New Course Request

Indiana University

Indianapolis Campus

Check appropriate boxes: Undergraduate credit [ ] Graduate credit [ ] Professional credit [ ]

1. School/Division: School of Engineering & Technology
2. Academic Subject Code: MSTE

3. Course Number: 414 (must be cleared with University Enrollment Services)
4. Instructor: Pete Hylton

5. Course Title: Motorsports Design II

Recommended Abbreviation (Optional): (Limited to 32 characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2009

7. Credit Hours: Fixed at _______ 3 _______ or Variable from _______ to _______

8. Is this course to be graded S-F (only)? Yes _____ No _____ X

9. Is variable title approval being requested? Yes _____ No _____ X

10. Course description (not to exceed 50 words) for Bulletin publication:

P: MSTE 311 and MSTE 331 and MSTE 350 and MSTE 320

This is the culminating course in the Motorsports Engineering Plan of Study, tying together concepts from all the other courses in the curriculum, and requires a capstone design project representative of a real world project within the Motorsports Industry. (MSTE 497 may substitute)

11. Lecture Contact Hours: Fixed at _______ 2 _______ or Variable from _______ to _______

12. Non-Lecture Contact Hours: Fixed at _______ 2 _______ or Variable from _______ to _______

13. Estimated enrollment: _______ 25 _______ of which _______ 0 _______ percent are expected to be graduate students.

14. Frequency of scheduling: _______ yearly _______ Will this course be required for majors? Yes _____

15. Justification for new course: _______ Part of the already approved BS in Motorsports Engineering _______

16. Are the necessary reading materials currently available in the appropriate library? _______ Yes _____

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain which courses it overlaps and whether this overlap is necessary, desirable, or unimportant

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new 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. Geno, Date 11/1/08

Dean of Graduate School (when required) Date

Approved by: David Akery, Date 11-25-08

Dean, University Enrollment Services Date

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.

University Enrollment Services Final White; Chancellor/Vice-President-Blue; School Division-Yellow;
Department Division-Pink; University Enrollment Services Advance-White
PURDUE SCHOOL OF ENGINEERING & TECHNOLOGY
OUTCOMES AND ASSESSMENT DATA SHEET

This is an internal document to identify and record expected outcomes and anticipated assessment strategies for all courses taught within the School of Engineering and Technology. Submission of this form, as noted below, is required and must accompany all new course and course change requests. Copies of this form should also be retained within the department and kept on file with the outline or syllabus for each course.

Course Number: MSTE 414 Course Title: Motorsports Design II

Procedure:

First, identify all instructional outcomes expected for this course, and then select all ABET outcomes which are consistent with those anticipated objectives from TABLE 1 below.

<table>
<thead>
<tr>
<th>TABLE 1: ABET OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINEERING - EAC Criteria #3</td>
</tr>
<tr>
<td>An ability to apply knowledge of mathematics, science, and engineering</td>
</tr>
<tr>
<td>An ability to design and construct experiments as well as to analyze and interpret data.</td>
</tr>
<tr>
<td>An ability to design a system, component, or process to meet desired needs.</td>
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<tr>
<td>An ability to function on multi-disciplinary teams.</td>
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<tr>
<td>An ability to identify, formulate and solve engineering problems.</td>
</tr>
<tr>
<td>An understanding of professional and ethical responsibility.</td>
</tr>
<tr>
<td>An ability to communicate effectively.</td>
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<tr>
<td>The broad education necessary to understand the impact of engineering solutions in global societal context.</td>
</tr>
<tr>
<td>A recognition of the need for and ability to engage in life-long learning.</td>
</tr>
<tr>
<td>A knowledge of contemporary issues.</td>
</tr>
<tr>
<td>An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.</td>
</tr>
</tbody>
</table>

Subsets for each of the six IUPUI Principles of Undergraduate Learning (PUL) are given on the reverse side in TABLE 2. Using a number corresponding to each ABET outcome identified from TABLE 1 above to select a column, place a "" or "X" mark in the applicable TABLE 2 row(s) cell for each PUL. Courses will often address multiple ABET outcomes and ABET outcomes frequently will overlap more than one PUL subset. Thus, it is expected completed data sheets may contain marks in several cells thereby indicating the course simultaneously satisfies multiple Principles of Undergraduate Learning while fulfilling its intended ABET objective(s).

After completing TABLE 2, briefly define or explain how the course outcomes or objectives will be evaluated within the context of the departmental assessment program in the space below:

Students in this course will be evaluated by individual assignments on pertinent topics and on a team project and presentation.

Submitted By: Pete Hylton Date: 10/3/08
### TABLE 2 - MATRIX OF EXPECTED COURSE OUTCOMES

(Suggestion - while completing Table 2, place a copy of the ABET outcomes from Table 1 along side for easy cross referencing.)

<table>
<thead>
<tr>
<th>PRINCIPLES OF UNDERGRADUATE ENGINEERING</th>
<th>ENGINEERING OUTCOMES - EAC CRITERIA 3: items (a) to (k)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNDING</td>
<td>Require all students to</td>
</tr>
</tbody>
</table>


MSTE 414 – Motorsports Design II

Description: This is the Motorsports Engineering Capstone Design course, tying together all that has been studied in past classes into an industry caliber design project.

Concept: The design project requires a group of students (selected by the instructor) to work together as a team, to thoroughly develop the design for a selected project. The project team will perform the tasks normally associated with a design effort in industry, including concept development, scheduling, cost estimates, design, engineering analysis, drawing production, specification preparation, risk management, and preparation for a Preliminary Design Review (PDR) presentation and a Final Report and Final Design Review (FDR) presentation. The majority of the work performed in this class is done as a team. As such, the majority of the grade is based on team effort. Completion of the team’s project and all required reports and presentations is required.

Prerequisites: MSTE 311 and MSTE 331 and MSTE 350 and MSTE 320

Scheduled Class Meetings: 75 minute lecture once per week, one lab session per week

Instructor: Pete Hylton
Phone: 317-274-7192, Email: phylton@iupui.edu, Office: ET209G

Text: Design Concepts for Engineers, 3rd edition, by Horenstein

Grading:
- Team homework: 100
- PDR: 300
- FDR & Final Report: 400
- Individual homework: 200

Grading Scale: 90-100 = A, 80-90 = B, 70-80 = C, 60-70 = D, 0-60 = F

Late work: Reports, presentations, and homework need to be on time. Severe late penalties will apply.

Tentative Course Schedule:

Week 1: Introduction, Project & Team Assignments, Design Process Discussion
Week 2: Project Scheduling, Cost Analysis, Design Process
Week 3: Technical Risk Management, Effective PowerPoint Presentations
Week 4: Design for Manufacturability
Week 5: Prepare for Concept Readiness Review
Week 6: Preliminary Design Review (PDR)
Week 7: Analysis of Designs, Teams receive Requests for Action (RFA) from reviewers
Week 8: Probabilistic Design
Week 9: Ethics
Week 10: Concurrent Engineering Design
Week 11: Patents, Copyrights, Professional Engineer Certification
Week 12: Motorsports Modeling
Week 13: Motorsports Analysis
Week 14: Prepare for Final Design Review
Week 15: Final Design Review (FDR)

Outcomes:
1. Apply knowledge of mathematics, science, and engineering to the solution of complex and comprehensive design problems relative to the motorsports industry.
2. Design a system, component, or process to meet desired needs pertinent to the motorsports industry.
3. Function on a multi-disciplinary team.
4. Identify, formulate, and solve engineering problems.
5. Recognize professional and ethical responsibility.
6. Communicate effectively in written reports and oral presentations.
7. Use the techniques, skill, and modern engineering tools necessary for engineering practice in the motorsports industry.
PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(100-400 LEVEL)

DEPARTMENT: Motorsports Engineering  EFFECTIVE SESSION: Fall 2009

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- New course with supporting documents
- Add existing course offered at another campus
- Expiration of a course
- Change in course number
- Change in course title
- Change in course credit/type
- Change in course attributes (department head signature only)
- Change in instructional hours
- Change in course description
- Change in course requisites
- Change in semesters offered (department head signature only)
- Transfer from one department to another

PROPOSED:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>Course Number</th>
<th>Long Title</th>
<th>Short Title</th>
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<tbody>
<tr>
<td>MSEE</td>
<td>414</td>
<td>Motorsports Design II</td>
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</table>

EXISTING:

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<tr>
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</thead>
</table>

TERMS OFFERED:

- Check All That Apply:
  - Summer
  - Fall
  - Spring

CAMPUS(ES) INVOLVED:

- Calumet
- Cont Ed
- Ft. Wayne
- Fla
- W. Lafayette
- Indianapolis

Announced title will be entered by the Office of the Registrar if omitted. (20 CHARACTERS ONLY)

CREDIT TYPE:

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<th>Meets Per Week</th>
<th>Weeks Offered</th>
<th>% of Credit Allocated</th>
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<th>Delivery Medium (Audio, Internet, Live, Taped-Based, Video)</th>
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Calumet Department Head Date 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