



PROFESSIONAL SCIENCE MASTER'S

THE UNIVERSITY OF UTAH

PROGRAM HANDBOOK

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WELCOME

Since 2002, the Professional Science Master's program's guiding principle has been to offer a program of study for students who want to develop the science, technical and business skills required for management careers in industries, government agencies or non-profit organizations.

"Developing talent" is a major concern as technology companies along the Wasatch Front seek to grow or create businesses with potential for growth. These companies require individuals with strong technical capabilities, but the modern business environment using cross-functional teams also requires employees be effective communicators, understand how their contributions fit into their company's overall strategy and can lead projects to completion.

Professional Science Master's graduate students, working through their courses of study and the capstone Professional Experience Project, can address these needs. They have the opportunity to increase their technical knowledge in a Science Track aligned with their discipline, develop the business skills required for effective management and then put them into practice.

Following our guiding principle, we will continue to improve the program and increase benefits to its students and the community of businesses that The University of Utah seeks to serve.

CONTACT INFORMATION

For questions regarding the PSM program, please contact:

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INTRODUCTION

The Professional Science Master's (PSM) Program is a non-thesis, interdisciplinary program that fuses graduate studies in science and mathematics with skills from other professional domains, such as business, management, communication, and data analysis. A key part of the PSM Program degree requirements is the development and completion of a Professional Experience (internship) project, which applies the science and business skills learned in the program curriculum.

The degree is awarded through the College of Science. The program is administered through The Graduate School.

DISCLAIMER

Efforts are made to ensure the information in this document is accurate; however, policies of The University of Utah and The Graduate School will take priority in the event of a discrepancy with policies provided in this document.

PROGRAM DEGREE REQUIREMENTS

REGISTRATION

PSM graduate students register via The University of Utah's Campus Information System, cis.utah.edu, to secure their classes.

MAXIMUM HOURS

A schedule of nine hours is considered a full load for master's candidates. No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester.

MINIMUM CONTINUOUS REGISTRATION

All PSM graduate students must be registered for at least one course from the time of formal admission through completion of all requirements for the degree they are seeking, unless granted an official leave of absence (see Leaves of Absence section, below). Students not on campus and not using University facilities are not expected to register for summer term. Students must, however, be registered during summer term if they are taking examinations. If students do not comply with this continuous registration policy and do not obtain an official leave of absence, they will be automatically discontinued from PSM graduate study. In this case, students will be required to reapply for admission to the University through Graduate Admissions upon approval of the home department. Students should be registered for graduate level courses (5000-6000 level) until they have completed all requirements for the degree including the Presentation of the Professional Experience (Internship) Project.

MINIMUM ACCEPTABLE GRADES

PSM students are required to maintain a 3.0 or higher GPA in course work counted toward the degree. Failure to maintain a 3.0 or higher GPA for two consecutive semesters may lead to students being discontinued from the PSM Program after review by the Program Director and consultation with the Executive Committee and Dean of The Graduate School. A grade below C- is not accepted for credit toward a graduate degree.

CREDIT/NO-CREDIT GRADING

Graduate students are granted the option, subject to approval by the PSM program and review by the Dean of The Graduate School, to enroll in courses and be graded on a credit/no-credit (CR/NC) basis instead of receiving a letter-grade.

The intent of the CR/NC option is to free students to extend their studies to areas outside their program of study and to take classes they otherwise might not take if they had to compete with students from that department for a letter grade. The following apply to taking classes CR/NC:

- The PSM program does not allow students to take CR/NC classes during their first year of study.
- After their first year in the PSM program, a student may request permission from the Program Director (Director of Graduate Studies) or the Supervisory Committee Chair to register for no more than one class per semester on a CR/NC basis.
- The PSM program has flexibility to plan the best possible program with the student. The choice of courses to be taken CR/NC is subject to the approval of the Program Director or the Supervisory Committee Chair acting on behalf of the PSM program.
- Graduate students should earn a grade of C or better to be entitled to 'credit.' Students who do not wish to register for credit, either for a letter grade or CR/NC, should audit the course.
- Graduate students enrolled in a class for CR/NC may change to a letter grade any time before the Monday of the last week of classes. Graduate students are cautioned that it is important they receive letter grades in order to build a graduate GPA. This is especially important if students apply for fellowships or traineeships on a competitive basis or later transfer to another institution.

Additional considerations:

- CR/NC should not be used for any core course (focus area) or defined option (elective) required by the PSM degree.
- CR/NC is not counted towards the student's GPA. Taking courses CR/NC places "higher risk" on the remaining graded coursework.

TIME LIMIT

All work for the master's degree must be completed within four consecutive calendar years. On recommendation of the student's supervisory committee, the Dean of The Graduate School can modify this requirement. If the student exceeds the time limit and is not granted a modification or waiver, the PSM Program Director has the option to discontinue the student. Students whose studies have been interrupted for long periods of time and who have been granted extended time to complete their degrees may be required to complete additional courses, to pass examinations, or otherwise to demonstrate that they are current in their field.

LEAVES OF ABSENCE

Students who wish to discontinue their studies for one or more semesters (other than summer term) must complete a *Request for Leave of Absence Form* (available from the Office of the Registrar). The form must be approved and signed by the Supervisory Committee Chair (if established) and the Program Director.

Requests for leaves of absence may be granted for up to one year or two semesters for circumstances related to:

- a serious health condition of the student or family member,
- parental leave to care for a newborn or newly adopted child,
- a call to serve in military service, or
- other compelling reasons that the student's department believes is in the best interests of both the student and the University.

Students who experience a medical condition associated with their pregnancy and need accommodations recommended by their medical provider should contact the University's Title IX Coordinator, who will work with the student, cognizant faculty, and administration to determine what accommodations are reasonable and effective.

The form requesting a leave of absence for a current semester must be completed by the student and received in The Office of the Registrar by the last day of classes of that semester. Leaves of absence are not granted retroactively. Students must officially withdraw from classes in any semester for which a leave is granted; failure to formally withdraw results in the reporting of E or EU grades for all classes.

The period during which a leave of absence is granted does not count toward the period allowed to complete the degree. Leaves are granted for a maximum of one year. The leave of absence is void if a student registers for classes in a semester for which a leave was granted.

REQUEST TO CHANGE SCIENCE TRACKS

Each track is a separate degree, each with different requirements and prerequisites. A student wishing to change tracks must reapply to the program. New letters of recommendation may or may not be required, consult with an advisor prior to changing program.

COURSEWORK REQUIREMENTS

The Professional Science Master's Program is a science and/or mathematics graduate degree; students in the program take approximately the same number of graduate-level science and mathematics courses as traditional Master of Science programs require. Instead of a research requirement, PSM students take courses in Advanced Quantitative Skills, Business, Management and complete a Professional Experience Project.

The 36 credit hours required for the degree are fulfilled in a four-part framework:

Advanced Quantitative Skills (5-7 Credits)

Students must take at least 2 classes that fulfil the Advanced Quantitative Skills requirement. One of these will be MST 6600 Applied Statistical Techniques; students need to be sure that at least one additional elective focuses on computer modeling, data analysis, or productive computing. These classes may be part of a student's core requirements or electives.

Transferable Skills (12 Credits)

The Professional Science Master's program offers courses that provide students with business and management concepts essential for leading activities in a variety of organizations outside of academia. Various leadership, business, and management skills are taught in a series of PSM courses (12 credit hours). Students may opt to fulfill three Transferable Skills credits required by taking elective courses in writing, policy, communication or courses offered from the David Eccles School of Business in place of one MST course.

Professional Experience (3-4 Credits)

An essential component of this degree is a Professional Experience Project in industry, non-profit or government agency. These activities will engage students in real-world work situations involving technical problems, teamwork, communication skills, and decision making. Students are encouraged to take MST 6974 Professional Experience Project Planning (1 credit hour) prior to enrolling in MST 6975 (3 credit hours).

Science Track Courses (15 or 16 Credits)

The remaining coursework will be specific to the degree a student is seeking.

- **Biotechnology**
- **Computational and Data Science**
- **Earth Resource Management**
- **Environmental Science**

Petition to take Unlisted Classes

Students who identify a course not listed in PSM materials (including Track "One-Pagers" or the Course Availability Spreadsheet) can petition to have that course approved as part of their program of study. Students must complete the following steps:

1. Send the following information to the Program Director in the body of the email:
 - Course Prefix, Course Number, and the course description from the catalog.
 - A brief statement that addresses the request and how it relates to your professional goals.
2. Attach a recent copy of the syllabus for the course.

Transfer Credits and Credits Earned by Non-Matriculated Students

You must submit a petition if you wish to receive credit for non-matriculated credits or transfer of credits from another institution. Credits earned by non-matriculated students may or may not apply to the PSM graduate degree program. Students should follow the Petition for Curriculum Change Instructions above. Up to nine credit hours of non-matriculated credit, taken no more than three years prior to approval, can be applied toward a graduate degree. Graduate credit may be transferred from other regionally accredited institutions, provided that the student earned a grade of a B or higher, the credits are approved by the program director, and the credits were taken within 4 years of admission to the PSM. Exception to either of these requirements must be requested by the Program Director or supervisory committee chair and approved by the Dean of The Graduate School.

ACADEMIC MISCONDUCT

The PSM Program takes cases of academic misconduct seriously and follows the Policies of the University of Utah for academic misconduct and sanctions. The following information is from the University of Utah's Code of Student Rights and Responsibilities:

“Academic misconduct” includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information. It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct.

“Academic sanction” means a sanction imposed on a student for engaging in academic or professional misconduct. It may include, but is not limited to, requiring a student to retake an exam(s) or rewrite a paper(s), a grade reduction, a failing grade, probation, suspension or dismissal from a program or the University, or revocation of a student's degree or certificate. It may also include community service, a written reprimand, and/or a written statement of misconduct that can be put into an appropriate record maintained for purposes of the profession or discipline for which the student is preparing.

Students have the right to appeal an academic sanction. The Code of Student Rights and Responsibilities documents the appeal process.

PROFESSIONAL EXPERIENCE PROJECT

A crucial part of the PSM Program degree requirements is the development and completion of a Professional Experience Project. The expectation is that students do more than merely serve as an intern. A project is "a temporary endeavor undertaken to produce a unique product, service or result." (PMI Guide to PMBOK®, 2000.) The PSM program requires that graduate students plan and execute a project with a sponsor external to the university setting, usually a local industry partner, government agency, or non-profit organization. The process includes:

- Assembling a Supervisory Committee
- Identifying a project relevant to the sponsor and meeting the University's requirements for a master's project
- Working with the sponsor in proposing a solution
- Implementation of the project
- Evaluating the effectiveness of the solution

Our goal is for students to complete their project during a single semester. To meet this goal, students need to plan their projects (and have the project approved by the program director and supervisory committee) in the preceding semester.

The project scope will vary from project to project; however, most projects require a time commitment of 12-18 hours per week. This weekly time commitment translates into 150 — 250 hours for a 15-week semester. The project must include a science (or STEM) and transferable skills (business) component related to their program of study. Students enroll in MST 6975 to receive credit for their project.

A template for the final report with information on content is available on the PSM Canvas site.

An Overview of the Professional Experience Project is in figure 1.

SUPERVISORY COMMITTEE

Supervisory Committee must be in place **prior** to beginning the Professional Experience Project. The Supervisory Committee provides input on the student's Professional Experience proposal, attends the proposal presentation, evaluates the written report, attends project review meetings, attends the final presentation and assigns a grade to the Professional Experience project.

The Supervisory Committee consists of three faculty members with the majority being tenure-line faculty at The University of Utah. All University of Utah faculty members (tenure-line, career-line, adjunct, visiting and emeritus) are eligible to serve as members of the Supervisory Committee; one Committee member may be external to the U of U. The faculty member must hold an academic or professional doctorate, the terminal degree in their field, or have demonstrated expertise relevant to the student's project. A tenure-line faculty member serves as Chair of the Supervisory Committee.

Non-University of Utah faculty can serve as a member of a Supervisory Committee if they hold an advanced degree and have professional experience in a relevant subject area. The student must send a formal request (this can be done using email) to the PSM Program Director and must include a current Curriculum Vitae of the proposed member and justification. If approved, the Program Director will make an official recommendation to the Dean of The Graduate School, who makes the final decision to allow the Non-University faculty to sit on the Supervisory Committee.

It is the responsibility of the student to approach prospective committee members to determine their willingness and availability to serve in such a capacity. Faculty members have the right to refuse to sit on a student's supervisory committee for justifiable academic reasons.

Exceptions to these guidelines must be recommended and justified by the PSM Program Director and approved by the Dean of The Graduate School.

Prerequisites

Prior to taking MST 6975 Professional Experience Project starting their Professional Experience Project, students must take MST 6200 Professional Development and either MST 6110 Business Development or MST 6210 Operations and Project Management, plus 9 additional STEM credits.

Professional Experience Opportunity

Graduate students are responsible for identifying a sponsoring organization or company and developing a suitable project with a supervisor of the organization or company. Students are encouraged to seek out and explore Professional Experience opportunities as soon as possible after entering the PSM Program.

Supervisory Committee

Graduate students are responsible for assembling their supervisory committee and submitting the *Supervisory Committee Information* to the Instructor of MST 6975.

The following three documents are provided to members of the supervisory committee:

1. Supervisory Committee Guidelines
2. Professional Experience Proposal Objectives and Summary Guidelines
3. Professional Experience Proposal Guidelines

These forms are available on the PSM Program Canvas site and as Appendices in this handbook.

Professional Experience Project: **Overview**

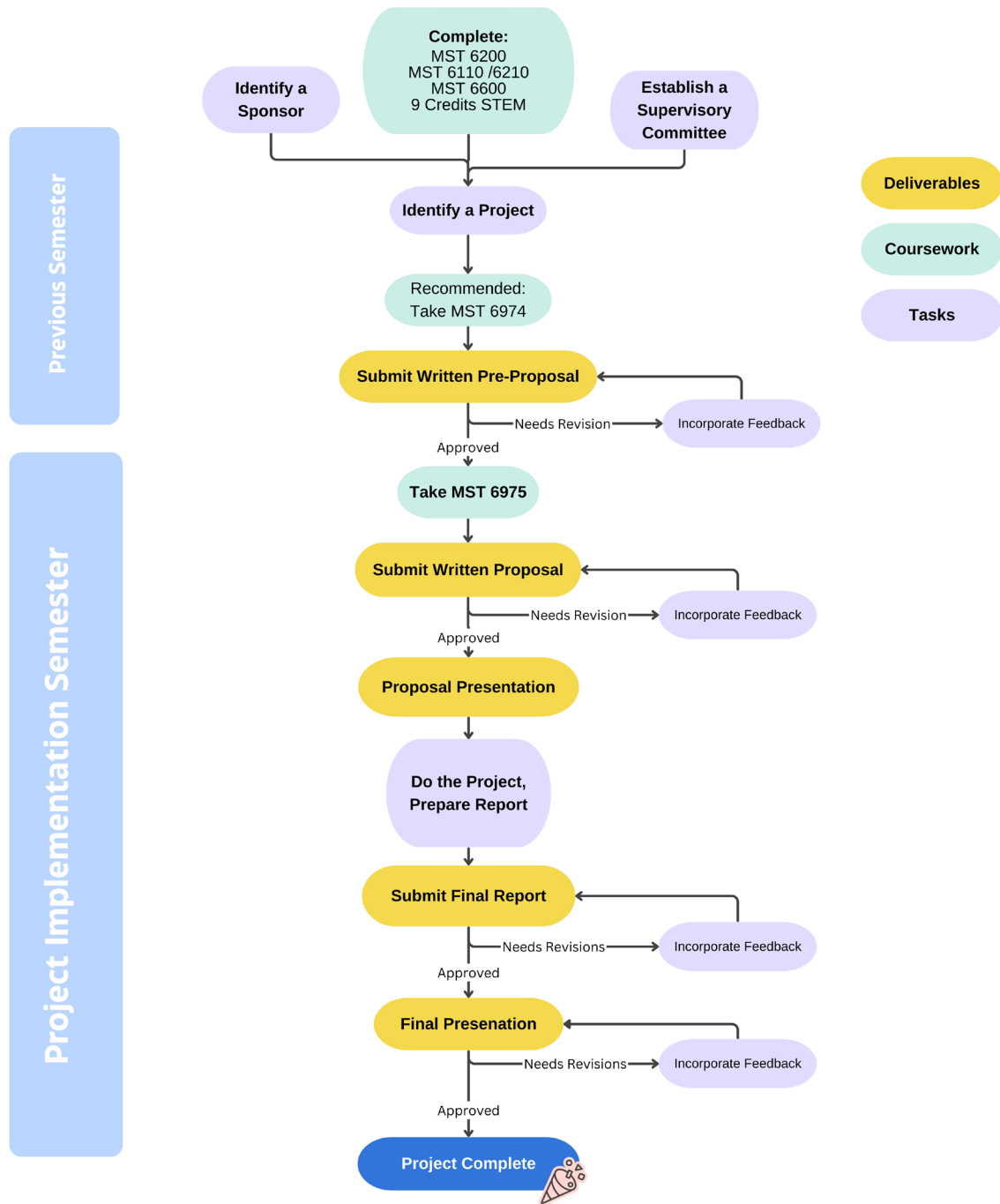


FIGURE 1. PROFESSIONAL EXPERIENCE PROJECT OVERVIEW FLOW CHART. After taking the necessary coursework, students identify a project and sponsor and engage a Supervisory Committee. Deliverables include a written Pre-Proposal, a Proposal, a Proposal Presentation, a written Professional Experience Project Report and a Final Presentation.

Professional Experience Project: **Project Groundwork**

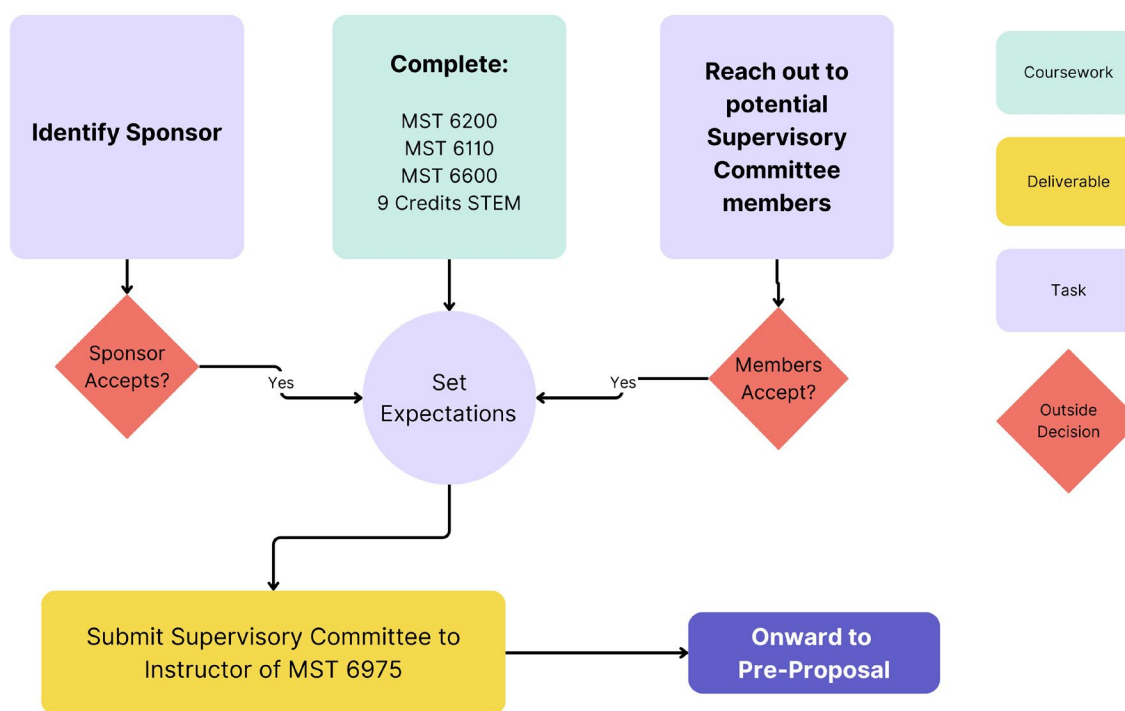


FIGURE 2. PROJECT GROUNDWORK FLOW CHART. Before beginning their project, a student must identify a sponsor, assemble a Supervisory Committee, complete 18 credits of their degree, and have their committee approved by the Instructor of MST 6975.

Written Professional Experience Proposal

Graduate students should carefully review the Professional Experience Proposal Guidelines. The written Professional Experience Proposal should include both a science and non-STEM component.

A one-page Professional Experience Pre-Proposal stating the Project Objectives and Project Description will be submitted to the Instructor of MST 6975 and the Program Director for review and approval. Upon approval of the Professional Experience Pre-Proposal, graduate students proceed to write the formal proposal. Students are encouraged to seek input from the PSM staff and instructors; however, the written Professional Experience Proposal is submitted to the Supervisory Committee for review and feedback. This document should be submitted approximately 6 weeks prior to the beginning of the project to allow sufficient time for review. A well written proposal that follows the program guidelines can be approved in a shorter timeframe.

Final versions of the proposal and summary documents are submitted to your supervisory committee **at least one week prior to your Professional Experience Proposal Presentation.**

Professional Experience Project: **Pre-Proposal and Proposal**

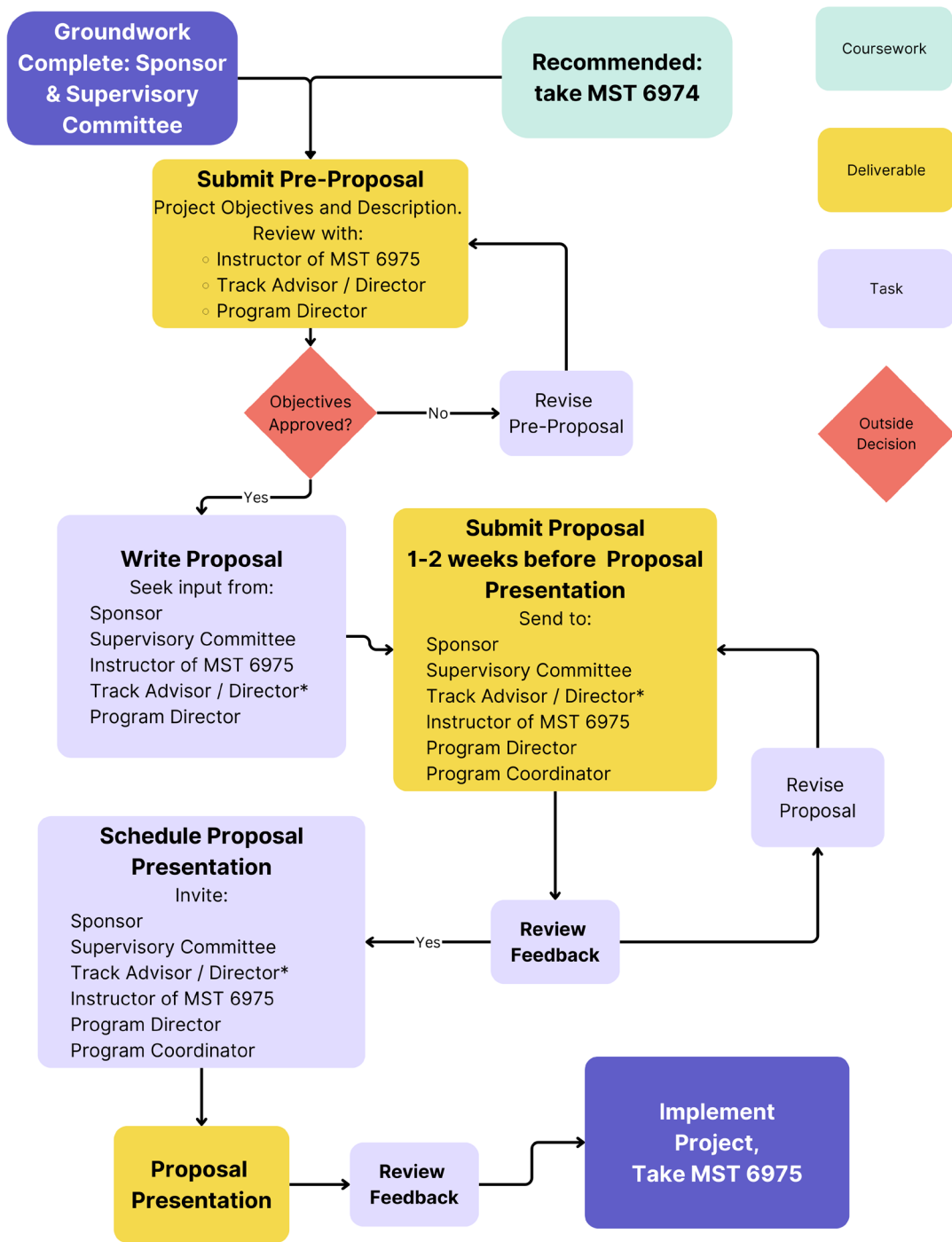


FIGURE 3. PRE-PROPOSAL AND PROPOSAL FLOW CHART. Submit a Pre-Proposal. Once approved, write a Project Proposal, seeking input along the way. Proposals should be submitted at least 1-2 weeks prior to your Proposal Presentation.

Professional Experience Proposal Presentation

Graduate students will coordinate a meeting time to present the proposal to the student's Supervisory Committee. Students should also invite the Instructor of MST 6975, Program Director, relevant advisors to the proposal meeting. Required attendees are the Supervisory Committee, and either the Track Director, Program Director, Associate Director, or Program Coordinator, who serve as facilitators.

The Professional Experience Project Proposal and Presentation process is outlined in figures 3 and 4.

The Professional Experience Proposal must include a schedule for updates to the Supervisory Committee.

Each process in the Professional Experience Proposal and Presentation process flow diagrams are represented as a "box." Brief descriptions are provided below:

- **Advanced Quantitative and Transferable Skills:** Graduate students must complete half the MST Transferable Skills and Advanced Quantitative Skills courses prior to starting their Professional Experience Project.
- **Identify Sponsor:** Graduate students are responsible for identifying a sponsor. The MST 6975 Instructor and Program Director can provide guidance if needed.
- **Establish Supervisory Committee:** Graduate students assemble their Supervisory Committee following Graduate School guidelines which are included as part of this Handbook.
 - **Supervisory Committee Information email:** This is a deliverable that documents the members of the Supervisory Committee. The committee reviews the Project Proposal and grades the final Project Report and Presentation.
- **Pre-Proposal (Project Objectives and Project Description) (email):** Project Objectives must be approved by the Program Director and the Instructor of MST 6975.
- **Write Proposal:** The Professional Experience Project Proposal is written prior to starting the Professional Experience. Graduate students should seek input from the Organization or Company Sponsor, Track Director / Advisor, Program Director and/or Instructor of MST 6975. The Professional Experience Proposal should be reviewed with members of your Supervisory Committee prior to the presentation. This can be done via email, one-on-one meetings, or a formal review meeting with the committee.
 - **Proposal:** This document is a deliverable; a copy of the Project Proposal is submitted to the Instructor of MST 6975.
- **Send a copy of your proposal to members of your Supervisory Committee (email)**
- **Schedule Proposal Presentation with Supervisory Committee:** In addition to the Supervisory Committee, invite your Track Director / Advisor, the Program Director and the Instructor of MST 6975.
- **Prepare Proposal Presentation**
 - **Present Proposal Presentation to Supervisory Committee**

- **Proposal Presentation:** This document is a deliverable; a copy of the Proposal Presentation is submitted to the Instructor of MST 6975.

Note, the following documents are **DELIVERABLES**:

- *Supervisory Committee Information email*
- *One page Pre-Proposal email*
- *Professional Experience Proposal*
- *Professional Experience Presentation*

Final Report

Graduate students submit a report based on their Professional Experience Project. The report should be reviewed with the Instructor of MST 6975 prior to submitting it to the Supervisory Committee. Students provide a copy of the report to the Supervisory Committee. The final draft of the report should be approximately one month prior to your anticipated final presentation. Ideally, graduate students will provide a final report for review that only needs minor edits.

After review of the final draft report with the Supervisory Committee via email comments and feedback, the graduate student will schedule and present the Professional Experience Final Report Presentation to the Supervisory Committee. In addition to the Supervisory Committee, the Science Track Director / Advisor, or Program Director are required to attend.

Graduate students submit the Professional Experience Report to the Supervisory Committee, Track Director / Advisor, Instructor of MST 6975, and either Program Director or Associate Program Director **at least 1 week before the final presentation**. Revisions may still be required based on comments from the Supervisory Committee.

Students will submit a copy of the final and approved version of the Professional Experience Report to the Instructor of MST 6975. The Professional Experience Report is a public document.

Final Presentation

Confirm the date, time and location of the Final Presentation with the Supervisory Committee.

Fill out the *Announcement/Abstract* Form (available on the PSM Program Canvas site and as an Appendix in this document) and submit the form to the Instructor of MST 6975 one week before your final presentation. **Note: The final presentation is open to the public.**

After the final presentation and discussion, students will incorporate any additional feedback and comments at the request of the Supervisory Committee. The Supervisory Committee will then approve the final report and recommend a grade.

Submit a hard copy of your final report to the Instructor of MST 6975. **Note: The final report is considered a public document.**

* Additional general information regarding assembling a supervisory committee can be found at the following Graduate School URL: <http://gradschool.utah.edu/graduate-catalog/degree-requirements/>.

Note, the following documents are **DELIVERABLES**:

- *Announcement and Abstract*
- *Professional Experience Presentation*
- *Professional Experience Report*

The Professional Experience Report and Presentation process is shown in figure 4.

Professional Experience Project: **Project Implementation and Report**

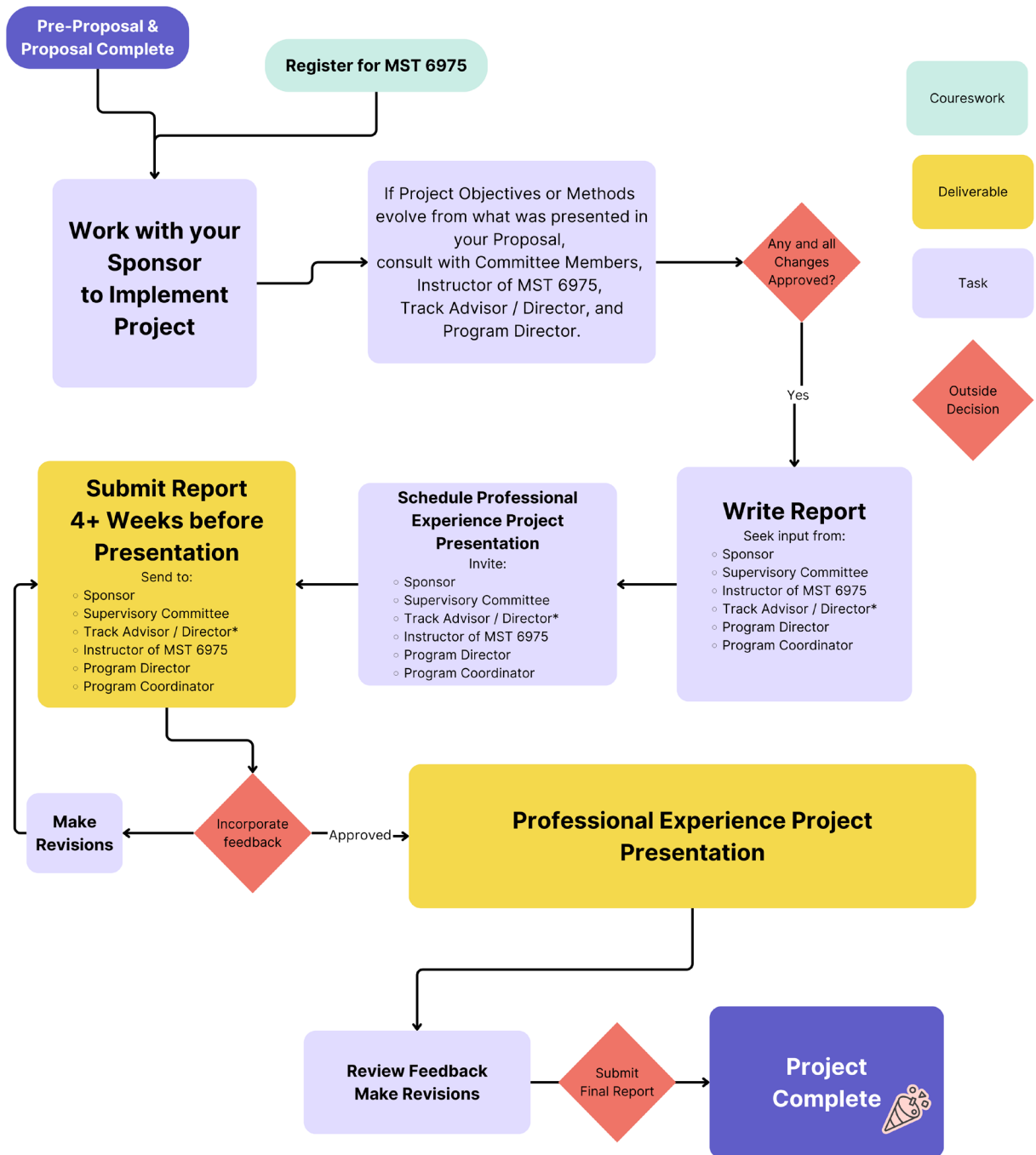


FIGURE 4. PROFESSIONAL EXPERIENCE PROJECT IMPLEMENTATION AND REPORT FLOW CHART.

Implement your Project, keeping all parties informed of any evolving objectives or methods. Be sure to submit your written report at least 4 weeks prior to your presentation so that you can incorporate any feedback.

GRADUATION

Students complete the **Application for Graduation** 4 months before they expect to graduate; important dates are published online. A flow chart is provided in Figure 5.

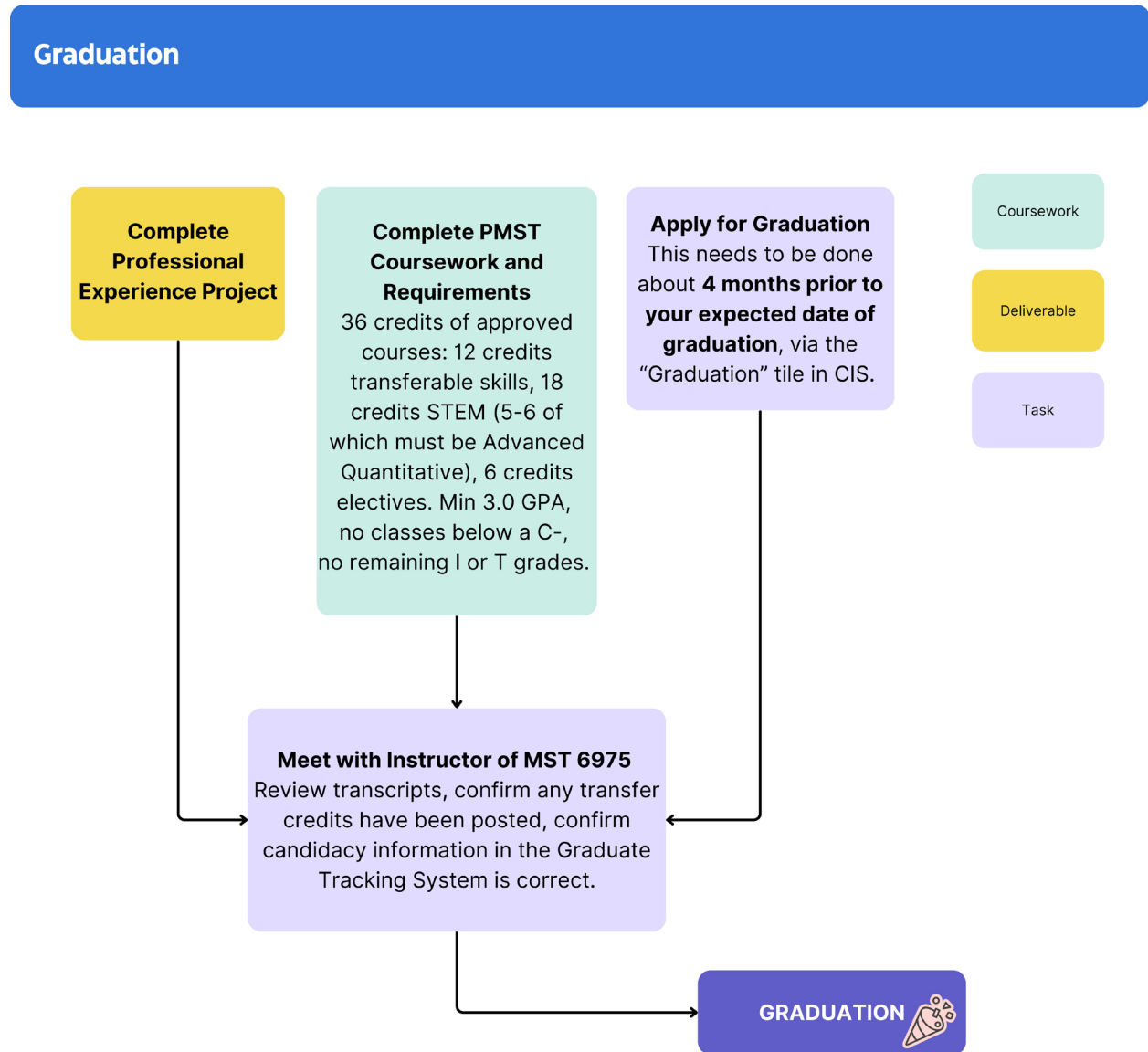


FIGURE 5. GRADUATION FLOW CHART. In order to graduate, students must complete their coursework and Professional Experience Project as well as apply for graduation. Early in their final semester or even before then, they should meet with PSM Administration to ensure everything is in order.

ADDITIONAL PROGRAM REQUIREMENTS

EMAIL

Correspondence with the University of Utah (The Professional Science Master's program, The Graduate School, Faculty, etc.) should be conducted using your U-mail account.

CANVAS

The PSM program maintains a CANVAS website and students in the program are expected to access this site. The site is used for:

- Sharing files related to the program
- Making announcements

Sharing Files

Files are organized into folders; active folders such as the PSM Handbook are updated regularly while other folders are used to archive information. You should consult the program staff if you have specific questions or need assistance finding specific information.

Announcements

The Canvas site provides a convenient, direct method for program staff to communicate with students. Announcements include, but are not limited to:

- Upcoming Seminars
- Program deadlines or other important dates
- Career Fairs
- Job and Professional Experience postings from potential employers and sponsors

EVENTS AND CALENDAR INVITATIONS

PSM events that require planning will be posted to the Canvas calendar and scheduled using The University of Utah's Umail Outlook calendar. Students should accept or decline these invitations based on their availability. They should update their status if their schedule changes. Use of "tentative" is discouraged as it does not provide accurate information to the event planner.

APPENDICES

SUPERVISORY COMMITTEE GUIDELINES

The following two pages should be printed out and reviewed with members of the Supervisory Committee.

Supervisory Committee Guidelines for the Professional Science Master's Program

Thank you for serving as a supervisory committee member for our student.

The supervisory committee works with the student to:

- Establish Professional Experience expectations at the proposal stage
- Approve the Professional Experience proposal
- Offer guidance or feedback to the student during the Professional Experience
- Provide feedback and input on the final report
- Approve the final report and readiness for the student's Professional Experience presentation
- Attend the Proposal Presentation and Final Presentation
- Suggest a letter grade to the Professional Experience project and submit the grade to the Program Director

Decisions regarding approving the Professional Experience proposal, evaluating the final examination and assigning a Professional Experience grade are made by a majority vote within the Supervisory Committee.

Students in the PSM program take approximately the same number of graduate-level science and mathematics courses as traditional Master of Science programs require; however, instead of a research requirement, PSM students take courses in professional domains and complete a Professional Experience that provides practical, hands-on training and a meaningful work experience which includes science, technical and business content. Students demonstrate their business (i.e., communication, management, decision-making and leadership), science and technical skills within their Professional Experience project.

Your role in the supervisory committee is invaluable for our students. It provides students with a foundation from which they can seek counsel and expert feedback, which enriches their academic experience. For more information about our program, please visit our website at PSM.utah.edu.

Sincerely yours,

Meghan Dovick, Ph.D.

Director, Professional Science Master's

(801) 585-3650

meghan.dovick@utah.edu

Student Professional Experience Project Expectations

Students are expected to:

Obtain approval from the Instructor of MST 6975, Track Director / Advisor, and the Supervisory Committee before beginning the Professional Experience Project and provide the Supervisory Committee members with the following documents:

1. Supervisory Committee Guidelines
2. Professional Experience Project Proposal Guidelines
3. PSM Professional Experience Proposal

Additionally, PSM Graduate Students are expected to:

- Follow through on the project expectations outlined within the proposal
- Restate expectations/requirements set at the time of the proposal presentation in an email to the Supervisory Committee
- Communicate with the Supervisory Committee if a requirement, expectation and/or deliverable cannot be met, to enable the Supervisory Committee and the student to devise a modification to the original plan to fulfill the project objectives
- Schedule the required meeting with the Supervisory Committee one month prior to the final presentation to discuss the content of the final report/presentation
- Submit a final version of the final report to the committee at least one week before the final presentation to provide enough time for the committee to review the report

PRE-PROPOSAL: PROPOSAL OBJECTIVES AND PROJECT DESCRIPTION GUIDELINES

The Professional Experience Proposal Summary defines the project objectives prior to writing the formal proposal and is provided to the Track Director for review and approval. This can be done via email.

Pre-Proposal: TITLE

Project Objectives

Use the S.M.A.R.T method to define your project objectives.

• Specific:	Explicit, clear, understandable
• Measurable:	Quantifiable (business metrics, quantity, quality, cost, or time)
• Attainable:	Reachable, within capabilities
• Relevant:	Important to the organization and program
• Time-bound:	Specific time period

(Project Management Fundamentals, International Institute for Learning, Inc., 2009, p. 4-21)

The SMART method provides a simple framework for stating the Project Objectives. Objectives must relate to the science or business components of the project. Both a science and business component are required for the project.

Example 1 (not SMART): Project aims to develop a robust in-house method for analyzing nutritional supplements.

Example 2 (SMART): Develop an in-house method for analyzing amino acid levels in nutritional supplements using reverse phase, ultra-high performance liquid chromatography in 10 weeks.

Example 3 (SMART): Prepare a “cost-of-analysis” report that compares the cost of in-house testing versus the current cost using external laboratories. This report will be a deliverable of the project (10 weeks).

Project Description

1. Identify the problem and make it clear why it is important.
2. Provide a brief summary of the project including the resources needed.
3. Include a brief summary of the organization you will be working with and the name, title and contact information (phone number and email address) of the organization's project sponsor.
4. List the deliverables for both the
 - a. Sponsoring organization
 - b. Supervisory Committee
5. Indicate whether or not the proposed project will take place at your current place of employment and, if so, how it will differ from your current responsibilities.

PROFESSIONAL EXPERIENCE PROPOSAL GUIDELINES

Information below is provided as a general guide. A specific format is not required; however, a template is available upon request. The proposal should include:

Project Objectives

Use the S.M.A.R.T method to define your project objectives.

Objectives must relate to the science and/or non-STEM components of the project. Both a science and business component are required for the project.

Introduction

Identify the larger problem and make it clear why it is important. The introduction should be written to engage a wide audience. Include a brief summary of the organization you will be working with.

(Note: The first part of the written proposal is based on the proposal objectives and summary discussed in the previous section.)

Detailed Project Description

Provide a detailed description of your project and your specific challenges. Clearly state what will be the important results from your work.

Project Plan

A good proposal will include a detailed project plan. The plan should include:

- Objectives – the desired outcome of the efforts and aligned with project objectives.
- Requirements – specific attributes of the deliverables that will satisfy the objectives.
- Deliverables – the project deliverable is the Professional Experience Report; interim deliverables are the outcomes of tasks and activities within the project.
- Project schedule – define the major milestones, duration of work efforts, start and end dates for every work component. Project schedules can be represented using Gantt charts. (See examples on the following page.)
- Milestones – events or points in time when a deliverable or set of deliverables is available; completion of a phase.

The baseline plan will be used as the reference point for project execution.

References

Provide the list of references used to develop your proposal. Use a format consistent with your discipline.

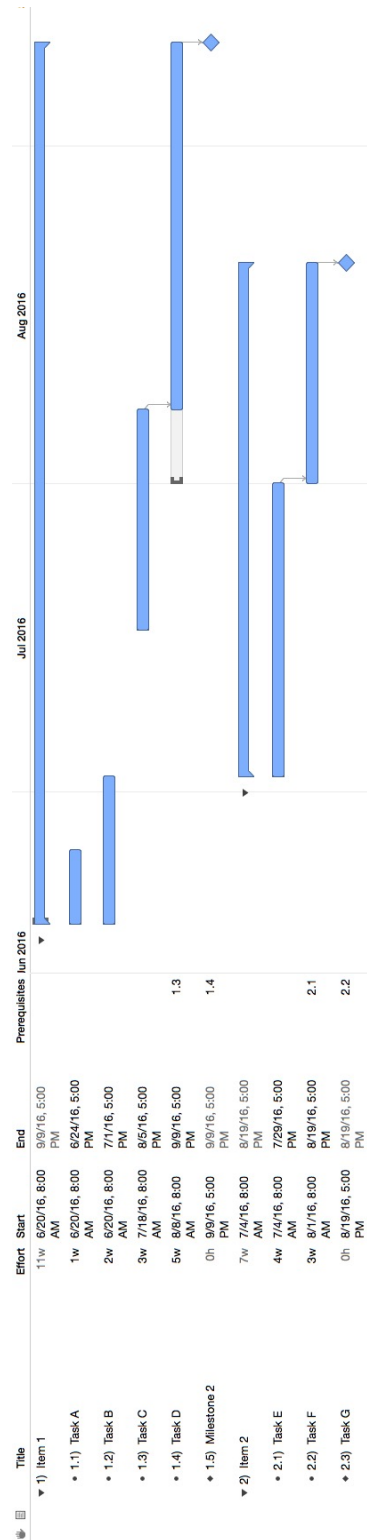


Figure 2. Project schedule generated using a commercial SW package (OmniPlan 3 for Mac)

Task	Dependency?	Start Date	End Date	WW25	WW26	WW27	WW28	WW29	WW30	WW31	WW32	WW33	WW34	WW35
1 Task 1		20-Jun	24-Jun											
2 Task 2		20-Jun	1-Jul											
3 Task 3		28-Jul	30-Jul											
4 Task 4	3	1-Aug	27-Aug											
5 Task 5	2	4-Jul	9-Jul											
6 Milestone 1			16-Jul											
7 Task 7		4-Jul	30-Jul											
8 Task 8	7	1-Aug	20-Aug											
9 Milestone 2			27-Aug											

Figure 3. Project schedule generated using MS Excel.

PROFESSIONAL EXPERIENCE REPORT GUIDELINES

Information below is provided as a general guide. A specific format is not required; however, a template is provided on the PSM Canvas web site. The report should include:

Executive Summary

The executive summary captures the essence of the entire project in one or two pages.

Introduction

Identify the larger problem and make it clear why it is important. The introduction should be written to engage a wide audience. Include a brief summary of the organization you will be working with.

Project Objectives

Restate the project objectives based on your original proposal. Identify any changes to the project objectives that occurred during the Professional Experience. The objectives must relate to the science and/or business components of the project. Both a science and business component are required for the project.

Project Description

Describe the specific challenges you worked on during your Professional Experience.

Results

Report the important results from your work.

Conclusions

What did you learn? What were you able to change or implement as a result of your Professional Experience? What are next steps or recommendations?

References

Provide the list of references used in your report. Use a format consistent with your discipline. Citations should be referenced within the report.

Tables and Figures

All tables and figures within the report and appendix need to include proper titles and captions.

Appendix

Large data sets or complex figures and tables that interrupt the flow of a report should be put in an Appendix at the end of the report.

PROFESSIONAL EXPERIENCE PRESENTATION GUIDELINES

Presentations should, as a general rule, NOT follow the flow of an academic paper (Introduction, Methods and Materials, Results, Conclusions), as they are not intended to be “stand alone” documents.

Presentation structure discussed in “Strategic Storytelling: How to Create Persuasive Business Presentations” by Dave McKinsey (CreateSpace Independent Publishing Platform, North Charleston, 2014) follows:

- Situation
- Complication
- Resolution

The method discussed is concise and follows the presentation flow common in business meetings where data is being reviewed.

An excellent text on slide design and data presentation is “Slide:ology: The Art and Science of Creating Great Presentations” by Nancy Duarte (O’Reilly, Sebastopol, 2008, Ch. 4).

Both of these texts emphasize the benefits of outlining or “storyboarding” and these techniques provide a framework to build effective presentations.

Finally, give yourself enough time to develop the presentation. Effective presentations require time. A time estimate from Duarte (p. 13) includes:

- Organize the ideas/material: 1 hour
- Outline and/or storyboard: 2 hours
- Build the slides: 20+ hours
- Rehearse, rehearse, rehearse: 3+ hours

While the total is less than 30 hours, it shouldn’t be completed in one or two sittings.

PRESENTATION ANNOUNCEMENT/ABSTRACT

Students submit the following information to the Instructor of MST 6975:

- **Title**
- Name
- Date and Time
- Location
- One to two paragraph abstract summarizing the Professional Experience (Internship). This information will be posted to Canvas as an Announcement.

Additionally, provide a MS Word, MS PowerPoint or similar file with the following format (standard 8.5" by 11" paper):

<p>Professional Science Master's Professional Experience Presentation</p> <p>YOUR NAME Your Track</p> <p><u>The Presentation Title</u></p> <p>Sponsored by: Sponsoring Organization</p> <p>Time: Time</p> <p>Date: Day, Month, Date, Year</p> <p>Place: Building and Room Number</p> <p>Abstract One to two paragraphs describing your project.</p>
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