MCHE 485:
Mechanical Vibrations
Spring 2019

Dr. Joshua Vaughan
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@Doc_Vaughan
First, Some Info on Me

- Grew up in Southern Virginia
- Bachelor’s from Hampden-Sydney College in May 2002
  - Double Major: Physics and Applied Math
First, Some Info on Me

- Grew up in Southern Virginia
- Bachelor’s from Hampden-Sydney College in May 2002
  - Double Major: Physics and Applied Math
  - 4-year starting pitcher
Grad. School

- Graduate School at Georgia Tech
  - Advisor: Dr. William Singhose
  - M.S. in May 2004
    - Thesis: Active and Semi-Active Control to Counter Vehicle Payload Variation
  - Ph.D. in August 2008
    - Thesis: Dynamics and Control of Mobile Cranes
Postdoc

- Tokyo Institute of Technology
- Lab of Dr. Shigeo Hirose
Cable-driven-parallel-manipulators (CDPMs)
Cable-driven-parallel-manipulators (CDPMs)
Walking Robots
Bridge Design
Earthquakes
Taipei 101
(Modern) Wing Design – 787
(Modern) Wing Design – 787
Course Info (cont)

- TR 12:30 – 1:45pm, CLR 311
- Principles of Vibration, 2\textsuperscript{nd} Ed. Benson H. Tongue
- [http://www.ucs.louisiana.edu/~jev9637/MCHE485.html](http://www.ucs.louisiana.edu/~jev9637/MCHE485.html)
- No set office hours
- Prereq form is due as pdf via email by Friday, 1/25 at 5pm
Course Tools/Resources

• Simulation using the scientific Python ecosystem
  - Anaconda Python distribution
  - NumPy, SciPy, SymPy, and matplotlib
  - Jupiter notebook – http://jupyter.org

• GitHub repository – https://github.com/DocVaughan/MCHE485---Mechanical-Vibrations
Cranes in the C.R.A.W.LAB
CDPM In the C.R.A.W.LAB
My Contact Info

• Rougeou 225

• joshua.vaughan@louisiana.edu

• @Doc_Vaughan

• http://www.ucs.louisiana.edu/~jev9637
<table>
<thead>
<tr>
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<th>Tuesday</th>
<th>Thursday</th>
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<tbody>
<tr>
<td>January</td>
<td></td>
<td>17 Course Introduction</td>
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<tr>
<td></td>
<td>22 Chapter 1</td>
<td>Dynamics Review</td>
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<td>29 Chapter 2</td>
<td>24 Chapter 1</td>
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<td>29 Chapter 2</td>
<td>31 Chapter 2</td>
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<td>26 Chapter 2</td>
<td>28 Mid-Term Exam 1</td>
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*Note: PDF version on the course site also has tentative assignment due date information.*
### Tentative Schedule (Cont.)

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<thead>
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<td>5</td>
<td>Mardi Gras</td>
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<td>11 Chapter 4</td>
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<td>16</td>
<td>Spring Break</td>
<td>18 Spring Break</td>
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<td>23</td>
<td>Chapter 4</td>
<td>25 Chapter 4</td>
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<td><strong>May</strong></td>
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<td>2 Wrap Up</td>
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Grading

• Homework – 10%
  - Due approximately bi-weekly
  - Electronic submission required
  - Will include some simulation/coding
  - For you!

• Mid-Term Exams – 40%
  - 2 exams, equally weighted

• Mini-Projects – 20%

• Final Exam – 30%
Trends from Past Semesters

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<tr>
<th>Letter Grade</th>
<th>Occurrences</th>
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- Fall 2012
- Spring 2013
- Spring 2014
- Spring 2015
- Spring 2016
- Spring 2018

Semesters: Fall 2012, Spring 2013, Spring 2014, Fall 2014, Spring 2015, Spring 2016, Spring 2018
Grade Analysis

![3D Scatter Plot]

- Homework Average
- Midterm Average
- Final Exam

The plot shows the distribution of grades across different assessments.
General Rules/Advice

• Be responsible for your own learning
  - If you have a question, ask
  - Try to understand, not memorize

• Be respectful of yourself and others – See the syllabus for the course Code of Conduct