

# SEng 5852 Individual Project

## Research Paper

### Objective & Scope

To effect change within your organization, you will need to identify and critically analyze new developments and techniques. In this assignment, you will gain experience analyzing existing research and techniques in Software Process Improvement (SPI) and Quality Management (QM).

### Assignment Steps

#### 1) Topic Selection

Identify a topic within SPI/QM that interests you. We have provided topic ideas to guide you but encourage you to create your own. Submit your chosen topic via Canvas. To avoid duplicate selections, we will be approving topics on a first-come, first-served basis.

#### 2) Annotated Bibliography

Review the Current Literature – a key part of this assignment is for you to review, synthesize, and critique current literature with respect to some problem (current or historical). As such, you will read through relevant literature – i.e., academic papers, systematic reviews, experience reports, book sections, and current popular software publications – to understand the area and develop a position (a message) for your final paper.

The final report must include 5 or more sources (3 of which must be from peer reviewed or book sources; encyclopedic sources are not permitted). Please include the interview of an expert in your topic to discuss your finding as one of your sources. To help you form your position, you will submit an annotated bibliography for 2 sources (you don't have to use these sources in your final paper). For each entry (source) in your annotated bibliography, you will write about 1 to 1.5 pages (single-spaced) where you will cite the original source, restate the most important points, and reflect on the source.

We are looking for<sup>1</sup>:

- Substance: include enough material in your writing. Start with a short summary of the paper, followed by your critical reflections on it. Note related work you are familiar with and think what you could do to extend the work presented or what you would do differently.
- Synthesis: put the information in your own words. Do not lift the main points from the paper. Rather than quoting them, rewrite them in your own words.
- Critical reading: note any issue or problem you see in the source. Feel free to address ease of reading, clarity, motivations, innovation, relevance, technical content, experimental setup, etc.
- Creativity: think how you would things differently, where you could apply the methods presented, how you could extend them.

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<sup>1</sup> The text of this section was taken, with minor changes, from M. Gini, "Csci 8551 Fall 2013: Syllabus," unpublished, August 2013. Emphasis added.

### 3) Outline

Develop an Outline – to support you in this assignment, you will be outlining the major points of your paper (see below for paper requirements). The outline must include (note, this is not exhaustive):

- The motivation of the paper.
- Your paper's thesis statement (a one-sentence statement describing what the reader should expect in your paper – the direction of your paper – and the specific takeaways).
- For each expected paragraph, the thesis of the paragraph (same concept as above, but for the paragraph).
- The expected support (facts from all 5 sources) for the paragraph's thesis.

### 4) Write Research Paper

Write a research paper that is 4 to 8 pages in length (single spaced). In this, you will:

- Concisely introduce and clearly state the motivation of the paper. Include the take-aways and your thesis statement.
- Analyze the problem using the relevant literature and interview to support your claims (min. 5 sources; 3 of which must be book sections or peer-reviewed articles/journals and an expert interview). You will need to categorize the literature in some way. Make sure you briefly restate the main points of the sources (**in your own words**), contrasting with other sources as necessary. Your relevant experience may be included as additional support for your claims.
- Summarize the paper; restate the objective/thesis of the paper and conclusions the reader should draw from your work.

### 5) Present Research Summary

During the last session, you will present a short (5-minute) summary of your research topic and conclusions to the class.

### Deliverables (via Canvas, as PDFs, by deadline)

- Topic Selection
- Annotated Bibliography – 10 pts
- Outline – 10 pts
- Research Paper – 100 pts
- Research Paper presentation

### Plagiarism and Citations

This is an individual assignment. While providing each other with editing support is permissible, copying content or ideas from a source (including another student) without citation is unacceptable and will result in a 0-grade for the assignment. Further, quoting large segments from a source, even if cited, is not permitted, and will result in large deductions in points. We want you to show synthesis of the problem and the sources. You should use little to no direct quotes in your paper. An exception may be in describing your expert interview.

**Additional Tips**

- Use first-person, active voice.
- 5-paragraph Paper Format – this is a good format to know for writing (even if you need additional paragraphs for support)
- More resources are available on Canvas including topic ideas, research databases/book lists, writing resources, and citation styles