





## 1. Overview

### A. Description

Provide a brief description of the new concentration (including the specific focus of the new concentration, relationship to other concentrations in this degree program, etc).

The engineering department at the Polytechnic campus has a multidisciplinary engineering program with a concentration in Electrical Systems. The multidisciplinary engineering program allows students to learn in a problem-based curriculum with hands-on projects and the development of professional skills integrated into the program. In the junior and senior years, students take electrical engineering courses to complete a concentration in Electrical Systems. The graduate with an electrical systems concentration will be able to provide leadership in engineering settings, which are intrinsically multi-disciplinary in nature, using electrical engineering knowledge to design and implement control systems. Students learn theory and application of sensors, actuators, microcontrollers and microprocessors, power sources and board level implementations of such systems.

### B. Demand

Explain the unit's need for the new concentration (e.g., market demand, research base, direction of the discipline, and interdisciplinary considerations). How will the new concentration complement the existing degree program?

Electrical Systems is an existing focus area inside the BS in Engineering, housed in the College of Technology and Innovation's Department of Engineering. This proposal is to convert the existing focus area to a formal concentration. The recent merger of the Engineering Technology Department into the Engineering Department provided an opportunity to revise the Electrical Systems curriculum to better address the needs of students and industry. The best measure of the number of students that will be enrolled in the Electrical Systems concentration is the sum of the students previously in the electrical systems focus area and the students in the electronics technology degree program. This represents about 150 students. In addition, the Occupational Outlook Handbook anticipates a 6% increase in job demand between 2010 and 2020. Thus we anticipate a moderate growth in this concentration.

The BSE Engineering program is designed so that students combine a primary concentration with a secondary focus. The proposed Electrical Systems concentration will serve as one of the BSE program's primary concentrations and will allow students to design their programmatic experience in many positive ways. For instance, when the Electrical Systems concentration is combined with a secondary focus area in either mechanical or robotics, the student achieves a unique multidisciplinary background that provides a solid foundation in systems analysis and design. Another choice when a student takes the Electrical Systems concentration could be a secondary focus in computing studies, which creates a highly marketable hardware/software combination. Such combinations are difficult to achieve within the confines of a traditional disciplinary-specific engineering degree. The graduate with an electrical systems concentration and the multidisciplinary background achieved from additional study areas will be able to provide leadership in engineering settings which are intrinsically multi-disciplinary in nature, using electrical engineering knowledge to observe and control other systems, perhaps of a mechanical, thermal or chemical nature.

## 2. Support and Impact

### A. Faculty governance

Provide a supporting letter from the chair of the academic unit verifying that the proposed concentration has received faculty approval through appropriate governance procedures in the unit and that the unit has the resources to support the concentration as presented in the proposal, without impacting core course resources.

### B. Other related programs

Identify other related ASU programs and outline how the new concentration will complement these existing ASU programs. (If applicable, statements of support from potentially-affected academic unit administrators need to be included with this proposal submission.)

The Ira A Fulton School of Engineering was consulted for comment and has no objection to the proposed concentration (email attached).

### C. Letter(s) of support

Provide a supporting letter from each college/school dean from which individual courses, or the entire concentration, are taken.

**3. Academic Curriculum and Requirements****A. Knowledge, competencies, and skills**

List the knowledge, competencies, and skills (learning outcomes) students should have when they complete this proposed concentration. Examples of program learning outcomes can be found at (<http://www.asu.edu/oue/assessment.html>).

In addition to the learning outcomes shared by all concentrations in the BSE Engineering program, the following learning outcomes have been specifically identified for the proposed concentration:

1. The student will explain and demonstrate how electrical technology, markets, and tools drive design and apply this knowledge to the design of electrical systems and subsystems.
2. The student will develop user requirements and decompose problems into systems of systems.
3. The student will use their knowledge of components and architectures to design electrical and electromechanical modules and integrate them into systems.
4. The student will apply the processes necessary to fabricate electrical systems: prototype, simulate/model, validate and troubleshoot.
5. The student will use modern components and techniques to manage electrical energy.

**B. Admissions criteria**

List the admissions criteria for the proposed concentration. If they are identical to the admission criteria for the existing major and degree program under which this concentration will be established, please note that here.

Admission criteria mirrors that of the existing major and degree.



C. Curricular structure

Provide the curricular structure for this concentration. Be specific in listing required courses and specify the total minimum number of hours required for the concentration.

**Required Core Courses for the Degree/Major**

Engineering Core (note: Additional supporting courses required within general studies are noted on major map)

Prefix	Number	Title	Is this a new Course?	Credit Hours
EGR	101	Introduction to Engineering Design I	N	3
EGR	102	Introduction to Engineering Design II	N	3
EGR	104	Critical Inquiry in Engineering	N	3
EGR	201/202	Fall/Spring Multidisciplinary Project	N	3/3
EGR	216/217	Fundamental of Engineering Systems I / II	Y	3/3
EGR	218	Materials and Manufacturing Processes	Y	3
EGR	219	Computational Modeling of Engineering Systems	Y	3
EGR	280	Engineering Statistics	N	3
EGR	301/302	Fall/Spring Concentration Project	N	3/3
<i>Section sub-total:</i>				36

**Required Concentration Courses**

Prefix	Number	Title	Is this a new Course?	Credit Hours
EGR	330	Design of Electrical Systems	Y	3
EGR	334	Analog-Digital Interface	Y	3
EGR	338	Microcontrollers in Smart Systems	Y	3
EGR	430	Design, Fabrication, and Architecture of Electronic Devices	Y	3
EGR	431	Power Management	Y	3
PHY	331	Principles of Modern Electromagnetism	N	3
<i>Section sub-total:</i>				18

**Elective Concentration Courses**

Prefix	Number	Title	Is this a new Course?	Credit Hours
<i>Section sub-total:</i>				0

**Other Concentration Requirements**

E.g. – Capstone experience, internship, clinical requirements, field studies, foreign language skills as applicable

Credit Hours

EGR	401/402	Engineering Capstone Project I/II	N	3/3
Section sub-total:				6
<b>Total minimum credit hours required for concentration</b>				<b>60*</b>
				<i>*conc + degree core</i>

***Academic Curriculum and Requirements (Continued)***

D. Minimum residency requirement

How many hours of the concentration must be ASU credit? 6 credits

E. Provide a brief course description for each new course.

Degree Core:

EGR 216: Fundamentals of Engineering Systems I (3)

An introduction to modeling of engineering systems using mathematical and scientific principles. Modeling techniques include network models for electrical, fluid and heat systems; application of basic thermodynamic considerations to understand limitations in energy conversion; and application of basic mechanics of particles to model simple mechanical systems. In addition, the course will introduce the basic structure a modern electronic measurement system and relate this structure to measurement accuracy, precision and resolution.

Enrollment requirements: Prerequisite: CHM 113 or CHM 114, MAT 265

EGR 217: Fundamentals of Engineering Systems II (3)

Modeling of engineering systems at an intermediate level using mathematical and scientific principles. Modeling techniques include basic static and dynamic analysis of rigid bodies; electrical circuit analysis; simple frequency domain models of linear systems; and applications of feedback in linear system models.

Enrollment requirements: Prerequisites: PHY 121, EGR 216

EGR 218 Materials and Manufacturing Processes (3)

Course description: Application of material properties and manufacturing processes to the design and fabrication of engineered artifacts.

Enrollment requirements: Prerequisites: CHM 113 or CHM 114

EGR 219 Computational Modeling of Engineering Systems (3)

Course description: An introduction to computing that develops software to find solutions to engineering problems. Students will write and document code to solve problems in data acquisition, modeling of physical systems, and optimization.

Concentration:

EGR 330: Design of Electrical Systems (3) *(will also be required for the Robotics concentration)*

Overview of electrical system architectures and components used in design of smart electrical and electromechanical systems. Prerequisites EGR 217 and EGR 219

EGR 334: Analog-Digital Interface (3) *(will also be required for the Robotics concentration)*

Overview of electrical system architectures and components used in design of smart electrical and electromechanical systems. Prerequisites: EGR 217 and EGR 219; Corequisite EGR 301

EGR 338: Microcontrollers in Smart Systems (3)

Microcontroller implementation of smart systems. Microcontrollers are applied to control dynamic systems; this includes the interface with sensors and actuators as well as developing simple open- and closed-loop control laws.

Prerequisites: EGR 330, EGR 334



**EGR 430: Design, Fabrication, and Architecture of Electronic Devices (3)**

Comprehensive introduction to the design, operation, production and application of the most common semiconductor devices and categories of integrated circuit. The close interaction between materials, semiconductor physics and circuit performance is demonstrated, especially in terms of the applications and economics of digital systems. Prerequisite: EGR 330

**EGR 431: Power Management (3)**

Devices and techniques to supply and manage power in electrical systems. Prerequisite: EGR 330

Note: All new required courses should be submitted in Curriculum Changer and ready for Provost's Office approval before this concentration is put on [Curriculum and Academic Programs Committee \(CAPC\)](#) agenda.

**4. Administration and Resources**

**A. How will the proposed concentration be administered (including admissions, student advisement, retention, etc.)?**

The concentration will be administered through the current structure and process for in place for the existing major and degree.

**B. What are enrollment projections for the next three years?**

	<b>1<sup>st</sup> Year</b>	<b>2<sup>nd</sup> Year</b> (Yr. 1 continuing + new entering)	<b>3<sup>rd</sup> Year</b> (Yr. 1 & 2 continuing + new entering)
Number of Students (Headcount)	150*	159	169

\*Projections based on enrollment in existing focus areas and expected growth as explained in demand statement.

**C. Resources**

What are the resource implications for the proposed concentration, including any projected budget needs? Will new books, library holdings, equipment, laboratory space and/or personnel be required now or in the future? If multiple units/programs will collaborate in offering this concentration please discuss the resource contribution of each participating program. Letters of support must be included from all academic units that will commit resources to this concentration.

No additional resources are required.

**D. Primary Faculty**

List the primary faculty participants regarding this proposed concentration. For interdisciplinary concentrations, please include the relevant names of faculty members from across the University.

<b>Name</b>	<b>Title</b>	<b>Area(s) of Specialization as they relate to proposed concentration</b>
Odesma Dalrymple	Assistant Professor	Engineering Education
Robert Grondin	Associate Professor	Solid State Electronics
Shawn Jordan	Assistant Professor	Engineering Education
Narciso Macia	Associate Professor	Control Systems
Arunachalanadar Madakannan	Associate Professor	Energy Sources
Darryl Morrell	Associate Professor	Signal Processing
Lakshmi Munukulta	Professor	Materials and Energy Sources
Scott Pollat	Senior Lecturer	Power Systems
John Robertson	Professor	Integrated Systems
Govindasamy Tamizhmani	Clinical Professor (50%)	Energy Sources

**5. Additional Materials**

**A. Major Map**

Attach a copy of the “proposed” major map for this degree program and each concentration(s) to be offered. Instructions on how to create a “proposed major map” in [BAMM](#) can be found in the [Build a Major Map Training Guide](#).

**B. Appendix**

Complete and attach the Appendix document.

**C. Attach other information that will be useful to the review committees and the Office of the Provost.**

**APPENDIX**  
**OPERATIONAL INFORMATION FOR UNDERGRADUATE CONCENTRATIONS**

(This information is used to populate the [Degree Search/catalog](#) website.

Please consider the student audience in creating your text.)

**1. Proposed Concentration Name:** Engineering (Electrical Systems), BSE

**2. Program Description** (150 words maximum)

The Department of Engineering In the College of Technology & Innovation has a multidisciplinary engineering program with a concentration in electrical systems. The multidisciplinary engineering program allows students to learn in a problem-based curriculum with hands-on projects and the development of professional skills integrated into the program. In the junior and senior years, students take electrical engineering courses to complete a concentration in electrical systems. The graduate with an electrical systems concentration will be able to provide leadership in engineering settings, which are intrinsically multi-disciplinary in nature, using electrical engineering knowledge to design and implement control systems. Students learn theory and application of sensors, actuators, microcontrollers and microprocessors, power sources and board level implementations of such systems.

**3. Contact and Support Information**

Building Name, code and room number: ( <i>Search ASU map</i> )	TECH 101
Program office telephone number: ( <i>i.e. 480/965-2100</i> )	480/727-1874
Program Email Address:	egr@asu.edu
Program Website Address:	<a href="https://technology.asu.edu/egr">https://technology.asu.edu/egr</a>

**4. Delivery/Campus Information Delivery:** On campus, Polytechnic campus

*Note: Once students elect a campus or On-line option, students will not be able to move back and forth between the on-campus and the ASU Online options. Approval from the Office of the Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online.*

**5. Campus/Locations:** indicate all locations where this program will be offered.

Downtown Phoenix     Polytechnic     Tempe     West    Other:

**6. Additional Program Description Information**

- A. Additional program fee required for this program?    YES (the BSE in Engineering has a program fee)
- B. Does this program have a second language requirement?    No

**7. Career Opportunities & Concentrations**

Provide a brief description of career opportunities available for this degree program. If program will have concentrations, provide a brief description for each concentration. (150 words maximum)

Electrical engineers are in high demand for many industry sectors, especially manufacturing, utilities, communications and defense systems. However, electronic systems also pervade the service sectors such as health care, finance, education and entertainment. Graduates from this program have the broad base of technical and operational skills that make them well suited for employment across the whole spectrum of applications.

**8. Additional Admission Requirements**

If applicable list any admission requirements (freshman and/or transfer) that are higher than and/or in addition to the university minimum undergraduate admission requirements.)

None



**9. Keywords**

List all keywords used to search for this program. Keywords should be specific to the proposed program. Engineering, electrical engineering, electronics, electronic systems, integrated systems, manufacturing, control, semiconductors, power systems

**10. Advising Committee Code**

List the existing advising committee code to be associated with this degree. UGTIEN  
*Note: If a new advising committee needs to be created, please complete the following form:*  
[Proposal to create an undergraduate advising committee](#)

**11. First Required Math Course**

List the first math course required in the major map. MAT 265 is the first required MA course. The program also requires: MAT 266, MAT 267, MAT 275, MAT 343 for a total of 15 mathematics credits

**12. Western Undergraduate Exchange (WUE) Eligible:**

Has a request been submitted to the Provost by the Dean to consider this degree program as eligible for WUE?  
*Note: No action will be taken during the implementation process with regards to WUE until approval is received from the Provost.*  
 The concentration is eligible for WUE.

**13. Area(s) of Interest**

A. Select **one (1)** primary Area of Interest from the list below that applies to this program.

- |   |  |
|---|--|
| <input type="checkbox"/> <a href="#">Architecture, Construction &amp; Design</a>    | <input checked="" type="checkbox"/> <a href="#">Engineering &amp; Technology</a>     |
| <input type="checkbox"/> <a href="#">Artistic Expression &amp; Performance</a>      | <input type="checkbox"/> <a href="#">Environmental Issues &amp; Physical Science</a> |
| <input type="checkbox"/> <a href="#">Biological Sciences, Health &amp; Wellness</a> | <input type="checkbox"/> <a href="#">Interdisciplinary Studies</a>                   |
| <input type="checkbox"/> <a href="#">Business, Management &amp; Economics</a>       | <input type="checkbox"/> <a href="#">Languages &amp; Cultures</a>                    |
| <input type="checkbox"/> <a href="#">Communication &amp; Media</a>                  | <input type="checkbox"/> <a href="#">Law &amp; Justice</a>                           |
| <input type="checkbox"/> <a href="#">Computing &amp; Mathematics</a>                | <input type="checkbox"/> <a href="#">Social Science, Policies &amp; Issues</a>       |
| <input type="checkbox"/> <a href="#">Education &amp; Teaching</a>                   |  |

B. Select **any** additional Areas of Interest that apply to this program from the list below.

- |   |  |
|---|--|
| <input type="checkbox"/> <a href="#">Architecture, Construction &amp; Design</a>    | <input type="checkbox"/> <a href="#">Engineering &amp; Technology</a>                |
| <input type="checkbox"/> <a href="#">Artistic Expression &amp; Performance</a>      | <input type="checkbox"/> <a href="#">Environmental Issues &amp; Physical Science</a> |
| <input type="checkbox"/> <a href="#">Biological Sciences, Health &amp; Wellness</a> | <input type="checkbox"/> <a href="#">Interdisciplinary Studies</a>                   |
| <input type="checkbox"/> <a href="#">Business, Management &amp; Economics</a>       | <input type="checkbox"/> <a href="#">Languages &amp; Cultures</a>                    |
| <input type="checkbox"/> <a href="#">Communication &amp; Media</a>                  | <input type="checkbox"/> <a href="#">Law &amp; Justice</a>                           |
| <input checked="" type="checkbox"/> <a href="#">Computing &amp; Mathematics</a>     | <input type="checkbox"/> <a href="#">Social Science, Policies &amp; Issues</a>       |
| <input type="checkbox"/> <a href="#">Education &amp; Teaching</a>                   |  |

The following fields are to be completed by the Office of the Executive Vice President and Provost of the University.

CIP Code: \_\_\_\_\_

Plan Code: \_\_\_\_\_



**2013 - 2014 Major Map  
Engineering-Electrical Systems, BSE (Proposed)**

Term	Credit Hours	Critical course signified by	Hours	Minimum Grade	Notes
<b>Term 1</b>	0 - 14	Critical course signified by			
		CHM 113: General Chemistry I (SQ)	4		<ul style="list-style-type: none"> <li>An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses</li> <li>ASU Math Placement Exam score determines placement in Mathematics course</li> <li>CTI 101 First Year Seminar required of all freshman students</li> </ul>
		CTI 101: Success in Technology & Innovation	1		
		EGR 101: Introduction to Engineering Design I	3		
		ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: English for Foreign Students	3	C	
		MAT 265: Calculus for Engineers I (MA)	3	C	
		<b>Term hours subtotal:</b>	<b>14</b>		
<b>Term 2</b>	15 - 29	Critical course signified by			
		EGR 102: Introduction to Engineering Design II	3		<ul style="list-style-type: none"> <li>Complete MAT 265 with a C or better</li> <li>Completed First-Year Composition Requirement (ENG 101/107 and ENG 102/108 or ENG 105)</li> </ul>
		EGR 104: Critical Inquiry in Engineering (L)	3		
		ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: English for Foreign Students	3	C	
		MAT 266: Calculus for Engineers II (MA)	3	C	
		PHY 121: University Physics I: Mechanics (SQ)	3		
		<b>Term hours subtotal:</b>	<b>15</b>		
<b>Term 3</b>	30 - 44	Critical course signified by			
		EGR 201: Fall Multidisciplinary Project	3		<ul style="list-style-type: none"> <li>Complete PHY 121</li> <li>Complete MAT 266 with a C or Better</li> </ul>
		EGR 216: Fundamentals of Engineering Systems I	3		
		EGR 218: Materials and Manufacturing Processes	3		
		EGR 280: Engineering Statistics (CS)	3		
		MAT 267: Calculus for Engineers III (MA)	3	C	
		<b>Term hours subtotal:</b>	<b>15</b>		
<b>Term 4</b>	45 - 59	Critical course signified by			
		EGR 202: Spring Multidisciplinary Project	3		<ul style="list-style-type: none"> <li>Complete MAT 267 with a C or better</li> </ul>
		EGR 217: Fundamentals of Engineering Systems II	3		
		EGR 219: Computational Modeling of Engineering Systems	3		
		Humanities, Fine Arts and Design (HU) AND Historical Awareness (H)	3		
		MAT 275: Modern Differential Equations (MA) OR MAT 274: Elementary Differential Equations (MA)	3		
		<b>Term hours subtotal:</b>	<b>15</b>		
<b>Term 5</b>	60 - 75	Credit Hours			
		BIO 181: General Biology I (SQ) OR CHM 116: General Chemistry II (SQ) OR GLG 101: Introduction to Geology I (Physical) (SQ & G) AND GLG 103: Introduction to Geology I-Laboratory (SQ) OR PHY 122: University Physics Laboratory I (SQ) OR PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ) OR BIO 182: General Biology II (SQ)	4		<p><b>Secondary Focus Area</b></p> <ul style="list-style-type: none"> <li>A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.</li> </ul>
		EGR 301: Fall Concentration Project	3		
		EGR 330: Design of Electrical Systems	3		
		EGR 334: Analog-Digital Interface	3		
		<b>Secondary Focus Area</b>	3		
		<b>Term hours subtotal:</b>	<b>16</b>		
<b>Term 6</b>	76 - 90	Credit Hours			
					<p><b>Secondary Focus Area</b></p>

EGR 302: Spring Concentration Project	3
EGR 338: Microcontrollers in Smart Systems	3
HST 318: History of Engineering ((L or SB) & G)	3
MAT 343: Applied Linear Algebra	3
Secondary Focus Area	3
Term hours subtotal:	15

- A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.

Term 7 91 - 105 Credit Hours	Hours	Minimum Grade	Notes
EGR 401: Engineering Capstone Project I (L)	3		Secondary Focus Area
EGR 430: Design, Fabrication, and Architecture of Electronic Devices	3		
PHY 331: Principles of Modern Electromagnetism	3		
Upper Division Secondary Focus Area	3		
Social and Behavioral Sciences (SB)	3		
Term hours subtotal:	15		

- A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.

Term 8 106 - 120 Credit Hours	Hours	Minimum Grade	Notes
EGR 402: Engineering Capstone Project II	3		Secondary Focus Area
EGR 431: Power Management	3		
Humanities, Fine Arts and Design (HU)	3		
Upper Division Secondary Focus Area	3		
Upper Division Humanities, Fine Arts and Design (HU) OR Upper Division Social and Behavioral Sciences (SB) AND Upper Division Cultural Diversity in the U.S. (C)	3		
Term hours subtotal:	15		

- A secondary focus area is a group of courses comprising of 12 or more credit hours (minimum 6 hours upper division at the 300 or 400 level) which form a coherent theme. For example, all courses may share a common subject prefix. Students work with an academic success specialist to identify their secondary focus area.

**Total Hours:** 120  
**Upper Division Hours:** 45 minimum  
**Major GPA:** 2.00 minimum  
**Cumulative GPA:** 2.50 minimum  
**Total hrs at ASU:** 30 minimum  
**Hrs Resident Credit for Academic Recognition:** 56 minimum  
**Total Community College Hrs:** 64 maximum

**General University Requirements Legend**

- General Studies Core Requirements:
- Literacy and Critical Inquiry (L)
  - Mathematical Studies (MA)
  - Computer/Statistics/Quantitative Applications (CS)
  - Humanities, Fine Arts and Design (HU)
  - Social and Behavioral Sciences (SB)
  - Natural Science - Quantitative (SQ)
  - Natural Science - General (SG)

General Studies Awareness Requirements:

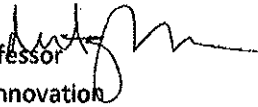
- Cultural Diversity in the U.S. (C)
  - Global Awareness (G)
  - Historical Awareness (H)
- First-Year Composition

General Studies designations listed on the major map are current for the 2013 - 2014 academic year.



To: Elizabeth D. Phillips  
Executive Vice President and University Provost

From: Mitzi Montoya  
Vice Provost, Dean, and Professor  
College of Technology and Innovation



Date: September 23, 2012

Re: Establishment of Concentration in Electrical Systems within the B.S. in Engineering

Please accept this memo of support for the establishment of the proposed concentration in Electrical Systems within the B.S. in Engineering. The attached proposal has been developed by the faculty of Engineering, has been reviewed and approved through the established process within the college and has full support of the faculty and the College of Technology and Innovation dean's office.

The department of Engineering has sufficient resources to support the new concentration in Electrical Systems without impacting the offering of core courses within the unit.

If you have any questions or concerns, please do not hesitate to contact me.

CC: Scott Danielson, Associate Dean of Academic Programs, College of Technology and Innovation  
Ann McKenna, Chair and Associate Professor, College of Technology and Innovation

Date: September 25, 2012

To: Mitzi Montoya  
Vice Provost, Dean, and Professor  
College of Technology and Innovation

From: Ann McKenna   
Chair and Associate Professor  
Engineering Department  
College of Technology and Innovation

Re: Establishment of Concentration in Electrical Systems within the B.S. in Engineering

Please accept this memo of support for the establishment of the proposed concentration in Electrical Systems within the B.S. in Engineering. The attached proposal has been developed by the faculty of Engineering, has been reviewed and approved through the established process within the department and the college and has full support of the faculty of the College of Technology and Innovation.

The department of Engineering has sufficient resources to support the new concentration in Electrical Systems without impacting the offering of core courses within the unit.

---

**From:** James Collofello  
**Sent:** Wednesday, September 26, 2012 9:28 AM  
**To:** Scott Danielson  
**Subject:** RE: BSE in Engineering Concentrations Proposal Impact Statements

Scott,

The engineering school does not have any concerns with the new proposed concentrations.

jim

James S. Collofello  
Associate Dean of Academic and Student Affairs  
Professor of Computer Science and Engineering  
School of Computing Informatics and Decision Systems Engineering  
Ira A. Fulton Schools of Engineering  
Arizona State University

---

**From:** Scott Danielson  
**Sent:** Tuesday, September 25, 2012 4:30 PM  
**To:** James Collofello  
**Subject:** BSE in Engineering Concentrations Proposal Impact Statements

Jim,

As per our conversations, I am asking for your comment on the attached proposals for three different concentrations to be offered by the BSE in Engineering program in the College of Technology and Innovation at the Polytechnic campus. It is my understanding that our Deans reached agreement on our offering these concentrations in previous conversations.

Thank you.

Scott Danielson, Ph.D., P.E.  
Associate Dean for Academic Programs  
College of Technology and Innovation  
Arizona State University