

## **Problem-solving talk for Junior Seminar, Fall 2015**

As mentioned in seminar, Wittenberg requires all students to successfully complete an assessment of academic achievement in their major. The Physics assessment consists of a problem-solving assignment in Junior Seminar; a two-hour written assessment of conceptual knowledge (in the spring of junior year or the fall of senior year; more information on this part will be provided soon); and the senior thesis presentation.

The problem solving assessment is held in the fall of the junior year. For this part of the assessment, you'll be given a problem on a topic related to your previous Junior Seminar talk. We also provide an example of a model presentation and a copy of the rubric to be used in the evaluation. At a later seminar meeting, you'll give a presentation of the solution to your assigned problem. The presentation is evaluated by faculty using a rubric focusing on quantitative problem-solving skills (see page 2 of this document). If the presentation is judged to be unsatisfactory, the student must redo the presentation slides to bring the work up to a satisfactory level in order to receive credit for the presentation.

Ground rules: You may look up information in books or on the web, and you may ask the responsible faculty member for clarification of the problem, but you may not consult with any other living person. No dry run is required, though you may ask a faculty member or another student to sit in on a dry run to give advice on delivery (not content).

An example of a presentation is available at

[http://www4.wittenberg.edu/academics/phys/pvoytas/mathematical\\_development.wmv](http://www4.wittenberg.edu/academics/phys/pvoytas/mathematical_development.wmv)

## **How the quantitative (problem-solving) comps presentations will be evaluated**

The presentations will be evaluated by faculty in the five areas listed below.

For each of the five areas, scores from 0-5 will be assigned as follows:

0: no content at all in this area

1: the content in this area is entirely inappropriate or incorrect

2: large pieces are missing, or the content in this area is mostly inappropriate or incorrect

3: some of the content in this area is inappropriate, missing, or incorrect

4: minor omissions or errors

5: complete and appropriate

The highest possible score is 25; presentations that receive an average score of 20 or above are judged to be satisfactory and will not require revision.

Here are the five areas that will be evaluated:

### **Useful description of the problem**

How well information from the problem statement is organized into an appropriate and useful description. Depending on the type of problem, this may include such things as specifying known information, assigning appropriate symbols, stating a goal or target quantity, showing a sketch or picture of the physical situation, stating what characteristics the answer should have, drawing a graph, defining coordinate axes, and/or choosing a system.

### **Appropriate physics approach**

The correctness and appropriateness of the physics concepts and principles selected for solving the problem.

### **Specific application of physics to the problem**

The correctness and appropriateness of the actual application of the physics concepts and principles to the specific conditions in the problem. Depending on the problem, this may include such things as connecting the objects and quantities in the problem to the appropriate terms in specific physics relationships, applying initial conditions or other constraints, and making appropriate use of assumptions in the problem statement.

### **Use of appropriate mathematical procedures**

The correctness and appropriateness of the mathematical procedures and rules used in obtaining the solution.

### **Coherence and logical progression**

The extent to which the presentation of the overall problem solution is clear, focused, and organized. The results should follow logically from what is presented, and the results should make sense.