thereof is pending.
- Proprietary rights are involved.
- Other (Please specify.) \_\_\_\_\_

**INITIAL REQUEST**

- One Year Period.** (An initial request is normally for one year. However, in cases where the sponsoring organization has a contractual arrangement, which expressly stipulates a longer time period, with Purdue University and/or Purdue Research Foundation, a two-year initial period of confidentiality may be requested.)
- Two Year Period.** (The name of the sponsoring organization and the contract number must be indicated below before this form is submitted to the Graduate School.)

Sponsoring Organization \_\_\_\_\_

\_\_\_\_\_

Contract Number

Verification by Sponsored Program Services

**EXTENSION REQUEST** (Six Month Period)

Reason for Extension \_\_\_\_\_

The Thesis/Dissertation Office will retain both the deposit copy of the thesis and the copy for the head of the graduate program and will not permit access to these copies during the period of confidentiality without authorization in writing by the author, the major professor, or the head of the graduate program and the endorsement of the dean of the Graduate School. **At the end of the approved period of confidentiality, the thesis will be removed automatically from such status unless a request for extension is approved by the Graduate Council.** Earlier removal from confidentiality may be authorized in the same manner as access during confidentiality.

**SIGNATURES:**

\_\_\_\_\_  
Author

\_\_\_\_\_  
Major Professor

\_\_\_\_\_  
Head of the Graduate Program

*Submit this form to the Graduate School.*

**(For Graduate School Use)**

Confidentiality has been approved  
through \_\_\_\_\_

(Month, day, year)

\_\_\_\_\_  
Graduate School Dean

Distribution: Thesis/Dissertation Office, Author, Major Professor, Head of the Graduate Program, Sponsored Program Services, Office of Technology Commercialization, Graduate School

