

## **VIBRATIONS AND WAVES (PHYS 224) SYLLABUS, SPRING 2017**

**Instructor:** Dr. Markos Georganopoulos (PHYS 415, [georgano@umbc.edu](mailto:georgano@umbc.edu), tel:410-455-8149)

**Lectures, time and place:** MoWeFr 02:00 PM - 02:50 PM in PHYS 226

**Office Hours:** We & Fr 10:00 AM-11:30 AM in PHYS 415

**Class web page:** [http://astro.umbc.edu/~astromarkos/224\\_spring\\_2017](http://astro.umbc.edu/~astromarkos/224_spring_2017)

**Textbook:** George C. King, *Vibrations and Waves*

**Learning Goals and Course Overview:** By the end of the course, students should be able to understand and quantitatively address situations including oscillations with and without damping and with or without a driving force, coupled oscillators, travelling and standing waves, as well as wave interference, diffraction, and dispersion of waves. Anticipate an interactive environment where your participation is expected. Demonstrations, small computer simulations, as well as quantitative and qualitative problem solving will be an integral part of the lectures. The material for each class will be announced in advance and students are expected to be familiar with it.

**Resources.** We will rely on the required book "*Vibrations and Waves*" by George C. King. Additional material will be provided through notes. The class web page will be the announcement board of the course, where notes, homework, and announcements will be posted. You are expected to always be familiar with the contents of the web page.

**Academic Integrity:** By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, and the UMBC Policies section of the UMBC Directory.

### **GRADING**

Your final grade will be determined by a numerical score, calculated as follows:

<b>Final exam:</b>	<b>28 points</b>
<b>2 mid-term exams:</b>	<b>21 points each</b>
<b>Homework:</b>	<b>20 points</b>
<b>Reading questions:</b>	<b>8 points</b>
<b>Participation:</b>	<b>2 points</b>

To convert the numerical score to a letter grade, I will first calculate the average numerical score of the top 3 students in the class. This will be the benchmark for determining letter grades as follows:

**A: >90% of the benchmark**

**B: 80-89% of the benchmark**

**C: 70-80% of the benchmark**

**D: 50-69% of the benchmark**

**F: <50% of the benchmark**

**Reading questions (8 points total):** The material for each upcoming class will be announced in advance. Students are expected to go through it, as in the evening before the class, a simple question related to the material will be e-mailed to the class. Students that answer by e-mail in a brief and reasonable way before the beginning of the upcoming class will receive a credit of 0.2 points, to be summed up to a maximum of 8 points throughout the semester.

**Class participation (2 points total):** Participation, through asking questions and responding to the questions asked by the instructor is strongly encouraged. The participation grade, assigned by the instructor for each student at the end of the semester will be zero, one, or two points, with 0 meaning little or no participation, 1 satisfactory participation, and 2 exceptional participation.

**Homework (20 points total):** Homework questions will provide good practice for the types of questions likely to be posed in the mid term and final exams. A homework will be assigned every week. Your lowest homework grade will be dropped in determining the homework portion of your grade. Students are expected to solve all the problems of the homework but are not required to turn them in. In the beginning of the class on the due day of the homework, students will be given 10 min to clearly reproduce the solution of one the homework problems selected by me.

**Mid Term exams (21 points each):** The first one will cover the material from the beginning of the class up to the lecture before the first mid term. The second one will cover the material taught after the first mid term, all the way to the lecture before the second mid term. The times of the mid term exams will be announced in class at least a week in advance of the exam.

**Final Exam (28 points):** An exam at the end of the course on all the course material.

Clear handwriting, proper English grammar and syntax, as well as logical flow of your arguments and no major missing steps are required in all exams and homework.

Please let me know ***in advance*** if you cannot participate in any of the exams due to religious or personal or any other reasons.