

Technical Science – Alternative Delivery – Syllabus

Instructor Information

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Office

Building 100
Room 107

Course Information

Course No: 10-806-106
Credits: 2

Meeting Times / Location

Beginning Date: _____	Mon – Tues 8:00 – 5:30
Number of Weeks: 16	Wed – Thur 8:00 – 4:00
Ending Date: _____	Fri - 8:00 - 3:30
	ASC – Bld 100 Room 107

Course Description

Technical Science is divided into three units: 1. Scientific Tools and Methods, 2. Introduction to Chemistry, 3. Introduction to Physics. In unit 1, students convert measurements, design tables and graphs, create models, and use the scientific method. In unit 2, students interpret a model of the atom and use the periodic table. They distinguish physical, chemical, and nuclear changes and identify properties of common compounds. They analyze chemical equations and relate technical applications to chemical properties. In unit 3, students determine the effect of force on linear motion, analyze various physical phenomena, and analyze the various forms of energy.

Prerequisites

None

Textbooks, Resources, Supplies

Text: John Pluemer. *Technical Science*. Publisher: Southwest Wisconsin Technical College
Resources: <http://www.swtc.edu:8082/courses/techsci>
Supplies: Scientific calculator

Course Outcomes

Primary Core Ability: Communicate Clearly
General Education Outcome: Apply Scientific Concepts

Competencies

- Convert measurements to required accuracy
- Create tables and graphs
- Create a model
- Use the scientific method
- Interpret a model of an atom
- Use the Periodic Table
- Distinguish between physical, nuclear, and chemical changes
- Determine chemical properties of basic compounds
- Analyze a chemical equation
- Relate technical applications to chemical or physical properties
- Interpret types of rates
- Determine the effect of force on linear motion
- Analyze the relationship of physical phenomena
- Analyze forms of energy (nuclear, electromagnetic, chemical)
- Analyze forms of energy (thermal, mechanical, electrical)

Guidelines and Information

Progression Through the Course

Worktext: Students will receive a worktext that is a combination textbook, workbook, and course guide. It will present and explain material, guide the student through various learning activities (Computer Programs & videotapes), and provide questions and exercises to monitor the student's learning. Students will progress through the sections of the worktext reading passages, watching videotapes, completing computer tutorials, answering questions, and completing exercises. If at any time the student needs further explanation of a concept the instructor will be available to help. PLEASE ASK!!

Quizzes: There is a quiz following each section in the worktext. Quizzes are given often to insure that the student keeps up with the work and to insure that the material in one section is mastered before moving on to the next. The instructor will review quizzes with the student. If the results of a quiz indicate that the student has not mastered the material in that section, the instructor may require that the student spend more time on that section before moving on. The student will not continue until the material in the previous section is mastered. If at any time the student is having difficulty understanding the material in a section the instructor will be available to help. PLEASE ASK!!

Internet Assignments: There are also Internet assignments that must be completed by the student. These will be posted on the grade record sheet at the end of this document. The Internet assignments give students the opportunity to apply the science concepts to their occupation and to their everyday life.

Report - A written report is required of all students. The purpose of the report is to give students an opportunity to explore a topic (related to science) that is of interest to them. Your instructor will provide the criteria for the report.

Unit Tests: There is a Unit Test following each required unit. Study guides are available to help the student prepare for the test. You may use your completed quizzes as a study resource but they must be returned to your instructor before you take the course.

Tips and Policies for a Successful Performance

1. Get started immediately after your initial meeting with your instructor. Procrastination is the single biggest reason for poor performance in independent study courses. Be aware of the deadline for completing the course.
2. Set a pace for yourself that will allow you to finish the course on time. If you have 23 sections to complete and 16 weeks to get them done, then you should be completing more than 1 section per week. (I recommend 2 sections per week) Even if it only takes you one day to do a section, don't wait until the last 23 days to start working.
3. Ask questions when you don't understand. Take advantage of the communication resources: answer keys, instructor email and whiteboard contact, discussion with other students, ASC instructors.
4. Be honest with yourself. If you do a problem and check your answer and you find you got it right then you probably understand that problem. However, if you get a problem wrong, don't just look at the answer key and say "Oh I know how to do it now." Find out why you got it wrong.
5. Spend a reasonable amount of time on each question. Some problems will be easy for you and you will finish them quickly. Other problems may take a little more effort. Don't give up too soon. On the other hand, don't spend hours on a single question. If you have given it your best effort, move on to another problem and come back to it later or ask your instructor for help.

Open Enrollment

1. Open enrollment courses will last 16 "school weeks" beginning with the official registration date of the student. (Your instructor will inform you of the exact ending date for the course.)
2. If you register within the first two weeks of the Fall or Spring semester, the course will finish at the end of that semester. If you have not completed the course, you could get an Incomplete (I) only if you have completed 80% of the course material and if you have put forth significant effort as determined by the instructor of record.
3. If you register more than two weeks into the semester, you will receive an In-Progress (IP) and be given appropriate time in the following semester or summer session to finish the course. For example, if you register at the 8-week mark (halfway through the Fall semester), you would then be given 8 weeks in the Spring semester to complete the course. Late registration will mean a diminished or no refund period.
4. Registration for a given semester stops when the registration for the following semester begins. For example, if you enroll in a course on December 1st, you will be registered for the Spring semester. Your course officially begins on the first day of the Spring semester (early January) and ends at the time of the last class meeting in the Spring semester. (Your instructor will inform you of the exact ending date for the course.)

In a situation like the one described above, you are free to get the course materials (textbook, etc) and begin to review them. However, your instructor will not begin grading any tests or assignments until the semester officially begins.

For purposes of this open enrollment option the following applies:

Registration for Spring semester begins in early November

Registration for Summer session begins in early April

Registration for Fall semester begins the first day of Summer session (early June)

5. You can expect to have contact with your instructor during the official Fall and Spring semesters and during the 6-week Summer session. Do not expect to have contact with your instructor when SWTC is not in session.

ADA Statement

Students with disabilities should contact the Special Services Coordinator to arrange special accommodations or services to participate in this course, please contact...

Lisa Hebgen, Special Services Coordinator,

Building 100 Room 108.

1-800-362-3322 x 2631 or TDD 1-608-822-2072.

lhebgen@swtc.edu

Refer to the Student Handbook for further details.

Ethics Policy:

When an instructor has evidenced dishonest behavior by a student or students, that student shall be withdrawn from the course for the semester. A letter describing the infraction will be sent to the student and the division dean and filed with student services. The student or students will be required to meet with the division dean, the counselor, and the course instructor.

Grading Information

Rationale

Attendance - This course is offered through the ASC in a self-paced, open-entry/open-exit format allowing students to fit it into their schedule when it is most convenient for them. However, students must show steady progress. Sporadic attendance will adversely affect grades.

Worktext - Students will be required to complete the questions and activities in the worktext as they study the various materials that are a part of this course. In order to be successful in this course, students must grasp the concepts that are presented through the various activities in the worktext.

Quizzes: The student will be required to complete 24 quizzes covering material from the three units outlined above. The quizzes range in value from 14 to 50 points. Quizzes represent 50% of the student's grade.

Tests: The student will be required to complete three tests one following each required unit. The tests represent 30% of the student's grade.

Report: A two-page report is required of all students. Details about the nature of the report will be covered in the worktext. The report represents 10% of the final grade.

Internet Assignments - The Internet assignment occur periodically as means of applying the content to the students' program area. This will be 10% of the final grade.

Final Grade Computation

The final grade is based 50% on quizzes, 30% on tests, 10% on report, and 10% on Internet assignments.

Quizzes - At the end of the course, the quiz points earned will be divided by the total quiz points possible for that student. This is the quiz score.

Tests - The test points earned will be divided by the possible test points. This is the test score.

Internet Assignments - The Internet assignment points earned will be divided by the possible Internet assignment points. This is the assignment score.

Report - The report points earned will be divided by the possible report points. This is the report score.

Final % = (Quiz Score x 50%) + (Test Score x 30%) + (Assign. Score x 10%) + (Report Score x 10%)

The final percentage will translate into a grade based on the scale below.

Grading Scale

A = 92% - 100%

B = 83% - 91%

C = 74% - 82%

D = 65% - 73%

F = Below 65%

No more than 2 quizzes or tests can be done per day during the last 10 days of the semester.

Grade Record

Unit 1 Scientific Tools and Methods

Section	Assignment	Quiz	Test
Making Observations	-----	Quiz 1 =	-----
Measurements	-----	Quiz 2 =	-----
Tables and Graphs	-----	Quiz 3 =	-----
Models	-----	Quiz 4 =	-----
Scientific Method	-----	Quiz 5 =	-----
			Test 1 =

Unit 2 Introduction to Chemistry

Section	Assignment	Quiz	Test
Study of Matter	-----	Quiz 6 =	-----
Multidimensional Properties	-----	Quiz 7 =	-----
Atoms	Atom Web Assign	Quiz 8 =	-----
Elements, Isotopes, and Ions	-----	Quiz 9 =	-----
Periodic Table	Periodic Table Web Assign.	Quiz 10 =	-----
Physical, Nuclear, & Chemical Changes	-----	Quiz 11 =	-----
Chemical Bonds	-----	Quiz 12 =	-----
Making Compounds	-----	Quiz 13 =	-----
Chemical Equations	-----	-----	-----
Chemistry in Your Everyday Life.	Metals Web Assign Nonmetals Web Assign Salts Web Assign Water Web Assign	-----	-----
			Test 2 =

Report

Report / Presentation	Score =
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Unit 3 Introduction to Physics

Section	Assignment	Quiz	Test
Rate	-----	Quiz 15 =	-----
Force and Motion	-----	Quiz 16 =	-----
Work, Resistance, and Power	-----	Quiz 17 =	-----
Energy	-----	Quiz 18 =	-----
Nuclear Energy	-----	Quiz 19 =	-----
Electromagnetic Energy	Light Web Assign	Quiz 20 =	-----
Chemical Energy	-----	Quiz 21 =	-----
Thermal Energy	-----	Quiz 22 =	-----
Mechanical Energy	-----	Quiz 23 =	-----
Electrical Energy	-----	Quiz 24 =	-----
			Test 3 =