PROFESSIONAL MASTER OF SCIENCE AND TECHNOLOGY HANDBOOK
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Director’s Message
Since 2002, the Professional Master of Science and Technology 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 technology-based 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 Master of Science and Technology 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.
INTRODUCTION

The Professional Master of Science and Technology (PMST) 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 PMST 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 offered through the College of Science and the College of Mines and Earth Sciences. The program is administered through The Graduate School.
PROGRAM DEGREE REQUIREMENTS

REGISTRATION
PMST Graduate students register via The University of Utah web site to secure their classes.

MINIMUM CONTINUOUS REGISTRATION
All PMST 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 PMST 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.

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 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 at a time, and may be renewed by submitting a new Request for Leave of Absence form to The Office of the Registrar. The leave of absence is void if a student registers for classes in a semester for which a leave was granted.

**Minimum Acceptable Grades**

PMST 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 PMST 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.

**Maximum Hours**

No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester. A schedule of nine hours is considered a full load for master’s candidates. Requests for exceptions to this policy should be submitted in writing to the Dean of The Graduate School by the student’s supervisory committee chair. Students in the Tuition Benefit Program (TBP) are advised to refer to the TBP information page to review policies related to maximum hours. [http://gradschool.utah.edu/tbp/tuition-benefit-program-guidelines/](http://gradschool.utah.edu/tbp/tuition-benefit-program-guidelines/)

**Course Requirements**

The Professional Master of Science and Technology 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, PMST 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 (8 or 9 Credits)**

Apply computer, modeling, and statistical tools to real-life problems. Three areas of skills are covered: data analysis, productive computing, and reasoning.

**Transferable Skills (9 Credits)**

The Professional Master of Science and Technology 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 six PMST courses. Students may fulfill the remaining three Transferable Skills credits required by taking elective courses within the David Eccles School of Business.
Professional Experience (3 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, team work, communication skills, and decision making.

Science Track Courses (15 or 16 Credits)
Biotechnology
Computational Science
Environmental Science
Scientific Instrumentation

Curriculum Degree Plan Worksheet
The PMST program provides an Excel worksheet for students to plan and track their individual courses of study. This Excel file is available on Canvas website or from the PMST Project Coordinator. The Project Coordinator can provide guidance on completing the worksheet. Once complete, students should review their proposed course of study with their Track Director. When completed, the Project Coordinator enters the program of study into the University Grad Tracking system; the Supervisory Committee approves the program of study using the Grad Tracking system.

Petition for Curriculum Change—Instructions
Students who identify a course not listed in the Curriculum Degree Plan Worksheet can petition to have that course approved as part of their program of study. Students must complete the following steps:

1. Complete the Science Track Curriculum Degree Plan Worksheet in its entirety, including the proposed change.
2. Using a University email account, send the following information to the Program Coordinator 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.

   Your email should be written using a standard business letter format.

3. Attach your proposed Curriculum Degree Plan Worksheet and a recent copy of the course syllabus for the course.

The Project Coordinator will review the Petition for Curriculum Change for completeness. When complete, the Petition for Curriculum Change will be forwarded to the appropriate PMST Track Director or the student’s Supervisory Committee Chair for approval.

If your petition is approved you will not need to fill out the Science Track Curriculum Degree Plan Worksheet again before your graduating semester, provided you adhere to the curriculum plan you submitted.

The petition process is outlined in Figure 1.
PMST Science Course Petition Process

The Curriculum Degree Plan Worksheets contain courses defined by the Track and Focus Area.

1. Course Name, Number and Description from the catalog.
2. A brief statement that justifies the change.
3. A PDF copy of the course syllabus

Student completes the Curriculum Degree Plan Worksheet

Are all courses listed in the worksheet?

Yes

Student submits the completed worksheet to the Project Coordinator

No

Student documents the course being requested.

Student submits an email to the Project Coordinator

Is the documentation complete?

Yes

Project Coordinator forwards the request to the Track Director

No

If the course description provides sufficient detail, the course syllabus may be excluded from the documentation, however, the Project Coordinator, Program Director, or Track Director can request a copy of the syllabus if they determine it is needed.

Project Coordinator emails the Track Director and Program Director of the activity

Figure 1. PMST Science course petition process flow chart.
Request to Change Science Tracks

A student submits a petition to the PMST Executive Committee which includes a formal letter justifying the request and describing how their professional goals have changed since being accepted into the program. The petition must also include an updated Curriculum Worksheet showing the proposed plan of study. To initiate the change, the student must reapply to the PMST Program, selecting the desired track.

A Petition to change tracks is not automatic, and approval to change tracks does not guarantee acceptance into the new program of study.

Finally, the Executive Committee and appropriate Track Directors will review and approve the use of courses from one track to satisfy the requirements of the new track.

The Office of the Registrar will officially record the change if the petition request is approved and the new application accepted.

Credits Earned by Non-Matriculated Students

Credits earned by non-matriculated students may or may not apply to the PMST graduate degree program. You must submit a petition if you wish to receive credit for non-matriculated credits, second bachelor’s degree credits, or transfer of credits from another institution. Additionally, students are required to submit a signed statement indicating that such credits have not been used and will not be used to meet requirements for another degree. Students should follow the Petition for Curriculum Change Instructions above. Only nine semester hours of non-matriculated credit, taken no more than three years prior to approval, can be applied toward a graduate degree. 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.
Credit/No-credit Grading
Graduate students are granted the option, subject to approval by the PMST 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 PMST program does not allow students to take CR/NC classes during their first year of study.

- After their first year in the PMST 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 PMST 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 PMST 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/NR should not be used for any core course (focus area) or defined option (elective) required by the PMST degree.

- CR/NC is not counted towards the student’s GPA. Taking courses CR/NC places “higher risk” on the remaining graded coursework.
ACADEMIC MISCONDUCT

The PMST 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.
Contact Information
For questions regarding this handbook, please contact:

PMST Program Director
Dr. Ray Hoobler, at 801-585-5630

PMST Project Coordinator
Mr. Derek Payne, at 801-585-3650,

or contact your respective track director:

Biotechnology
Dr. Jennifer Shumaker-Parry: shumaker-parry@chem.utah.edu

Computational Science
Dr. Elena Cherkaev: elena@math.utah.edu

Environmental Science
Dr. Lindsey Nesbitt: lindsey.nesbitt@utah.edu

Science Instrumentation
Dr. Clayton Williams: clayton@physics.utah.edu
**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 PMST Executive Committee 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.

**SUPERVISORY COMMITTEE**

Full-time students should form their Supervisory Committee during the second semester of their first year of study; part-time students during the first semester of their second year of study. The Supervisory Committee must be in place prior to beginning the Professional Experience Project. The Supervisory Committee approves the student’s Academic Plan, 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. 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 a member of a Supervisory Committee. The Student sends a formal request (this can be done using email) to the PMST Program Director and must include a 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 PMST Program Director and approved by the Dean of The Graduate School.
PROFESSIONAL EXPERIENCE

A key part of the PMST Program degree requirements is the development and completion of a Professional Experience (formerly called an internship) project, which applies the science and business skills learned in the program curriculum.

Prerequisites
MST 6010, MST 6012, MST 6020, MST 6021, MST 6022, MST 6023, MST 6500, plus 6 additional credits, must be completed prior to the Professional Experience project.

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 PMST Program.

Supervisory Committee
Graduate students are responsible for assembling their supervisory committee and submitting the Supervisory Committee Information Form to the project coordinator.

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 PMST Program Canvas site and as Appendices in this handbook.

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 business component.

A one-page Professional Experience Proposal Objectives and Project Description will be submitted to the appropriate Program Coordinator and Program Director for review and the Track Director for approval. Upon approval of the Professional Experience Proposal Objectives and Project Description, graduate students proceed to write the formal proposal. The Professional Experience Proposal is submitted to the PMST Project Coordinator for review by the Program Coordinator, Program Director and Track Director. The written Professional Experience Proposal is submitted to the Supervisory Committee for approval. This document should be submitted approximately 6 weeks prior to the beginning of the project to allow sufficient time for review.

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

Professional Experience Proposal Presentation
The Professional Experience Proposal Approval Form with the Professional Experience supervisor’s signature must be completed and submitted to the Project Coordinator prior to scheduling the presentation.

Graduate students will coordinate a meeting time to present the proposal to the student’s Supervisory Committee. Students should also invite the Science Track Director, Program Director and Project Coordinator to the proposal meeting. Required attendees are the Supervisory Committee, and either the Science Track Director, Program Director or Program Coordinator who serve as facilitators.

After presenting the Professional Experience Proposal, the graduate student must have the Supervisory Committee and the Science Track Director or Program Director sign the Professional Experience Proposal Approval Form. This is completed before beginning the project.

The Professional Experience (Internship) Proposal and Presentation process is outlined in figures 2 through 4.
Professional Experience Proposal and Presentation

Step 1: Identify Sponsor and Establish Supervisory Committee

Figure 2. Professional Experience Proposal and Presentation process flow chart. Step 1 is to identify a Professional Experience Sponsor and members to serve on the Supervisory Committee.
Figure 3. Professional Experience Proposal and Presentation flow chart. Step 2 is to have the Proposal Objectives and Project Description approved, and to write the proposal.
Professional Experience Proposal and Presentation

Step 3: Presentation and Approval

Figure 4. Professional Experience Proposal and Presentation flow chart. Step 3 is to prepare and present the proposal 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 the MST Transferable Skills and Advanced Quantitative Skills courses prior to starting their Professional Experience.

- **Identify Sponsor**: Graduate Students are responsible for identifying a sponsor. The Track Director and Program Director can provide guidance if needed.

- **Establish Supervisory Committee**: Graduate Students assemble their Supervisory Committee following Graduate School guidelines
  - **Supervisory Committee Information Form**: This deliverable documents the members of the Supervisory Committee. The committee reviews the Project Proposal and grades the final Project Report and Presentation

- **Project Objectives and Summary (email)**: Project Objectives must be approved, first by the Program Director and second, by the Track Director.

- **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, Program Director and/or Project Coordinator. 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 Project Coordinator

- **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, the Program Director and the Project Coordinator

- **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 Project Coordinator
  - **Professional Experience Proposal Approval Form**: This document is a deliverable; a signed copy of the Professional Experience Proposal Approval Form is submitted to the Project Coordinator

The Graduate Student can start their Professional Experience after the above steps are completed.

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

- **Supervisory Committee Information Form**
• Professional Experience (Internship) Proposal
• Professional Experience (Internship) Presentation
• Professional Experience (Internship) Proposal Approval Form
**Professional Experience Project**
The Professional Experience Proposal must include a schedule for updates to the Supervisory Committee.

Contact your committee as soon as possible to clarify new expectations that will enable you to fulfill the program academic requirements, if a Professional Experience requirement, deliverable, or expectation for the project unexpectedly cannot be met as anticipated.

**Final Report**
Graduate students submit a final report based on their Professional Experience Project. The report should be reviewed with the Program Coordinator and Program Director prior to submitting it to the Supervisory Committee. Students provide a copy of the final report to the Supervisory Committee and schedule a review meeting with their Supervisory Committee after completion of the project. This should be approximately one month prior to your anticipated final presentation. This meeting should be used to discuss your work and review the final report of the Professional Experience work. Ideally, graduate students will provide a final report for review that only needs minor edits.

After review of the final report with the Supervisory Committee, 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 or Program Director are required to attend.

Graduate Students submit the **final version** of the Professional Experience Report to the Supervisory Committee, Track Director, Project Coordinator and Program Director **at least 1 week before the final presentation**.

**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 PMST Program Canvas site and as an Appendix in this document) and submit the form to the Project Coordinator one week before your final presentation. **Note: The final presentation is open to the public.**

Submit a hardcopy of your final report to the project coordinator. **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/](http://gradschool.utah.edu/graduate-catalog/degree-requirements/).

The Professional Experience Report and Presentation process is shown in figures 5 through 7.
Internship Report and Presentation
Step 1: Draft Report

Figure 5. Professional Experience Report and Presentation flow chart. Step 1 is a draft report for review by PMST program staff.
Internship Report and Presentation
Step 2: Supervisory Committee Review of Report

Figure 6. Professional Experience Report and Presentation flow chart. Step 2 is to review the final report with the Supervisory Committee approximately one month prior to the final presentation.
Internship Report and Presentation
Step 3: Internship Presentation

Figure 7. Professional Experience Proposal and Presentation flow chart. Step 3 is to present the report to the Supervisory Committee and submit the final report to the PMST project coordinator.
Note, the following documents are **DELIVERABLES**:

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

Students complete the Application for Graduation the Semester before graduating; important dates are published online. A flow chart is provided in Figure 8.

---

**Graduation Flow Chart**

1. **PMST Program**
   - **Requirements Met?**
     - **Yes**
       - Verify your major and degree are correct in CIS
     - **No**
       - Requirements must be completed prior to the conferral date.

2. **Verify**
   - Program Coordinator to confirm candidacy information in the Graduate Tracking System is correct.
   - Verify that all applicable transfer work has been posted to your academic record
   - Review your transcript; make sure all coursework has been completed.

3. **Complete**
   - Application for Graduate Degree

4. **Application**
   - Submit Application to the Registrar's Office, Graduation Division, Window15
   - Email Application for Graduate Degree to graduation@utah.edu

5. **Complete**
   - final coursework

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**Figure 8. Flow chart showing the Application for Graduation process.**
ADDITIONAL PROGRAM REQUIREMENTS

PROFESSIONAL EXPERIENCE REPORT
Students submit a final copy of the Professional Experience Report to the Project Coordinator. The Professional Experience Report is a public document.

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

EVENTS AND CALENDAR INVITATIONS
PMST events that require planning will be scheduled using The University of Utah’s Umail 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.

CANVAS
The PMST 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 PMST 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 the potential employers and sponsors
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 Master of Science and Technology 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 final presentation
- Assign a 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 PMST 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, PMST 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 pmst.utah.edu.

Sincerely yours,
Ray J. Hoobler, Ph.D.
Director, Professional Master of Science and Technology
(801) 585-5630
ray.hoobler@utah.edu
Student Professional Experience (Internship) Expectations

Students are expected to:

Obtain approval from the Track Director and the Supervisory Committee before beginning the Professional Experience and provide the Supervisory Committee members with the following documents:

1. Supervisory Committee Guidelines
2. Professional Experience Proposal Guidelines
3. PMST Professional Experience Proposal

Additionally, PMST 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 or 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.
Professional Experience Grading

The Professional Experience process follows a “phase gate” process:

Phase 1: Identify the sponsor and project
Phase 2: Project proposal and proposal presentation
Phase 3: Project
Phase 4: Project report and presentation

The Supervisory Committee assigns the final grade at the end of the Professional Experience after receiving a copy of the final report.
PROFESSIONAL EXPERIENCE 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.

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

<table>
<thead>
<tr>
<th>Specific</th>
<th>Explicit, clear, understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measureable</td>
<td>Quantifiable (business metrics, quantity, quality, cost, or time)</td>
</tr>
<tr>
<td>Attainable</td>
<td>Reachable, within capabilities</td>
</tr>
<tr>
<td>Relevant</td>
<td>Important to the organization and program</td>
</tr>
<tr>
<td>Time-bound</td>
<td>Specific time period</td>
</tr>
</tbody>
</table>

(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 2a (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 2b (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.

- Specific
- Measurable
- Attainable
- Relevant
- Time-bound

Objectives must relate to the science and/or business 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 objective
- 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 9. Project schedule generated using a commercial SW package (OmniPlan 3 for Mac)
Figure 10. 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 PMST 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 objective 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?

References
Provide the list of references used in your report. Use a format consistent with your discipline.

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.

A PowerPoint template is provided on the PMST Canvas web site.
IMPORTANT FORMS
The following forms are provided below and can be printed as needed:

- Supervisory Committee Information Form
- Request to Change Supervisory Committee Form
- Professional Experience (Internship) Proposal Approval Form
Supervisory Committee Information Form

Student Information

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student ID number</th>
</tr>
</thead>
</table>

Track (check one)
- Biotechnology
- Computational and Data Science
- Environmental Sciences
- Scientific Instrumentation

Supervisory Committee Members (Name, Department, email address, phone number)

Chair
Name:
Department:
Email:
Phone number:

Member
Name:
Department:
Email:
Phone number:

Member
Name:
Department:
Email:
Phone number:

Member
Name:
Department:
Email:
Phone number:

Approvals:

Supervisory Committee Chair:

Program Director:
Request to Change Supervisory Committee Form

Note: This form should only be used when requesting a change to a Supervisory Committee and not when initially organizing a committee.

**Student Information**

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student ID number</th>
</tr>
</thead>
</table>

Track (check one):
- Biotechnology
- Computational and Data Science
- Environmental Sciences
- Scientific Instrumentation

**Current Supervisory Committee Members**

<table>
<thead>
<tr>
<th>Chair</th>
<th>Member</th>
<th>Member</th>
</tr>
</thead>
</table>

Indicate with a check which member is being removed.

**Proposed Supervisory Committee Members**

<table>
<thead>
<tr>
<th>Chair</th>
<th>Member</th>
<th>Member</th>
</tr>
</thead>
</table>

Indicate with a check which member is being removed. Committee members being added must sign this form.

**Justification for change (100 words):**

**Approvals:**

| Supervisory Committee Chair: |
| Science Track Director: |
| Program Director: |
# Professional Experience (Internship) Proposal Approval Form

<table>
<thead>
<tr>
<th>Submitted by (Print first, last name)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Track (check one)</th>
<th>Biotechnology</th>
<th>Environmental Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Computational and Data Science</td>
<td>Scientific Instrumentation</td>
</tr>
</tbody>
</table>

**This Professional Experience Proposal has been read and has been found to be satisfactory by:**

**Project Supervisor**

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Signature</th>
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<tbody>
<tr>
<td>Department:</td>
<td>Date:</td>
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</table>

**Supervisory Committee Members**

<table>
<thead>
<tr>
<th>Chair, Print Name</th>
<th>Signature</th>
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<tr>
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<td>Date:</td>
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<table>
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<tr>
<th>Member, Print Name</th>
<th>Signature</th>
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<td>Date:</td>
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</table>

**PMST Science Track Director or Program Director**

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Date:</td>
</tr>
</tbody>
</table>
Ray J. Hoobler, Ph.D.
Program Director
(801) 585-5630
Building 44, Room 223
Ray.Hoobler@utah.edu

Derek Payne
Project Coordinator
(801) 585-3650
Building 44, Room 126
Derek.Payne@gradschool.utah.edu
PRESENTATION ANNOUNCEMENT/ABSTRACT
Students submit the following information to the Program Coordinator:

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):

Professional Master of Science and Technology
Professional Experience Presentation

YOUR NAME
Your Track

The Presentation Title
Sponsored by: Sponsoring Organization

Time: Time
Date: Day, Month, Date, Year
Place: Building and Room Number

Abstract
One to Two paragraphs describing your project.