

SM 101 SCIENTIFIC THOUGHT AND METHOD

Syllabus

Instructor: _____
Office _____ Phone _____ Office Hours _____

Graduate Teaching Assistant: _____
Office _____ Phone _____ Office Hours _____

Pre-requisite: MPL level 3 or higher or MTH 126/127

Text: Provided in the form of student packets.

Course Description: This course has been designed specifically for science and math majors in an effort to increase student retention, motivation, and success. Students will have the opportunity to explore the physical and natural sciences through a small number of interdisciplinary skills-based units that focus on the process of scientific investigation. The course will emphasize the development of those practical and critical thinking skills necessary to perform scientific inquiry, and integrated within the curriculum will be opportunities for students to strengthen basic math skills.

Attendance/Participation: Due to the nature of this course, attendance is required. To further encourage regular attendance, a portion of the final grade is devoted to this. The class will be divided into cooperative learning groups who will work together to perform experiments and exercises, with each member recording the results and answers to questions in their own lab manual (provided). Assessment of classroom participation will be based on the checkpoint discussions of the activities with the instructor (participation points given for completed checkpoints).

Homework: Homework assignments will be assigned each class and will be due the following class period. Points will be deducted for late homework (half credit if one class late, no credit thereafter).

Exams: These announced evaluations will be scattered throughout the course. The evaluations will be based on scientific reasoning, rather than the memorization of facts and formulas.

Writing Assignments: Students will be assigned several writing assignments throughout the quarter which may include lab reports and/or critiques of scientific articles. Details and supporting information for these assignments will be given in class.

Weighted Grade Distribution	Percent
Attendance/Participation	10%
Homework	20%
Exams 1, 2, 3	40%
Writing Assignments/lab manual	30%

Grading Scale:

A (90% and above)
B (80%-89%)
C (70%-79%)
D (60%-69%)
F (59% and under)

Tentative Course Topics:

- Week 1 Observation versus inference
Nature of science
- Week 2 Measurement and unit conversions
Creating and interpreting graphs
- Week 3 Introduction to experimental design, Exam 1
- Week 4 Hypothesis writing
Critiquing published scientific research
- Week 5 Evidence-based conclusion writing
Reporting scientific investigations
- Week 6 Introduction to argumentation and scientific models
Exam 2
- Weeks 7-10
Autonomy in scientific investigations - Students engage in multiple experiments that increase in complexity from several variables to multiple co-dependent variables.
Lab reports and class presentations will be assigned.

Exam 3: (during Finals Week)

Date and time: TBA

Student Code of Ethics

Please understand the policies of the university. They will be adhered to in this course.