Different faculty have taught the metrics course in substantially different ways over the past 5 years. We are taking it through a systematic revision now that will probably stabilize it for the next 5. This study guide, and the comprehensive, reflect the fact that we are in a transitional year.

EXAM OVERVIEW

The exam will briefly present a development project and place you in the role of project manager. It will then ask you to consider what types of measurements you should take on this project and to evaluate the costs, benefits, and risks associated with them. A fuller description of the structure of the exam, and examples of likely questions are included later in this study guide.

EXAM POLICY: LIMITED OPEN BOOK RULES

You will be able to bring CLEAN COPIES of books and papers listed in this study guide. A perfectly CLEAN COPY has NO WRITING ON IT (no printing on them, no other marks on them, just the original document or a photocopy of it). We understand that students buy books used. We will often tolerate a small amount of highlighting and a few marginal notes. However, we will not tolerate mark-ups that appear to provide specific support for this exam.

The exam proctor WILL inspect your materials. If they have any highlighting or markups, the decision to allow or disallow the material will be with the proctor, and the proctor will have been instructed to err on the side of not allowing them.

Use of any materials in the exam beyond the books and papers listed in the study guide (including other books or papers or notes of your own) will be treated as cheating and subject to the usual disciplinary penalties.

REFERENCE MATERIALS

All students should be familiar with:

  o Austin is sometimes hard to find. If you can’t get a copy of it, read Ridgway (1956), Dysfunctional consequences of performance measurements. Administrative Science Quarterly, 1(2), p. 240. (This is available to students online through the Florida Tech library.)

In addition, you should be familiar with the resources in Group A or Group B:

  • Group A
    o Steve Tockey (2005), Return on Software, Addison-Wesley
    o Lawrence Putnam & Ware Myers (2003), Five Core Metrics: The Intelligence Behind Successful Software Management, Dorset House.
  • Group B

When you answer the exam, please tell us specifically whether you are relying on Group A references or Group B.

Please feel free to cite directly to the sources you use.

You can sometimes save time by writing a brief summary and a citation to a specific page in one of the references, if the text on that specific page is obviously directly relevant and expands your summary in a way that the grader can be counted on to understand. You might cite to formulas, proofs, descriptions or discussions. Your summary must be clear enough and informative enough to persuade the grader that you understand what you are citing.

A SAMPLE EXAM

The exam will be similar in structure and content to this. We intend this as a fair illustration of the scope and difficulty of the exam, but not as an exact statement of the actual exam. We will change the hypothetical example and might ask the same questions or different ones. We believe that knowing how to create and apply answers to the questions below will significantly help you on the exam.

Hypothetical Situation

You are a project manager at a company that creates custom software under contract. You are just about to start a project to create an inventory management system for an external customer. As a first, rough guess, it appears that this will involve creating about 1000 features (such as data entry forms, calculations, queries, reports, etc.). You will have access to an imperfectly-written requirements document, design notes from the customer and from your company’s salespeople, and limited access to the customer’s staff (to ask them questions).

1. What is a work breakdown structure? How could you create one for this project? What would the end result contain and how would you use it to help you estimate and manage the project?
2. In your opinion, what are the five most important measurements to take on this project?
3. For each of the 5 suggested measurements, answer these questions:
   a. What underlying attribute are you trying to measure?
   b. How can you measure this? (For example, what would you count, and how would you count it?)
   c. What do you expect to learn from this measurement?
   d. Why do you want to know this? How do you expect to use it?
   e. Who else (besides you) do you think will rely on this information and how do you expect them to use it? (Answer “who” in terms of roles in your company or the customer company)
   f. How good is this measurement of the attribute? Justify that answer.

4. For three of the measurements, continue with answers to these questions:
   a. Can you determine the accuracy of this measurement? How? When?
   b. Can you improve the accuracy of the measurement as the project proceeds, in a timely enough manner for your improvements to be useful? How?
   c. What are the potential costs of this measurement?
   d. What are the potential risks of this measurement?
   e. How could you mitigate those risks?

OUR GRADING STANDARD

We are trying to determine whether you have learned enough about software metrics (and their role in software development and management) to justify graduation with an advanced degree in software engineering.

- We expect you to demonstrate an understanding of basic concepts in software measurement, including accuracy, reliability, and validity.
- We expect you to demonstrate that you can suggest reasonable ideas, consider alternatives, and evaluate costs, benefits and risks of your suggestions.
- We expect your presentation to be articulate and well organized.

Our grading will be holistic. Two faculty will independently review your answer and form an impression of the knowledge and competence demonstrated by the answer.

- Based on previous experience with the metrics exams, we expect most exams to yield a clear pass or a clear fail on such a review. If so, we will assign a grade of Pass or Fail, providing a few comments on failing papers.
- Papers on the border between pass and fail typically suffer significant communication problems that make it difficult for us to estimate what you know. In such cases, we will add some comments that give examples of answer-portions that confused us. Our general rule will be that if we don’t understand what you meant or how you intended us to interpret what you wrote, we will not give you credit for it.