Course Change Request

Indiana University

Check Appropriate Boxes:  Undergraduate credit [✓]  Graduate credit []  Professional credit []

1. School/Division  School of Engineering and Technology


5. Current Title:  Vehicle Dynamics

8. Effective Semester/Year for changes listed below: Spring 2009  7. Instructor:  Pete Hylton

Type of Change Requested (Check appropriate boxes and indicate changes)

☐ 8. Change course number to:  (must be cleared with University Enrollment Services)

☐ 9. Current course title:

Change to:

Recommended abbreviation (optional)  (Limited to 32 Characters including spaces)

☐ 10. Current credit hours fixed at:  or variable from:  to

Change to credit hours fixed at:  or variable from:  to

☐ 11. Current lecture contact hours fixed at:  or variable from:  to

Change to lecture contact hours fixed at:  or variable from:  to

☐ 12. Current non-lecture contact hours fixed at:  or variable from:  to

Change to non-lecture contact hours fixed at:  or variable from:  to

☐ 13. Is this course currently graded with S-F (only) grades?  Yes  No ✓

Change to S-F (only) grading?  Yes  No

☐ 14. Does this course presently have variable title approval?  Yes  No ✓

Is variable title approval being requested?  Yes  No

☐ 15. Is this course being discontinued?  For all campuses  or for this campus only

☐ 16. Current course description

Course description is not changing. Only an additional pre-requisite option is being added (MET213 was formerly the only pre-requisite, now it will be MET 213 or MSTE 210)

Change course description to (not to exceed 50 words)

Course description is not changing. MSTE 210 is being added as a prerequisite option in addition to MET 213.

17. Justification for change

Course will be in 2 plans of study so an option from each will be available as a prereq.

18. Are the necessary reading materials currently available in the appropriate library?  Yes

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of this course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:

Michael E. Frie
Department Chairman/Division Director

Date 10/23/08

Approved by:

W. L. Avery
 Dean

Date 10-28-08

Dean of Graduate School (when required)

Date

Chancellor/Vice-President

Date

University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.
### Proposed Course Details

**Subject Abbreviation:** Met

**Course Number:** 472

**Long Title:** Vehicle Dynamics

**Short Title:** Vehicle Dynamics

**Credit Type:**

- **Fixed Credit:** 3 Cr. Hrs.
- **Variable Credit Range:**
  - Minimum Cr. Hrs: (Check One)
  - Maximum Cr. Hrs: (Check One)
- **Equivalent Credit:** Yes
- **Thesis Credit:** Yes

**Course Attributes:**

- Pass/Not Pass Only
- Satisfactory/Unsatisfactory Only
- Repeatable
- Maximum Repeatable Credit:
- Designator Required
- Special Fees

### Course Description

P: ME213 or MSE210 or equivalent or permission of instructor. This course provides a study of vehicle chassis, suspension, and aerodynamic systems with a focus on high performance.

### Approval Signatures

- **Calumet Department Head:** Michael E. A.  
  **Date:** 10-20-05  
  **Calumet School Dean:**  
  **Date:**

- **Fort Wayne Department Head:**  
  **Date:**  
  **Fort Wayne School Dean:**  
  **Date:**

- **Indianapolis Department Head:**  
  **Date:**  
  **Indianapolis School Dean:**  
  **Date:**

- **North Central Department Head:**  
  **Date:**  
  **North Central Chancellor:**  
  **Date:**

- **West Lafayette Department Head:**  
  **Date:**  
  **West Lafayette College/School Dean:**  
  **Date:**  
  **West Lafayette Registrar:**  
  **Date:**

### Office of the Registrar
MET472 – Vehicle Dynamics

**Description:** Study of vehicle chassis, suspension, and aerodynamic systems

**Class Times:** Tuesdays & Thursdays 3:00-4:15

**Prerequisites:** MET 213 or MSTE 210 or equivalent or permission of instructor

**Instructor:** Pete Hylton  Phone: 317-274-7192  email: phyutton@iupui.edu  office: ET209G


**Grading:**
- Homework/Individual Projects 200 points
- Final Exam 100 points
- Team Project 200 points  Total 500 points

**Minimum Scale:**
- 90-100 = A, 80-90 = B, 70-80 = C, 60-70 = D, 0-60 = F
- +/- will be given

**Tentative Course Schedule:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>Intro, Velocity/ Acceleration, G-G Diagram</td>
<td>Ch 1</td>
</tr>
<tr>
<td>1/10</td>
<td>Tire Behavior, Slip Angle, Camber, Friction Circle</td>
<td>Ch 2</td>
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<tr>
<td>1/15</td>
<td>Continuation &amp; Lab Time</td>
<td></td>
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<tr>
<td>1/17</td>
<td>Vehicle Axis Systems</td>
<td>Ch 4</td>
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<tr>
<td>1/22</td>
<td>Continuation &amp; Lab Time</td>
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<tr>
<td>1/24</td>
<td>Aero Dynamics, Wind Tunnel, Flow Visualization</td>
<td>Ch 3 &amp; 15</td>
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<td>1/29</td>
<td>Lab Time</td>
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<tr>
<td>1/31</td>
<td>More Aero</td>
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<td>2/7</td>
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<td>2/12</td>
<td>Lab Time</td>
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<tr>
<td>2/14</td>
<td>Dynamics Review</td>
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<tr>
<td>2/19</td>
<td>6:00 pm Preliminary Design Review</td>
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<tr>
<td>2/21</td>
<td>Springs &amp; Dampers</td>
<td>Ch 21 &amp; 22</td>
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<tr>
<td>2/26</td>
<td>Continuation &amp; Lab Time</td>
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<tr>
<td>2/28</td>
<td>Stability &amp; Control</td>
<td>Ch 5</td>
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<td>Continuation &amp; Lab Time</td>
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<td>3/6</td>
<td>More Springs &amp; Dampers, Transient Stability &amp; Control</td>
<td>Ch 6</td>
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<td>3/11</td>
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<td>3/13</td>
<td>Spring Break</td>
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<td>3/18</td>
<td>Continuation &amp; Lab Time</td>
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<td>3/20</td>
<td>Force-Moment Analysis</td>
<td>Ch 8</td>
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<td>Continuation &amp; Lab Time</td>
<td>Ch 9</td>
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<tr>
<td>3/27</td>
<td>G-G Diagram</td>
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<td>Continuation &amp; Lab Time</td>
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<td>4/3</td>
<td>Design Process</td>
<td>Ch 10</td>
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<td>4/10</td>
<td>Racecar Design &amp; Development</td>
<td>Ch 11 &amp; 12</td>
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<td>4/15</td>
<td>Continuation &amp; Lab Time</td>
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<tr>
<td>4/17</td>
<td>Chassis Set-up, Suspension Geometry</td>
<td>Ch 12 &amp; 17</td>
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<td>4/22</td>
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<tr>
<td>5/1</td>
<td>Final Exam 3:30-5:30</td>
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Course Outcomes:

1. Demonstrate an appropriate mastery of the knowledge, techniques, skills and modern tools necessary for analysis of vehicle dynamics and design of vehicle systems.
2. Apply current knowledge and adapt to emerging applications appropriate to the topic of vehicle dynamics.
3. Conduct, analyze and interpret experiments and apply experimental results to improve processes.
4. Apply creativity in the design of systems, components or processes appropriate to program objectives.
5. Function effectively on teams.
6. Identify, analyze and solve technical problems
7. Communicate effectively.