

## **Modes of Professional Communication: The Lab Report**

### **The lab report—its professional context**

To achieve success, engineers must have excellent communication skills. When you embark on your post-graduate career, your employers and clients will expect you to have a solid grasp of at least one acceptable format for documenting and relating findings from tests of materials, designs, procedures, and complex systems. Thus, writing reports on your laboratory research is an essential part of your professional communications training; good reporting is required, not optional. Without clear, logically organized, and economical accounts of your research, your employers or clients will be unable to understand how your results should inform their future actions, no matter how compelling you believe your findings to be. Your lucid documentation of research, both in the laboratory and the field, serves as vital evidence of your competence and credibility as an engineer.

### **Criteria for the lab report**

The laboratory reports you write for this class will be used to evaluate your mastery of these key skills. In each report, your instructor will expect you to accomplish the following tasks:

- Introduce the background of the problem (citing sources as necessary), and objective of your investigation succinctly, limiting yourself to pertinent information
- Show knowledge of proper protocols for planning and conducting experiments in your methods section
- Compile data from your investigation completely, accurately, and in readable tables and graphics that clearly illustrate important trends and key findings
- Perform data reduction and analysis (including error analysis), being sure to include pertinent equations, graphics, and figures accompanied by explanations of how they illuminate your findings and the research problem as a whole
- Describe results clearly and concisely
- Discuss results and draw logical conclusions, being sure to acknowledge the limitations of your investigation

Your report should include headings and subheadings to mark off major sections of the document, use precise terminology and avoid repetition or simple narrative of your doings. Lastly, you should be sure to proofread the final document for proper grammar and punctuation, consistent citation formats, and correct labeling and numbering of figures in the text.

### **Final thoughts**

The effort you put into mastering this form will be repaid in many ways over the course of your career. Perhaps most importantly, the good habits of documentation and analysis that you develop in writing these reports will sharpen your eye as a researcher, making you quicker to spot important trends in your data or recognize significant anomalies—both in your own work and that of your colleagues.