

# PHY 341, BIO 337, and CH 368, Research Methods for UTeach, Fall 2009

| Date                                    | Topic  | Project in Progress | Reading                | Homework Start        | Due                              |
|---|--|---------------------|------------------------|-----------------------|----------------------------------|
| Aug 24                                  | Classes not in session                                       |                     |                        |                       |                                  |
| Lab                                     | Balloons: Inquiry I Preparation                              | Inquiry I           | Feynman, part II       |                       |                                  |
| Aug 31                                  | Falling objects; Experimental design I&II                    |                     | Notes, Chapter 1       |                       |                                  |
| Lab                                     | Safety, Inquiry II   | Inquiry II          | Notes, Chapter 2       | 1 (Inquiry Grading)   | Inquiry I                        |
| Sep 7                                   | Labor Day  |                     |                        |                       |                                  |
| Lab                                     | Homework 1 Grading Discussion+Inquiry II                     |                     | Notes, Appendix A      | 2 (Excel)             | Homework 1 + Inquiry II Proposal |
| Sep 14                                  | Statistics: Motivation, Overview, Sampling and Averaging     |                     | Sample Inquiries       | 3 (Human Subjects)    |                                  |
| Lab                                     | Inquiry II   |                     |                        |                       | Homework 2                       |
| Sep 21                                  | Statistics: Standard Deviation, Standard Error               |                     | Notes, Chapter 3       | 4 (Statistics)        | Homework 3                       |
| Lab                                     | Inquiry II   |                     |                        |                       |                                  |
| Sep 28                                  | Statistics: Distributions, Central Limit Theorem and Z tests |                     |                        |                       | Homework 4                       |
| Lab                                     | Inquiry III  | Inquiry III         |                        | 5 (Inquiry grading)   | Inquiry II draft                 |
| Oct 5                                   | Statistics: <i>t</i> tests and Inquiry II partner grading    |                     |                        |                       | Homework 5                       |
| Lab                                     | Inquiry III+ $\chi^2$  |                     |                        | 6 ( $\chi^2$ )        |                                  |
| Oct 12                                  | Scientific Literature  |                     | Notes, Chapter 5       |                       | Homework 6                       |
| Lab                                     | Inquiry IV planning  | Inquiry IV          |                        |                       | Inquiry III                      |
| Oct 19                                  | Inquiry II presentations                                     |                     |                        | 7 (Literature Search) | Inq IV Proposal 1                |
| Lab                                     | Inquiry IV; proposal review                                  |                     |                        |                       | Homework 7                       |
| Oct 26                                  | Modeling: Order of magnitude                                 |                     | Notes, Chapter 4       | 8 (Estimation)        | Inq IV Proposal 2                |
| Lab                                     | Inquiry IV   |                     |                        |                       | Inquiry II final                 |
| Nov 2                                   | Modeling: M&Ms + Temperature                                 |                     |                        | 9 (M&Ms)              | Homework 8                       |
| Lab                                     | Inquiry IV   |                     |                        |                       |                                  |
| Nov 9                                   | Numerical Modeling: Equations in Excel                       | Presentati          | Presentation articles  | 10 (Position paper)   | Homework 9                       |
| Lab                                     | Inquiry IV   |                     |                        |                       |                                  |
| Nov 16                                  | Presentation Preparation                                     |                     |                        |                       |                                  |
| Lab                                     | Inquiry IV   |                     |                        |                       |                                  |
| Nov 23                                  | Presentations  |                     |                        |                       | Homework 10                      |
| Lab                                     | Inquiry IV or Thanksgiving                                   |                     |                        |                       |                                  |
| Nov 30                                  | Presentations  |                     | Feynman, Cargo Cult... | 11 (Inquiry Grading)  | Inquiry IV draft                 |
| Lab                                     | Inquiry discussions with partners                            |                     |                        |                       | Homework 11                      |
| Final Exam Periods: Final Presentations |  |                     |                        |                       | Inquiry IV final                 |