Memorandum

To: The Faculty of the College of Engineering

From: The School of Mechanical Engineering

Date: December 7, 2016

RE: Change to Existing ME 20000 – Thermodynamics I

The Faculty of the School of Mechanical Engineering has approved the following changes to an existing course and now seeks the approval at the college level. We are adjusting the listed pre-requisite for ME 20000 to include ENGR 16200 with a minimum grade of C- since this course will now replace the old ENGR 14200. Also, we added the [may be taken concurrently] statement to ENGR 13300 for consistency. Finally, the Math Department now requires students to earn a grade of a C- or higher in all prerequisite Math courses. Thus, we are also adjusting the listed pre-requisite for ME 27000 include ENGR 16200 with a minimum grade of C- since this will now be the new honors option rather than ENGR 14200.

Course: ME 20000- Thermodynamics I

Proposed Requisites:

(Undergraduate level MA 26100 Minimum Grade of C- [may be taken concurrently] or Undergraduate level MA 26300 Minimum Grade of C- [may be taken concurrently]) or MA 18200 Minimum Grade of C- [may be taken concurrently] or MA 27100 Minimum Grade of C-[may be taken concurrently] and (Undergraduate level CHM 11500 Minimum Grade of C- or Undergraduate level CHM 12300 Minimum Grade of C-) or CHM 11100 and CHM 11200 Minimum Grade of C- and Undergraduate level ENGR 13200 Minimum Grade of C- [may be taken concurrently] or Undergraduate level ENGR 16200 Minimum Grade of C- [may be taken concurrently] or Undergraduate level ENGR 13300 Minimum Grade of C- [may be taken concurrently].

Description: First and second laws of thermodynamics, entropy, reversible and irreversible processes, properties of pure substances. Application to engineering problems.
PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

DEPARTMENT: Mechanical Engineering
EFFECTIVE SESSION: Fall 2017

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

☐ New course with supporting documents
☐ New course with significant changes
☐ Add existing course offered at another campus
☐ Change in course attributes (department head signature only)
☐ Change in course number
☐ Change in course title
☐ Change in course credit/hours
☐ Change in course credit/life

PROPOSED:
Subject Abbreviation: ME
Course Number: 20000

EXISTING:

Course Number:

Terms Offered: Check All That Apply
☐ Summer ☐ Fall ☐ Spring

CAMPUS(ES) INVOLVED:
☐ Calumet ☐ N. Central
☐ Cont. Ed ☐ Tech. Statewide
☐ Ft. Wayne ☐ W. Lafayette
☐ Indianapolis

Abbreviated title will be entered by the Office of the Registrar. (Max. Characters Only)

Long Title: Thermodynamics I
Short Title: Thermodynamics I

COURSE ATTRIBUTES: Check All That Apply
☐ Pass/No Pass Only
☐ Satisfactory/Unsatisfactory Only
☐ Department
☐ Instructor

1. Fixed Credit Cr. Hrs.:
2. Variable Credit Range:
   Minimum Cr. Hrs:
   Maximum Cr. Hrs:
   Equivalent Credit:

1. Pass/No Pass Only
2. Satisfactory/Unsatisfactory Only
3. Department
4. Instructor

Schedule Type
Lecture
Recitation
Presentation
Laboratory
Lab Prep
Studio
Distance
Clinic
Experiential
Research
Ind. Study
Field/Internship

Credit Hours:

Weeks % of Credit
Offered Allocated

COUSE DESCRIPTION INCLUDE REQUIREMENTS/RESTRICTIONS:

Requires: MA 26100, minimum grade C- (may be taken concurrently) or MA 26300, minimum grade C- (may be taken concurrently) or MA 16200, minimum grade C- (may be taken concurrently) or MA 27100, minimum grade C- (may be taken concurrently). CHM 11500, minimum grade C- (may be taken concurrently) or CHM 11500 and CHM 12000, minimum grade C- (may be taken concurrently). ENGR 13200, minimum grade C- (may be taken concurrently), ENGR 13300, minimum grade C- (may be taken concurrently). Please see attached memorandum for additional information.

COURSE LEARNING OUTCOMES
1. Provide a thorough understanding of the basic concepts of thermodynamics (i.e., 1st and 2nd law).
2. Apply the basic concepts of thermodynamics to the solution of practical problems in a social context. 3. Develop a systematic approach to problem-solving skills.

Calumet Department Head
Calumet School Dean
Date
Date

Fort Wayne Department Head
Fort Wayne School Dean
Date
Date

Indianapolis Department Head
Indianapolis School Dean
Date
Date

Purdue University Faculty Senate Chair
Date

Vice Chancellor for Academic Affairs
Date

West Lafayette Department Head
West Lafayette School Dean
Date
Date

West Lafayette Register
Date

OFFICE OF THE REGISTRAR
Memorandum

To: The Faculty of the College of Engineering
From: The School of Mechanical Engineering
Date: December 7, 2016
RE: Change to Existing ME 26300 – Introduction to Mechanical Engineering Design, Innovation and Entrepreneurship

The Faculty of the School of Mechanical Engineering has approved the following changes to an existing course and now seeks the approval at the college level. The Math Department now requires students to earn a grade of a C- or higher in all prerequisite Math courses to proceed. The course will remain restricted to students majoring in Mechanical Engineering.

Course: ME 26300- Introduction to Mechanical Engineering Design, Innovation and Entrepreneurship

Proposed Requisites:
( CGT 16300 for a total of 1 conditions )

CGT 16300
Minimum Grade of D-
May be taken concurrently.

and

.: ME 20000 for a total of 1 conditions ME 20000
Minimum Grade of D-
May not be taken concurrently.

and

.: ME 27000 or CE 27100 for a total of 1 conditions CE 27100
Minimum Grade of D-
May not be taken concurrently. ME 27000
Minimum Grade of D-
May not be taken concurrently.

and

.: MA 26200 for a total of 1 conditions MA 26200
Minimum Grade of C-
May be taken concurrently.

Or
MA 26600
Minimum Grade of C-
May be taken concurrently

and
.
.: ME 29000 for a total of 1 conditions ME 29000
Minimum Grade of D-
May be taken concurrently.

Description: The product design process. Development of product design specifications using customer inputs, benchmarking, product/market research and patent review. Concept generation and evaluation using brainstorming, functional decomposition, modeling and decision matrices. Detailed product design including assembly, economic analysis, CAD, and bill of materials. Oral and written design reviews. Key skills developed include teamwork, communication, project planning, innovation, design, and entrepreneurship.
**PURDUE UNIVERSITY**

**REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE**

**MECHANICAL ENGINEERING**

**EFFECTIVE SESSION:** Fall 2012

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

- 1. New course with supporting documents
- 2. Add existing course offered at another campus
- 3. Extension of a course
- 4. Change in course number
- 5. Change in course title
- 6. Change in course credit/type
- 7. Change in course attributes (department head signature only)
- 8. Change in instructional hours
- 9. Change in course description
- 10. Change in course prerequisites
- 11. Change in some/more offered (department head signature only)
- 12. Transfer from one department to another

**PROPOSED:**

- Subject Abbreviation: ME
- Course Number: 26300
- Title: Introduction to Mechanical Engineering Design, Innovation, and Entrepreneurship

**EXISTING:**

- Subject Abbreviation: ME
- Course Number: 26300
- Title: ME Design, Innovation, and Entrepreneurship

**CAMPUSES INVOLVED:**

- N. Central
- Tech Statewide
- W. Lafayette
- Indianapolis

**TERMS OFFERED:**

- Summer
- Fall
- Spring

**COURSE ATTRIBUTES:**

- 1. Pass/No Pass Only
- 6. Registration Approval Required
- 2. Satisfactory/Unsatisfactory Only
- 7. Variable Title
- 3. Repeatable
- 8. Honors
- 4. Credit by Examination
- 9. Full Time Privilege
- 5. Fee ( indicted)
- 10. Off Campus Experience

**COURSE DESCRIPTION (INCLUDE REQUIRED RESTRICTIONS):**

- Requisites - COT 16300, minimum grade D- (may be taken concurrently). ME 20000, minimum grade D- (may not be taken concurrently). ME 27000 or CE 27100, minimum grade D- (may be taken concurrently). MA 26200 or MA 26600, minimum grade C- (may be taken concurrently). ME 29000, minimum grade D- (may be taken concurrently). Please see attached memorandum for additional information.

**COURSE LEARNING OUTCOMES:**

1. Instill the philosophy that real engineering design problems are open-ended and multifaceted.
2. Teach a systematic design methodology.
3. Provide guidance in applying engineering principles to open-ended problems.
4. Develop the ability to mathematically model and analyze engineering systems.
5. Sharpen skills in leadership, teamwork, communication, project planning, innovation, design, and entrepreneurship.
6. Instill a philosophy of professional and ethical behavior.
7. Provide a foundation for the rest of the mechanical engineering curriculum and future careers.

**SCHEDULE TYPE:**

- Lecture
- Laboratory
- Distance
- Clinic
- Research
- Field Study
- Prac/Other

**COURSE ATTRIBUTES:**

- Lecture Minutes Per Week
- Laboratory Minutes Per Week
- Distance Minutes Per Week
- Distance Minutes Per Week
- Other

**PERCENTAGE OF CREDIT ALLOCATED:**

- Cross-Listed Courses

**COURSES INVOLVED:**

- Cross-Listed Courses

**SCHEDULED DEPARTMENTS:**

- Fall Wayne Department Head
- Indianapolis Department Head
- North Central Faculty Senate Chair
- West Lafayette Department Head

**SCHEDULED DATES:**

- Fall Wayne School Dean
- Indianapolis School Dean
- Vice Chancellor for Academic Affairs
- West Lafayette College Dean

**OFFICE OF THE REGISTRAR**
Memorandum

To: The Faculty of the College of Engineering

From: The School of Mechanical Engineering

Date: December 7, 2016

RE: Change to Existing ME 2700 – Basic Mechanics I

The Faculty of the School of Mechanical Engineering has approved the following changes to an existing course and now seeks the approval at the college level. The Math Department now requires students to earn a grade of a C- or higher in all prerequisite Math courses. Thus, we are also adjusting the listed pre-requisite for ME 27000 include ENGR 16200 with a minimum grade of C- since this will now be the new honors option rather than ENGR 14200.

Course: ME 27000 – Basic Mechanics I

Proposed Requisites:

Undergraduate level PHYS 17200 Minimum Grade of C- or Undergraduate level ENGR 162 Minimum Grade of C- [may not be taken concurrently] and (Undergraduate level MA 16200 Minimum Grade of C- or Undergraduate level MA 16600 Minimum Grade of C- or Undergraduate level MA 18100 Minimum Grade of C-) and (Undergraduate level MA 26100 Minimum Grade of C- [may be taken concurrently] or Undergraduate level MA 26300 Minimum Grade of C- [may be taken concurrently]) or MA 18200 Minimum Grade of C- [may be taken concurrently] or MA 27100 Minimum Grade of C- [may be taken concurrently] and Undergraduate level ENGR 13200 Minimum Grade of C- [may be taken concurrently] or Undergraduate level ENGR 13300 Minimum Grade of C- [may be taken concurrently] or Undergraduate level ENGR 16200 Minimum Grade of C- [may not be taken concurrently]

Description: Vector operations, forces and couples, free body diagrams, equilibrium of a particle and of rigid bodies. Friction. Distributed forces. Centers of gravity and centroids. Applications from structural and machine elements, such as bars, trusses, and friction devices. Kinematics and equations of motion of a particle for rectilinear and curvilinear motion.
**PURDUE UNIVERSITY**
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

**DEPARTMENT**: Mechanical Engineering  
**EFFECTIVE SESSION**: Fall 2017

**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/term
- [ ] Change in course attributes (department head signature only)
- [ ] Change in instructional hours
- [ ] Change in course description
- [ ] Change in course requirements
- [ ] Change in semesters offered (department head signature only)
- [ ] Transfer from one department to another

**PROPOSED**

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<thead>
<tr>
<th>Subject Abbreviation</th>
<th>Subject Abbreviation</th>
<th>ME</th>
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| Course Number | Course Number | 27000 |

<table>
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<tr>
<th>Long Title</th>
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<tr>
<td>Short Title</td>
<td>Basic Mechanics I</td>
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**EXISTING**

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<th>Subject Abbreviation</th>
<th>Subject Abbreviation</th>
<th>ME</th>
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**TERMS OFFERED**

- [ ] Summer
- [ ] Fall
- [ ] Spring

**CAMPUS(ES) INVOLVED**
- [ ] Calumet
- [ ] N. Central
- [ ] Cont. Ed.
- [ ] Tech Studies
- [ ] Ft. Wayne
- [ ] W. Lafayette
- [ ] Indianapolis

**CREDIT TYPE**

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<tr>
<th>Credit Type</th>
<th>1. Fixed Credit: 3 cr. hrs.</th>
<th>2. Variable Credit Range:</th>
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<tr>
<td>Minimum Cr. Hrs.</td>
<td>To</td>
<td>Or</td>
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<tr>
<td>Maximum Cr. Hrs.</td>
<td>Yes</td>
<td>No</td>
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**COURSE ATTRIBUTES**

- [ ] Pass/No Pass Only
- [ ] Satisfactory/Unsatisfactory Only
- [ ] Repeatable
- [ ] Maximum Repeatable Credit: 8 hours
- [ ] Credit by Examination
- [ ] Full Time-Enrollment
- [ ] Fees [ ] Coop [ ] Job [ ] Rate Request: 10 Off Campus Experience

**Schedule Type**

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<th>Lecture</th>
<th>Minutes Per Week</th>
<th>Meetings Per Week</th>
<th>Wknds Offered</th>
<th>% Credit Allocated</th>
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**COURSE DESCRIPTION**

Requisites - PHYS 17200, minimum grade C- or ENGR 16200, minimum grade C- (may not be taken concurrently) and MA 16200, minimum grade C- (may not be taken concurrently) or MA 16500, minimum grade C- (may not be taken concurrently) or MA 18100, minimum grade C- (may not be taken concurrently). MA 26100, minimum grade C- (may be taken concurrently) or MA 27100, minimum grade C- (may be taken concurrently) or MA 18200, minimum grade C- (may be taken concurrently) or MA 26100, minimum grade C- (may be taken concurrently) or MA 26300, minimum grade C- (may be taken concurrently). ENGR 132, minimum grade C- or ENGR 13300, minimum grade C-, or ENGR 16200, minimum grade C- (may be taken concurrently). See attached memorandum for additional information.

**COURSE LEARNING OUTCOMES**

1. Develop an understanding of static equilibrium and stresses in statically determinate structures and how to apply them to engineering systems.
2. Learn a systematic approach to problem solving.
3. Foster effective mathematical and graphical communication skills.

**Signature**

**Offices of the Registrar**
Memorandum

To: The Faculty of the College of Engineering
From: The School of Mechanical Engineering
Date: December 7, 2016

RE: Change to Existing ME 30900 – Fluid Mechanics

The Faculty of the School of Mechanical Engineering has approved the following changes to an existing course and now seeks the approval at the college level. The Math Department now requires students to earn a grade of a C- or higher in all prerequisite Math courses. Thus, we are adjusting the Math grade requirements to reflect this change.

Course: ME 30900- Fluid Mechanics

Proposed Requisites:
( Course or Test: ME 26300
Minimum Grade of D-
May not be taken concurrently. )

and
( Course or Test: ME 27400
Minimum Grade of D-
May not be taken concurrently. )

and
( Rule: 1.: MA262or265/266or350/360 for a total of 1 conditions )

and
( MA 26200
Minimum Grade of C-
May not be taken concurrently. )
or
MA 26600
Minimum Grade of C-
May not be taken concurrently. )

Description: Continuum, velocity field, fluid statics, manometers, basic conservation laws for systems and control volumes, dimensional analysis. Euler and Bernoulli equations, viscous flows, boundary layers, flow in channels and around submerged bodies, one-dimensional gas dynamics, turbomachinery.
# PURDUE UNIVERSITY

REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

**DEPARTMENT:** Mechanical Engineering  
**EFFECTIVE SESSION:** Fall 2017

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

1. New course with supporting documents  
2. Add existing course offered at another campus  
3. Expire a course  
4. Change in course number  
5. Change in course title  
6. Change in course credit/type  
7. Change in course attributes (department head signature only)  
8. Change in instructional hours  
9. Change in course description  
10. Change in course requisites  
11. Change in semesters offered (department head signature only)  
12. Transfer from one department to another

**PROPOSED:**  
Subject Abbreviation:  
Course Number:  
Long Title: Fluid Mechanics  
Short Title: Fluid Mechanics

**EXISTING:**  
Subject Abbreviation: ME  
Course Number: 30900  
Long Title: Fluid Mechanics  
Short Title: Fluid Mechanics

**TERMS OFFERED:**  
Check all that apply:  
- Summer  
- Fall  
- Spring

**CAMPUS(ES) INVOLVED:**  
- Calumet  
- Fort Wayne  
- Indianapolis  
- W. Lafayette

**CREDIT TYPE**

1. Fixed Credit: Cr., Hrs.  
2. Variable Credit Range:  
   - Minimum Cr. Hrs:  
   - Maximum Cr. Hrs:  
3. Equivalent Credit: Yes  

**COURSE ATTRIBUTES:**  
Check all that apply:  
- Pass/Not Pass Only  
- Satisfactory/Unsatisfactory Only  
- Repeatable  
- Maximum Repeatable Credit:  
- Credit by Examination:  
- Full Time Privilege  
- Fee:  
- Lab:  
- Rate Request:  
- Off-Campus Experience

**Schedule Type**

- Lecture  
- Recitation  
- Presentation  
- Laboratory  
- Lab Prep  
- Study  
- Distance  
- Clinic  
- Experiential  
- Research  
- Ind. Study  
- Pract/Clin  

**Course Description (Include Prerequisites/Restrictions):**

Requisites - ME 25300, minimum grade D- (may not be taken concurrently). ME 27400, minimum grade D- (may not be taken concurrently). MA 26200, minimum grade C- (may not be taken concurrently) or MA 26600, minimum grade C- (may not be taken concurrently). Please see attached memorandum for additional information.

**Course Learning Outcomes:**

1. Develop the ability to identify and classify the various types of flows one may encounter.  
2. Develop (from first principles) the control volume formulation of the basic laws with emphasis on conservation of mass and Newton's 2nd law.  
3. Apply the control formulation of the basic laws to model physical systems.  
4. Conduct simple experiments and analyze data.  
5. Enhance systematic problem solving skills and sharpen written communication skills through short technical laboratory reports.

**OFFICE OF THE REGISTRAR**

[Signatures and dates for approval]