PURDUE POLYTECHNIC

THE PURDUE POLYTECHNIC INSTITUTE

Ph.D. GRADUATE STUDENT HANDBOOK

Assembled by
the Graduate Faculty
in the
Purdue Polytechnic Institute

PURDUE UNIVERSITY

West Lafayette, IN

July 11, 2022

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Purdue Polytechnic Institute Ph.D. Graduate Student Handbook

NOTE: This document supersedes the Graduate School Policies & Procedures Guide.

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FORWARD

This document is intended to clarify and emphasize the expectations that the Polytechnic has relative to the pursuit of graduate studies. If you have questions about how to interpret what is in this Handbook, please consult with your major professor, your Polytechnic Department/School Graduate Program Chair, or the Polytechnic Graduate Associate Dean's Office.

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SECTION 1.0. INTRODUCTION

Section 1.0 of this document provides an overview to general information graduate study in the Purdue Polytechnic Institute.

1.1. <u>General Information</u>

The Purdue Polytechnic Institute (Polytechnic) offers graduate instruction leading to the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees. The Master's degree enables students to concentrate on professional development studies in technology or technology education in any of the disciplinary foci and/or areas of concentration (see table 1) offered by the college. Note that some areas of concentration may include more than one area of disciplinary focus. Both thesis and non-thesis routes are offered through the master's program. The Ph.D. program's primary focus is to prepare faculty, researchers, specialists, managers and administrators for leadership in technological- and engineering-related careers in academia and industry.

Table 1.1. *Disciplinary Foci and Specializations*

<u>Disciplines and Accompanying Specializations</u>

Aviation Transportation Technology*: Sustainability, Transportation Economics, Safety Management, Aircraft Capital Asset Management, Human Factors, Workforce Development, Data Analytics, and emerging multidisciplinary fields. The Ph.D. may be in Technology, or in Aviation Technology and Management. Each Ph.D. is an approved STEM program.

Ph.D. in Aviation and Technology Management at West Lafayette web page
https://polytechnic.purdue.edu/degrees/phd-aviation-technology-and-management

Computer Graphics Technology: Computer Animation, Data Visualization, Game Studies, User Experience (UX) Design and Human-Computer Interaction, and Digital Enterprise Systems

Computer and Information Technology: Automation, Intelligence, and Robotics, Cyber forensics, Cyberinfrastructure and Networking, Data Applications, Homeland Security Information Security, Project Management and Business Analysis, Societal Applications of IT

Construction Management Technology: Many construction subsectors and technologies: Commercial; Civil Infrastructure; Electrical; Healthcare; Disaster Restoration & Reconstruction; Demolition; Mechanical; Residential; Automation, Digitalization, & BIM

Engineering Technology: Electrical, Computer and Mechanical Engineering Technologies. Industrial Engineering Technology and Supply Chain and Sales Engineering Technology, Engineering Technology Education and Alternative Energies

Technology Leadership and Innovation: Organizational Leadership, Digital Innovation, and Engineering/Technology Teacher Education

Specific information about the Purdue Polytechnic Institute graduate programs, including Purdue Online graduate program offerings, may be obtained from the web page at https://polytechnic.purdue.edu/graduate-studies. Written inquiries may be directed to Associate Dean for Graduate Studies, Purdue Polytechnic Institute, Rm. 150 Knoy Hall, Purdue University, 401 N. Grant, West Lafayette, IN 47907-2021, phone 765-494-6875.

The document addresses the Doctor of Philosophy and general graduate procedures. We also have a Doctor of Technology (DTECH) degree that is only taught through Purdue Online. This document does not contain policies for that degree. *NOTE: All schools and departments in the Purdue Polytechnic Institute have their own M.S. degrees. If you are interested in those specific MS degrees, please find them listed at* Graduate Studies - Purdue Polytechnic Institute

1.2. Ph.D. Program Vision

The Purdue Polytechnic Institute is committed to its graduate program and to offering the technology profession's leading Ph.D. and master's programs. These graduate programs have been designed to advance the disciplines of technology and to develop advanced level professionals who engage in technology, technological education, and related leadership. The faculty recognizes a genuine responsibility to prepare future scholar-practitioners for the technological enterprise in both public (education and government) and private sector environments. The Ph.D. program represents the college's most advanced manifestation of this commitment.

1.3. Ph.D. Program Purpose

Through the doctoral program faculty seek to provide degree candidates with the knowledge and skills necessary to advance the discipline and its practice. The primary purposes of the program are to prepare scholarly faculty to serve higher technology education programs throughout the nation and world, and advanced leader/researchers for public and private sector environments employing such levels of personnel. In doing so, the program also develops the concomitant skills involved in technology-relevant knowledge development, synthesis, and assessment. Candidates may also prepare for leadership roles in fields such as technology transfer, technology human resource development, technology teaching, or supervision of technology in private and public sector agencies.

Graduates of the program are expected to demonstrate an appropriate level of mastery of the discipline of technology, both in general and with respect to the technological focus built into their program. Given this, the program is structured to enable the development of the technological focus as well as a broad understanding of the discipline.

Successful Ph.D. candidates will demonstrate advanced ability to:

1. Envision, plan and conduct research and development activities;
2. Identify, comprehend, analyze, evaluate and synthesize research;
3. Evaluate technologies and technology-related programs;
4. Assess individual performance with, and understanding of, technology;
5. Communicate effectively and employ constructive professional and interpersonal skills; and
6. Function in one or more of the technology disciplines.

1.4. Ph.D. Program Overview

The Purdue Polytechnic Institute's Ph.D. program is based on practices at Purdue University and other leading institutions. These include a requirement for a minimum of 90 credit hours above the bachelor's degree, maintenance of a B- or better grade point average, and satisfactory progress each semester. At least one third of the total credit hours used to satisfy the degree requirements must be earned in continuous residence at Purdue. Historically the college's Ph.D. was designed for individuals who entered with an obtained M.S. degree ("Master's plus Ph.D."). However, the college also offers a Ph.D. for students entering directly from a bachelor's degree ("direct to Ph.D.").

Ph.D. advisors, working interactively with the student, will consider all prior graduate coursework accepted for transfer into the program while developing the Plan of Study (POS). In addition to a technology focus, each plan of study will include a solid discovery foundation sequence of research courses and a cognate, which is designed to add depth and a second discipline's perspective to the student's research or professional goal-related field. A dissertation will serve as both a culminating synthesis experience and a visible demonstration of performance.

SECTION 2.0. ADMISSION POLICIES AND PROCEDURES

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 Purdue Polytechnic Institute.

2.1. Background on Ph.D. Admission

Ph.D. applicants are admitted in each School/Department through a holistic graduate faculty evaluation process using Purdue's Slate admission platform. A controlled enrollment approach ensures that only a manageable number of highly talented degree aspirants with genuine academic leadership potential are admitted. The Polytechnic's goal that every admitted Ph.D. graduate student has the opportunity to be supported by one of the Polytechnic's research and development projects or teaching assignments.

Persons seeking admission to the program should have relevant prior coursework and experience in the discipline to ensure a significant potential for success in the program. Additionally, a requirement for acceptance is that a match exists between the applicant's goals and interests and that of the program's intent and the faculty research. When faculty, in their judgment, identify deficiencies in either the applicant's formal education or experiential background, they have a responsibility to require appropriate prerequisite experiences in addition to the standard program requirements. Please note, an earned MS degree from the Purdue Polytechnic does not guarantee acceptance into the Ph.D. Program.

2.2. Admission Criteria

The admissions process selects highly qualified applicants into the Polytechnic's Ph.D. program by considering each of the following criteria in judging the overall strength of the applicant. Typically, no criterion is used as a sole determinant for admission.

- For students holding a qualified M.S. degree, a graduate GPA of 3.5 or better and an undergraduate GPA of 3.25 or better (or equivalent class rank) from accredited institutions and in programs with specific relevance to technology will be required for unconditional admission. For students entering from a qualified bachelor's degree, an undergraduate GPA of 3.5 or better (or equivalent class rank) from accredited institutions and in programs with specific relevance to technology will be required for unconditional admission.
- A four-year undergraduate degree or an undergraduate degree that conforms to the Bologna Accords.
- GRE or GMAT scores at or above the 50th percentile (for each subscale) are required for unconditional admission for applicants holding a qualified M.S. degree. For direct admission from a B.S. degree, GRE or GMAT scores at or above the 60th percentile (for each subscale) are required for unconditional admission for applicants. Note, pursuant to ETS' recommended practice, the program does not require a specific minimum score.

- For direct admission from a B.S. degree, applicants should show substantial evidence of undergraduate research experience.
- At least two years of relevant work experience is preferred as is breadth in educational experience.
- Review and recommendation for acceptance by the relevant department's graduate faculty and at least one of which is willing to serve as major professor.
- A statement of purpose judged to be a good fit for the college's Ph.D. program mission.
- A positive admission interview report evidencing both preparation for doctoral studies and oral English proficiency
- Personal and professional characteristics commensurate with success in the profession
- International applicants whose first language is not English and who have not graduated from a University or College using English as the primary language of instruction, must provide proof of English proficiency for admission in *one* of the following ways:
    - TOEFL
    - IELTS
    - English Course – Intensive English Language Programs
    - Waiver – Citizen of or Degree from English Speaking Country
    - Waiver – Current Purdue University Students
- The Ph.D. Technology uses the Purdue University Graduate School minimums for satisfying the Graduate School's English Proficiency Requirements - https://www.purdue.edu/gradschool/admissions/how-to-apply/apply-toefl.html

2.3. <u>Application Requirements</u>

All applicants are required to submit the following items to create an application package suitable for effective review of the applicant's potential for success in the Purdue Polytechnic Institute's Ph.D. program (may vary by School/Department):

- Purdue University Graduate School online application form and applicable fees.
- A detailed reflective Statement of Purpose highlighting career goals, capabilities to be developed, and a self-assessment highlighting both strengths and weaknesses.
- A detailed resume or curriculum vitae.
- Transcripts of all universities or post-secondary institutions attended.
- Official GRE (preferred) or GMAT scores.
- A writing sample that documents a high level of competence in written communication such as a thesis or other significant, personally written product.
- Applicant interview form completed by faculty member if applying to SOET.
- At least three letters of recommendation from faculty with an earned doctoral degree or others deemed qualified to judge potential for success in research and Ph.D. programs.
- Official TOEFL score (if required).
- Documentation of financial support (required only for international applicants).

2.4. <u>Admission Procedures</u>

The procedures for admission to the Polytechnic Ph.D. program include the following steps:

- Applicants complete Purdue University's on-line electronic application and submit the Graduate School's application fee.
- Applicants submit all other application materials to the Polytechnic Graduate Studies Office.
- The Polytechnic Graduate Studies Office assembles complete application package for internal review.
- The completed application package is routed to the relevant School/Department in the Purdue Polytechnic Institute for review.
- At least one of the reviewers interviews the candidate, if possible. Although in-person interviews are desirable from both the Polytechnic and applicant perspective, alternative procedures (such as telephone interviews) may be employed.
- Faculty review package and report assessment to the Polytechnic Graduate Studies Office.

> *NOTE: It is the responsibility of every international student applicant to supply all documentation needed by the United States Immigration and Naturalization Service and Purdue University to establish eligibility for entrance into the USA as a student. This necessarily includes documentation of sufficient financial resources to sustain the anticipated period of study. **International graduate students must not begin to travel to Purdue University until formally notified of their acceptance by the Graduate School.***

2.4.1. Admissions Recommendations

Departmental admission recommendations to the Polytechnic Graduate Studies Office may be one of the following:

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

Departmental admission recommendations are forwarded to the Purdue Polytechnic Institute (Polytechnic) Associate Dean for Graduate Studies for review and recommendation to the Purdue University Graduate School.

2.4.2. Admission Deadlines

It is recommended that candidates for admission must have submitted all necessary application materials by the following deadlines (there may be a high degree of flexibility depending on demand):

- February 15th for summer admission (for international students applying from outside the US).

- April 1st for summer admission (for domestic students and international students applying from inside the US).
- April 1st for fall admission (all students).
- September 1st for spring admission (for international students applying from outside the US).
- October 1st for spring admission (all domestic students and international students applying from inside the US).
- For consideration in highly competitive Purdue fellowships, please have the application completed by as soon as as the callout is available for admission to the following year's Fall semester (typically late fall or early spring).

2.5. Conditional Admission

For those students admitted who do not meet unconditional admission criteria to the Ph.D. program, certain other performance elements may be considered. For example, substantial career accomplishment as evidenced by the resume or high performance on the Graduate Record Examination may indicate that student potential for success is not adequately reflected in their prior academic record.

In particular, faculty reviewers of graduate applicants note the level of communication (oral and written) proficiency documented by the applicant and in cases where performance is below expectations, e.g., as demonstrated by a low GRE Verbal score, faculty may consider establishing English development experiences in addition to the program's normal requirements.

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 12 credits following admission to the degree program." In addition, admission committees may require certain prerequisite coursework to satisfy a deficiency in the student's background.

Academic conditions of admission for all conditionally admitted students will be monitored by the Purdue Polytechnic Institute's Graduate Studies Office and/or the Graduate School, depending on who has imposed the condition. 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.

Departments are to justify and indicate any conditions under which these students should have their eligibility to register restored and be allowed to continue to study for the degree. This is requested by a memo from the *major professor* and routed through the college's Associate Dean for Graduate Studies, detailing reasons why the student should be permitted to continue. Upon Graduate School approval, the eligibility to register will be restored.

2.6. Time Limitation

Students pursuing the Ph.D. degree have up to eight years to complete their program. If the student exceeds these limits, the student may be dismissed for lack of satisfactory progress or, when circumstances are justified, may be required to retake some courses or take new courses to replace out-of-date courses. Typically, Master's plus students (those entering the program with a qualified master's degree) complete their coursework in three (3) years, and complete their preliminary examination at the end of that period. The research proposal and the final dissertation are typically completed in the subsequent two (2) years.

Direct to Ph.D. students (those entering with a qualified bachelor's degree) typically complete their coursework in four (4) years. After the first year, but before the third, students must pass qualifying examinations. In their final year, students complete the preliminary examination. The research proposal and the final dissertation are typically completed in the subsequent two (2) years.

> *NOTE: **Continuous registration** is required once the student begins coursework with the exception of a break for a maximum of 3 semesters before they must reapply. Students deemed not to be making satisfactory progress will be afforded one opportunity to justify progress to their program committee. To continue in the program, such students require the consent of their Ph.D. committee and the Associate Dean for Graduate Studies. Otherwise they will be dropped from the program.*

2.7. Financial Assistance

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

2.7.1. Availability

A limited number of graduate teaching and research assistantships from departments within the Purdue Polytechnic Institute are available. All assistantship applications are to be directed to the School/Department Head of the appropriate department. Additional appointments are available from other elements of the university, such as the library system and student housing. Details on assistantships and fellowships outside the Purdue Polytechnic Institute are available at Purdue University's Graduate School web site at https://www.purdue.edu/gradschool/fellowship/funding-resources-for-students/index.html . Additional information may be available from the Purdue Polytechnic Institute department heads.

2.7.2. Assistantship Appointments

In order to provide 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 three (3) academic years for Ph.D. students. 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.

Graduate Teaching assistantships (GTA) and Graduate Research Assistantships (GRA) 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.*

2.7.3. Fellowships

Purdue University's Graduate School administers many university-wide and national fellowship and scholarship programs. Students are advised to access [Overview of Student Funding Resources - Fellowship Office - Purdue University](#) for the latest information on such opportunities.

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 Purdue Polytechnic Institute.

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

The Purdue Polytechnic Institute has specific a GPA requirement for graduation as shown in Table 3.1. This is the same as the university requirement. Also shown are the GPA requirements for probation and dismissal relative to the college'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 fall and spring 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 departmental level.
- 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 core courses and dissertation research credit hours.

> *NOTE: There is an expectation that grades should not be below a **B-**, (B minus) in his or her core 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 department head to the student, with a copy to the major professor, 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 Polytechnic standards in a fall or spring 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 Polytechnic Associate Dean for Graduate Studies 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 file in school or department.
- **The student will have two semesters 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.
- Eligibility for an assistantship while on probation will be left to the School/Department Head's discretion.

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 Associate Dean for Graduate Studies 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 three (3) members of the Purdue Polytechnic Institute Graduate Education Committee (excluding the Graduate Education Committee representative from the student's home department).
- If the review committee recommends reinstating the student, the student's graduate advisor/chair must approve. If the graduate advisor does not approve, the Associate Dean for Graduate Studies 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 Associate Dean for Graduate Studies will be considered final and will be delivered within thirty (30) days of the student's request for exception to probation.

SECTION 4.0. DOCTORAL DEGREE PROGRAM STRUCTURE

The Purdue Polytechnic Institute offers two options for the pursuit of a PhD: a direct to PhD (from a qualifying B.S. degree) and a "Master's plus" PhD (where coursework from an existing M.S. degree counts towards the requirements for the PhD. Both options require 75 credit hours of coursework and 15 research credit hours that result in the completion of a doctoral dissertation.

4.1 <u>Process for Direct Admission Ph.D. Students</u>
1. Coursework (24 credit hours – assume end of first year)
   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 24 credit hours with minimum B- or better grades.
      i. Must include TECH 60100, STAT 50100 (or equivalent), TECH 64600, MET 52700, & major courses (up to 24 credit hours)
2. Qualifying Examination
   a. If failure, student completes MS requirements and leaves with an MS.
3. Coursework Completion (51 credit hours)
4. Preliminary Oral Examination
5. Dissertation Research Project (15 credit hours)
   a. Dissertation research proposal
   b. Proposal defense meeting
   c. Obtain appropriate certifications for research (RCR, CITI, HIPAA, FERPA, etc.).
   d. Execution of research
6. Final oral defense of dissertation research

4.2 <u>Process for M.S. Degree Holding Students</u>
1. Coursework (45 credit hours plus 30 from a qualified M.S. degree)
   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. Preliminary Oral Examination

3. Dissertation Research Project (15 credit hours)
    a. Dissertation research proposal
    b. Proposal defense meeting
    c. Obtain appropriate certifications for research (RCR, CITI, HIPAA, FERPA, etc.).
    d. Execution of research
4. Final oral defense of dissertation research

4.3. Program Credit Hour Requirements

The Purdue Polytechnic Institute Ph.D. requires a minimum of 90 graduate semester credit hours (beyond the bachelor's degree but counting up to a maximum of 30 for an appropriate master's degree). Table 4.1 provides a detailed listing of credit hour requirements.

Table 4.1. *Program Credit Hour Requirements*

Component	Direct to PhD	Master's Plus
Technology (the major/field of specialization)	30 cr min	21 cr min
Discovery Foundations (research methodology, statistics and experimental design)	18 cr min	12 cr min
Cognate (from any other appropriate Purdue College/School or a department other than the Polytechnic)	27 cr min	12 cr min
Dissertation Research	15-30 cr	15-30 cr
Total Hours beyond prior degree	90 cr min	60 cr min
Master's degree	---	30 cr max
Total Graduate Study	90 cr min	90 cr mini

> *NOTE: Appendix A provides a template that can be used for course planning for the Ph.D.*

4.3.1 Purdue Polytechnic TECH Ph.D. Major Courses

The central component of the Ph.D. program is intended to be used to flexibly add depth and breadth as appropriate to the student's professional goals and simultaneously be consistent with the program's mission. The Purdue Polytechnic Institute's Ph.D. program *Technology Major* seeks to develop 21st century cognitive skills by means of a ten (10) hour set of core courses and an additional set of courses creating a technology focus. In addition to the ten (10) hour core, students may take any appropriate number of other Purdue Polytechnic Institute graduate courses to create a focus.

The core courses are intended to represent the basics recommended for Ph.D. students. These may be substituted for more advanced courses or similar courses within a student's School/Department per Advisory Committee approval:

- STAT 50100 Experimental Statistics 1 or equivalent

- MET 52700 Technology from a Global Perspective
- TECH 60100 Research Seminar in Technology
- TECH 64600 Analysis of Research in Industry and Technology

Technology Major component courses are typically 500- or 600-level courses. They 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, department/school graduate head, and the Associate Dean for Graduate Programs. Undergraduate courses used must be in excess of baccalaureate degree requirements and not already included in M.S. courses being counted toward the Ph.D. 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 (course grade at least 3.0 on a 4.0 scale) is required.

> **NOTE:** *If a students holds an M.S. degree, courses included on the M.S. degree should not be retaken for the Ph.D. degree. For example, if the student had TECH 64600 in their M.S. program,* **it should not** *be taken again for the Ph.D.*

A maximum of twelve (12) hours of TECH 59000 or 69000 – Independent Study may be included on the plan of study. A minimum number of credit hours of TECH or Purdue Polytechnic Institute department prefixed courses (other than TECH 69900) must be a part of the program as shown in table 4.1. Section 6.0 provides information about the requirements for independent study.

4.3.2. Cognate Courses

The *Cognate* consists of any coherent set of courses in addition to the primary area of study in the Purdue Polytechnic Institute that creates competence in a field that is rationally related to the candidate's career objective. A doctoral level graduate faculty member representing the cognate must serve on the candidate's Ph.D. program committee. The intent of the cognate component in the Purdue Polytechnic Institute's Ph.D. program is to enable candidates to establish a support area of competence relevant to the candidate's career objective. Typically, a cognate consists of 9 to 12 semester credit hours of coherent courses. Thus, a student may have multiple cognate areas. The validity of the cognate is attested to by a doctoral level graduate faculty member who serves on the candidate's Ph.D. program committee. Some possibilities for cognate areas include, but are not limited to, the following:

- Science, Technology and Society
- Business/Management
- Engineering
- Human Resource Development
- Safety/Human Factors
- Quality
- Instructional Technology

- Curriculum & Instruction
- Higher Education Administration
- Psychology
- Computer Science
- A language. Meeting (by testing or coursework) a foreign language department's requirement for reading proficiency in a language other than either the student's native language

or English will be considered the equivalent of a cognate. Students must meet overall program credit hour requirements.

- International Studies
- Art & Design

4.3.3. Discovery Foundations Courses

All Ph.D. graduates from the Purdue Polytechnic Institute's Ph.D. program are expected to not only be able to critically evaluate and utilize research, but also be able to design, conduct, and report appropriate research in the technology disciplines. To this end, students must demonstrate proficiency in research and experiment design, multivariate statistics, and various research methods. The minimum core will be supplemented by additional study relevant to the specific requirements of the candidate's proposed dissertation research project.

The intent of the *Discovery Foundations* component in the Purdue Polytechnic Institute's Ph.D. program is to develop mastery of a solid set of research, knowledge development and discovery skills sufficient to enable the candidate's dissertation research project and the critical evaluation of other's research. Both qualitative and quantitative skills are to be developed by coursework in this component as are statistical methodologies including at least multivariate techniques. Therefore, students will take as a minimum:

- A course in multivariate statistics
- A course in quantitative experimental design
- A course in qualitative research methods

> *NOTE: Examples of multivariate statistics courses include STAT 50200, STAT 51200 as well as an advanced statistics course. Various quantitative and qualitative courses exist in the schools and departments of the Polytechnic as well as other university departments.*

4.3.4. Transfer of Credits

A standard maximum of 30 non-specific semester credit hours will be permitted for credit from completion of a committee-approved master's degree, and is subject to department/school graduate head recommendation for approval, and approval by the Polytechnic Institute Associate Dean for Graduate Studies. Research credits cannot be transferred; only course credits can be transferred. Of the 90 graduate semester credits required for a Ph.D., at least 33 credits, plus all dissertation research credits, must be earned under the supervision of the student's committee at Purdue University.

4.3.5. Qualifying Examination for Direct to PhD Students

To demonstrate to the faculty that a student is qualified to continue in the Ph.D. program in the Purdue Polytechnic Institute, the student is required to take and pass written qualifying examinations. These qualifying examinations are offered once each semester (except summer) at approximately mid semester. The student must take the qualifying examination after the second semester of enrollment in the Ph.D. program. Exceptions to this may be granted at the request of the advisor/chair and approval of the Associate Dean for Academic Affairs. However qualifying exams should occur no later than the fourth semester of study. See section 5.3 for more information.

4.3.6. Preliminary Oral Examination

Following the completion of the coursework for the Ph.D., students are expected to pass a preliminary oral examination. The examination includes both a written and oral component. The exam covers all the coursework the student has undertaken as a Ph.D. student. The preliminary oral examination requires the physical presence of all three graduate committee members. See Section 5.4 for more information.

4.3.7. Dissertation

The Ph.D. dissertation must demonstrate the candidate's ability to conduct substantial and significant research in the technology disciplines and/or related disciplines that intersect with them. Candidates are expected to demonstrate mastery of the key literature in the field and use this to situate the specific project they propose.

Students must enroll in TECH 699 Ph.D. Thesis Research for a minimum of 15 semester credit hours to receive credit for their dissertation research. This enrollment is to be distributed commensurately with the amount of work performed in the semester. Continuous enrollment in TECH 699 is required until the degree is earned.

> *NOTE: There are times when the term "thesis" is associated with doctoral classes or work (such as the title of the course TECH 699). While the term thesis is typically associated with master's degrees and the term dissertation is typically associated with doctoral degrees, the terms are sometimes used synonymously.*

4.4. 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 University transcript, and research credit hours with grades of "S" that appear on the Purdue University transcript.

Doctoral degree students must have at least one-third of the total credit hours used to satisfy degree requirements earned while registered for doctoral study in continuous residence on the Purdue University campus where the degree is to be granted. At least 90 credit hours are required; however, some program areas may require more than 90 credit hours. A Master's degree from any accredited university is considered to contribute 30 credit hours toward satisfying this residency requirement.

In fulfilling these requirements, a maximum of 18 credit hours will be allowed from any one semester (maximum hours proportional to length of summer session equals nine (9) credit hours).

> *NOTE: If a student completes all the academic requirements but has insufficient residence credits, a letter of explanation justifying the deficiency should be forwarded to the Dean of the Graduate School. If justification is sufficient, the Dean of the Graduate School may waive part of the residency requirement.*

4.5. <u>Appointment of a Major Professor/Advisor</u>

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 of the doctoral committee must hold an earned doctorate. The major professor serves concurrently as advocate, mentor, and supervisor of the graduate student.

4.6. <u>Graduate Advisory Committee</u>

The student and the major professor are responsible for the selection of an advisory committee. The duties of that committee are to assist the student in the preparation of the plan of study and to offer advice during the period of graduate work. It is important that the initial advisor, whether or not she or he continues as the permanent advisor, initiate activities to assist students in becoming acquainted with potential faculty to serve on the advisory committee.

> ***NOTE:*** *The student's doctoral advisory committee begins with three members of the graduate faculty, at minimum. After the preliminary oral examination, a fourth member must be added. The fourth member remains through the dissertation proposal creation, approval and defense process.*

The major professor and one other member of the committee should be from the Purdue Polytechnic Institute graduate faculty whereas the third may represent a cognate area but 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 coursework. A co-advisor may be designated when advantageous to the student and where it can build faculty experience. Students and major professors should note that if a student's plan of study and/or research project would be significantly improved by the expertise of a faculty member or a person outside of the university, they may request consideration for special certification for such service. Such requests require a rationale and description of the expertise and are routed to the Graduate School via the Polytechnic Graduate Studies Office. The request for appointment of the advisory committee is made on the same form (and at the same time as) the request for approval of the student's plan of study (refer to the section 5 on the Electronic Plan of Study Requirements).

The initial advisory committee should be selected preferably **during the first enrollment semester, but not later than the end of the second enrollment semester.** The committee will then be in place to help the student develop the plan of study and review/approve the student's dissertation proposal, which must be approved before actual work on the project may begin. The student should discuss the plan of study with their preferred potential advisory committee members and secure their permission to list them on the plan of study **before** the plan is submitted for signature. The fourth member of the doctoral committee may be added after the preliminary oral examination, but before the dissertation research proposal.

4.7. 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.*

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*

Assistantship Load	Recommended Course Load
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 doctoral degree is expected to complete all requirements for the degree within eight years from the completion of the oldest course on the plan of study.*

4.7.1. 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 B 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/.

4.8. Registering for Courses as a Graduate Student

Purdue University provides online scheduling of courses for all of its students via the *myPurdue* system. 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 the Purdue Polytechnic Institute to sign up for courses. Students may self-register through the Student Scheduling Assistant on the Registration tab of *myPurdue* under the Register for Classes banner.

A registration PIN is required to perform self- registration. You will be informed of your PIN at the time of admission from the Polytechnic Graduate Studies Office. You may also find your pin on the Registration tab of *myPurdue* under the Register for Classes banner. 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/.

The graduate students have the 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 (https://www.purdue.edu/gradschool/about/calendar/index.html) and typically the deadlines are emailed to students each semester at appropriate times.

4.9. Tuition Versus Fee-Based Courses

Any student who pursues a tuition-based residential degree that requests a fee-based distance learning course as part of their Plan of Study, may enroll in the fee-based distance learning course given the following:

1. There is sufficient availability of open seats such that no fee-based student would be prohibited from enrolling in the course.
2. The tuition-based residential student pays the required fee for the distance learning course. The fee will be in addition to the university charged tuition rates.
3. The student enrolls in the fee-based distance learning course through the Purdue Online Polytechnic Institute enrollment process for undergraduate/graduate programs.

4.10 Dropping and Adding Courses

To drop or add a course, the students may use the Scheduling Assistant found in the *myPurdue* system on the Registration tab. All variable credit courses will require the Polytechnic Graduate Studies Office to provide an override for the student to enroll in the course. The Polytechnic Graduate Studies Office must also set the desired credit hours (when a student enrolls, the default is one (1) credit hour). Subsequently, be sure to confirm that a dropped or added course has been officially recorded by checking *myPurdue*.

Courses may be added or dropped per the Registrar's calendar. Typically, during the Fall and Spring semesters, courses dropped during the first two weeks of classes will not appear on the student's transcript. Courses dropped during weeks three and four will be recorded as a "W" grade on your permanent record (withdraw). Courses dropped during weeks three and four will be recorded as a "W" grade on the student's transcript. Weeks five through nine require the signature of both the instructor and the Polytechnic Graduate Coordinator. 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 personnel in the Polytechnic Graduate Studies Office. 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 Polytechnic Graduate Coordinator, and the head of the department where the course is offered (for non-Polytechnic 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.*

4.11. <u>Research in Absentia</u>

Under circumstances often beyond their control, graduate students sometimes find it necessary to attempt completing their research in absentia. Experience has indicated that it is very difficult to complete research in absentia status, and it is seldom a recommended course of action. At the very least, research in absentia should only be considered if a student appears to be within one year of completing his or her research.

Permission for research in absentia status must be obtained from the Graduate School. The request for research in absentia is initiated by the student's major professor on GS Form 12: *Request for Research in Absentia* (see Appendix C). The Graduate School must receive the request form at least one month prior to the beginning of the initial absentia session. Research in absentia is not permitted until after a student has completed all course work, passed the Preliminary Exam, and made substantial progress on the Ph.D. thesis research (TECH 69900). In addition to the Graduate School regulations governing research in absentia, as outlined in the Graduate School Bulletin, the Polytechnic requires that the official request form must be accompanied by a statement, approved by all members of the Doctoral Advisory Committee, clearly identifying the reason(s) for the request. All requests for research in absentia must also be approved by the Associate Dean of Graduate Programs in the Purdue Polytechnic Institute.

When approved, permission to register for research in absentia will be valid for an initial period of one calendar year. A request for an extension beyond the approved year of research in absentia initiates a Formal Review by the Associate Dean of Graduate Programs in the Purdue Polytechnic Institute. As part of the Formal Review, the student must submit a written progress report and a complete explanation of why the deadline for completion within one year was not met. In addition, the Doctoral Advisory Committee must be convened to conduct a Formal Review Examination. The committee will recommend a) a one-year extension of the research in absentia status, b) termination of the research in absentia status (requiring the student to return to Purdue), or c) termination of the student's doctoral program. Students granted an extension of the one-year limit must submit a written progress report to their Doctoral Advisory Committee and to the Polytechnic Graduate Studies Office prior to all subsequent registrations for research in absentia. Additional requests for an extension of research in absentia status are subject to the same review procedures. A student must register for research in absentia every semester (summer sessions are not included) from the initial approval until all requirements are completed.

If your research merely requires the use of facilities that are available elsewhere, but not available at Purdue, you should not apply for research in absentia. Rather, retain your Purdue University appointment, register as a regular student, and file a request for "Change of Duty Station." Information regarding the process can be found at: *https://www.purdue.edu/newsroom/purduetoday/releases/2020/Q2/updates-made-to-form,-process-for-change-in-duty-station.html*)

4.12. Re-entry into the Ph.D. Program

If a Ph.D. student fails to register at the West Lafayette campus for three or more consecutive academic sessions, he or she must submit a new application for re-entry into the doctoral program and obtain approval from the Polytechnic Graduate Studies Office and the Graduate School before any subsequent registration will be permitted. Registration for *Research in Absentia*, it should be noted, is considered to be registration at the West Lafayette Campus.

A student seeking to re-enter the Ph.D. program is required to submit a new application as well as updated transcripts (if the applicant has pursued any academic studies in the interim). The student may also be required to submit a personal statement and new letters of recommendation.

The Graduate School has a policy that course credits earned by a student whose graduate study and/or professional activity has been inactive for five years or more cannot be used on a plan of study for an advanced degree. III. Admissions - Purdue University - Acalog ACMS™ A plan of study approved prior to such a period of inactivity is deemed invalid. Likewise, a Preliminary Examination passed prior to such a period of inactivity must be repeated.

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 or her professional and intellectual objectives. Thus, the plan of study is unique to each student's needs and desires within the framework set forth by requirements for the Polytechnic doctoral degree.

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. Based on this discussion, the major professor will request spaces in the appropriate courses. The major professor will also recommend possible cognate areas and advisors.

In addition to course work requirements, each student must complete and successfully defend their dissertation research (see section 7.0). 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 cognate 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. The plan of study is electronically signed by each member of the advisory committee and the student. After review, the plan is electronically signed by the Associate Dean for Graduate Programs. The plan is then submitted to the Graduate School for formal approval. 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.

5.1. Filing the Plan of Study

The following instructions detail how to set up and file your plan of study.

1. Go to myPurdue at https://mypurdue.purdue.edu. (If you have never set up your Purdue Career or Email Accounts, you must that first).
   a. To activate your Purdue Career Account, visit https://www.purdue.edu/apps/account/AccountSetup and fill in the requested information.
   b. For Email Account setup information, visit https://www.itap.purdue.edu/index.html .
   c. For additional information and help related to myPurdue or your Purdue Accounts, contact the Purdue Help Desk at (765) 494-4000 or itap@purdue.edu.
2. Click on the Academic tab of myPurdue.
3. Click on the Graduate School Plan of Study link to log in.
4. Click on the Plan of Study Generator (POSG) link.

5. Click on Create New Plan of Study.
6. Once in the POSG, refer to the Help buttons located on each page to assist you. You may save your POS and return to it later if you cannot complete it in one sitting.
   a. ***Students are not permitted to list master`s coursework*** in the Ph.D. course section of this plan. The Chair will list the number of credit hours allowed from an earned MS in the space titled "Total Master`s Credits Allowed" in the Graduate course tallies section of the plan at the time of approval. The maximum credit hours per MS degree is 30. The Graduate School can also make the update if necessary.
7. Once you are completed with your plan of study, finalize it to submit it.

Be sure to review the Plan of Study Checklist to verify completeness of your EPOS before submitting it in final form:

https://polytechnic.purdue.edu/degrees/phd-technology/resources/forms-and-documents

Upon approval by the Graduate School, the plan of study becomes a contract among the student, the Purdue Polytechnic Institute, and the Graduate School. When all requirements of the plan of study are completed satisfactorily, the student is awarded the Doctor of Philosophy (Ph.D.) degree. Refer to the sample plan of study form in Appendix E. Appendix F 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.*

> ***NOTE:*** *See section 4.1.5 for information about transfer credit.*

5.2. Independent Study Credit

A maximum of (12) semester hours of independent study credit (e.g., TECH 59000 or 69000 or departmental 59000 or 69000) may be included in a plan of study. Independent study courses require a specific proposal and approval process as defined in section 6.0 of this handbook.

On this form:
https://polytechnic.purdue.edu/sites/default/files/files/690INDEPENDENT_STUDY_AUTH.pdf

Per VI. General Academic Requirements & Grade Appeals in the 2021-2022 University Catalog,

> "*Before the end of the 2nd week of each session of registration for XXXX69800 and XXXX69900, a written set of minimum expectations (e.g. data set, draft of chapter, sampling plan, IRB, lit review, manuscript, objectives of proposal) will be submitted to the student by the departmental/program representative (faculty member, program chair) supervising the credits. Ideally these expectations would be discussed and developed jointly by the student and departmental representative. The expectations and deliverables should align with the number of credits that the student is registered for (i.e. greater expectations for more credits). The student should acknowledge receipt of the expectations. If questions or concerns surface regarding expectations and credit load at any time throughout the semester, the student and departmental/program representative must discuss and record the concern to an agreed upon endpoint. For a description of the grades, please see catalog.purdue.edu (Policy Section: Grades and Grade Reports)."*

The general TECH690 form does not require information on how the grade is determined and grading scale. Could be opening us up to grade appeal.

5.3. <u>Dissertation Research Credit</u>

Doctoral students in the Polytechnic are required to have a minimum of 15 credit hours of TECH 69900 Ph.D. Thesis Research. This course and its respective credit are not shown in the listing of courses on the Plan of Study. Instead, it is acknowledged in the notes field. For example, the notes field in the EPOS may include the following:

> "The student will complete 15 credit hours of TECH 69900 over 3 or more semesters to satisfy the dissertation requirement."

5.4. <u>Examination Requirements</u>

The Purdue Polytechnic Institute's Ph.D. program requires students to successfully demonstrate an adequate level of competence as documented by their individual performance on examinations. Both Master's plus and direct to Ph.D. students take preliminary examinations near the end of their coursework. Direct to Ph.D. students take an additional qualifying examination.

5.4.1. Qualifying Examination for Direct-to-Ph.D. Students Only

To demonstrate to the faculty that a Direct-to-Ph.D. student is qualified to continue in the Ph.D. program in the Purdue Polytechnic Institute, the student is required to take and pass written qualifying examinations. These qualifying examinations are offered once each semester (except summer) at approximately mid semester. The student must take the qualifying examination after the second semester of enrollment in the Ph.D. program. Exceptions to this may be granted at the request of the advisor/chair and approval of the Associate Dean for Graduate Programs. However qualifying exams should occur no later than the fourth semester of study.

5.4.1.1. Examination Timing, Scoring and Reporting

The qualifying exam will be offered on November 1st and April 1st of each academic year (or the Monday closest to that day). The student will take the Minor exam from 8:30 AM to 12:00 PM and the major exam from 1:00 PM to 4:30 PM. The Associate Dean for Graduate Programs (or designee) will administrate the exam.

Examinations are prepared and graded by the appropriate doctoral graduate committee in the student's home department. The scores and a recommendation for continuation or dismissal are forwarded to the student's major professor and the Associate Dean for Graduate Programs. The Associate Dean for Graduate Programs notifies the student of the results of her/his examination.

5.4.1.2. Composition of the Exam

Examinations are offered in each of the following areas:

1. Research Design (i.e., TECH 64600)
2. Quantitative Research Methods or Qualitative Research Methods (i.e., TECH 62100, EDCI 61500 or equivalent)
3. Technology from a Global Perspective (MET 52700) or approved substitute
4. Specific Major area of Interest (e.g., CIT, CGT, MET, etc.).

The student shall be required to take examinations in: research design, quantitative or qualitative research, technology, and major area of interest. To take the qualifying exam, the student must have completed nine (9) credit hours in Discovery Foundations including TECH 64600 or equivalent research methods course AND STAT 50100 or equivalent introductory statistics AND a specific research methods class (quantitative or qualitative). The student must have completed MET 52700 or equivalent and 2 classes in their major area of specialization in order to sit for the qualifying exam.

5.4.1.3. Failure of the Qualifying Exam

In the event that a student fails one or more of the examinations, s/he must repeat that examination or examinations the next time they are offered. If, upon repeating the examination, the student still fails to achieve acceptable scores, s/he will be dismissed from the Purdue Polytechnic Institute Ph.D. program at the end of the semester in which the qualifying exams were taken a second time. There will be no appeal process if a student is dismissed following failure of the qualifying exams a second time. An MS degree may be awarded if the student has enough credit hours to qualify in lieu of continuing the Ph.D. program of study.

5.4.2. Preliminary Examination Requirement

The purpose of the preliminary examination is to comprehensively assess the student's mastery of the knowledge base(s) encompassed by the plan of study. Successful performance on the comprehensive examination admits the student to candidacy for the

Ph.D. Unsuccessful performance can result in assignment of additional requirements or dismissal from the program.

One of the major outcomes of the preliminary examination is that students work actively to synthesize knowledge and skills learned while completing the courses required by their plan of study. To this end, major advisors need to work carefully with advisees over an extended period of time to enable them to evolve such integrated capabilities. It is also recommended that students at similar stages in their pursuit of the Ph.D. form independent study groups to help each other employ peer learning to assemble such capabilities.

Purdue University Graduate School policy states that "To become eligible to take the examination, the student must have filed a plan of study, satisfactorily completed most of the formal study, and satisfied any foreign language requirements (if required). The examination should be scheduled as soon as possible and must be completed at least three sessions before the expected date of the Ph.D. final examination."

The Preliminary examination should be designed by each student's Ph.D. committee to assess the student's:

- Mastery of the technology focus area consistent with the student's plan of study, their articulated purpose for pursuing Ph.D. study, and the Ph.D. program's mission.
- Understanding of the cognate discipline and its interface with the student's technology focus area consistent with their articulated purpose for pursuing Ph.D. study, and the Ph.D. program's mission
- Ability to assess, design and conduct research appropriate to the student's articulated purpose for pursuing Ph.D. study, and the Ph.D. program's mission

While the form(s) of this exam is subject to specification by each student's Ph.D. committee, **it is intended to systematically assess integrated competence in the technology major, discovery foundations and cognate components of the plan of study.** Performance will be judged by the student's graduate committee and will be reported to the Graduate School. ***The Preliminary Exam is NOT intended to be a Dissertation Proposal Meeting.***

Typically, this examination will be scheduled during the semester in which the student completes their coursework. This examination must consist of both a written examination and a subsequent oral component. **Typically, the written examination is comprised of questions provided in advance by the committee to which the student formally responds outside of the classroom setting over a defined, two-to-four-week period.** If a conventional test is used, two days of assessment are typical, and the major professor is responsible for proctoring the exam. The student's Ph.D. committee faculty may specify what, if any, resources the student will be permitted access to during each portion of the examination.

Faculty on the student's Ph.D. committee are to be provided with a complete copy of all the student's written responses to all portions of the examination. Committees may, however, divide the formal assessment tasks as they deem appropriate. It is recommended that faculty communicate their assessment of the examination to the major advisor at least one week in advance of the oral portion of the examination. The major advisor may use, as appropriate, any of this input while working with the student to help prepare for the oral examination.

It is recommended that at least a two-hour time block be scheduled for the oral portion of the preliminary examination. **To schedule the preliminary exam, a Graduate School Form 8:** *Request to Appoint an Examination Committee* **needs to be electronically filed by the student in myPurdue a minimum of two (2) weeks prior to the scheduled examination date.**

To ensure that student knowledge is current, the Graduate School stipulates that "A preliminary examination passed by a student whose graduate study and/or professional activity has been inactive for five years or more is invalid. (See Section III-B-5 of the Graduate School publication *Policies and Procedures for Administering Graduate Student Programs*.)" Given this, if this amount of time has elapsed, Purdue Polytechnic Institute Ph.D. committees are to reassess the student's mastery of the discipline by retesting according to the same guidelines as the initial preliminary examination.

The results of the preliminary examination are pass, pass with conditions, or non-acceptable performance. In case of the latter assessment, faculty will be asked to specify whether the student is eligible to retest. If the latter, at least one semester of study and preparation must transpire before a retest is permitted. Upon completion of the oral portion of the preliminary examination, the examination results, the examination itself, and a copy of the student's responses are forwarded to the Polytechnic Graduate Studies Office. The examination report will be recorded and then forwarded to the Graduate School and the examination and responses will be filed in the student's master file.

> *NOTE: At least three academic sessions devoted to research and writing must elapse between the preliminary and final Ph.D. examinations. For example, if the preliminary examination is completed in spring semester 2010, the earliest a student can defend, and graduate is spring semester 2011. Note that summer counts as an academic session so long as the student registers for research credits.*

5.4.3. Preliminary Examining Committee

The preliminary examining committee must consist of a minimum of three members of the graduate faculty who need not be faculty members with whom the student has taken coursework. All members of the examining committee are to be notified of the scheduled examination. Other faculty members may be requested by any member of the examining committee to participate, without vote, in the examination, and any interested faculty member may be present, without vote. Although only three

committee members are required, if the committee has four or more members, a single member may withhold his or her signature of approval.

5.4.4. Dissertation Proposal Defense Meeting Requirement

While not an examination, the proposal defense meeting follows the preliminary oral examination and precedes the beginning of the doctoral research. The proposal meeting assembles the final oral examination committee to preview and approve the dissertation proposal for research. The written proposal typically includes the first three chapters of the dissertation, while the proposal defense meeting typically includes a presentation as well as a question and answer period.

> *NOTE: The dissertation proposal defense meeting cannot occur in the same semester as the preliminary examination.*

5.4.5. Final Examination Requirement

A Final Examination is required after the student's Ph.D. research is completed and a satisfactory dissertation, as deemed by the Ph.D. advisor or co-advisors, is written. The Graduate School Form 8: *Request to Appoint an Examination Committee* is filed electronically and is used to schedule the meeting. **It must be filed two (2) weeks prior to the scheduled examination date.**

The purpose of this examination is to assess the Ph.D. candidate's capability to demonstrate advanced mastery of research as well as the specific topic investigated. This examination requires:

- Distribution of the advisor-approved dissertation draft to all Ph.D. committee members, and the Purdue Polytechnic Institute Associate Dean for Graduate Studies, *at least two weeks in advance* of the examination date.
- Oral presentation of the research to the Ph.D. examination committee during a publicized session open to the university community
- An oral examination by the Ph.D. examination committee members conducted by the committee in closed session.

NOTE: At least three academic sessions devoted to research and writing must elapse between the preliminary and final Ph.D. examinations. For example, if the preliminary examination is completed in spring semester 2010, the earliest a student can defend, and graduate is spring semester 2011. Note that summer counts as an academic session so long as the student registers for research credits.

5.4.6. Proposal Defense and Final Examination Committee

The proposal defense and final examination committee will consist of a minimum of four members of the graduate faculty. The Ph.D. candidate and all examination committee members are expected to participate in the proposal defense and final examination. At least three of the committee members, including the major professor, must be physically present for the duration of the examination.

Other members may participate using telecommunication if necessary. Performance on the final examination will be judged by the official Ph.D. examination committee appointed on the GS Form 8. Successful mastery is required in order for the Ph.D. to be awarded.

> **NOTE:** *Often the final examination committee includes the three faculty who served on the preliminary examination committee, plus another individual.*

5.4.7. Rules and Regulations Related to Doctoral Proposals, Research, and Examinations

It is the policy of the university and of the Purdue Polytechnic Institute that:

- At least two academic sessions of registration devoted to research and writing must elapse between the preliminary and final doctoral examinations. For instance, a doctoral student who passes the preliminary examination in a summer session is eligible to take the final examination (provided that the student is registered the following fall and spring sessions) beginning with the following summer session.
- Ph.D. students must be continually registered for research hours between preliminary and final Ph.D. examinations.
- Final Ph.D. examinations will be announced so that interested members of the Purdue faculty and student body may attend up until the point of committee deliberations which shall be held *in private*.
- Final examinations must be held before the last week of classes.
- When the *Request for Appointment of Examining Committee* (G.S. Form 8) is approved by the Graduate School, the Polytechnic Graduate Studies Office will receive the following additional materials for the candidate:
    a) Candidate audit form
    b) *Survey of Earned Doctorate*

[VII. Administering Graduate Degree Programs - Purdue University - Acalog ACMS™](#)

Note: Information related to these rules and regulations may be found at:
[Thesis and Dissertation Office - Purdue University](#)

5.5. Publication Requirement

Scholarship plays a very important role in the preparation of M.S. and Ph.D. students in the Purdue Polytechnic Institute. Graduate students need to understand the role of scholarship in higher education as well as its importance in disseminating new knowledge. The Polytechnic 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, the Purdue Polytechnic Institute requires all Ph.D. students and M.S. thesis students to engage in scholarship.

Ph.D. students are required to be first author on at least one-refereed journal article or refereed conference proceedings and co-author on one other refereed journal article or refereed conference proceeding. These articles may be published or "in review".

Exceptions to the above requirements must be approved by the student's committee chair and the Associate Dean for Graduate Studies. Some other form of scholarship should be substituted for the above if the student requests an exception.

5.6. Publication of the Research

Because of the usual intense and dynamic interaction of professor and Ph.D. student, there is an expectation the research will lead to one or more joint publications. Typically, the designation of authorships is mutually agreed upon and it follows an order of decreasing contribution to the research and publication. Students and advisors should also note the guidelines for ownership of intellectual property developed by Purdue University's Graduate School.

> *NOTE: All faculty and students should be familiar with Purdue University's policy on intellectual property. See Purdue University's Policy I.A.1, Intellectual Property at:*
> *https://www.purdue.edu/policies/academic-research-affairs/ia1.html*

5.7. Recommended International Experience

Sources cite many benefits of study abroad programs for both graduate and undergraduate students, as well as faculty, within the university environment. In addition to learning about globalization and related issues, the experience of short-term study outside the US, conducting international presentations, and leadership or involvement in international projects or project teams can have a positive professional affect on students. Purdue is a global institution and in the Strategic Plan one of the three major goals is "Meeting global challenges by enhancing Purdue's presence and impact in addressing grand challenges of humanity". For these reasons, an international experience is recommended for all graduate students in the Polytechnic.

It is recommended that M.S. and Ph.D. students in the Polytechnic participate in one of the following:

- Enrolling in one graduate level course dealing with globalization, internationalization, or culture (examples: ECON 53400, EDCI 68500, EDST 50400, FR 58100, GER 58100, HK 58100, JPNS 54300, MET 52700, MGMT 60100 or 64900, OBHR 65000, OLS 57800, POL 53000, RUS 58100, SPAN 68200).
- Participate in a short-term study abroad course
- Present a paper at an international conference outside the U.S.
- Participate in an international industrial project that requires travel abroad or interaction with international participants

SECTION 6.0. REGISTRATION FOR AN INDEPENDENT STUDY COURSE
(TECH 69000)

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 TECH 69000 or departmental 69000 may not be initiated until all of the following procedures have been satisfied.***

To enroll in an independent study the student must:

1. Meet with the major professor to discuss the proposed study and secure his/her approval.

2. 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 timeline and two progress reports must by 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 who 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 is using the above categories and present the information below each subheading.*

   f) Meet with the professor (the professor in charge) who will guide the study to discuss the prospectus.

   g) All Form VTs (Variable Title; formerly Form 23VT) are done through mypurdue/scheduling assistant workflow process, below are the links on how the student can do this

How to request a VT form
https://www.youtube.com/watch?v=TL_P6UQuWdg

Confirmed Creation of VT request
https://www.youtube.com/watch?v=aJSZoI_fDio

The Form VT MUST NOT be submitted for processing prior to securing the necessary approvals for the prospectus.

> ***NOTE: Independent study credit may not be used for graduate research credit (i.e., as a substitute for required TECH 69900 credit hours) NOR as a substitute for a core class. A maximum of 12 credit hours of independent study may be listed on a Ph.D. student's Plan of Study.***

Section 6.1. Registration for a Curricular Practical Training (CPT) Internship (TECH 69500) for International Students

The Student Exchange Visitor Program (SEVP) defines Curricular Practical Training (CPT) As an alternative study, internship, cooperative education, or other type of required internship or practicum that is offered by a sponsoring employer through a U.S. College or University.

CPT is only available for current F-1 students when it is part of an established curriculum within a school. CPT must be integral to your major program of study. It cannot be authorized for work related to your minor, concentration, or previous major. CPT is not intended for general, ongoing work authorization, or as a bridge to employment after graduation. True volunteer work (i.e., at a food bank or animal shelter) does not require CPT. **However, any internship, whether it is paid or unpaid, requires CPT authorization.**

For Technology students wishing to register for CPT, please use TECH 69500 – Graduate Professional Practice and register for zero credit hours. This may be coordinated by the Associate Dean for Graduate Students, or your major professor with cooperation of your employer. Students should confirm employment and assignment before starting, and submit a summary report upon conclusion of the course. This is typically taken during the summer, but it is also offered Fall and Spring.

SECTION 7.0. THE DOCTORAL DISSERTATION

A doctoral dissertation in technology 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 dissertation 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 of the writing must be scholarly, with a primary audience of other researchers.

To pursue the development of a dissertation, students must first develop a dissertation proposal and secure its approval by their final examination committee. A formal meeting of the student's graduate committee is required to evaluate the proposal and the Polytechnic Graduate Studies Office is to be provided a copy of the approved proposal and the Polytechnic Form 2, *Acceptance of Graduate Proposal* (see Appendix J). Proposals are developed pursuant to student enrollment in one (1) to three hours (3) of TECH 69900. Subsequent enrollment in TECH 69900 for the additional required credits is contingent upon filing of the approved proposal.

> *NOTE: The primary difference between a thesis and a dissertation is scope, that is, size and breadth of the project.*

7.1. Key Points about the Dissertation

1. A dissertation 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. Dissertations 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 dissertations result in a clearly identifiable new knowledge of significance (requires documentation of originality).

4. Generally, dissertations 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 or developmental in methodology. Other forms/paradigms of research scholarship may also be employed if approved by the committee.

5. The dissertation format must follow the *Purdue Graduate School Thesis Guidelines* as supplemented and detailed in this handbook. The format is APA 7th edition citation format with some specific differences (see section 8.5 and 8.6).

6. Dissertations demonstrate a high level of reasoning, effective written communication, and are documented in a form that permits replication.

7. Dissertations are necessarily filed in Purdue's library (via the e-pubs section). Dissertation containing intellectual property are marked as confidential and not made publicly available.

8. Dissertations are filed with the University and the Hammer Research Repository ([Purdue University Graduate School research repository - Browse](#)). Dissertation containing intellectual property are marked as confidential and not made publicly available.

SECTION 8.0. DISSERTATION PROCEDURES

The culminating demonstration of successful performance in the student's Ph.D. program is the design, execution, and documentation of the dissertation, and its defense. Any form of research deemed acceptable and appropriate to the Ph.D. committee may be used to satisfy this requirement. No part of this handbook is intended to signal a preference for quantitative or qualitative research or for research from any particular paradigm.

Nevertheless, quality research cannot be rushed. Given this, it is encouraged that students and Ph.D. advisors begin work on the research project as early as possible. Often, for students employing a typical four-year timeline, the third year is appropriately used to define the research topic and generate the proposal (or fifth year for a six-year timeline). The earlier this occurs during this time the better. The gradual use of TECH 69900 credits is one way to encourage such progress, although the bulk of them should be taken only after the student has completed the preliminary examination and has an approved dissertation proposal.

Procedurally a student must:

a) Enroll in TECH 69900 (typically one (1) credit hour) to generate and successfully defend the dissertation research proposal.
b) Defend the proposal in front of final examination committee (comprised of at least four members).
c) Obtain appropriate approvals (if applicable) to conduct research (CITI, IRB, HIPAA, FERPA, etc).
d) If approved, execute the dissertation research (during this time students enroll in subsequent hours of TECH 69900).
e) Upon completion of the dissertation:
    a. Thesis students must meet with the Polytechnic Thesis Advisor for approval of their format
    b. Defend project in front of final examination graduate committee.
    c. Upon successful defense of the project, students deposit the dissertation with the university, college, and with their committee.

8.1. TECH 69900 Research Ph.D. Thesis Enrollment

Exact enrollment timing can vary, but at least three consecutive enrollments in TECH 699 are required. Typically, **the first enrollment is for one (1) to three (3) semester hours of credit following the preliminary examination** (but earlier enrollment is permitted if deemed appropriate). During this academic session, the dissertation proposal is developed and approved by the final examination committee.

> *NOTE: At least three academic sessions devoted to research and writing must elapse between the preliminary and final Ph.D. examinations. During each of these three sessions, the student should enroll in TECH 699 credit.*

8.2. Grades for TECH 69900 Ph.D. Thesis Research

Performance in any TECH 69900 Ph.D. Thesis Research course is graded using the following scale:

- Pass – used where the student has met or exceeded requirements.
- No Pass – 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.

> *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.*

8.3. Ph.D. Dissertation Proposal Defense

Once the dissertation proposal has been completed (the proposal typically includes the first three chapters), the student works with the graduate chair to establish a meeting of the final examination committee for defense and approval of the proposal. Typically, the student does a 30-to-40-minute presentation, with sufficient time left to answer questions. Once the proposal is approved by the committee, submit the proposal with a completed Polytechnic Form 2: Acceptance of Graduate Proposal to your school/departmental office (signed by all committee members and the graduate student).

> *NOTE: **The proposal defense and the final defense CANNOT occur in the same semester**. The proposal defense meeting must be scheduled two (2) weeks in advance of the date of the proposal defense. The proposal must also be provided to the committee two (2) weeks in advance of the date of the proposal defense.*

8.4. APA and Formatting Requirements for Dissertations

Theses in the Purdue Polytechnic Institute follow the university guidelines for formatting. Generally, the formatting is aligned with the APA 7th edition parenthetical citation format with some specific additions. Directed projects in the Purdue Polytechnic Institute generally follow the same format, however at the discretion of the chair of the student's directed project committee, the student may be directed to use a different format.

Dissertations (for both proposals and final documentation) should utilize the document templates provided by the university and/or college. Templates for Microsoft

Word and Latex exist and may be selected by campus specifically for the Polytechnic. Templates are provided on the following two URLs:

- University Templates (for Word):
  http://www.purdue.edu/gradschool/research/thesis/templates.html
- Polytechnic Template (for Latex):
  https://polytechnic.purdue.edu/sites/default/files/files/LaTeX%20Thesis%20Template%281%29.zip

> *NOTE: The Microsoft Word template is available via the university's web site. Those students wanting to use Latex should use the template provided on the Polytechnic web site.*

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.

- Guidelines for Optional Polytechnic Institute Article-Based Dissertation Format may be found online at the following URL:
  Thesis and Dissertation Formatting - Purdue Polytechnic Institute
    o An article-based dissertation is a collection of 3 (minimum) published (or accepted for publication without further revision) research articles in high quality refereed journals related to a common theme.

8.4.1. Notes about the Templates

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

- For the required course TECH 64600, students will be familiarized with the templates and use them to generate their projects in the course. Most students take TECH 64600 in the same semester or the semester before they intend to defend their proposal.
- The University template will not automatically format all elements as needed within the Purdue Polytechnic Institute. 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 Ph.D. students are required to have a thesis format meeting prior to their final oral defense of their dissertation. The Polytechnic Thesis Format Advisor 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 the Polytechnic Thesis Advisor 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 and dissertations (https://polytechnic.purdue.edu/sites/default/files/files/mohler_dissertation.pdf)

8.5. <u>Preparing the Dissertation Proposal</u>

Although the bulk of the student's work towards meeting this requirement typically occurs after the student's passing of the preliminary examination, the student may submit their research proposal to their Ph.D. committee at any time deemed appropriate to their Ph.D. advisor/co-advisors. Students should discuss with their Ph.D. advisor, the procedures she or he wishes to have followed in preparing the proposal and vetting it with the other committee members. Usually, advisors will want to approve a proposal draft prior to it being circulated to the other members of the student's committee.

NOTE: Please refer to Section 5.4.4 Dissertation Proposal Meeting Requirement for important information regarding the Proposal Defense.

The faculty's expectation for the Ph.D. research proposal is that it is of sufficient detail to enable careful assessment of the project's significance, its locus within the literature, and the validity and reliability of the proposed methodology and instrumentation. The proposal is typically the first three chapters of the dissertation. The expectation is that the graduate student will be the primary person conducting the study although studies situated within larger initiative contexts are certainly permissible. If such conditions exist, it is encouraged that the student and advisor thoroughly explore all potential implications of the situation for the student. These include dependence on others outside of the student's control, shared intellectual property rights, restrictions on publications, timing of progress and the like.

Proposals must be succinct, direct, and contain no passive wording. Clear, jargon-free prose that establishes the need for the study and a proposed method of solution are required—nothing more (or less). While POLYTECHNIC 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 30-50 pages (including figures, tables, but not counting References or 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 indention, 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, Purdue Polytechnic Institute standards contain a recommendation that the proposal be written in third person. However, depending on the type of work being executed, first person writing may be acceptable. Students should consult with their graduate chair and discuss which is appropriate based upon the direction of their research and the methodology they intend to employ.

> ***NOTE:*** *While the student is working on the development of their research proposal, and then subsequently engages in conducting their research, it is encouraged that they enroll in several successive semesters of TECH 62100 Seminar in Technology. During these enrollments they will have the opportunity to learn of other students' work and see examples of proposals and research activity. Critical evaluations of research quality and effectiveness will be practiced, and they will have the opportunity of presenting their proposal in practice form. Upon completion of the proposal defense, and acceptance, the student and their major advisor are to file a revised copy of the proposal and the completed POLYTECHNIC Form 2 with their departmental office*

8.6. <u>Dissertation Proposal Contents</u>

There are two alternatives for the dissertation format in the Polytechnic. The following sections provide an overview of the proposal contents for a traditional five-chapter dissertation format. The proposal itself typically consists of the first three chapters including: Chapter 1 Introduction, Chapter 2 Literature Review, and Chapter 3 Methodology.

8.6.1. Dissertation Cover Page

The dissertation cover page is established based upon the University formatting guidelines. Appendix K shows an example of the dissertation 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 title (in all caps), type (Dissertation), name, and graduate month and year of the dissertation cover page.

Once the dissertation proposal is approved, the dissertation proposal is filed with the Office of Graduate Studies in the Purdue Polytechnic Institute following the proposal defense meeting. This original document then becomes the contract for the dissertation. Students must also submit a signed POLYTECHNIC Form 2: Acceptance of Graduate Proposal (see Appendix J).

8.6.2. 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.

Definition 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 statement demonstrates the inappropriate and excessive use of acronyms (as well as one that is overly long and cumbersome). If acronyms are used to reduce volume or 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.

> *NOTE:* **The thesis template provides a section for the definitions and acronyms in the front of the template (before the abstract).**

8.6.3. 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 150-250 words. The abstract must follow the APA 7th edition format.

8.6.4. 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 (the title of the chapter serves as the 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.

8.6.4.1. 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?"

8.6.4.2. Research Question/Hypotheses

Once the statement of the problem is generated the research question and hypotheses follow. The research question is a testable statement of the problem, the guiding mission for the research. 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 under certain conditions.

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 technology dissertations), 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 the dissertation has hypotheses will depend on the type of research being conducted (quantitative or qualitative).

8.6.4.3. 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 or potential impact 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. The review of literature can be used to expand this support.

8.6.4.4. 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.

8.6.4.5. 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.

8.6.4.6. 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.

8.6.4.7. 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.

8.6.5. 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 project/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.

The review of the literature typically includes 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 ensure 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.

8.6.6. 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 ensure that the advisory committee understands the steps the student wishes to take and establishes those steps as appropriate in other published studies.

Dissertations in the Purdue Polytechnic Institute 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. 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), a statistical test (such as comparing measures before and after and executing statistics on it to evaluate how it performs).

Most dissertations can be classified along multiple dimensions as to the type of research being done. Projects can fall into 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 Purdue Polytechnic Institute is that there is not one type or only one class of research. Research in the Purdue Polytechnic Institute is as varied as the physical attributes of the students who choose to pursue their degree within it.

8.6.7. List of References

The reference list must include only 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, 7th edition.

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 (https://www.purdue.edu/gradschool/research/rcr/index.php).

8.8. Preparing the Final Dissertation

After your dissertation proposal has been approved by your committee, and you continue your research, preparation of the final dissertation begins. One of the first steps to take is to change your proposal document from present tense to past tense to reflect that your dissertation contains your completed research. Students must become very familiar with the Purdue Graduate School's Thesis Manual and template even before they begin writing the final dissertation. It is good practice for the student and their major professor to confer and agree on an initial outline for the dissertation. 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 dissertation. If a dissertation 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 Dissertation Contents

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

- Cover Page
- Definitions
- 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
    - Assumptions
    - Limitations
    - Delimitations
    - Summary
- Chapter 2: Review of the Literature
- Chapter 3: Methodology
    - The outline of this chapter varies, but typically it includes sections describing the procedures and data collection methods for the study:
    - 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
    - The outline of this chapter is highly variable, but typically it includes sections describing:
        - Description of data conditioning and analyses
        - Presentation of the data
- Chapter 5: Conclusions, Discussions and Recommendations
    - Conclusions
    - Discussion
    - Recommendations
    - Summary
- List of References
- Appendices
- Vita (optional)

8.8.2. Chapter 4: Presentation of the Data

Chapter 4 of the dissertation 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 dissertation.

8.8.3. Chapter 5: Conclusions, Discussion, and Recommendations

Chapter 5 of the dissertation 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 dissertation that could be expanded to form entire studies in their own right. Recommendations 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 final examination committee.

NOTE: There are times when a dissertation might have more than five chapters. Depending on the scope or breadth of the study, more chapters may be necessary. Typically, chapters 1 thru 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 dissertation 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 dissertation 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 (if not copyrighted).
- 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 dissertation, the writer must ensure that they maintain anonymity (where applicable) and do not break copyright agreements (for example, most tests are copyrighted).*

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

8.9 Three-Article Dissertation Format (Alternative to the 5-Chapter Format)

An article-based dissertation is a collection of 3 (minimum) published (or accepted for publication without further revision) research articles in high quality refereed journals related to a common theme. *Prior to submission to the journals for publication, the candidate must obtain approval of each article and the journals from all current Committee members.* The relationship between the articles and theory bases they are drawn from must be described in an introductory chapter. Crosscutting themes, conclusions, implications and recommendations that may be drawn from across the articles must be described in a concluding chapter.

Students are required to be first author, and confirm their contributions of each article before their listings according to the following Multiple Author Policy.

8.9.1 Requirements

Multiple Author Policy
(Adapted from Morgan, 1984)
An author is a person who has used professional skills to make a significant contribution to a published article and who can take public responsibility for its content.
A significant contribution is a contribution without which the article would have been seriously compromised in scope or quality. A significant contribution to a research project may be made by an author in one or more of the following research phases:

1. Conceptualization and design,
2. Methodology and/or simulation design,
3. Execution,
4. Data Collection,
5. Analysis,
6. Findings,
7. Conclusions, and/or
8. Recommendations

Types of work that are specifically excluded from this definition are as follows:

1. Referring subjects to researchers,
2. Performing routine laboratory work, data entry, or analysis,
3. Any nonprofessional work, and
4. Proofreading or correction of the format or style of the article.

Unjustified multiple authorship dilutes the value of authorship, reduces the credibility of the study and can violate the essential principle that science can advance only through the work of those who understand what they are saying.

> Reference: Morgan, P. P. (1984). How many authors can dance on the head of an article? *Canadian Medical Association Journal, 130,* 842.

Student authors are required to confirm contributions to each paper with the following statement. My contributions within the parameters of this article are: _____. List each author and their contribution to this article. An example may look like this style from the *Transportation Research Record*:

> **Author Contributions**
> The authors confirm contribution to the paper as follows: study conception and design: Author1lastname, I.; data collection: Author2lastname, X.; analysis and interpretation of results: Author3last, Z, and Author1lastname, I.; draft manuscript preparation: Author1lastname, I. and Author4last, Y. All authors reviewed the results and approved the final version of the manuscript.

A dissertation authored using this structure will need to include acknowledgement of prior publication within the respective chapter, and permission from the Journal for publication with the following statements. The Journal of _____ _____ provided permission for me to publish this article titled _____ in this dissertation. Please attach permission letters in Appendices.

Although each journal may have specific statement requirements, the acknowledgment should be single spaced and appear 3 single spaces under the chapter title. Consult your publisher regarding required information that should appear in this acknowledgment.

8.9.2 Three-Article Dissertation Contents

All dissertations will conform to Purdue Polytechnic and Purdue Graduate School formatting and format review guidelines. A typical article-based dissertation will use the following structure:

- Preliminary pages
  - Title page
  - Statement of Approval and authorship page
  - Dedication (optional)
  - Acknowledgments (optional)
  - Table of Contents
  - List of Tables
  - List of Figures
  - Abstract

- Main Body pages

- Introduction of Dissertation Research and Overview of Purpose and Significance of Research. Research question(s) addressed overall, and the question(s) addressed in each published article. Discussion of how these articles address the research question. Additional information may need to be provided; e.g. the survey development may need more discussion and to be supplemented with the IRB information and a copy of the survey instrument; or other pertinent research details that may not appear in the specific articles.
- Published Article #1
- Published Article #2
- Published Article #3
- Additional Published Articles numbered
- Discussion of overall contribution supported by the contributions of each article. Crosscutting themes, conclusions, implications and recommendations that may be drawn from across the articles must be described.

- Back Matter pages
  - Appendix (Include Permission Letters for Previously Published Articles)
  - References
  - Vita (optional)
  - List of Publications (optional)

SECTION 9.0. CERTIFICATIONS, PUBLICATIONS & INTEGRITY

The following sections provide information about certifications (FERPA, IRB, CITI, etc.) and resources available at Purdue. Information about research integrity, plagiarism and copyrights conclude this section of the handbook.

9.1. <u>Certifications & Approvals</u>

To be able access student information and to conduct research at Purdue University requires that faculty and students alike be certified in specific ways. Accessing student information requires FERPA certification. To conduct research requires CITI certification and IRB approval (when human subjects are involved). The following sections provide more information about these items.

9.1.1. Family Educational Rights and Privacy Act (FERPA)

To be able to access student information via Purdue's various computer systems (such as myPurdue), faculty and students must be aware of certain legal issues associated with such data. FERPA protects and makes confidential student information beyond basic "directory information" about the student.

> *NOTE: Purdue University's official FERPA policy is available here in Policy VIII.A.4: http://www.purdue.edu/policies/records/viiia4.html.*

Purdue University requires that faculty and students who have a justifiable need to access student information be trained and certified. Faculty and students can become FERPA certified by accessing:
https://www.purdue.edu/registrar/FERPA/certification.html.

9.1.2. Collaborative Institutional Training Initiative (CITI) Certification

The CITI Program is a subscription service providing research ethics education to all members of the research community. Purdue University uses this system to certify faculty and graduate students to conduct research. Of particular importance, researchers involved in the use of human subjects are required to complete the CITI web-based education program in order to be certified as eligible to engage in human subject research at Purdue University. All researchers on an IRB protocol must complete the CITI training before the IRB protocol will be approved**.** To become CITI certified, faculty and students should create an account at https://www.citiprogram.org/ and then go through the required training modules. Graduate students who serve as collaborators on research are also required to pass CITI certification.

9.1.3. Institutional Review Board (IRB) Approval

The IRB is a unit of the Human Research Protection Program (HRPP), which is housed within the Office of Research Administration (ORA), located in room 300 Hovde Hall.

> ***NOTE:** The IRB is an extension of the Office of the Vice President for Research (*http://www.purdue.edu/research/vpr/*). Faculty and graduate researchers should become familiar with the wealth of information available on the VPR's web site.*

The IRB website provides detailed steps, forms, and example IRB proposals for all Purdue University faculty and students conducting human subjects research. Researchers need to obtain permission to conduct any studies at Purdue University by submitting IRB proposals and completing certain workshops and online training protocols (see CITI Certification above).

9.2. Resources

The following sections acknowledge important resources provided by various units across campus.

> ***NOTE:** The Vice President for Research provides a handbook titled, Research Handbook: A Guide to the Grants Process at Purdue University, located at: https://www.purdue.edu/research/funding-and-grant-writing/docs/EVPRP2016Guide2GrantsProcess.pdf.*

9.2.1. Research Oversight

The Office of the Vice President for Research (VPR) provides much information for faculty and students concerning issues pertaining to research. The VPR provides research oversight concerning Export Control (transport of commodities, software, technical data and certain other information to foreign countries), use of controlled substances for research purposes, use of radiation/lasers, use of biologically hazardous materials, use of animals as well as research involving humans. Faculty and students should be aware of the information available, particular if their research includes any of these or if they are traveling abroad (http://www.purdue.edu/research/research-compliance/export-control/overview.php).

9.2.2. Responsible Conduct of Research (RCR)

Training in the Responsible Conduct of Research (RCR) has two components: A general online tutorial appropriate for the career stage of the Researcher, and Research field-specific discussions, workshops or seminars offered or recommended by departments, colleges, schools or centers. More information is found here https://www.purdue.edu/policies/academic-research-affairs/s20.html
A few highlights are: "Researchers working on sponsored research projects must complete RCR training within the deadlines established by the sponsor. All other

University faculty and staff who meet the definition of Researcher must complete the general online RCR training within 120 days of employment with the University. Graduate students who meet the definition of Researcher must complete the general online RCR training within 60 days of enrollment. Undergraduate students who meet the definition of Researcher must complete the general online RCR training within 30 days of their involvement in a research project". There is more information found at https://www.purdue.edu/policies/academic-research-affairs/s20.html

The RCR is a joint program between the Graduate School and the Office for the Vice President for Research. This program provides workshops, online training and tutorials, as well as assists in setting policy relative to the conduct of research at Purdue University. More information about the RCR is available at: https://www.purdue.edu/gradschool/research/rcr/index.php.

9.2.3. Statistical Consulting Service (SCS)

The Department of Statistics provides statistical software and design consulting services for the University community – free of charge. The Statistical Consulting Service can help with statistical software problems and data analysis issues. *Statistical Software Consulting* provides assistance with the set up and running of a wide variety of statistical computing programs, including SAS, SPSS, Minitab and S-Plus. Software consulting is available in MATH G175 on a drop-in basis. *Experimental Design and Data Analysis Consulting* is available during the Fall, Spring and Summer semesters. Services include assistance with all phases of research projects: proposal preparation, design of studies, survey design, data input strategies, data import/export, analysis of data, interpretation of results, presentation of results, and other statistics or probability problems. More information is available at: http://www.stat.purdue.edu/scs/.

9.2.4. Center for Instructional Excellence (CIE)

The CIE provides valuable teaching resources (and teaching scholarship resources) to faculty. Graduate student TAs can obtain various certificates by completing a series of free workshops and seminars. The certificates include: Graduate Teaching Certificate (GTC), Graduate Teacher Certificate Alternative, Advanced Graduate Teacher Certificate (AGTC), Preparing Future Faculty Program (PFFP), and the Graduate Teacher Technology Certificate (GT2C). In addition, the website provides teaching tips, teaching consultation, and information about instructional data processing (e.g., test scoring and page scanning services). More information is available at: http://www.cie.purdue.edu/.

9.2.5. Sponsored Programs Services (SPS)

SPS assists Purdue's faculty, staff, and students in securing and managing sponsored program support, and in delivering maximum public benefit from sponsored projects. SPS manages the process of proposal submission, award management, reporting and various contracts that may result from a sponsored award. For more information about SPS and their services, see http://www.purdue.edu/sps/.

9.2.6. Discovery Park

Discovery Park, located adjacent to campus, is a collection of large-scale centers that lead Purdue's interdisciplinary research efforts. Some of these centers include Bindley Bioscience Center, Birck Nanotechnology Center and Burton D. Morgan Center for Entrepreneurship. There are various ways in which graduate faculty can engage Discovery Park. For more information, see http://www.purdue.edu/dp/.

9.2.7. Purdue Research Foundation (PRF)

PRF is a nonprofit foundation that 1) manages gifts, bequests and endowments; 2) makes funding available to faculty, staff and students to aid in scientific investigation, research or educational studies; 3) acquires, constructs and improves Purdue's facilities, grounds and equipment; and 4) manages intellectual property developed at Purdue. More information about PRF is available at: http://www.prf.org/.

9.2.7.1. PRF Research Parks

The Purdue Research Parks are the result of Purdue University's commitment to spur economic growth in Indiana's high-tech sector. Under development since the late '90s by the Purdue Research Foundation, a private, nonprofit foundation created to assist Purdue, the parks are focused on companies operating in the arenas of life sciences, homeland security, engineering, advanced manufacturing and information technology. More information about the PRF Research Parks is available at: http://www. purdueresearchpark.com/about/.

9.2.7.2. Office of Technology Commercialization (OTC)

The Purdue Research Foundation's Office of Technology Commercialization (OTC) operates one of the most comprehensive technology transfer programs among leading research universities in the United States. Services provided by this office support the economic development initiatives of Purdue University and benefit the university's academic activities.

Purdue's intellectual property is an asset that Purdue strives hard to protect, market and license. OTC works hand-in-hand with Purdue faculty-, staff- and student-entrepreneurs to provide the resources needed to better understand Purdue policies related to intellectual property and the processes whereby this intellectual property (patents, copyright, trademarks, and tangible research property) can become an actual product or service. To ensure the long-term success of the innovations, OTC takes the process one step further – at times – and help Purdue inventors form startup companies complete with investor support and qualified management teams. More information about the OTC is available at: https://www.prf.org/otc/.

> *NOTE: All faculty and students should be familiar with Purdue University's policy on intellectual property. See Purdue University's Policy I.A.1, Intellectual Property at:*
> *https://www.purdue.edu/policies/academic-research-affairs/ia1.html*

9.3. Integrity

Purdue University has a tradition of ethical conduct spanning its history. As a land-grant institution, Purdue demonstrates responsiveness to its constituencies and extends to them access to our knowledge resources. We nurture relationships with other partners in education who support our vision or join us to foster common interests. We integrate our mission with our responsibilities. We contribute our knowledge resources impartially in serving our public purposes. As faculty, students, staff, and administrators, we are a community of dedicated learners, scholars, professionals, and practitioners - all contributing our talents to uphold our standards and improve ourselves and the broader community in which we live and work. Our responsibilities and obligations toward the advancement of learning, discovery, and engagement in the University and in Indiana extend to our nation and the world. Purdue's statement of integrity is meant to provide an overarching declaration that informs specific policies and procedures regarding conduct, enforcement, and accountability. Such policies and procedures either exist in official University documents or will be developed as necessary.

> *NOTE: Purdue's Statement of Integrity is available at: http://www. purdue.edu/Purdue/about/integrity_statement.html*

9.3.1. Plagiarism, Falsification, and Fabrication

Purdue University maintains the highest academic and ethical standards research conducted by faculty and graduate students. The university assesses the acts of plagiarism, falsification and fabrication as equal as acknowledged by the following university policy on research misconduct:

> "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)*).

9.3.1.1. 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.

9.3.1.2. Strategies for Avoiding Plagiarism

The following are some general strategies to avoid unintended plagiarism:

- Put in quotations everything that comes directly from the text, **especially when taking notes**.
- 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.
- 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.

9.3.1.3. 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 (Smith, 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.**

9.3.2. Self-checking for Plagiarism

To assist Purdue faculty to check for potential plagiarism violations for their students, the Graduate School, in partnership with the Office of the Vice President for Research, has initiated a self-check service called *iThenticate*. 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. Students may want to use the free plagiarism checker provided free to students called Turnitin Originality found at [Turnitin Originality | Purdue University Innovative Learning](#).

9.3.2.1. Rules Governing Usage

iThenticate is expressly for use as a tool for checking documents before submission to committees, journals, publishers, and archives, to help students and faculty prevent incidences of unintended plagiarism. The service is free for Purdue faculty 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.

Since 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—https://www.purdue.edu/gradschool/research/rcr/index.php.

9.3.2.2. Procedure for iThenticate

It is the goal of the university to grant all faculty at Purdue the ability to use the *iThenticate* system. Students do not have direct access to the system. For students to gain access to the system, they must contact a faculty member who has access. However, faculty can process documents on behalf of students and then provide the results.

Most Polytechnic faculty have access to the *iThenticate* system. If you have a document you would like to have analyzed, contact your advisor and/or chair and she or he can submit it on your behalf, and provide the results to you. You may also request that the Polytechnic Thesis Format Advisor process your document as well. Please note that as part of the Thesis Format Advising Process, all graduate students will have their thesis analyzed in the *iThenticate* system.

> ***NOTE:*** *The iThenticate system accepts the following file formats: Microsoft Word, searchable pdf, LaTex, postscript, and plain text. Scanned documents converted to pdf or encapsulated in Word or LaTex are not acceptable.* ***Also note that you should delete all images from your file before submitting it for processing (so as to reduce file size).***

9.3.3. Copyright Issues with Figures

Figures and images included in a publication 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) are copyrighted. Including them within one's publication 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 purposes. 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 for your specific purposes.

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 author should do everything in his or her power to ensure the legitimacy of the use of materials in his or her publications. It is safer to not include an image if you cannot secure appropriate permissions than run the risk of copyright infringement.

SECTION 10.0. POST-DISSERTATION ACTIVITIES

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

10.1. <u>Appointment of the Examining Committee & Scheduling the Final Oral Examination</u>

The major professor and student are jointly responsible for finding a common date, time, and period when all final examination 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 committee. Typically, the Graduate Coordinator in the Purdue Polytechnic Institute will find appropriate facilities for the meeting. The date, time, period and facilities for the meeting are to be transmitted to the Purdue Polytechnic Institute Graduate Studies Office by the student. To establish the committee, date and time for the final oral examination, students file the GS Form 8 (Request for Appointment of Examining Committee) online in myPurdue's Plan of Study Generator (https://mypurdue.purdue.edu). **This form is required to be submitted two weeks in advance of the final defense.**

> *NOTE: At least three academic sessions devoted to research and writing must elapse between the preliminary and final Ph.D. examinations. For example, if the preliminary examination is completed in spring semester 2010, the earliest a student can defend, and graduate is spring semester 2011. Note that summer counts as an academic session so long as the student registers for research credits.*

Following the notice of final examination date, the Graduate Coordinator in the Purdue Polytechnic Institute will schedule an appropriate meeting room (equipment other than standard equipment offered by Purdue is the responsibility of the student to arrange).

The day prior to the final examination date, the Graduate Coordinator in the Purdue Polytechnic Institute will forward a file of relevant student records, GEC evaluation forms, and candidate audit forms to the major professor. Following the oral defense, it is the major professor's responsibility to obtain all required committee member signatures on the electronic GS Form 7 (Report of master's Examining Committee) in advance of the established deadlines.

10.2. <u>Declaring Graduation Candidacy</u>

In the semester that a student intends on defending dissertation and graduate, she or he must declare graduation candidacy as they register for classes. A Form 23 Registration Form is used to declare graduation candidacy (see Appendix I). Students can register online via their myPurdue scheduling assistant. If the student is registering for CAND 99100, then they have to be registered for at least one credit hour of research hours to be allowed to register for this candidacy. If they are registering for CAND 99200 (Degree Only) or 99300 (Exam Only), then the research hours are not needed.

10.3. <u>Completing the TECH 699 Requirement</u>

At the conclusion of the final oral examination, the major professor and each member of the examining committee will sign the electronic Graduate School Form 7, Report of the Examining Committee form.

> ***NOTE:*** *The Graduate School permits NO EXCEPTIONS to its published deadlines for graduation.*

If any problems or deficiencies in the report are indicated by the examining committee, these must be corrected before the dissertation 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 dissertation to each of the following: university, college, and graduate committee. Sections 10.5, 10.6 and 10.7 cover each of these in detail.

10.4. <u>Formatting Review for Dissertations</u>

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

The Thesis Formatting Review requires the following steps:

1. Scheduling the meeting via the Polytechnic Graduate Coordinator.
2. Submitting an electronic copy of the dissertation via email to the Polytechnic Thesis Advisor two days prior to the review meeting for submission to the *iThenticate* plagiarism checking software.
3. Attending the dissertation review meeting.

10.4.1. Formatting

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

10.4.2. Formatting Your Dissertation

TECH 64600 (a required course for most students) assists the student in developing their proposal and therefore covers how to format the thesis or dissertation. If you are not required to take that course, the following provides some guidelines you should follow to ensure your thesis or dissertation 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.purdue.edu/gradschool/research/thesis/templates.html

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: If your thesis or directed project will include many formulas, you may want to use Latex rather than Microsoft Word. If you use Latex, use the Latex template that is located on the Purdue Polytechnic Institute web site (NOT the one on the university Graduate School web page).*

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 and dissertations (https://polytechnic.purdue.edu/sites/default/files/files/mohler_dissertation.pdf)

10.4.3. Scheduling Formatting Appointment

To make a thesis formatting appointment with the Polytechnic Dissertation Format Advisor (Associate Dean for Graduate Programs) you will need to email the Polytechnic Graduate Coordinator Felicia Anderson (fanderso@purdue.edu). Once your thesis has been approved, you may schedule your defense. It is recommended that you make your appointment early.

10.4.4. Providing an iThenticate Copy

Two days prior to your scheduled Thesis Advising appointment, you should email the Polytechnic Thesis format Advisor a complete copy of your thesis as a single Word or PDF document.

> *NOTE: If your document contains a large number of images, the images should be deleted from the file before providing it to the Thesis Advisor.*

After receiving your document, the Polytechnic Thesis Advisor will submit your electronic document to the *iThenticate* application to verify there is no plagiarism within the document (see Section 9.3.2). At the Thesis Format Advising appointment you will be able to review the results of the plagiarism check as well as receive the electronic results.

> *NOTE: You should bring a USB drive or other storage media with you to the Thesis Advising appointment so that you may receive a copy of the iThenticate results.*

10.4.5. Attending the Formatting Appointment

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 for Polytechnic Thesis Advisor to sign.

> *NOTE: It is advised that students have multiple copies of the GS Form 9 for the committee to sign (see section 10.7). Only one copy is required (for university deposit, see section 10.5).*

10.4.6. Dissertation Pre-review

If a student is in doubt whether their document is formatted correctly, they may email a sample from their thesis to the Polytechnic Thesis Format Advisor for review and comment. "Pre-review" meetings are also a possibility but must occur before the sixth (6th) week of each semester.

10.5. <u>The Final Oral Examination</u>

Once the format review meeting is completed, the student prepares for their final oral examination (dissertation defense). At most final oral examination meetings, the student conducts a 30-to-45-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 need to discuss the final oral examination meeting with her or his chair in advance to verify the method by which the chair will conduct the meeting.

> *NOTE: The proposal defense and the final defense CANNOT occur in the same semester. The final defense meeting must be scheduled two (2) weeks in advance of the date of the defense. The final dissertation must also be provided to the committee two (2) weeks in advance of the date of the final defense.*

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 and GS Form 32 (see Appendix N). It is advised that students have multiple copies of the GS Form 9 for the committee to sign (see section 10.7). Only one copy is required (for university deposit; see section 10.5).

10.6. <u>University Deposit of the Dissertation</u>

Following successful defense of a thesis, students must deposit their dissertation with the Graduate School. Information about the university deposit meeting may be found at: http://www.purdue.edu/gradschool/research/thesis/appointment.html. The deposit meeting requires students provide an electronic copy of their dissertations, as well as the following completed and signed forms:

- GS Form 9: Thesis Acceptance (see Appendix L)
- GS Form 9 ETD: Electronic Thesis Deposit (see Appendix M)
- GS Form 32: Thesis/Dissertation Agreement, Publication Delay, and Certification/Disclaimer (see Appendix N)

> ***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. See the GS Form 32 (Appendix N).*

10.7. <u>College Deposit of the Dissertation</u>

The Purdue Polytechnic Institute no longer requires a printed and bound copy of the dissertation. The College now requires a digital copy for the Purdue Polytechnic Institute be submitted electronically to the Purdue e-Pubs site (http://docs.lib.purdue.edu/tech/).

10.7.1. Final Signatures on GS Form 9

The final form 9 is generated automatically once the form 8 is submitted. The final signature of the GS Form 9 will be the Polytechnic Associate Dean for Graduate Programs. After depositing your thesis electronically with the Graduate School, you will then submit the college copy electronically at the Purdue Polytechnic Institute Purdue Libraries e-Pubs site.

10.7.2. 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: https://polytechnic.purdue.edu/sites/default/files/files/epubsInst.pdf.

10.8. <u>Copies of Final Dissertation for Graduate Committee</u>

After depositing your dissertation with the e-Pub site, some faculty like to receive a traditionally printed and bound copy of the final dissertation, whereas many others will 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.

10.9. <u>Additional Requirements for Graduation</u>

Additional items that Ph.D. 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.
- *Optional Copyright Fee.* If students would like their dissertation to be officially registered with the U.S. Copyright Office, they may pay an additional $65 fee.

10.10. <u>Participating in Commencement</u>

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/.

10.11. <u>Hooding Ph.D. Candidates</u>

At Purdue University, it is customary for the chair of the Ph.D. candidate's committee to put the doctoral hood on the candidate at the graduation ceremony. Ph.D. candidates should talk to the chair about their expectations. In the case of a committee with co-chairs, the student should select one of the chairs to serve in this capacity. In the event that the chair cannot attend the ceremony, the Dean of the Graduate School will hood the candidate.

SECTION 11.0. OVERALL DOCTORAL DEGREE PROCEDURAL CHECKLIST

To help students progress through their degree requirements, the following checklist will help map a path through the Purdue Polytechnic Institute's Doctor of Philosophy program. Specific and official deadlines are announced each semester, posted on the Polytechnic Graduate webpage and are also available from the Polytechnic Graduate Studies Office. Table 11.1 shows a helpful timeline chart for the Ph.D.

11.1. <u>First Semester</u>

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 degrees sent to the Purdue University Graduate School Admissions Office. https://www.purdue.edu/gradschool/admissions/apply/transcript-upload-tips.html

With the help of the major professor:

2. Discuss your career and educational objectives and, within the framework of the Purdue Polytechnic Institute doctoral degree and draft a preliminary plan of study. Review the optional Areas of Concentration as you work.

3. Select a doctoral committee consisting of your major professor and at least two graduate faculty members. At least two of your committee members must be regular, Purdue Polytechnic Institute graduate faculty. You may select one or more additional faculty to serve on your 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 Polytechnic Graduate Studies 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 Polytechnic Graduate Studies Office (see Section 5.0 of this handbook).

8. Identify a tentative research area.

9. Register for classes for the next semester following approval of the plan of study (see Section 4.5 of this handbook).

11.2. <u>Succeeding Semesters</u>

1. Register for classes as appropriate for the next semester (see section 4.5 of this handbook).

2. Register for TECH 64600 (during your third or fourth semester) and begin planning for your dissertation research (see section 8.4 of this handbook).

Polytechnic Ph.D. Timetable

Semester	Coursework	Advisor/ Committee	Electronic Plan of Study	Dissertation	Graduation requirements **
End of the 1st	TECH 60100 Completed	Work with advisor on research area and possible committee members	Create/File draft EPOS	Begin considering research idea/area	
End of the 2nd	TECH 64600 Completed	Establish committee (3	File Official EPOS		
Third Semester (April or November)		Complete Qualifying Examination			
Next to Last (or Last) Semester of Coursework		Complete Preliminary Examination	File EPOS Changes (as necessary)		
Last Semester (or Semester Following Completion) of Coursework	Complete TECH 69900 (1-3 cr.)	Establish committee (4 people) / Schedule/attend Dissertation	File EPOS Changes (as necessary)	Dissertation Proposal Defense (Chapters 1-3 complete)	
At least three academic sessions devoted to research and writing must elapse between the preliminary and final Ph.D.	Complete remaining TECH 69900 credits (14-12 cr.)	Schedule/attend dissertation defense meeting		Polytechnic Thesis Advising Appt. Final Dissertation Defense GS Thesis Deposit Appt. Polytechnic Thesis Deposit (e-Pubs)	Polytechnic Publication requirement Polytechnic Exit Survey GS Exit Survey Survey of Earned Doctorate

* Summer counts as an academic session (i.e., if preliminary examination is completed in May 2016, then earliest final defense May, 2017)

3. In the final semester of required coursework, schedule your preliminary oral examination (see section 5.4.1 of this handbook). Three committee members are required for the preliminary examination. Students must submit a Request for Examining Committee (GS Form 8) no less than two weeks prior to the exam date (see myPurdue for form submission).

4. Verify your candidate status after passing your preliminary oral examination.

5. In either your final semester of coursework or the semester immediately following your preliminary oral examination, sign up for one (1) to (3) credits of TECH 699 to create and defend your dissertation proposal (see section 8.1 and 8.2 of this handbook).

6. Prepare your dissertation proposal (see section 8.5 of this handbook).

7. Schedule your proposal defense meeting (at least two weeks in advance of the meeting). Four committee members are required for the proposal defense. Once the committee has approved the proposal, submit the proposal with the completed Polytechnic Form 2: Acceptance of Graduate Proposal (see section 8.3) to your departmental office.

8. Following approval of your proposal, sign up for appropriate amounts of TECH 699 credit each semester until completion of your dissertation research (see section 8.1, 8.2, and 10.2 of this handbook).

11.3. <u>Final Semester</u>

At least three academic sessions devoted to research and writing must elapse between the preliminary and final Ph.D. examinations. For example, if the preliminary examination is completed in spring semester 2020, the earliest a student can defend, and graduate is spring semester 2021. Note that summer counts as an academic session so long as the student registers for research credits.

1. Register for your final TECH 69900 credits see section 8.1, 8.2, and 10.3 of this handbook).

2. Ensure 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. Verify with the Polytechnic Graduate Coordinator your candidate status.

4. Arrange the scheduling of the final oral examination at least two weeks prior to the exam date with the Polytechnic Graduate Program Coordinator. Four committee members are required for the final defense. A Request for Examining Committee (GS Form 8) must be submitted electronically no less than two weeks prior to the exam date (see section 10.1 of this handbook).

5. Schedule Thesis Format Advising meeting with the Polytechnic Thesis Format Advisor to occur two weeks prior to the final oral examination via the Polytechnic Graduate Coordinator (see section 10.4 of this handbook).

6. Schedule University deposit meeting electronically with the Graduate School (see section 10.6 of this handbook).

7. Satisfy the final oral examination requirement and make any revisions to the dissertation that are required by your committee (see section 10.5 of this handbook).

8. Submit a final copy of your dissertation to the Purdue Library e-Pubs section prior to the deadline established by the Polytechnic Graduate Studies office (see section 10.6 of this handbook).

9. Provide final copies of your dissertation to your chair and graduate committee (see section 10.7 of this handbook).

SECTION 12.0. PROCEDURES FOR REQUESTING CONTINUATION FROM AN M.S. INTO THE PH.D. IN TECHNOLOGY

Direct continuation from a master's degree to a doctoral plan of study can be desire of students pursing graduate study. Students who begin a master's degree in the Purdue Polytechnic Institute decide that they wish to continue from their M.S. directly into the Purdue Polytechnic Institute in Ph.D. To ensure that internal "applicants" are qualified and evaluated in a manner consistent with the review of external candidates to the Ph.D. program and to follow university policy, the described policies outline the procedures for requesting continuation to the Doctor of Philosophy in Technology.

12.1 Type of Master of Science

Procedures for students in the Purdue Polytechnic Institute Master of Science (and its related concentrations) differ from those required for students in Master of Science programs in the college's schools/departments (specifically, CIT, CGT, SATT, SCMT, TLI and SOET). The following sections describe the procedures of these two types of M.S. students within the Purdue Polytechnic Institute.

It is assumed that regardless of M.S. degree being obtained students wanting to continue to a Ph.D. should pursue a thesis-based MS degree rather than a coursework only degree from their respective M.S. program. Additionally, all students wanting to continue directly from an M.S. to a Ph.D. in Technology should make the decision and begin the respective process outlined below at the beginning of their candidate semester (i.e., the beginning of the semester in which they intend to graduate).

12.2 Procedure for Students Pursuing the CIT, CGT, SATT, SCMT, SOET, or TLI M.S. degrees

Students pursing an M.S. degree in CIT, CGT, SATT, SCMT, SOET or TLI wishing to continue in the Doctor of Philosophy in Technology program are required to apply to the doctoral program through the Graduate School's Apply Yourself web site. Because school/departmental M.S. programs are different programs from the Polytechnic's Master's degree, students must still apply directly to the Technology Ph.D. program (even though those departments are within the college).

Thus, these students must provide all requisite application materials and pay the Graduate School application fee. If the GRE was taken for admittance to the respective college departmental M.S. program, the applicant will not be required to take the GRE again. Students should provide a copy of the scores to the Polytechnic Graduate Studies office to be included in their application materials (if the scores are over three years old).

12.3 Students Pursuing the M.S. in Technology (and any of its respective concentrations)

Students who are enrolled in the Master of Science in Technology program and wish to continue in the Doctor of Philosophy in Technology program are required to complete a Polytechnic Grad Studies Form 4, which records the student's name, major professor, thesis title, M.S. graduation date and cumulative M.S. GPA. The Polytechnic GS Form 4 is routed to the major professor and committee members for signature and positive or negative recommendation for admittance to the Ph.D. program. Finally, the

Department Dead signs the Polytechnic GS Form 4 and routes it to the Polytechnic Graduate Studies office.

Once received by the Polytechnic Graduate Studies Office, the form is reunited with the applicant's M.S. application materials. This application package is routed to the respective department's Ph.D. review committee for acceptance or denial into the Ph.D. program. If accepted, the Polytechnic Graduate Studies office notifies the Graduate School of the student's acceptance and matriculation into the Purdue Polytechnic Institute Ph.D. program.

APPENDIX A:

Ph.D. PROGRAM PLANNING TEMPLATE

(Available at https://polytechnic.purdue.edu/sites/default/files/files/PHD_Program_Plnning_Template.doc)

Master's Plus Ph.D. Program Planning Template

Degree Component	Minimum Hours	Existing Courses Taken as part of MS	Courses to be Taken (including a maximum of 9 credits transfer)
Technology Major Required: (3 cr – pick from) • TECH 60100 Research Seminar in Technology (1 cr) • TECH 66200 Philosophy of Technology (3 cr) • MET 52700 Technology from a Global Perspective (3cr) • GRAD 61200 Responsible Conduct of Research (1 cr) Focus Courses (9 cr) TECH or any department prefixed course; others only with committee approval	12 cr min		(a minimum of 12 cr of new Polytechnic courses is to be taken in EPOS) (Independent Study – Tech 69000 – 9 cr maximum)
Related Area (Courses outside your major discipline; may be outside Polytechnic)	6 cr min		
Discovery Foundations Required: • Min 3 cr quantitative research methods/statistics (see foot notes for suggestions) • Min. 3 cr qualitative research methods • Min. 3 cr survey of research methods (TECH 646 or equivalent) • Min 3 additional cr as recommended by advisor & committee	12 cr min		
Dissertation/Research	15 cr min – 30 cr max		
Total	**Minimum 60 cr**	**Maximum 30 cr**	**Minimum 90 cr** (including those in Existing Courses column)
Other Coursework			

Suggestions for Use: Please note all recommendations must meet committee advisor's approval. When exemptions are to be made, advisors must make note on EPOS

1. Have student enter each of their master's degree courses in the appropriate row of the **Existing Courses** column.
2. Have student enter each of their already completed courses beyond the master's degree from Purdue or another university in the appropriate row of the **Existing Courses** column (a maximum of 9 hours is permitted).
3. Enter the most appropriate courses that will build the desired competencies in the appropriate rows of the **Courses to be Taken** column. Any 300-level or 400-level courses must be followed by 500- and 600-level courses.
4. Verify the coursework with committee advisor until all the hour minimums are met or exceeded.
5. Confirm that the Technology Major and Related area degree components collectively include a minimum of 12 semester credit hours of 600-level courses.
6. Confirm that no more than 9 hours of Independent Study (Tech 590 or 690) is included on the plan of study.
7. Confirm that the plan of study includes at least 15 hours of new Ph.D. program coursework beyond the M.S. degree to be taken in the Technology Major.
8. Research (TECH 699) credits not part of courses listed in POS but count towards total hour requirement.

Direct to Ph.D. Program Planning Template

Degree Component	Minimum Hours	Courses to be Taken (including a maximum of 9 credits transfer)
Technology Major Required: (3 cr – pick from) • TECH 60100 Research Seminar in Technology (1 cr) • TECH 66200 Philosophy of Technology (3 cr) • MET 52700 Technology from a Global Perspective (3cr) • GRAD 61200 Responsible Conduct of Research (1 cr) • Focus Courses (TECH or any department prefixed course, others only with committee approval)	18 cr min	(Independent Study – Tech 59000 or 69000 – 9 credits maximum)
Related Area (Courses outside your major discipline; may be outside Polytechnic)	6 cr min	
Discovery Foundations Required: • Min 3 cr quantitative research methods/statistics (see foot notes for suggestions) • Min. 3 cr qualitative research methods • Min. 3 cr survey of research methods (TECH 64600 or equivalent) • Min 3 additional cr as recommended by advisor & committee	12 cr min	
Dissertation/Research	15 cr min – 30 cr max	
Total	**Minimum 90 cr**	**Minimum 90 cr**
Other Coursework		

Suggestions for Use:

1. Have student enter each of their already completed courses beyond the bachelor' degree from Purdue or another university in the appropriate row (a maximum of 9 hours is permitted).
2. Enter the most appropriate courses that will build the desired competencies in the appropriate rows of the **Courses to be Taken** column. Any 300-level or 400-level courses must be followed by 500- and 600-level courses.
3. Verify the coursework with the committee advisor until all the hour minimums are met or exceeded.
4. Confirm that the Technology Major and Related Area degree components collectively include a minimum of 12 semester credit hours of 600-level courses.
5. Confirm that no more than 9 hours of Independent Study (Tech 59000 or 69000) is included on the plan of study.
6. Confirm that the plan of study includes at least 15 hours of new Ph.D. program coursework to be taken in the Technology Major.
7. Research (TECH 69900) credits not part of courses listed in POS but count towards total hour requirement.

APPENDIX B:

GS FORM 12: REQUEST FOR RESEARCH IN ABSENTIA
(Available via the Electronic Plan of Study Generator on myPurdue)

Graduate School Form 12
(Revised 6/06)

PURDUE UNIVERSITY
GRADUATE SCHOOL
Request for Ph.D. Degree Candidate Research in Absentia
(See registration procedures on reverse side.)

Name of Student _____ PUID No. _____

Current Address _____

Absentia Address _____

Department _____ Department Code _____

Session Effective _____

1. The following items are required to petition for the absentia privilege. Have you:

    a.   satisfactorily completed all of the coursework on your plan of study?   yes   no

    b.   passed your preliminary examinations?   yes   no

    c.   made significant progress on your dissertation research topic?   yes   no

2. Give the specific title of your research project or investigative area, and describe briefly the status of your research project and the nature of the work to be done in absentia.

3. Give the name and the location of the institution or organization at which you will be located, the name of any local supervisor, and list any facilities you will be using.

4. What Purdue facilities will you be using, and how will adequate supervision be maintained by your major professor?

5. What is the expected date of completion of your dissertation? _____

6. What is the number of credits for which you expect to register each semester? _____ *
    *If requesting more than three credits, justification is required. (See below.)

If this request is approved, I agree to register every consecutive session (excluding summer) until the degree has been awarded, my program is terminated, or I withdraw from the University. I understand that I should check the time-to-degree limits of my department and that if my degree program exceeds this limitation, the department may block continuing registrations. I also agree to notify the bursar of any change in my absentia address. I understand and agree to the conditions set forth for the privilege of registering for research in absentia.

_____   _____
                  Signature of Student   Date

Approval
Recommended   _____   _____
                  Major Professor   Date

    Current Designator Code _____   Graduate Faculty Identifier _____

Approval
Recommended   _____   _____
            Head of the Graduate Program   Date

Graduate School Dean

Submit original to the Graduate School not less than one month preceding the session in which absentia registration is desired.

PURDUE UNIVERSITY
GRADUATE SCHOOL

Ph.D. Degree Candidate
Research in Absentia Registration Procedures

Standard registration for research in absentia is for three credit hours. In special circumstances, students who will be devoting substantial time to research may request permission to register for additional research credits up to 18 credit hours for full-time effort and a proportional registration in the summer session. Registration requests for more than three credit hours must be approved by the dean of the Graduate School. Requests must be supported by an accompanying statement prepared by the major professor and approved by the head of the graduate program. This statement should provide information about the student's employment status and the level of support provided for the student's research in terms of facilities and/or release time. The duration of this support also should be indicated.

After approval of this request by the dean of the Graduate School, the registrar will enroll the student for research in absentia, and the bursar will produce a fee statement and supply instructions for payment. Each session thereafter (except summers) until the degree has been received, this procedure will be repeated during the advanced registration period. If a student is registering for more than three credit hours, the registration form must be approved by the Graduate School each session. The student is responsible for informing the bursar of any changes in mailing address. Late payment of fees will be subject to the normal penalty fee. Nonpayment of the fees will terminate the student's registration and cancel the absentia privilege.

Summer session registration is not required unless the student expects to receive a degree at the close of the session. Summer registration should be processed through the student's major department, utilizing the *Course Request (Registrar's Form 23)*, in the same manner as for a regular course.

Once a student stops registering in absentia, that student cannot register for absentia for a later session. Knowing this, if a student still wishes to stop registering for absentia credits, the student should contact the major professor to request that a *Course Request (Registrar's Form 23)* be completed. The 699A credits can be "dropped" by providing a note in the comment box that the absentia registration should be terminated. The *Course Request* must be signed by the student, the major professor, and the head of the graduate program.

APPENDIX C:

HRS FORM 33F: REQUEST FOR CHANGE IN STATION

(Available via the helpful links under
https://www.purdue.edu/newsroom/purduetoday/releases/2020/Q2/updates-made-to-form,-process-for-change-in-duty-station.html)

APPENDIX D:

SAMPLE PLAN OF STUDY

(Available via https://mypurdue.purdue.edu)

Graduate Plan of Study

Student
Student Email
Degree Campus   West Lafayette (Main Campus)   PWL
Admitted Program   TECHNOLOGY   TECH
Degree Title   DOCTOR OF PHILOSOPHY   PHD
Program   Technology-PHD   TECH-PHD
Date Degree Expected   AUG 2014
Concentration   NONE
Research Area   PROJECT MANAGEMENT

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.	Cou rse No.	Cre dit Ho urs	Reg is. Typ e	Gra de	B or bet ter	Tran sfer From	Date Compl eted To Be Compl eted
PRIM ARY	PRINCIPLE & MGMT OF SIX SIGMA	TEC H	5810 0	3	RE	A	-	-	Fall 2011
PRIM ARY	ADV ANALY RES INDUSTRY	TEC H	6210 0	3	RE	A	-	-	Fall 2011
PRIM ARY	SAP/ERP SUPPLY CHAIN PROCESSES	IT	5810 0	3	RE	A	-	-	Spring 2012
PRIM ARY	SUSTAIN ISSUES AND MEASUREMENT	TEC H	6210 0	3	RE	B-	-	-	Spring 2012
PRIM ARY	SUSTAINABILITY FOUNDATIONS	TEC H	5810 0	3	RE	C	-	-	Summe r 2012
PRIM ARY	PANAMA CANAL/FREE TRADE ZONE	IT	5810 0	1	RE	A	-	-	Fall 2012
PRIM ARY	TECH GLOBAL PERSPECT	ME T	5270 0	3	RE	A	-	-	Fall 2012
PRIM ARY	QUAL & PROD IND & TECH	IT	5080 0	3	RE	A+	-	-	Spring 2013
PRIM ARY	TECH CAREERS ABROAD	SA	5900 0	3	RE		-	-	Summe r 2013
RELA TED	SERVICE LEARNING	ENE	6950 0	3	RE	B	-	-	Fall 2012
RELA TED	SIX SIGMA & QUALITY MANAGEMENT	MG MT	5720 0	2	RE	B+	-	-	Fall 2012

| RELATED | SERV LRN MENTOR TCHG EXPR EPCS | ENE | 69500 | 1 | RE | A | - | - | Spring 2013 |
| RELATED | QUALITY CONTROL | IE | 53000 | 3 | RE | B | - | - | Spring 2013 |

Graduate course tallies:
Purdue POS GPA:
Primary Area Credit Hours :
Related Area Credit Hours :
Total Master's Credits Allowed on this Ph.D. Plan:

Language Requirement : None
Comments Regarding Exceptions or Requirements: None

Pass/No Pass Courses: The table below includes a dynamic list of pass/not pass (P/NP) courses that this student has satisfactorily completed, or which are currently in progress.
This list is automatically populated based on the student's transcript. The courses listed in this section are not considered by the Graduate School as satisfying degree requirements, with the exception of students in certain programs within the Krannert School of Management.
Krannert master's students may take up to 10% of the coursework required for Krannert program as P/NP provided that the student also completes a minimum of 30 credits of graded (C- or better) coursework for the program.

Courses Title	Subj. Abbr.	Course No.	Credit Hours	Grade	Date Completed To Be Completed
PREPARING FUTURE FACULTY	GRAD	59000	2	P	May 2013

APPENDIX E:

INDEPENDENT STUDY REQUEST FORM AND INSTRUCTIONS

(Available at
https://polytechnic.purdue.edu/sites/default/files/files/690INDEPENDENT_STUDY_AUTH.pdf

APPENDIX F:

EXAMPLE FORM 23

OFFICE OF THE REGISTRAR
FORM 23 (11/2013)
PURDUE UNIVERSITY

SCHEDULE REVISION REQUEST

OFFICE USE

1. PUID _____ 2. NAME _____
                                         LAST   FIRST   MIDDLE

3. Select Term ▼   4. YEAR _____   5. COLLEGE _____   6. MAJOR _____   7. Graduate ▼

	Office Use	A-Add D-Drop M-Modify	CRN	Subject	Course No.	Var. Credit	W/ WF	P/ NP	Instructor Signature	Date	Department Head Signature	Date
1												
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AUTHORIZATIONS:

_____   _____
SIGNATURE OF STUDENT   DATE   ADVISOR SIGNATURE   PHONE NO.   DATE   PRINTED NAME

ADVISOR COMMENTS:

BURSAR USE

OFFICE OF THE REGISTRAR COMMENTS:

APPENDIX G:

ONLINE THESIS DEPOSIT AND ACCEPTANCE

Follow this guide: https://www.purdue.edu/gradschool/documents/thesis/Student-Instructions-Thesis-Acceptance-Form.pdf

APPENDIX H:
POLYTECHNIC FORM 4: REQUEST TO CONTINUE FROM MASTER OF
SCIENCE IN TECHNOLOGY PROGRAM TO DOCTOR OF PHILOSOPHY IN
TECHNOLOGY

(More information available at ***https://polytechnic.purdue.edu/degrees/phd-technology/resources/continuation-ms-phd***)

Polytechnic Grad Studies

**Purdue Polytechnic
Graduate Studies**

Request to Continue from Master of Science in Technology Program to Doctor of Philosophy in Technology

(This form is only valid for students in the Polytechnic Master of Science. Students in departmental MS programs must apply online to the program via the Graduate School.)

Student completes this section and provides a copy of his or her approved thesis proposal to be included with this form.

Major Advisor:

Graduate Student:

M.S. Thesis Title:

M.S. Graduation Date: Cumulative M.S.GPA:

Major advisor complete this section and obtain signatures

M.S. Committee Members	Recommend for Continuation in PhD?	
	Yes	No
_____ Chair Signature	☐	☐
_____ Member Signature	☐	☐
_____ Member Signature	☐	☐
_____ Member Signature	☐	☐

Department head complete this section

Upon recommendation of the faculty comprising the student's graduate committee, I request that this student be allowed to continue from the Master of Science in Technology to the Doctor of Philosophy in Technology.

_____
Department Head   Date

After completing this form, please route this document to Polytechnic Graduate Program Office | (Knoy 461) so that the student's M.S. application package may be reviewed by the doctoral applicant review committee in the appropriate department.