Preparation for Peer Teaching of Labs and Discussion Session

INDIVIDUAL AND TEAM TASKS:

1. **Individually** read through the next four pages. These pages describe how the four afternoon peer-teaching sessions are structured and graded. Be prepared to ask questions in a class discussion.

2. **Lab Preparation:** It is assumed that each team member has already done the *Method Questions* for your assigned lab problems.
   (a) Discuss with your team the answers to the Methods Questions.
   (b) Work through the assigned lab problems (as a team), collect data, and analyze your results (3 points). What is the conclusion for this lab problem? Your team will be the "expert" on this lab, and should be able to answer questions from other TAs. If you need help with anything, ask the mentor TA working with you.
   (c) When you have finished (b), ask your mentor TA for the *Lab Instructor's Guide* for these problems. This manual was written by former TAs to help you prepare for and teach each lab problem.
   (d) Discuss the following questions with your team. How does the data you collected and analyzed compare with the example data in the Instructor's Guide? What other information is included in the Instructor's Guide? How will this information help you prepare to teach these lab problems?
   (e) Photocopy your results and analysis for each lab problem (one per "student"). These will be handed out to your "students" at the end of each lab practice teaching session.

3. **Discussion Session Preparation:** It is assumed that each team member has already solved the assigned group problem in a logical, organized manner.
   (a) Discuss with your team your individual solutions to the discussion problem.
   (b) As a team, write a ***good solution*** for this problem. A good solution must be helpful to undergraduate students who do not know how to solve the problem. A good solution includes:
      - Detailed diagram(s)
      - Definition of all variables
      - Logical progression and complete steps in the solution (working backwards from target variable).
      - Symbolic representation of all equations (both fundamental principles and relationships that apply in certain situations) should be written before substitution of defined variables.
      - Solve the problem mathematically **before** the substitution of quantities (numbers) into the final equation for the target variable.
   (c) Photocopy your solution (one per "student"). This will be handed out to your "students" at the end of the discussion practice teaching session.

Structure of Peer Teaching

As a way of preparing to teach the University of Minnesota's problem-solving labs and discussions sessions, you will have the opportunity to practice-teach either one lab problem or one discussion session to your peers. ***You have already been assigned to a 3-member team, and your team has been assigned two lab problems and one discussion session to prepare***. For four afternoons in the next week, the mentor TAs will supervise the practice teaching of the labs and discussion sessions.

There are two goals for this peer teaching. One is for you to get practice "running through" a lab problem or discussion session, so that you have a sense of what it feels like to keep track of time, supervise a room full of people solving a problem, and lead a discussion. The other goal is for you to become familiar and comfortable with the equipment and typical results for the problem-solving labs.

Each afternoon will be structured as follows:

- The mentor TAs may need to make some brief announcements.
- The "practice teachers" for one afternoon will teach, and the practice teachers for the other three afternoons will act like undergraduate students. This means that you must come to morning class with the *Methods Questions* completed, and be ready to participate in discussions and take data in the afternoon (see Homework #4, #5, #7 and #9 in the Syllabus).
- On the day your team practice teaches:
  - Your team will receive your “students” (peers acting as undergraduates) answers to the Methods Questions during the morning. This will allow you to look over the answers and decide which Method Question(s) you will have your “students” discuss put on the board.
  - Just before lunch, your Mentor TA will tell each team member whether they will teach the assigned discussion session or a lab problem (and which assigned lab problem). So each team member has to be prepared to teach all three.
- Each practice teacher will have about 60 minutes to teach one lab problem, or about 30 minutes to teach a discussion session. The practice teachers for lab will then pass out the data and results that THEY had previously prepared for their lab problem (3 points). The practice teachers for discussion will hand out the solution to the problem (3 points).
- The "students" for this lab or discussion session will give each practice teacher written feedback.
- After all the TAs have practice-taught on a day, they will stay and be mentored by the mentor TA.

These afternoon sessions should run between 3 and 4 hours for the first three days, and about 2 hours for the fourth day.

Each TA will select one free afternoon!

Grading When You Are a Student

2 Labs:

Methods Questions	6 points	Homework #4.#5, #7, and #8
Journals	1 point	
Written feedback to Practice Teachers	1 points	

1 Discussion:

Group Solution	2 points
Written feedback to Practice Teacher	0. 5 points

Grading When You Are a Teacher

Labs:

Data Analysis and Results for 2 problems	6 points (team)
Teaching (see following pages)	3 points

Discussion:

Written Group Solution	3 points (team)
Teaching (see following pages)	3 points

Total: 21 points

Grading Sheet for Homework #4, #5, #7 or #9
When You Are the Practice Teacher: LAB

What the TA Does	TA Initials:				
Opening Moves:	⓪ Be at the classroom early				
	① Prepare students for group work by showing group/role assignments.				
	② Prepare students for lab by: a) diagnosing difficulties while groups discuss and come to consensus on *Methods Questions*.				
	b) selecting one person from each group to write/draw on board answers to the *Methods Questions*.				
	c) leading a class discussion about the group answers.				
	d) telling students how much time they have to check their predictions; reminding Manager to keep track of time				
Middle Game	③ Coach groups in problem solving (making decisions) by: a) monitoring (diagnosing) progress of all groups				
	b) helping (coaching) groups with the most need, using group roles.				
	④ Grade Lab Procedure (journal).				
	⑤ Prepare students for class discussion by: a) giving students a "10-minute warning." Pass out Group Evaluation Form (if necessary)				
	b) selecting one person from each group to put corrected methods questions and results on board.				
End Game	⑥ Lead a class discussion focusing on what you wanted students to learn from solving the problem.				
	⑦ Discuss group functioning (optional)	*na*	*na*	*na*	*na*
	⑧ Start next lab problem (repeat Steps 1 – 7) if time	*na*	*na*	*na*	*na*
	⑨ End of Lab a) Tell students what lab problems to do Methods Question for next week; if last session, assign students problems for lab report.				
	b) Leave a neat lab room for the next class. Do NOT let the next group of students into the classroom. Write down the comments about equipment that did not work on the lab-room sheet .				
	Total:				
	Grade:				

Total Steps Performed	Grade	Total Steps Performed	Grade
13 - 14	3 points	9 - 10	1 points
11 -12	2points	0 - 8	0 points

Grading Sheet for Homework #4, #5, #7 or #9
When You Are the Practice Teacher: DISCUSSION SESSION

What the TA Does					
	TA Initials:				
Opening Moves:	⓪ Be at the classroom early				
	① Introduce the problem by telling students: a) what they should learn from solving problem;				
	b) the part(s) of the solution you want groups to put on board				
	② Prepare students for group work by: a) showing group/role assignments and classroom seating map (if necessary);				
	b) passing out Problem (& Useful Information) and one Answer Sheet.				
	c) Tell class the time they need to stop and remind Managers to keep track of the time.				
Middle Game	③ Coach groups in problem solving by: a) Monitoring (diagnosing) progress of all groups. Establish a circulation pattern for periodically listening to groups and *diagnosing difficulties*.				
	b) helping (coaching) groups with the most need. Using group roles.				
	④ Prepare students for class discussion by: a) giving students a "five-minute warning"				
	b) selecting one person from each group to put specified part of solution on the board.				
	c) passing out Group Evaluation Sheet (optional)	*na*	*na*	*na*	*na*
End Game	⑤ Lead a class discussion focusing on what you wanted students to learn from solving the problem.				
	⑥ Discuss group functioning (optional)	*na*	*na*	*na*	*na*
	⑦ Pass out the problem solution as students walk out the door.				
	Total:				
	Grade:				

Total Steps Performed	Grade	Total Steps Performed	Grade
11-12	3 points	7-8	1 points
9-10	2 points	0 - 6	0 points