Course Instructor: Mr. Lance C. Esswein, M.S.
Office: Science & Technology Building (ST) 310C

Office Hours: MTWR 4:00 - 4:50 pm (or by appointment)
Phone: (361) 633-1472
E-Mail: lance.esswein@gmail.com

url for Course Homepage on the Web:
http://www.sci.tamucc.edu/~physweb/physics/physics-courses/phys1402/Physics1402-homepage.html

Physics 1402 carries 4 credits. Concurrent registration in Physics 1402- 001 (lecture section) and any one of the several Physics 1402-Lab sections is required. Letter grade will be awarded to you in Physics 1402-001 only; 25% weight will be given to lab work in determining your final letter grade.

Course Description: This is an algebra and trigonometry based introductory course on Newtonian physics. This course counts toward the natural science component of the University Core Curriculum, which serves as the common foundation for all majors. Accordingly the course is designed for students from all disciplines provided that their mathematics placement is above College Algebra. This course is required for several degree programs in the sciences, and is often expected to have been completed by students applying for graduate school in the sciences. It will not satisfy the academic requirement of programs such as engineering, engineering technology, geographic information science, mathematics, chemistry (general concentration) or engineering and physics (minor or major, if the credits are transferred).

Topics covered include Aristotelian physics and its overthrow, Newton's Laws of motion, Gravitation and the motion of celestial objects, Conservation Laws, Momentum and Energy. The idea of the universe as a law governed system will be developed. Laboratory activities provide introduction to experimental methods in physics.

Student Learning Objectives: After successfully completing this course you will be able to use the technical language required to precisely describe motion, and to recognize the physical principles governing the motion of objects. You will be able to scientifically explain the nature of motion qualitatively, answer quantitative questions on motion, and design elementary experiments to test the physical principles behind motion, accepted as valid by the community of physicists.

Prerequisites: College Algebra required or placement beyond College Algebra. Proficiency in college level algebra is very essential to successfully complete this course.

Curricular Resources: 'General Physics II Lab Manual' by M.K.Balasubramanya is required. It contains the physics necessary for all experiments and the details of these experiments.

No text book is required for this course. However the instructor strongly encourages you to purchase at least one general physics text book where the discussion is algebra and trigonometry based. Any edition, including previous editions of a text will be adequate. A partial list of such texts is given below:

Physics: Algebra/Trig, by Hecht
Physics, by Cutnell & Johnson,
Physics, by Walker,
Physics, by Serway & Faughn,
College Physics, by Urone,
Introductory College Physics, by Mulligan.

Additional helpful physics books at the Reserve Desk in Bell Library:
The instructor makes available his notes, and relies heavily on animated presentations and videos to amplify lectures.

**Bring a scientific calculator to every lecture and laboratory.**

### Schedule of Lecture Topics and Exam Dates:

<table>
<thead>
<tr>
<th>Monday, July 9</th>
<th>Tuesday, July 10</th>
<th>Wednesday, July 11</th>
<th>Thursday July 12</th>
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</thead>
<tbody>
<tr>
<td>Module 1: Introduction. Units &amp; Dimensions</td>
<td></td>
<td>Module 2: Waves &amp; Sound</td>
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<tr>
<td>Monday, July 16</td>
<td>Tuesday, July 17</td>
<td>Wednesday, July 18</td>
<td>Thursday July 19</td>
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<tr>
<td>Module 2: con't</td>
<td>Module 2: con't</td>
<td>Module 3: Electricity Review for Exam #1</td>
<td>EXAM #1</td>
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<tr>
<td>Monday, July 23</td>
<td>Tuesday, July 24</td>
<td>Wednesday, July 25</td>
<td>Thursday July 26</td>
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<tr>
<td>Review Exam #1</td>
<td>Module 3: con't</td>
<td>Module 3: con't</td>
<td>Module 4: Magnetism</td>
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<tr>
<td>Monday, July 30</td>
<td>Tuesday, July 31</td>
<td>Wednesday, August 1</td>
<td>Thursday August 2</td>
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<tr>
<td>Module 4: Electromagnetism &amp; EM Waves</td>
<td>Module 4: con't</td>
<td>Module 4: con't Review for Exam #2</td>
<td>EXAM #2</td>
</tr>
<tr>
<td>Monday, August 6</td>
<td>Tuesday August 7</td>
<td>Wednesday, August 8</td>
<td>Thursday, August 9</td>
</tr>
<tr>
<td>Review Exam #2</td>
<td>Module 5: Mirrors &amp; Optics</td>
<td>Module 5: con't</td>
<td>FINAL EXAM</td>
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**Sources of Help:** The instructor strongly encourages you to visit him on a regular basis to clarify your understanding of the course material and to seek his help in completing the homework. FREE mathematics and physics tutoring services are available via the **CASA, GSSC 119, Phone 825-5933**; you are strongly encouraged to make use of this service. You should also form a peer group of your classmates to collectively study and understand physics. The instructor will assist you in forming such groups.

**Communicating with the Instructor and Classmates:** You are encouraged to visit the instructor personally during established office hours for help. You are also welcome to communicate with him by phone and/or e-mail with physics questions. Blackboard will be employed to support learning objectives and discussions as required. The grades for this class will be posted periodically in Blackboard.

The instructor is a strong proponent of the “embrace technology” concept. The use of smartphones, tablets, and laptops is allowed and encouraged both during lecture and lab. For actual exams, the specified calculator ONLY will be used. If the students requires assistance via text or email, ensure the subject of your e-mail messages to the instructor must begin with 'General Physics 1-' followed by a short description in the subject field. For example - 'Subject: General Physics 1-Difficulty with Question 3 of Quiz 2', or 'Subject: General Physics 1-Web page not accessible'. If you do not follow this convention there will be a delay in your instructor replying to your message. Ensure your name is in the message so the instructor will know whom to respond to.

**Quizzes:** There will be several short in-class quizzes to ensure the students understand the material. These will be short 10 minute quizzes usually targeted on a key principle or concept presented in the class. There will be no make-ups allowed.

**Homework:** Homework problems will be assigned at various times in the class, The due date will be clearly stated. No late work will be accepted.

**Lab:** A Laboratory Safety Presentation will be presented the first lab session. You must attend to be able to work in the physics laboratory. Failure to complete this requirement by the deadline may result in the student being deleted from the class.
You will be assigned pre-lab exercises, with a multiple choice quiz based on those exercises at the beginning of the lab period, as well as a post-lab quiz which tests your ability to interpret and analyze data related to that experiment. You can use only the lab manual to answer these pre- and post-lab quizzes.

All experiments will be performed in groups and will require a group lab report. Each one of you is individually responsible for recording experimental observations and data. If your lab partner recorded experimental data and you did not, and if your lab partner dropped the course or is unreachable and uncommunicative, you are still responsible for completing work on that lab on time.

You will not be allowed a lab make up opportunity unless you have been granted the instructor's prior approval for an absence for reasons of sickness (backed by your doctor's note) or family emergency.

The lab report on an experiment should be comprehensive, including a clear analysis of the experimental results. The required structure of the lab report will be explained to you in the lab. The lab instructor will evaluate your group's quality of work, the care taken in collecting data and in performing the experiment, and your understanding of physics evident from the analysis of your data and your discussion in the report. Your lab report on an experiment is due at the beginning of the next lab period. Further guidance on Lab report requirements will be provided by your Lab Instructor the first day of lab.

**Computer Skills for Physics Lab Test:** At the end of the semester there will be a required Computer Skills for Physics Lab Test where your computational skills with the spreadsheet, and your ability to gather and analyze data generated by electronic sensors and collected by the computer will be tested.

**Lab Grading Scheme:** The lab grade will be evaluated according to this scheme: Lab Reports 80%, Pre- and Post-Lab quizzes 15%, and the Computer Skills for Physics Lab Test 5%.

**Exams:** Two term exams will be held during the lecture period. The final exam will be in the lecture room. Term exams will be closed book and the only resource you can use are hand written material and a calculator but nothing else. There is a limit on the number of hand written material: 4 pages for Exam 1, 6 pages for Exam 2, and 8 pages for the final exam. There will be both conceptual questions and numerical problems on the exams, as well as questions based on the physics and measurement techniques you have learned in the lab. All topics covered up to the class prior to a term exam constitute potential material for the term exam. More specific guidance on material for the two term exams will be provided later during the term. Your answers to exam questions should be clearly and legibly written on the exam on the margin or on attached sheets. For the multiple choice questions on the exams which have a numerical answer, you will need to show your work and calculations on a work sheet. If you worked a problem on a term exam correctly, but marked its answer incorrectly, you will get partial credit for that problem based only on the work shown on the worksheet. The only other valid reason for partial credit is a simple misreading of given data such as reading 10 m as 100 m and no other. Sign errors, partially worked out problems, or any other errors will not qualify for partial credit. **Graded term exams, and their answer keys, will be made available for inspection and study in class or in the instructor's office but they will not be returned to the student and the student cannot copy them or the exam answer keys and solutions.**

**Use of Computers:** Many experiments require the use of PCs in the physics laboratory. Computer skills that the student should acquire in this course include (a) the use of available physics software, and (b) creating and using a spreadsheet, including graphing and linear regression. You should bring a portable data storage device to the lab to save the files you and your group created. Alternately, save your work on remote drives accessible through a network. Each student must have access to a copy of the files the group created. Spend a few minutes at the end of the lab period to copy, for your use, the files you have created. The instructor cleans the desk top on the physics lab microcomputers frequently and student created files will be deleted at that time. The use of smartphones, tablets and laptops is allowed and encouraged.

**Policy on Make Ups for Labs, Quizzes and Exams:** There are NO provisions for making up exams, quizzes or laboratories except in cases where prior arrangements have been made with the instructor. The only valid reasons for missing a lab, quiz or an exam are (1) health related, backed by a doctor's note, (2) family emergency which can be documented, (3) job interview (letter of invitation for the interview required by the instructor), and (4) participation in a previously scheduled athletic, or university event or travel to a conference. In case of emergency resulting in not informing the instructor of your absence from class, contact the instructor at your earliest convenience. If you have to miss a laboratory, contact the laboratory
instructor by phone or e-mail immediately. The instructor emphasizes that reasons for an absence for a class, a lab or an exam must be reported prior to the respective meeting time and not after the class, lab or exam.

**Grading policy:** Your final composite numerical grade is based on the following weights to the different components of the course:-(i) Lab 25% (ii) Quizzes 10% (iii) Homework 10% (iv) Two Term Exams, 15% each (v) Comprehensive Final Exam 25%.

Your letter grade will be determined using the university catalog's interpretation of the meaning of each letter grade. (See the catalog's section on 'Grades'; A = Excellent, B = Good, C = Average, D= Passing, F = Failure; work not passed). The definition of excellent, good, average, passing and failure will be based on the statistics of prior student performance in this course. The scheme for awarding letter grades will be as follows:

**Grade Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>90% to 100%</td>
</tr>
<tr>
<td>B</td>
<td>80% to 89%</td>
</tr>
<tr>
<td>C</td>
<td>70% to 79%</td>
</tr>
<tr>
<td>D</td>
<td>60% to 69%</td>
</tr>
<tr>
<td>F</td>
<td>0% to 59%</td>
</tr>
</tbody>
</table>

**Policy on Making Up Lost Work Days due to University Closure:** In the event of the university closing down temporarily due to acts of nature or any other reason, the instruction will be through notes circulated by the instructor online and quizzes and exams conducted online. The instructor will announce details on the actual implementation of the policy at the time of the suspension of classes.

**Policy on Academic Integrity:** The instructor expects a high level of personal integrity on the part of students enrolled in the course. He further assumes that students have qualities of personal worth, dignity and the capacity for self-direction in personal behavior. Plagiarism and academic dishonesty, demonstrated by work copied from other students or sources not authorized by the instructor, on labs, exams or quizzes, will result in the award of 0 for that lab, exam or quiz, a written reprimand to the student, and a recommendation for a more severe disciplinary action to the appropriate department chair/dean.

**Notice to Students with Disabilities and Veterans:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101. Certain accommodations for the successful completion of the course by students with disabilities, like testing in a quite, secluded room, or providing extra time as deemed appropriate, can be made, after the above office has determined the appropriateness of such accommodations for the disabled student. Any action regarding such accommodation will require prior written notice to the instructor by the Office for Students with Disabilities.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**Dropping a Class:** The Instructor hopes that you never find it necessary to drop this or any other class. However, unforeseen circumstances in the middle of the term may make dropping a course necessary or wise. Please consult with the Instructor before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class.

**Grade Appeal Process:** As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days
allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University 
Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules 
Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal 
process, students may contact the Office of Student Affairs.

IF ANY CHANGES TO ANY OF THE ABOVE STIPULATIONS ARE MADE, THEY WILL BE ANNOUNCED IN 
CLASS AND/OR ON THE COURSE LISTSERVER AND/OR THE WEB, AND YOU ARE RESPONSIBLE FOR 
KEEPING YOURSELF INFORMED OF SUCH CHANGES.