



MODULE: STANDARD OPERATING PROCEDURES (SOP)

MENTOR GUIDE

Checklist

Prior to meeting with advisee(s)

- Familiarize yourself with SOP handouts
- Gather materials for the peanut butter and jelly sandwich exercise if you plan to provide the visual of sandwich making:
 - Bread, multiple types (hot dog buns, bagels, sandwich bread, etc)
 - Knife, multiple types (plastic, steak knife, etc)
 - Plates, napkin, and/or paper towels
 - Jar of peanut butter
 - Jar of Jelly (can also have packets of jelly available)
- Review provided SOP for making a peanut butter and jelly sandwich
- For the SOP for a lab experiment, do one of the following:
 - Use a current SOP from your lab as an example (make sure that it is a well-known procedure)
 - Put together SOP for a well-known lab experiment/procedure in your lab
 - Review and use the provided sample SOP for a lab experiment (“Weighing an Object on a Balance”)
- Complete safety training requirements

Discussion with advisee(s)

- Definition and importance of SOPs
- Common mistakes when developing SOPs
- Best practices for developing SOPs
- Common mistakes with implementation of SOPs written by others
- Review the completed five-minute reflection and discuss any points of confusion



Research Experience and Mentoring

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Suggested Schedule

- Review the module materials.
- Contact mentee(s) to assign them each the task of writing of a peanut butter and jelly (PBJ) sandwich making Standard Operating Procedure (SOP), due at the next planned meeting for this module.
- Distribute module to mentee and give brief background, review assignment expectations.
- Schedule mentor-mentee meeting and collect PBJ supplies.
- Direct mentee to work on module content independently, remind mentee to bring completed assignments and reflection to meeting.
- Review and discuss purpose and importance of SOPs; consider reviewing the materials included in the workbook regarding SOPs.
- Have one or two mentee(s) read his/her SOP, line by line, directing your steps (or mis-steps) in making a PBJ sandwich. Follow his/her directions very closely to create a sandwich. Be sure to emphasize any unclear instructions by exaggerating your misunderstanding and misusing the materials. See the module considerations below for examples on this point.
- Following the PB&J demonstration, revisit the provided literature in the workbook concerning SOPs. Use the demonstration results to highlight important components of SOPs.
- This discussion can transition into the SOP exercise in which advisee(s) will shadow the advisor while following an SOP for a common laboratory procedure or experiment. In doing so, the advisee(s) should gain understanding of how good SOPs enable repeatable, reliable science. Students should also gain familiarity with scientific writing and communication.
- Follow up this exercise with a discussion of best practices and common mistakes in creating SOPs.
- Review the mentee's completed five-minute reflection and discuss any points of confusion.

Materials

- Peanut Butter and Jelly Sandwich materials (provided by Mentor during discussion of module). Include materials that will be used for purposeful misinterpretation of the SOP (e.g. hamburger bun, spoon, etc.)

Considerations

- After advisees participate in the peanut butter and jelly exercise, it is important to emphasize the need to specificity when composing SOPs. This should be illustrated during the exercise, as you attempt to "follow" their written SOPs for making the sandwiches. Do not use any of your prior knowledge of sandwiches, but instead follow their instructions to the letter. When necessary, exaggerate any ambiguities in their SOPs by deliberately misusing some of the materials (ex. act like you don't know how to open the jar of peanut butter if the SOP doesn't provide explicit instructions for opening it). This will drive home the need for specificity, even for the most menial details.
- Complete a simple activity in the lab that the mentee will shadow and will be able to create an SOP based on. This activity should already have an established, verified SOP in the lab. This will allow immediate feedback for the advisee.