University of Wisconsin-Milwaukee, Department of Physics Spring 2019
411-001 Mechanics

For general information on UWM policies and procedures, visit:
http://www4.uwm.edu/secu/SyllabusLinks.pdf

1. General Information

Attendance:  
Attendance will be taken at each class meeting.

Text:  
Visit http://uwm.ecampus.com/shop-by-course You should see the screen shown below with the various displayed purchasing options.

Expected average student time investment:

- Class contact (lecture): 3.33 x 14 +2.5 = 49.12 hrs.
- Assigned Reading: 14 weeks x 4 hrs. = 56 hrs.
- Assignments: 12 x 8 hrs. = 96 hrs.
- Reviewing for 2 tests: 2 tests x 10 hrs. = 20 hrs.
- Reviewing for (cumulative) final: 15 hrs.
- Final: 2 hrs.
- Total semester commitment (including reviewing for final and time taking final): 238.1 hrs. (59.5 hrs./credit)
- Weekly average (using 15 weeks): 15.9 hrs.

Course website:  
This course uses a standard Desire to Learn (D2L) website. Any UWM student enrolled in this class can reach the website: if you are unfamiliar with the D2L system, please refer to the notes on page 5 of this syllabus.

Pre-reqs:  
Physics 210. Go to: https://catalog.uwm.edu/courses/physics/ for further details. Pre-reqs will be enforced.

Class schedule:  
M,W: 12:30-1:45PM; F: 12:30-1:20PM. All classes in PHY 127. Lecture begins Wednesday January 23rd.

Level of difficulty:  
You will need good math skills. You will need to know the basics of multivariable calculus and be familiar with vector algebra including the dot and cross products.

Calculator:  
Please bring a simple scientific calculator to each lecture and test. (N.B. You do NOT need a fancy and expensive programmable calculator such for basic calculations).

Learning outcomes:  

Students who complete this course will have:
- Developed a deeper understanding of the content of Newton’s Laws of Motion
- Developed the skills to apply Newton’s Laws to problems involving resisted motion and problems that require the use of cylindrical and spherical polar coordinates.
- Developed and understanding of the calculus of variations, Lagrange’s equations, and their application to mechanical problems.
- Developed an understanding of Hamiltonian Mechanics

2. Personnel:

Instructor:  
Robert Wood, KEN 3038. (Associate Chair of Department)
(Phone: 229-5303, e-mail: chunnaic@uwm.edu)

Office hours:  
TBA
**Use of e-mail:** If you e-mail the instructor, please state clearly:
1) **who you are** (please use both given and family names)
2) Please include **Physics 411-001 Spring 2019** in the subject line.
3) By default I address students as Ms/Mr and use the family names given in the PAWS class roster. If you want me to use another name or form of address, please let me know in writing.

If you don’t follow 1) and 2), above, there will be some delay in my replying to your message. You may not receive replies to e-mails sent after 5.30pm in the evening or at weekends until the following business day.

*If you choose to send messages by e-mail that can reasonably be described as unintelligible, discourteous, or abusive* do not expect a response and do expect (in the case of discourteous or abusive messages) your e-mail address to be added to the instructor’s spam filter.

3. **Important UWM dates:**

Please understand that these dates (see below) are decided by the school, **NOT** by the instructor, who cannot change them either for your or for his own convenience.

- **February 4th** is the LAST DAY for students to add full-term courses.
- **February 18th** is the LAST DAY to withdraw from classes without W on transcript.
- **April 7th** is the LAST DAY to drop classes with transcript notation (W). After this date, drops and withdrawals require the signature of the instructor and the school/college advising office. Signatures are given on appeal and only for non-academic reasons.

See also: [http://uwm.edu/onestop/dates-and-deadlines/important-dates-by-term/](http://uwm.edu/onestop/dates-and-deadlines/important-dates-by-term/)

**FINAL:** **Thursday May 16th**, 12:30 – 2:30pm, in Physics 127

Please understand that these are decided by the school, **NOT** by the instructor, who cannot change them either for your or for his own convenience.

4. **Important course dates (decided by instructor)**

Two tests will be held during the semester at regularly scheduled class times on the following dates: Friday March 1st, and Friday April 19th.

5. **Notes:**

The instructor will periodically supplement lecture presentation and the text by uploading his own notes to the course website.

6. **Assignments:**

Assignments will be posted on the course website at intervals of about 1.5 weeks. It is really useful to try these questions on your own **before** you seek for help (it’s how you learn to do physics and how you can prepare for the timed tests). Due dates will be clearly indicated on the assignments. No late assignments are accepted without an appropriate medical excuse (specifying the dates during which the student was unfit for normal academic duties and including the letterhead and signature of a physician) or, in the event other emergencies, appropriate documentation.
7. Tests:
Two tests will be held during the semester at regularly scheduled class times on the following dates: Wednesday February 27th, and Wednesday April 17th. NO TAKE HOME COMPONENTS WILL BE INCLUDED IN THESE TESTS. YOU WILL BE GRADED ON WHAT YOU WRITE DOWN DURING THE 1 HOUR AND FIFTEEN MINUTES. Make-up tests will be arranged ONLY if an appropriate written medical excuse (specifying the dates during which the student was unfit for normal academic duties and including the letterhead and signature of a physician) is available, or, for non-medical emergencies, appropriate documentation. Test dates will be rearranged for students who have conflicts with religious observance (see note 5, page 5 for official UW policy).

8. Final:
12:30 – 2:30PM, Thursday May 16th in PHY 127 (the usual classroom in which 411-001 meets). The final is comprehensive (cumulative). The final is also mandatory: you are responsible for making sure that you can attend at this time. If you do not attend the final, you have not completed the course: you will receive an F or an I (incomplete), depending on the circumstances. Incompletes are issued only for valid reasons (e.g., medical emergency).

Other official UWM policies concerning finals are given below. For full details go to:
http://www4.uwm.edu/secu/docs/other/S22.htm
https://uwm.edu/onestop/enrolling/finding-classes/#finals

Final Examination Policy: One-hour final examinations in one-credit courses may be given during the last class period; two-hour final examinations in all other courses shall be given during the regular examination period. The time of a final examination for an individual or a class may be changed only with the prior approval of the dean or director. The change will involve a postponement to a later date. The Provost’s Office and Classroom Assignments shall be notified of any approved changes in final examinations in order to avoid scheduling conflicts of day, hour and room.

Conflict: When a departmental combined-lecture examination conflicts with another examination, it is the responsibility of the department giving the combined-lecture examination to resolve the conflict.

Student Responsibility for Scheduling: Each student is responsible for arranging a study list that will permit satisfactory progress towards degree requirements and a class schedule that avoids (a) class and final exam scheduling conflicts and (b) an excessively demanding exam schedule.

9. Grades:
The overall course grade will be determined as follows:
1) 30% from two tests of equal weight administered during the semester.
2) 30% from assignments (all of equal weight).
3) 40% from a comprehensive (cumulative) final.

10. Incompletes:
Incompletes. A notation of "incomplete" may be given in lieu of a final grade to a student who has carried a subject successfully until near the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student's control, has been unable to take or complete the final examination or to complete some limited amount of term work. See https://www4.uwm.edu/secu/docs/other/S_31_INCOMPLETE_GRADES.pdf

An incomplete for missing the final will be allowed only in cases of: illness resulting in hospitalization or a documented emergency/urgent care visit to a physician; documented family emergencies/bereavement; and verifiable (documented) traveling difficulties. All such absences must be supported by appropriate documents. If a student misses the final for medical reasons, a physician’s note, clearly showing the signature and letterhead of the physician, must be produced before a make-up can be allowed. The note must state clearly that, in the physician’s opinion, the student was not fit to take the final. A note stating only that a student visited (for example) the campus Norris Health Center is not sufficient. Notes from family members/relations are not acceptable.

INCOMPLETE POLICY FOR UNDERGRADUATES (Fac. Doc. #1558, 2536) An incomplete may be given to a student who has carried a subject successfully until near the end of the semester but, because of illness or other unusual and substantiated cause beyond
that student’s control, has been unable to take or complete the final examination or to complete some limited amount of term work. An incomplete is not given unless the student proves to the instructor that s/he was prevented from completing course requirements for just cause as indicated above.

A course marked incomplete must be completed during the next succeeding semester, excluding summer sessions and UWinterim. If the student does not remove the incomplete during this period, the report of “I” will lapse to “F”.

11. Proposed schedule (this is only a rough guide)

<table>
<thead>
<tr>
<th>Week 01</th>
<th>Chapter 1. Coordinate systems.</th>
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<tbody>
<tr>
<td>Week 02</td>
<td>Chapter 2. Newtonian Mechanics</td>
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<td>Week 03</td>
<td>Chapter 3. Oscillations.</td>
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<td>Week 04</td>
<td>Chapter 5. Gravitation.</td>
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<tr>
<td>Week 05</td>
<td>Chapter 6. Calculus of Variations</td>
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</tbody>
</table>
| Week 06 | **Test 01, Wednesday February 27th.**  
Chapter 7. Hamilton’s Principle -- Lagrangian and Hamiltonian Mechanics |
| Week 07 | Chapter 7 continued.           |
| Week 08 | Chapter 7 continued, Chapter 8 Central Force problem |
| Week 09 | Chapter 9. Dynamics of a system of particles. |
| Week 10 | Chapter 9 continued.  
Chapter 10. Motion in non-inertial frames. |
| Week 11 | Chapter 11. Dynamics of Rigid Bodies |
| Week 12 | **Test 02, Wednesday April 17th.**  
Chapter 11. Dynamics of Rigid Bodies |
| Week 13 | Chapter 11. Dynamics of Rigid Bodies. |
| Week 14 | SPECIAL TOPICS |
| Week 15 | SPECIAL TOPICS |

12. OTHER IMPORTANT INFORMATION: PLEASE READ THIS CAREFULLY

1. **Discriminatory conduct (such as sexual harassment):** Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff.
   See: [http://uwm.edu/deanofstudents/conduct/](http://uwm.edu/deanofstudents/conduct/) and [https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf](https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf)

2. **Title IX/Sexual Violence.** Title IX is a federal law that prohibits sex discrimination in education program or activities, and UWM policy prohibits such conduct (see Discriminatory Conduct, above). This includes sexual violence, which may include sexual harassment, sexual assault, relationship violence, and/or stalking in all educational programs and education-related areas. UWM strongly encourages its students to report any instance of sex discrimination to UWM’s Title IX Coordinator (titleix@uwm.edu). Whether or not a student wishes to report an incident of sexual violence, the Title IX Coordinator can connect students to resources at UWM and/or in the community including, but not limited to, victim advocacy, medical and counseling services, and/or law enforcement.
   For more information, please visit: [https://uwm.edu/titleix/](https://uwm.edu/titleix/)

3. **Cheating and academic misconduct:** all work handed in for grading (including electronic submissions) must be the result of your own efforts. Copying the work of another student or using solutions/answers to problems from an on-line or other source and presenting them as your own, original work, will be regarded as cheating.
   Cheating/academic misconduct will be dealt with by the instructor according to the UW policies and procedures. Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions, including failing a course or even suspension or dismissal from the University. For details, see: [http://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/](http://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/)
4. **Special Consideration.** The principle of equal treatment of all students shall be a fundamental guide in responding to requests for special consideration. No student should be given an opportunity to improve a grade that is not made available to all members of the class. This policy is not intended to exclude reasonable accommodation of verified student disability, or the completion of work missed as the result of religious observance, verified illness, or justified absence due to circumstances beyond the student’s control. *(Authority: UWM Faculty Documents 860B and 1927)*

5. **Religious observance.** In the syllabus, you will find a schedule of tests. Please inform the instructor ASAP if you see a conflict with religious observance. Also inform the instructor ASAP if the deadline of a quiz or an assignment conflicts with religious observance. A suitable date/time for the test (that does not conflict with the religious observance) or other deadline can then be arranged. Please note the following official UW policies: [http://www4.uwm.edu/secu/docs/other/S1.5.htm](http://www4.uwm.edu/secu/docs/other/S1.5.htm)

   See also: [http://www.interfaith-calendar.org/2019.htm](http://www.interfaith-calendar.org/2019.htm)

   *(Authority: UWS 22 and UWM Fac. Doc. 1918)*

I. Declaration of policy. It is the policy of the board of regents that students' sincerely held religious beliefs shall be reasonably accommodated with respect to all examinations and other academic requirements. The board of regents adopts this chapter in order to ensure that all institutions of the university of Wisconsin system have in place appropriate mechanisms for ensuring the reasonable accommodation of students' sincerely held beliefs, and for appeals related to these matters.

II. Accommodation of religious beliefs.

1. A student shall be permitted to make up an examination or other academic requirement at another time or by an alternative method, without any prejudicial effect, where:

   (a) There is a scheduling conflict between the student’s sincerely held religious beliefs and taking the examination or meeting the academic requirements; and

   (b) The student has notified the instructor, within the first three weeks of the beginning of classes (within the first week of summer session and short courses), of the specific days or dates on which he or she will request relief from an examination or academic requirement.

2. Instructors may schedule a make-up examination or other academic requirement before or after the regularly scheduled examination or other academic requirement.

3. Instructors shall accept, at face value, the sincerity of students' religious beliefs.

4. Student notification of instructors and requests for relief under sub. (1) shall be kept confidential.

5. Complaints of failure to provide reasonable accommodation of a student’s sincerely held religious beliefs as required by this rule may be filed under UWM Complaint and Grievance Procedures.

6. The chancellor shall, through appropriate institutional publications (to include at a minimum the Schedule of Classes and Bulletin), provide notification to students and instructors of the rules for accommodation of religious beliefs, and of the procedure and appropriate office for filing complaints.

6. **Students with disabilities:** please arrange for the authorization for special accommodations issued by the Accessibility Resource Center (ARC) to be sent to the instructor as soon as possible. The link for the ARC is [https://uwm.edu/arc/connect/](https://uwm.edu/arc/connect/). Page 6 shows you a screen grab of what you will see if you go to this link; a new system which has replaced the old paper “visa forms”.

Please note that I cannot allow students to take tests under conditions different from those experienced by the rest of the class (extra time, separate room, etc.) unless they have permission from the ARC. This permission is issued by ARC in the form of an email, but it is the student’s responsibility to make the appropriate contact with ARC. The ARC will issue formal instructions to me about how students with disabilities are to be accommodated. Because of limited space in the Physics building, **ALL STUDENTS WHO REQUIRE SPECIAL ACCOMMODATIONS SUCH AS EXTRA TIME MUST ARRANGE TO TAKE THEIR TESTS IN ARC.**
7. **Students called to active military duty:** accommodations and advice for students who anticipate an absence due to call-up of reserves to active military duty are available at this link: [http://uwm.edu/active-duty-military/](http://uwm.edu/active-duty-military/)

8. **Complaint procedures:** Students may direct complaints to the head of the academic unit or department in which the complaint occurs. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy.

   [https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf](https://www4.uwm.edu/secu/docs/other/S_47_Discriminatory_Policy.pdf)

   For your information:

   **Chair of Physics:** Professor Prasenjit Guptasarma: KEN 3077, (414)229-6497, pg@uwm.edu

   **Dean of Students’ Office:** [http://www4.uwm.edu/dos/](http://www4.uwm.edu/dos/)

   **Equity and Diversity:** [http://uwm.edu/equity-diversity-services/about/](http://uwm.edu/equity-diversity-services/about/)

   *Please remember that instructors have the same legal protection and redress against libel, slander, defamation, and harassment as you; some students seem not to know or understand this*

9. **Grade appeal procedures:** A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College/School.

   See [http://www4.uwm.edu/secu/docs/other/S_28_Grade_Appe_by_Students.pdf](http://www4.uwm.edu/secu/docs/other/S_28_Grade_Appe_by_Students.pdf)

   [http://uwm.edu/letters-science/advising/answers-forms/policies/appeal-procedure-for-grades](http://uwm.edu/letters-science/advising/answers-forms/policies/appeal-procedure-for-grades)
10. **Behavior during lecture:** please do not disrupt the lecture by talking loudly with neighbors, refusing pay attention when the lecturer has started teaching by ostentatiously reading the newspaper, texting etc. Please be civil and reasonable.

11. **Cell phones:** please turn off cell phones during lectures, discussions, and tests; please do not sit in front of the instructor or TA during class while texting your friends (or anyone else).

12. **Attendance:** will be recorded for each lecture but it is not part of your grade.

**12. UW-Milwaukee Desire2Learn (D2L) course web sites:**

Materials for this course are available on a Desire2Learn (D2L) course web site. Students may see these materials there anytime using a standard web browser.

**Recommended browsers:** A complete and up-to-date list of recommended browsers and settings can always be found at: [http://kb.wisc.edu/helpdesk/page.php?id=3210](http://kb.wisc.edu/helpdesk/page.php?id=3210). Please contact the UWM Help Desk, as described at the bottom of this page, with any questions about these requirements.

**To find and browse the D2L course web site:**

1. Go directly to the D2L **Landing** page at [http://D2L.uwm.edu](http://D2L.uwm.edu).

2. On the D2L **Landing** page, choose the button labeled **[UWM ePanther]**.

3. On the next page, type in your ePanther **Username** (your ePanther campus email, but without the "@uwm.edu") and **Password** (the same password you use for Panther Link and PAWS). Then hit [Login].
   - You may bookmark the D2L.UWM.edu landing page, if you wish.
   - To prevent failed log-ins, please DO NOT BOOKMARK the UWM ePanther login page.

4. On the D2L **My Home** screen, find the area called **My Courses**. You’ll see your active courses here, arranged by Semester, with the newest semester at the top.

5. Click any course title to see the Course Home page. Click [Content] in the navigation bar to begin exploring the site.

6. If you have any difficulty getting into the course web site, please close down your web browser completely and open it up again. Then try logging on again, using the instructions above. If you do not know your ePanther username or password, please get help as indicated below.

7. When you are finished looking around your D2L course sites, always click on **[Logout]**. This is especially important if you are in a computer lab. Otherwise, the next person who uses the machine will be using your D2L account!

**What to do if you have problems with Desire2Learn (D2L)**

If you have any difficulties with D2L, including problems with your login (e.g., you forgot your password, or if you just can’t get on), please contact the UWM Help Desk. You may do one of the following:

- Report the problem via online web form at [GetTechHelp.uwm.edu](http://GetTechHelp.uwm.edu)
- Call the UWM Help Desk at 414.229.4040 if you are in Metro Milwaukee.
- Go to Bolton 225 (this lab is not open all day or on weekends – call 414.229.4040 for specific hours)
- From outside the 414 or 262 area codes, but from within the USA, you may call the UWM Help Desk at 1.877.381.3459
Each student enrolled in this course must sign the following statement and return it to the instructor no later than Monday, January 28th. Students who fail to do so will be dropped from the course without further notice.

Please print your name on the line below.
FAMILY NAME FIRST, GIVEN NAME LAST________________________________________________________

Statement by student:
1) I have READ THE SYLLABUS FOR THIS COURSE (Physics 411-001) and acquainted myself with the policies therein.
2) I have checked that I satisfy the pre-reqs for this course.
3) I have checked the schedule of tests for conflicts with religious observance and informed the instructor if such conflicts exist.
4) If I intend to ask for special accommodations because of a disability, I have at this date either handed the ARC VISA form to the instructor or I have contacted the ARC and they are currently assessing my case.
5) I have noted the two drop dates clearly stated in this syllabus.
6) I have noted the date and time of the final and checked this on the official schedule of finals at: https://uwm.edu/onestop/enrolling/finding-classes/#finals

Date________________________________________________________

Please sign your name legibly here______________________________________________________________