MILWAUKEE AREA TECHNICAL COLLEGE

Course Syllabus

Fall 2007

Course: Comprehensive Technical Physics		**Credits:** 4.0
Subject Abbreviation: NATSCI	**Course Number:**137	**Section Number:**001

Class Meets:
Lecture/Lab: T 9:00 a.m. – 11:55 a.m. in Room C416
Lecture/Lab: TH 9:00 a.m. – 11:55 a.m. in Room C416

Instructor: Dr. Zack A. Shana

Office:C487	**Office Hours:** TBA
Phone number:(414) 297-6954	**E-mail:**Shanaz@matc.edu

Course Description:
This course is designed to cover traditional first- and second- semester technical physics topics including mechanics, heat, electricity, magnetism and optics. The course emphasizes applications to chemical, technical and industrial programs.

Prerequisites:
MATH 152 (Tech Math 2) 0r Concurrent Enrollment of MATH 152.

ADA Statement:
If you have a disability that impacts your classroom performance and wish to request an accommodation, contact the Center for Special Needs at (414) 297-6838. They may require documentation regarding your disability to enable them to comply with your request. Admission of a disability is voluntary and will be handled in a confidential manner. MATC does not discriminate against individuals with disabilities and fully complies with the Americans with Disabilities Act. To ensure your academic success in this program, you are strongly encouraged to provide your instructor with a copy of the Instructor Notification Form from the Center for Special Needs.

Textbooks:
Unified Technical Concepts, “Physics for Technicians”, CORD communications
ISBN 1-55502-353-3

Supplies:
A notebook, pens, pencils, graph paper and a scientific calculator.

Course Competencies:

1. Analyze data
2. Perform dimensional analysis
3. Solve vector problems
4. Evaluate linear motion
5. Analyze force as it relates to linear motion
6. Evaluate energy in a mechanical system
7. Compare renewable energy alternatives
8. Analyze gravity
9. Analyze sound waves
10. Analyze fluids at rest
11. Assess thermal properties of matter
12. Calculate quantity of heat transferred
13. Analyze thermodynamic changes in a system
14. Analyze charge and potential
15. Analyze electric current
16. Analyze magnetic field
17. Analyze AC circuits
18. Analyze geometrical optics
19. Analyze interference and diffraction

Course Topics:

Ch 1:	Force
Ch 2:	Work
Ch 3:	Rate
Ch 4:	Momentum
Ch 5:	Resistance
Ch 6:	Potential & Kinetic Energy
Ch 7:	Power
Ch ***	Renewable Energy
Ch 8:	Force Transformers
Ch 11:	Vibrations & Waves
Ch 13:	Radiation
Ch 14:	Optical Systems

*** Special Topic

Course Requirements and Grading:

Assignments: Students will be assigned problems for each chapter covered in the course. The assignments will be collected and reviewed during the lab period.

Laboratory: Will consist of at least eight experiments. In addition to collecting basic physical data, the emphasis in the lab will be on analyzing the data, including graphing and least square analysis. **NO MAKE_UPS FOR MISSED LABS. The grade for the lowest lab report will be dropped.**

Testing: There will be three hour-tests and a final exam during the semester. Tests will include definitions, explanations, interpretations, problem solving, and lab performance. **NO MAKE_UPS FOR MISSED TESTS. The grade for the lowest test will be dropped.**

Grading: The course grade will be based on test scores, lab performance, homework effort and class participation.

Hour-Tests	50 %
Final Exam	20 %
Laboratory	20 %
Homework	10 %

Grading Scale:

93 – 100	A	73 – 76	C+
89 – 92	A-	69 – 72	C
85 – 88	B+	65 – 68	C-
81 – 84	B	60 – 64	D
77 – 80	B-	00 – 59	U

Attendance Policy: You are responsible for attending all classes and all course requirements. If you miss a class, it is your responsibility to contact the instructor, in advance if possible, and obtain the makeup work assignments. See the Course Syllabus Attendance Supplement.

Withdrawals: Students may withdraw from the course prior to the last week of formal class meetings without a grade penalty. Failure to officially withdraw may result in a grade (U) for the course.

Incompletes: Incomplete grade (I) is given if the student has successfully completed most of the course requirements with a passing grade, and for reasons beyond control, fail to complete a relatively small portion of the course. Consult with MATC policies on Incompletes.

Complaint Procedure:

Any student who experiences a problem with any aspect of this course should attempt to resolve it with the instructor first. If the problem is not resolved, it should be discussed with the Associate Dean of Liberal Arts and Sciences, Dr. Kimberly Farley at (414) 297-8187.

MATC Core Abilities

The Core Abilities are skills that allow students to continually adapt and learn. They have been called "employability skills," soft skills, and professional attributes. You may not be tested for all of the Core Abilities directly, but you will demonstrate or apply them to complete lessons or to improve skills. The Core Abilities and indicators are listed below, and the ones you will be focusing on in this course are checked.

Core Ability	Applies to Course (•)
Communicate Effectively	
a. Use effective oral communication skills	•
b. Use effective written communication skills	•
c. Apply standard rules of language structure, including grammar and spelling	
d. Listen actively to others	•
e. Derive meaning from text	•
f. Communicate in a bias-free manner	•
g. Support viewpoints with evidence	•
Collaborate with Others	
a. Demonstrate respect in relating to people	•
b. Cooperate and resolve conflicts effectively	
c. Participate in shared problem solving	•
Respect Diversity	
a. Acknowledge personal prejudices and biases	
b. Appreciate perspectives of people outside own background/culture	
c. Work collaboratively with persons from other backgrounds/cultures	
d. Demonstrate sensitivity to global issues	
Demonstrate Responsibility	
a. Attend classes as scheduled	•
b. Turn in quality work	•
c. Adhere to safety rules and regulations	•
d. Act professionally to fulfill job duties within chosen field	
e. Demonstrate flexibility and self-directedness in learning	•
f. Acknowledge a responsibility to the global community (cultural, economic, environmental, political)	
g. Practice environmental sensitivity in profession	

Think Critically	
a. Differentiate between fact and fiction	•
b. Consider other viewpoints and perspectives	•
c. Present logical arguments	•
d. Evaluate sources of information to solve problems	•
Utilize Technology	
a. Use technology to communicate	•
b. Solve problems using technology	•
c. Use appropriate technology to manage information	•
d. Recognize the impacts of technology	•
Apply Math and Science	
a. Apply math concepts and principles appropriately	•
b. Apply scientific concepts and principles appropriately	•
c. Interpret meaning from quantitative data	•
d. Interpret meaning from scientific data	•

Student Signature: Your signature indicates that the syllabus has been read and understood by you.

Sign ature: _____ **Date:** _____