Lectures: Section 1  
11:15 am – 12:30 pm, Tuesday and Thursday  
Willard Room 209  

Instructor: Gordon P. Warn  
213C Sackett Building  
Ph: (814) 863-2786  
Email: gpw1@psu.edu  
Office hours: Thursday 1:00 – 3:00 or by appointment  

Course website: https://cms.psu.edu/default.asp  

General course information will be posted on ANGEL. Please make a habit of checking your ANGEL account daily.  

Introduction and prerequisites:  
This course is designed to introduce the graduate student to the dynamics of structures for dynamic analysis of structural and mechanical systems subjected to various types of excitation. Prerequisites for this course include EMCH 212 (Dynamics) and CE 340 (Structural Analysis) or equivalent. In addition, it will be assumed for this course that each student is proficient in linear algebra (Math 220), calculus (Math 140 & 141) and the solution of ordinary and partial differential equations (Math 251). It is strongly encouraged that you review these materials if they have not been revisited of late.  

Course topics and learning objectives:  
Students taking this course will learn how to formulate and solve the equations of motion for a given structure subjected to a given loading (excitation). By the end of this course, you will be able to:  

- Classify types of excitation  
- Determine the dynamic characteristics of a structural or mechanical system  
- Formulate the equation of motion
• Describe the dynamic response of single-degree-of-freedom (SDOF) and multi-degree-of-freedom systems subjected to an arbitrary excitation
• Quantify the peak response (e.g., force, acceleration, drift, etc) of the structural or mechanical system.

Required textbook(s):

Additional references:
Dynamics of Structures, Ray W. Clough and Joseph Penzien, McGraw-Hill, 1975

Evaluation:
Students will be evaluated on their ability to explain the course concepts and perform calculations using the techniques presented in class. Grades will be computed using the following weighting scheme:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
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<tr>
<td>Midterm (tentatively 3/4)</td>
<td>30%</td>
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<tr>
<td>Final Exam (TBD)</td>
<td>40%</td>
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Exams will be similar in content and format to the homework assignments that will consist of calculations and derivations related to the material presented in class. If you complete your homework assignments understanding the material fully then you should be able to successfully complete the exams. Please see the tentative course schedule for further exam date information. If you have a conflict with the announced date you should speak with me immediately.

Homework policy:
• Homework will generally be assigned weekly and should be handed in at the beginning of the lecture period on the due date.
• Late homework will be penalized at a rate of 10% per day late. Homework submitted after the solutions have been provided (posted) will not be accepted. Exceptions to this policy may be arranged with Prof. Warn for special circumstances (i.e., serious illness, etc).
• Some homework assignments will require computer calculations. Matlab is highly recommended for these assignments and will be the only software supported by the instructor. You are free to use another program such as Excel or C++ if you prefer however no support will be provided.
Email:
Due to the nature of the course content, homework problems and exam questions, it is not possible to effectively answer student questions via email. Questions on these components of the course are best addressed in person during the specified office hours and therefore will not be answered by email. Email pertaining to the operation of the course (missed class, conflicts, etc) will be answered during regular hours (i.e., 8 am to 5 pm).

Academic integrity:
It is expected that each student do his or her own original work. Meeting in groups to exchange ideas is permitted however each student is individually responsible for this or her own work and for understanding the material. You are not permitted to copy or reference another student's homework or computer code. If you are not familiar with academic integrity as defined by Penn State’s faculty senate I encourage you to visit the following website: http://www.engr.psu.edu/CurrentStudents/acadinteg.aspx