

# TM 699 - Technology Management Capstone Project

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## Objective

The Technology Management Capstone Project provides an opportunity to demonstrate your mastery of the knowledge provided through the Technology Management graduate program and in your Area of Emphasis.

## Requirements

Completion of this 3 credit hour project course includes the writing and presenting of an original, effectively written, well-documented Comprehensive Capstone Report. This report must be more than a term paper or the development of a system or application. It involves the application of management and scientific techniques to a unique problem or task with the potential of contributing to the solution of the problem and producing change. In the case where the comprehensive project is involved with or builds on your professional work experience, the resulting comprehensive project must still satisfy the expectations of this course, which could mean that additional work will be needed beyond that imposed by your employer.

In addition to the written comprehensive report, you will perform an oral defense presentation of your report before the end of the semester to a Graduate School faculty committee. Begin thinking about which graduate faculty members you would like to approach to sit on your committee early in the Capstone development process.

You must have completed 27 credit hours before registering for TM 699. Additionally, an approved Project Proposal is required prior to registration. Once the Project Proposal is approved, you may begin working on the project, even prior to registering for TM699. Projects initiated prior to your Proposal approval are not acceptable – this must be a project initiated for the purpose of fulfilling Capstone requirements.

The Comprehensive Project Report and Oral Defense are expected to be completed by the end of the semester in which you are registered. If you are not able to complete the course requirements in the semester you enroll, you will want to make that determination before the 10<sup>th</sup> Friday of the semester, i.e., the last day to withdraw, or you risk failing the course. The Final Draft (meaning no edits required) is due six weeks before the end of the semester, i.e., the 10<sup>th</sup> Friday.

## Grading

This is a 3 credit hour Satisfactory/Unsatisfactory course. To pass, both the Comprehensive Project Final Report and the Oral Defense must be satisfactorily completed within the semester.

## Timeline

A critical success factor for completion of your Capstone Project is to carefully plan and monitor your timeline, therefore, you are required to develop, submit, and maintain a Project Plan using Microsoft Project. Another CSF is to submit periodic drafts for review so that revisions do not delay approval of your final report, which could mean a delay in your graduation.

First week of the semester	Submit a copy of your Project Plan for completing your project on time. Include when you will be submitting each section draft.
Upon completion of each report section	Submit a draft of each section as completed to assure we are on the same page regarding expectations, and so that timely revisions can be made. Submit any updates to the Project Plan with your drafts. Do not wait until you consider your report complete to submit your draft.
Six weeks before semester end	Submit Final Draft* for final review – Do not wait until now to submit your First draft or you will not complete Capstone requirements before the end of the semester and should consider withdrawing from the course or you risk failing.  *Final draft means that there are no grammar, content, or format issues and it is ready for review by the committee. You will be advised when these standards are met.
Upon Report Approval	Submit 3 hardcopies and an electronic copy of your Approved Report.  Begin working on your PowerPoint Defense Presentation. Submit for review when completed.

The key to a smooth and timely completion of your Capstone is to submit your drafts and Final Report early enough so required revisions do not create a delay. Poor planning on your part will not expedite the review process, so do not wait until the last minute.

## **Comprehensive Project Report Format**

The Capstone Report is a scientific report documenting your work on the Capstone Project. It is not, however, solely documentation supporting the development of an application. This report will demonstrate your ability to effectively and clearly communicate a problem or issue; research and document of what is known by experts in the field about that topic; your analysis of findings, possible resolutions; and your conclusions and recommendations to solve the problem or issue based upon your research. Additionally, successful completion of the project and report will depend on your ability to plan your time, follow instruction, and pay close attention to detail. The result will be a professional quality research report, so be prepared to “sweat the small stuff!”

This syllabus does not include every detail to address every question or requirement for the successful completion of your Capstone project. However, enough detail is provided to assist you in developing your first draft paper for review. Comments, edits, and recommendations will be returned after review of your draft submissions. These need to be taken seriously. Additional reviews will not occur until edits noted from previous submissions are addressed.

You will need to acquire a copy of the APA style manual, 6<sup>th</sup> edition. Online resources do not provide adequate detail. Most of your questions will be answered in this manual or via this syllabus. The Capstone Report is essentially written in the style of a Master's thesis using APA Style formatting, unless otherwise directed. It must be written in a clear, concise, and convincing manner with good grammar, punctuation, and spelling, and without jargon or slang.

All sections of the Capstone Report are written in past tense with the exception of Results and Conclusions sections. Remember that you are reporting on a project that has already been completed, i.e., you are reporting on the past, so the Capstone is written in the past tense.

Prior to submitting drafts for review, a spelling and grammar check must be used at its highest setting. Additionally, all drafts must be proofread by a competent resource. If you anticipate issues in this area, university resources are listed below.

I am here to assist you, but I am not your editor. You are responsible for using the resources available for assistance, as we need to focus on assuring your content is appropriate for graduate-level work and not spend our time on exchanges regarding grammar and format issues. These need be taken care of before you submit your drafts. And, although Marshall Writing Center resources identified below are

available for your use, these resources are not experts in your topic area or on formatting per the APA requirements, therefore, you must use the style guide to assure compliance.

The Report must follow the specific format given below, unless modifications are pre-approved.

## Report Format

- **Cover Page**
  - Title
  - College name
  - Degree you are pursuing, including Area of Emphasis
  - Advisor's name (me!)
  - Your contact information: name, 901 number, address, phone, email address
  - Month and Year of submission
- **Abstract (with keywords)**
- **Acknowledgements**
- **Table of Contents**
- **List of Tables (if applicable)**
- **List of Figures (if applicable)**
- **Introduction**
  - Background
  - Reason for selecting this topic
  - Problem statement(s)
- **Literature Review**
- **Research Methods**
- **Results**
- **Discussion (Evaluation of Results)**
- **Conclusions and Recommendations for Future Work**
- **Appendices**
- **References**

## Abstract

An Abstract is a one page, or less, block-style paragraph summary of your report from start to finish. It includes the problem statement (the issue(s) or problem(s) you are addressing), highlights of the literature review, the methodology used, findings, a brief evaluation of the results, your recommendation, and your conclusion. It is single-spaced, and references are not cited. Keywords, separated by commas, are listed as a second paragraph. The Abstract is the last section written.

## Acknowledgements

Identify who you would like to thank or recognize for assisting you in completing your project and achieving your graduate degree goal. Typically this includes family, friends, faculty, and if appropriate, your employer.

## **Table of Contents, List of Tables, List of Figures**

See APA Manual for format. Be sure page numbers listed coincide with text pages! The three types of contents listing are each on separate pages.

## **Introduction**

The Introduction sets the stage for your report. It identifies any background information, to include why you chose this project; the problem statement; and any information needed to 'introduce' the reader to your project.

## **Literature Review**

A literature review is conducted to determine what is already known about the problem or issue by experts in the field. This is a very important part of the project, as it lets you and readers know what others have to say about the topic or their experiences with similar projects.

The Lit Review is a significant portion of your report, so do not cut it short in research or writing. It should integrate the works and findings of others into a cohesive stand-alone capable report. In other words, it is not a series of book or article reports, it is the documenting of ideas and findings, etc. supported by your numerous sources. Use a combination of journal articles, books, Internet sources, and personal communications. Relying solely on Internet sources is not acceptable, and Wikipedia is not an appropriate source. Use a combination of sources to assure your topic is well documented by professional sources. If you cannot find enough literature on the topic, your subject may not be robust enough for a Capstone Project.

Typically, there are several pages of sources used in the Reference section related back to your Literature Review. Be sure to only identify references you use and cite within your report – This is not a bibliography of everything you read - it is an alphabetical listing of the sources you actually used. Be sure to appropriately cite references per APA guidelines when quoting or summarizing the work of others. Not citing references is a very serious offense (see Academic Dishonesty below).

## **Research Methods**

Identify the methodology you used for data collection and analysis. Data collection is usually a major undertaking in any project. It can be collected from your employer (with permission), coursework, journals, other library materials, the Internet, government agency reports, etc.

When applicable, and if time permits, a survey may be administered. A more efficient methodology, however, may be the interpretation or re-interpretation of previously conducted surveys of others (be sure to cite references when using the work of others). Often information is provided in published surveys that is not primary to the author's findings, but may be of interest for your project.

## Results

The evaluation of results is the heart of your Capstone. This is where mastery of your analytical skills is demonstrated. You will need to use the tools and skills you have acquired throughout your tenure in the Technology Management program.

## Discussion of the Results

In your own words, discuss the results or findings of your research.

## Conclusions and Recommendations for Future Work

Conclusions are statements, observations, determinations, and inferences based on the work done for this project. These conclusions must relate back to the Literature Review and in the Results section of your report. All conclusions must be supported by your findings and results.

Recommendations for future work (by you or others) are those that could be carried out as a result of your work, i.e., next steps or additional projects.

## Appendices

Supplemental data that would be distracting in the body of the report, i.e., letters, surveys, raw data, large tables, etc. are included in Appendices. Relevant tables and figures are included within the body of your text. Do not duplicate these in the Appendix.

## References

Using the APA style format, this section identifies works cited within the report. References must be cited in-text and in the Reference section. APA has very specific format requirements for various reference types. Pay careful attention to the detail for each, as you do not want these requirements to hold up your report approval. Here is where your attention to detail comes into play.

## Report Format

There are no set minimum or maximum pages assigned to your report. It should be long enough to *thoroughly* cover the topic, yet concise enough to keep readers interested. I have read good papers written in as few as 50 pages, and in as many as 350 pages. Whatever the length, you must be able to convince the reader that your report is thorough, i.e., that there is no more to be said, without being redundant or dull. If you have trouble making your report robust enough, your topic may be too narrowly scoped, or not appropriate for a Capstone Project. If it appears that it will take hundreds of pages to thoroughly complete, you may want to narrow the scope (with approval) to only cover a specific aspect of the topic. You want to be able to complete it within the designated timeframe.

The body of the report should be in 12 pt. Arial font, double-spaced (except for the Abstract, Table of Contents, List of Tables, and List of Figures). It should have margins of 1.25" on the left side (to accommodate report binding) and 1" on the top, bottom, and right side. It is not right justified. Pages are numbered and relate to the page numbers identified in the Table of Contents, List of Tables, and List of Figures. Keep fonts and formatting simple and easy to read. Refer to the APA Publication Manual for full formatting requirements. Be sure to be consistent in formatting throughout.

Personal pronouns, abbreviations, contractions, and informal comments are not appropriate in this professionally written academic report. Watch use of passive voice, which your grammar-check should pick up, and avoid excessive or long direct quotations.

## **Oral Project Defense**

Once your Final Report has been approved with no further revisions required, you need to submit your final three hardcopies in report covers and an electronic copy, along with the names of the other graduate faculty members who have agreed to sit on your committee. (If you need assistance selecting a committee, I will be happy to assist.) At that time, your Oral Defense presentation can be developed and scheduled. Allow at least two weeks for the Faculty Committee to review your final report before scheduling your Oral Defense.

Presentations are developed using PowerPoint. It is also a good idea to bring extra hardcopies of your Final Report and handouts of your presentation with you for the Committee and audience.

During the defense, you will make a 20 minute presentation on your project and report. This presentation should demonstrate your understanding of the topic and project, along with your analysis and recommendations. It is more than an outline of your report, yet it should be concise enough to be completed in your allotted time.

I recommend that you practice making your presentation to friends, family, your dog, and/or the mirror to assure your confidence with your topic is not overshadowed by any nervousness. Be sure to dress and behave in an appropriate business fashion, as this is a very important presentation and your last step in achieving your graduate degree goal.

Your presentation venue will be equipped with a computer and projection equipment. Be sure to arrive at the presentation location early enough to load and test your presentation and to take a deep breath or two before the Committee arrives. Also, bring a backup of your presentation, as Murphy's Law has been known to make an uninvited appearance!

Anticipate revisions to your report and/or presentation to be required before you pass the course. Do not be offended when they are requested. Again, allow plenty of time to make all required revisions prior to the end of the semester. The end of the semester is a busy time for everyone, and your Committee members have other obligations, so do not anticipate being able to schedule your defense the last week of the semester.

## Resources

APA Style Manual – Required

Publication Manual of the American Psychological Association, Sixth Edition

MU Writing Center and Resources

<http://www.marshall.edu/english/writingcenter/owc/>

<http://www.marshall.edu/english/writingcenter/writingresources.html>

You may also visit the Resource Center on campus for in-person assistance. They will be happy to help, however, the ultimate responsibility for this project is yours! Do not expect that they, alone, will correct your content or make the edits for you. They are there to help you learn.

## Academic Dishonesty

Dishonesty will not be tolerated! This warrants repeating... Dishonesty will not be tolerated! If you are not familiar with the University's policy, please review it at <http://www.marshall.edu/muonline/plagiarism.asp>. Please read it carefully.

Dishonesty in this course will result in Failure for the course and you will have to reapply, possibly with a new project. Depending upon the severity of the offense, additional disciplinary actions are possible from the university. All Final Reports are electronically checked for plagiarism, so do not go through the effort and pain in vain!

## Tips

Develop and maintain a schedule – Now that your coursework is likely completed, it is easy not to set aside enough time to research and develop your project. Without a scheduled course and few due dates imposed, it is easy to procrastinate until the last minute and then try to settle for a lesser quality project than you planned. Be aware, however, that it is my job to assure you do produce the quality report expected of graduate students, and I will not settle for less. Schedule time each day to dedicate to your project. Treat this project as you would if you were managing a project for your employer. A detailed project plan with strict due dates will help you monitor your progress.

Discuss the importance of this project with your family and friends – You will need their support when you are unable to dedicate time for their needs, and when you

feel overwhelmed by the process. Remember, this should only be for one semester with a huge personal and hopefully professional reward at the end. However, be aware that you are not the only one making sacrifices – your loved ones are as well.

Follow direction, suggestions, and recommendations - My goal is the same as yours... to produce a quality, professional-level project and then move on. I am not incented to keep students from graduating. However, we are both responsible for the quality of your Capstone report. I will do whatever necessary to assure we accomplish this... and I expect the same from you. You may not always appreciate or agree with my input; however, I have the background and credentials to help you achieve our goal, and am willing to put in the time and effort to assure we accomplish it as long as you demonstrate the same.

## **Formatting Reminders**

Set your MS Word grammar- and spell-check to the highest settings. This will help locate issues in your report.

All sections except for Results, Discussion of the Results and Conclusions are written in past tense. The Capstone report discusses what *was* done for the project, i.e., the project is over and you are relaying what you did. Therefore, you are discussing the past and past tense is used.

Keep the writing style formal and do not use personal pronouns, i.e., first person.

Indent paragraphs 5 spaces and do not add an extra line between paragraphs.

Reference everything in all sections except for in Results, Discussion of the Results and Conclusions. Although, references are included in these sections if you refer to someone else's work. Your personal opinions are saved for Discussion of the Results and Conclusions. Everything else must be researched and referenced. Be sure to thoroughly review the APA style manual for in-text and Reference list formatting.

Be consistent in spelling and capitalization. If you start out capitalizing a word, continue that throughout the document, e.g., .pdf vs. .PDF, information security vs. Information Security, etc.

## **Final Note**

Your Capstone experience will result in a graduate-level, professionally written project report you can be proud to present to anyone. Accomplishing this will not be an easy task, but the result will be worth the effort. After all, you spent a great deal of time, effort, and sacrifice to get to this point. Do not short-change this final step in achieving your graduate degree goal.