# Purdue University

**Request for Addition, Expiration, or Revision of an Undergraduate Course (10000-40000 Level)**

**EFFECTIVE SESSION:** Fall 2011

### 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 prerequisites
- [ ] Change in semesters offered (department head signature only)
- [ ] Transfer from one department to another

### PROPOSED:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>BME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number</td>
<td>20100</td>
</tr>
<tr>
<td>Long Title: Biomolecules: Structure, Function, and Engineering Applications</td>
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<tr>
<td>Short Title: Strct, Func, Api</td>
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</tbody>
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### EXISTING:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>BME</th>
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<tbody>
<tr>
<td>Course Number</td>
<td>20100</td>
</tr>
</tbody>
</table>

### TERMS OFFERED:

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

### CAMPUS(ES) INVOLVED:

- [ ] Calumet
- [x] N. Central
- [ ] Cont Ed
- [ ] Tech Statewide
- [ ] Ft. Wayne
- [x] W. Lafayette
- [ ] Indianapolis

### Abbreviated title will be entered by the Office of the Registrar if omitted. (50 characters only)

### CREDIT TYPE

1. Fixed Credit: Cr. Hrs.: 3
2. Variable Credit: Range: Minimum: 3, Maximum: 4
3. Equivalent Credit: Yes

### COURSE ATTRIBUTES:

- [ ] Pass/Not Pass Only
- [ ] Satisfactory/Unsatisfactory Only
- [ ] Repeatable
- [ ] Credit by Examination
- [ ] Special Fees
- [x] Registration Approval Type: Instructor

### Schedule Type

- [ ] Lecture: Minutes Per Mtg: 75
- [ ] Lab: Minutes Per Mtg: 75
- [ ] Clinical: Minutes Per Mtg: 75
- [ ] Practical/Observation: Minutes Per Mtg: 75

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

Prerequisites: CHM 11600 or CHM 12400 or CHM 13600 and MA 17300 or MA 16200 or MA 16600 or MA 18100 with a minimum grade of C- in all prerequisites.

Corequisite: BME 20500.

Concurrent Prerequisite: BIOL 23000. Classes of molecules (biomolecules) such as sugars, lipids, proteins, and nucleic acids that form the cellular components of living organisms. Explores the chemistry behind the structure and function of these important classes of biological molecules. Hydrogen-bonding, hydrophobic forces, electrostatic interactions along with other weak interactions discussed with reference to their importance in biomolecular systems in an engineering context.

### Course Learning Outcomes:

1. Identify biomolecules and explain their structure and function.
2. Describe the basic chemistry of biomolecules.
3. Recognize the connection between structure, function, and properties of biomolecules.
4. Explain how biomolecules may be engineered and used in living systems.

### Cross-Listed Courses:

**Calumet Department Head**
- Date

**Calumet School Dean**
- Date

**Ft. Wayne Department Head**
- Date

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

- [x] 7. Change in course attributes (department head signature only)
- [x] 8. Change in instructional hours
- [x] 9. Change in course description
- [x] 10. Change in course requisites
- [x] 11. Change in semesters offered (department head signature only)
- [x] 12. Transfer from one department to another

### PROPOSED:
- **Subject Abbreviation:** BME
- **Course Number:** 20100
- **Long Title:** Biomolecules: Structure, Function, and Engineering Applications
- **Short Title:** Biomol: Strct, Funct, Appl

### EXISTING:
- **Subject Abbreviation:** BME
- **Course Number:** 20100

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 characters only)

### CREDIT TYPE

<table>
<thead>
<tr>
<th>Schedule Type</th>
<th>Minutes Per Mitg</th>
<th>Meetings Per Week</th>
<th>Weeks Offered</th>
<th>% of Credit Allocated</th>
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<tbody>
<tr>
<td>Lecture</td>
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<td>Pract/Observe</td>
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<td>Ind. Study</td>
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### TERM OFFERED
- [x] Fall

### CAMPUS(ES) INVOLVED
- [x] W. Lafayette

### COURSE ATTRIBUTES: Check all that apply

<table>
<thead>
<tr>
<th>Course Attributes</th>
<th>Department</th>
<th>Instructor</th>
<th>Registration Approval Type</th>
<th>Variable Title</th>
<th>Honors</th>
<th>Full Time Privilege</th>
<th>Off Campus Experience</th>
</tr>
</thead>
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### COURSE DESCRIPTION (INCLUDE REQUIREMENTS/RESTRICTIONS):

- **Prerequisites:** CHM 11600 or CHM 12400 or CHM 13600 and MA 17300 or MA 16200 or MA 16800 or MA 18100 with a minimum grade of C- in all prerequisites.
- **Corequisites:** BME 20500. Concurrent Prerequisite: BIOL 23000. Classes of molecules (biomolecules) such as sugars, lipids, proteins, and nucleic acids that form the cellular components of living organisms. Explores the chemistry behind the structure and function of these important classes of biological molecules. Hydrogen-bonding, hydrophobic forces, electrostatic interactions along with other weak interactions discussed with reference to their importance in biomolecular systems in an engineering context.

### COURSE OUTCOMES:

1. Identify biomolecules and explain their structure and function.
2. Describe the basic chemistry of biomolecules.
3. Recognize the connection between structure, function, and properties of biomolecules.
4. Explain how biomolecules may be engineered and used in living systems.

### OFFICE OF THE REGISTRAR

**Calumet Department Head**
**Calumet School Dean**

**Fort Wayne Department Head**
**Fort Wayne School Dean**

**Indianapolis Department Head**
**Indianapolis School Dean**

**W. Lafayette Department Head**
**West Lafayette College/School Dean**
TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Biomedical Engineering

RE: Changes to existing Undergraduate Course, BME 20100 Biomolecules Structure, Function, and Engineering Applications, requisites

The Faculty of the School of Biomedical Engineering has approved the following changes to an existing course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: BME 20100 Biomolecules: Structure, Function, and Engineering Applications
Term offered: Fall, Lecture 3, Cr. 3
Prerequisites: CHM 11600, CS 15600, ENGR 10600, and MA 16600 or equivalencies
Co-requisites: BIOL 29500E, BME 20500

Description: Classes of molecules (biomolecules) such as sugars, lipids, proteins, and nucleic acids that form the cellular components of living organisms. Explores the chemistry behind the structure and function of these important classes of biological molecules. Hydrogen-bonding, hydrophobic forces, electrostatic interactions along with other weak interactions discussed with reference to their importance in biomolecular systems in an engineering context.

To: BME 20100 Biomolecules: Structure, Function, and Engineering Applications
Term offered: Fall, Lecture 3, Cr. 3
Prerequisites: CHM 11600 or CHM 12400 or CHM 13600 and MA 17300 or MA 16200 or MA 16600 or MA 18100 with a minimum grade of C- in all prerequisites.
Co-requisite: BME 20500
Concurrent Prerequisite: BIOL 23000

Description: Classes of molecules (biomolecules) such as sugars, lipids, proteins, and nucleic acids that form the cellular components of living organisms. Explores the chemistry behind the structure and function of these important classes of biological molecules. Hydrogen-bonding, hydrophobic forces,
electrostatic interactions along with other weak interactions discussed with reference to their importance in biomolecular systems in an engineering context.

**Reason:**

The prerequisites have been revised to specify equivalencies. A minimum grade requirement in key prerequisite courses is necessary to ensure an adequate understanding of prerequisite subjects when proceeding to this more advanced topic that builds upon and integrates the prior knowledge. The CS and ENGR prerequisites have been removed for simplicity since only qualified undergraduates can register for the BME co-requisite. The change in the Biology co-requisite reflects its new permanent number.

George R. Wodicka, Professor and Head
Weldon School of Biomedical Engineering