### Proposed:

- Subject Abbreviation: ECE
- Course Number: 30100
- Long Title: Signals and Systems
- Short Title: Signals and Systems

### Existing:

- Subject Abbreviation: ECE
- Course Number: 30100
- Long Title: Signals and Systems
- Short Title: Signals and Systems

### Terms Offered:

- Summer
- Fall
- Spring

### Campus(es) Involved:

- Calumet
- Cont Ed
- Ft. Wayne
- Tech Statewide
- Indianapolis
- West Lafayette

### Credit Type:

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<tr>
<th>Type</th>
<th>Minimum Cr. Hrs.</th>
<th>Maximum Cr. Hrs.</th>
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<td>Fixed Credit</td>
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<td>Variable Credit</td>
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### Course Attributes:

- Pass/Not Pass Only
- Satisfactory/Unsatisfactory Only
- Minimum Repeatable Credit
- Credit by Examination
- Special Fees

### Course Description:

Prerequisites: (ECE 20200 Minimum Grade of C or BME 30500) and (MA 26200 or MA 36800 or MA 26600)

### Course Learning Outcomes:

See attachment.

### Signatures:

- Calumet Department Head: [Signature]
- Calumet School Dean: [Signature]
- Fort Wayne Department Head: [Signature]
- Fort Wayne School Dean: [Signature]
- Indianapolis Department Head: [Signature]
- Indianapolis School Dean: [Signature]
- Central Department Head: [Signature]
- North Central Chancellor: [Signature]

### Office of the Registrar:

[Signature]

[Date: 3/3/10]
**COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):**

Prerequisites: (ECE 20200 Minimum Grade of C or BME 30500) and (MA 28200 or MA 36800 or MA 28800)

**COURSE LEARNING OUTCOMES:**

See attachment.
TO: The Faculty of the College of Engineering  
FROM: The Faculty of the School of Electrical and Computer Engineering  
RE: Change to Existing Undergraduate Course: ECE 30100, Signals and Systems, change in requisites.

The faculty of the School of Electrical and Computer 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: ECE 30100 Signals and Systems  
Sem. Fall, Spring; Cr. 3; Lecture 3.  
Prerequisites: ECE 20200 or BME 30500 and (MA 26200 or MA 36600 or MA 26600)  
Restrictions: Must be enrolled in one of the following: School of Electrical & Computer Engineering, School of Interdisciplinary Engineering, and School of Biomedical Engineering.  
Description: Classification, analysis and design of systems in both the time- and frequency-domains. Continuous-time linear systems: Fourier Series, Fourier Transform, bilateral Laplace Transform. Discrete-time linear systems: difference equations, Discrete-Time Fourier Transform, bilateral Z-Transform. Sampling, quantization, and discrete-time processing of continuous-time signals. Discrete-time nonlinear systems: median-type filters, threshold decomposition. System design examples such as the compact disc player and AM radio.

To: ECE 30100 Signals and Systems  
Sem. Fall, Spring; Cr. 3; Lecture 3.  
Prerequisites: (ECE 20200 Minimum Grade of C or BME 30500) and (MA 26200 or MA 36600 or MA 26600)  
Restrictions: Must be enrolled in one of the following: School of Electrical & Computer Engineering, School of Interdisciplinary Engineering, School of Biomedical Engineering.  
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APPROVED FOR THE FACULTY OF THE SCHOOLS OF ENGINEERING BY THE ENGINEERING CURRICULUM COMMITTEE

ECC Minutes 4/24
Date 4/30/10
Chairman ECC R. Cipsa
Reason: This course is part of the Core Curriculum for the BSEE and BSCmpE degrees. Subsets of Core Curriculum courses serve as prerequisites for most upper division ECE electives. In addition, a degree requirement for all ECE students is to achieve a GPA in all major-area (ECE) courses of at least a 2.0. Therefore, in order to ensure that ECE students are as well prepared as possible for upper division ECE courses, as well as to facilitate their achievement of the minimum major-area GPA of 2.0, a minimum grade requirement in the key ECE prerequisite course is being proposed.

on behalf of V. Balakrishnan, Interim Head
School of Electrical and Computer Engineering
Course Learning Outcomes:

i. an ability to classify signals (e.g. periodic, even) and systems (e.g. causal, linear) and an understanding of the difference between discrete and continuous time signals and systems.

ii. an ability to determine the impulse response of a differential or difference equation.

iii. an ability to determine the response of linear systems to any input signal by convolution in the time domain.

iv. an understanding of the definitions and basic properties (e.g. time-shift, modulation, Parseval's Theorem) of Fourier series, Fourier transforms, bilateral Laplace transforms, Z transforms, and discrete time Fourier transforms and an ability to compute the transforms and inverse transforms of basic examples using methods such as partial fraction expansions.

v. an ability to determine the response of linear systems to any input signal by transformation to the frequency domain, multiplication, and inverse transformation to the time domain. an ability to apply the Sampling theorem, reconstruction, aliasing, and Nyquist's theorem to represent continuous-time signals in discrete time so that they can be processed by digital computers.