This template is to be used only by programs that have received specific written approval from the Provost’s office to proceed with internal proposal development and review. The proposal template should be completed in full and submitted to the University Provost’s Office. It must undergo all internal university review and approval steps including those at the unit, college, and university levels. A program **may not** be implemented until the Provost’s Office notifies the academic unit that the program may be offered.

**College/School/Institute:** Ira A. Fulton Schools of Engineering  
**Department/Division/School:** The Polytechnic School  
**Proposing Faculty Group (if applicable):** Human Systems Engineering unit  
**If this is an official joint degree program?** No, this is not a joint degree program

**Degree type:** BS-Bachelor of Science  
**Name of degree program (major):** Human Systems Engineering  
**Are any concentrations to be established under this degree program?** No, concentrations will not be established.  
**Is a program fee required?** Yes, a program fee is required.  
**What is the first catalog year available for students to select on the undergraduate application for this this program?** 2016-2017  
**Delivery method:** On-campus only (ground courses and/or iCourses)

**Campus/Locations:** indicate all locations where this program will be offered.  
- [ ] Downtown Phoenix  
- [x] Polytechnic  
- [ ] Tempe  
- [ ] West  
- [ ] Other:  

**Proposal Contact**  
**Name:** Nancy Cooke  
**Title:** Professor  
**Phone number:** 480-727-5158  
**Email:** ncooke@asu.edu

**DEAN APPROVAL(S)**  
This proposal has been approved by all necessary unit and College/School levels of review. I recommend implementation of the proposed organizational change.

**College/School/Division Dean name:** James S. Collofello  
**Signature:** [Signature]

**Date:** 4 / 8 /2015

**Note:** An electronic signature, an email from the dean or dean’s designee, or a PDF of the signed signature page is acceptable.
1. Purpose and Nature of Program

   Provide a brief program description. Include the distinctive features of the program that make it unique.

   The BS in human systems engineering provides students who design and build technology and systems for humans with the theoretical background in human performance and methodological skills (e.g., task analysis, prototyping, user experience design, human-in-the-loop experiments) to build systems that take into account human capabilities and limitations. The degree extends psychology (cognitive, physiological, perceptual, social, organizational) to engineering applications. The degree will produce students well-grounded in the science of human cognition and behavior and capable of understanding the implications of this science for engineering endeavors. Human systems engineering skills are increasingly valued by industry, yet are not typically covered in traditional psychology programs. Students majoring or minoring in Human Systems Engineering will enhance their employment potential. The BS in human systems engineering is a unique blend of psychology and engineering offered by psychologists in an engineering college.

2. Student Learning Outcomes and Assessment Methods

   A. Knowledge, competencies, and skills

      List the knowledge, competencies, and skills students should have when they graduate from the proposed degree program. (You can find examples of program Learning Outcomes at [http://www.asu.edu/oue/assessment.html](http://www.asu.edu/oue/assessment.html))

      1. Graduates of the BS in human systems engineering program will be able to apply psychological theory and research to engineering problems involving humans
      2. Graduates of the BS in human systems engineering program will demonstrate competency in applying HSE statistical and design methods to engineering problems involving humans

   B. Assessment

      Describe the plan and methods to assess whether students have achieved the knowledge, competencies and skills identified in the Learning Outcomes. (You can find examples of assessment methods at [http://www.asu.edu/oue/assessment.html](http://www.asu.edu/oue/assessment.html))

      Measure 1.1 Mean performance on exams in Applied Cognitive Science (HSE 324)
      PC 1.1 70% of students will receive a mean score of C or better on exams in HSE 324
      Measure 1.2 Performance on the (HSE 477) capstone project proposal (problem statement and literature review)
      PC 1.2 70% of students will receive a mean score of C or better on the capstone proposal
      Measure 2.1 Mean performance on exams in Statistics for Human Systems Research II (HSE 330)
      PC 2.1 70% of students will receive a mean score of C or better on exams in HSE 330
      Measure 2.2 Performance on the methods and results sections of the (PSY 477) capstone project report
      PC 2.2 70% of students will receive a mean score of C or better on the methods and results sections of the capstone report

3. Academic Curriculum and Requirements

   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. Summary of credit hours required for this program

Total credit hours must be 120 and include first year composition, general studies, core/required courses, program specific electives, and any additional requirements (e.g., concentration credits).

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year Composition</td>
<td>6</td>
</tr>
<tr>
<td>ASU 101 (or Equivalent)</td>
<td>1</td>
</tr>
<tr>
<td>General Studies</td>
<td>10</td>
</tr>
<tr>
<td>Core/required courses</td>
<td>52</td>
</tr>
<tr>
<td>Program specific electives</td>
<td>15</td>
</tr>
<tr>
<td>Additional requirements – Focus Area</td>
<td>12</td>
</tr>
<tr>
<td>Other; please explain General University Electives</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>

C. Core/Required Courses.

i. Total required and/or core course credit hours: 52

ii. List the name, prefix, and credit hours for each required/core course for this program

- BIO 100: The Living World (SQ) or BIO 181: General Biology I (SQ) or BIO 182: General Biology II (SG) or BIO 201: Human Anatomy and Physiology I (SG) or BIO 202: Human Anatomy and Physiology II (SG) (4)
- CIS 105: Computer Applications and Information Technology (CS) (3) or CSE 180: Computer Literacy (CS) (3) or CST 100: Object-Oriented Software Development I (3) or EDT 180: Problem Solving Using Digital Technology Applications (CS) (3).
- HSE 101: Introduction to Human Systems Engineering (SB) 3
- EGR 101: Foundations of Engineering Design Project I OR EGR 104: Critical Inquiry in Engineering (L) 3
- EGR 219: Computational Modeling of Engineering Systems or CPI 101: Introduction to Informatics (3)
- HSE 230: Statistics for Human Systems Research I(CS) 3
- HSE 223: Applied Biology of Human Behavior (SB) 3
- HSE 224: Applied Social Science (SB) 3
- HSE 225: Human Systems Integration 3
- HSE 290: Experimental Methods for Human Systems Research (L) 3
- HSE 323: Perceptual Systems (SB - pending) 3
- HSE 324: Applied Cognitive Science (SB) 3
- HSE 325: Human-Computer Interaction 3
- HSE 330: Statistics for Human Systems Research II (CS) 3
- HSE 390: Qualitative Research Methods (L) 3
- HSE 477: Human Systems Engineering Capstone Experience (3)
- MAT 170: Precalculus (MA) (3)
D. Program Specific Electives.

i. Total required program elective credit hours:
   A student must complete at least 12 credits hours of Human Factors and at least 3 credits of Training Electives. In
   addition, a student must complete 12 credit hours of a related focus area.

ii. List the name, prefix, and credit hours for any program specific electives for this program:
   HUMAN FACTORS ELECTIVES
   - HSE 422 Human Factors in Sports 3
   - HSE 423 Human Factors in Transportation 3
   - HSE 425 Human Factors in Medical Systems 3
   - HSE 424 Human Automation Interaction 3
   - HSE 428 Judgment and Decision Making 3
   - HSE 429 Product Design and Evaluation 3

   TRAINING ELECTIVES
   - HSE 426 Training and Expertise 3
   - HSE 427 Design for Learning 3

Note: The human factors electives focus on human factors design in specific problem domains and are distinguished from the
training electives which focus on training and learning processes applied to systems. The separation ensures that students
take at least one course in each area.

E. Additional Program Requirements, if any:
   List and describe any capstone experiences, milestone, and/or additional requirements.

   HSE 477: Human Systems Engineering Capstone Experience 3
   This is a senior level course that is project-based. Students will work individually or in teams to carry out a project from
   start to finish on their own. The project will include a proposal which states the problems and provides relevant
   literature. The final product will be a written report that includes methods, results, and discussion. The work will also
   be presented orally in class and as a poster at an event such as the Polytechnic Innovation Showcase.

F. Concentrations

I. Are any concentrations to be established under this degree program? No, concentrations will not be established.

II. If yes, are concentrations required? (Select One)

III. List courses & additional requirements for the proposed concentration(s):

<table>
<thead>
<tr>
<th>Concentration Name</th>
<th>Total credit hours</th>
<th>Core/Required Courses for Concentration (Prefix, # &amp; Title)</th>
<th>Total Core credit hours</th>
<th>Program Specific Electives (include course name and prefix)</th>
<th>Total Elective credit hours</th>
<th>Additional Requirements (i.e. milestones, capstones)</th>
</tr>
</thead>
</table>
4. New Course Development

A. Will a new course prefix (es) be required for this degree program? Yes
   If yes, list prefix name(s) (i.e. ENG- English) HSE
   Note: A request for a New Prefix form must be completed for each new prefix required and submitted with this proposal: http://provost.asu.edu/files/shared/curriculum/Prefix_Request.doc.

B. New Courses Required for Proposed Degree Program.
   List all new courses required for this program, including course prefix, number and course description.

   Note: New course requests must be submitted electronically via Curriculum ChangeMaker and undergo all internal university review and approval steps including those at the unit, college, and university levels.
5. Program Need
Explain why the university needs to offer this program (include target audience and market).
Engineers build technology and systems of technology that are used by humans. Much of this technology never gets used because it does not fit the need or is not useable. The HSE program will provide engineers and others with background in human capabilities and limitations and with methodological skills to translate this theory and research into safer and more effective systems. Engineers and others who develop systems for human needs and usability can 1) make safer systems and 2) enhance marketability.

6. Impact on Other Programs
List other academic units that might be impacted by the proposed program and describe the potential impact (e.g., how the implementation of this program might affect student headcount/enrollment, student recruitment, faculty participation, course content, etc. in other programs). Attach letters of collaboration/support from impacted programs.
Community college transfers could be impacted by the human systems engineering program, though because the lower division HSE courses overlap (though not completely) with PSY courses the human systems engineering program will accept transfer students with those lower division PSY courses. In addition there may be students enrolling in the HSE lower division courses who would have normally enrolled in PSY courses, however, this is not a change as students who are PSY majors at Tempe have also taken the PSY courses from our unit. Impact statements are attached from the psychology programs in Tempe and West as well as various other programs with courses that may overlap.

7. Projected Enrollment
How many new students do you anticipate enrolling in this program each year for the next five years?

<table>
<thead>
<tr>
<th>5-YEAR PROJECTED ANNUAL ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year (Yr 1 continuing + new entering)</td>
</tr>
<tr>
<td>Number of Students Majoring (Headcount)</td>
</tr>
</tbody>
</table>

8. Accreditation or Licensing Requirements
If applicable, provide the names of the external agencies for accreditation, professional licensing, etc. that guide your curriculum for this program, if any. Describe any requirements for accreditation or licensing.

The Human Factors and Ergonomics Society accredits graduate programs only, but the accreditation requirements have guided the development of this undergraduate program.
9. Faculty & Staff

A. Current faculty
List the name, rank, highest degree, area of specialization/expertise and estimate of the level of involvement of all current faculties who will teach in the program.

Level of involvement: All of the faculty listed here will be engaged in teaching courses for this program and in curriculum development and assessment activities. A rough estimate is 20% FTE per faculty will be devoted to teaching in this undergraduate program.

Vaughn Becker, PhD, Associate Professor, cognitive science, cognitive readiness, fatigue and stress, statistics
Russell Branaghan, PhD, Associate Professor, human-computer interaction, product design, medical systems
Nancy J. Cooke, PhD, Professor, teamwork, cognition, human systems integration, human-automation interaction
Scotty Craig, PhD, Assistant Professor, learning technologies, virtual training technologies, methods
Rob Gray, PhD, Associate Professor, human performance in sports, transportation systems, perception and action
Rod Roscoe, PhD, Assistant Professor, writing performance, intelligent tutors, skill acquisition
Hyunjin Song, PhD, Assistant Professor, social psychology, judgment and decision making, organizational behavior
Jeff Thomas, PhD, Faculty Associate, emergency response, introduction to HSE
Bing Wu, PhD, Assistant Professor, sensation and perception, physiological psychology, neuropsychology

B. New Faculty:
Describe the new faculty hiring needed during the next three years to sustain the program. List the anticipated hiring schedule and financial sources for supporting the addition of these faculty members.

No new faculty needed until we grow our majors to over 150 which is estimated to happen in the 4th year.

C. Administration of the program.
Explain how the program will be administered for the purposes of admissions, advising, course offerings, etc. Discuss the available staff support.

Our BS in industrial and organizational psychology has been administered through The Polytechnic school's advising, recruiting, and admissions staff in conjunction with program chair, Nancy Cooke and administrative assistant, Becky Montez. The BS in human systems engineering will be administered by the same Polytechnic School personnel, that have administered the BS in industrial and organizational psychology.

10. Resources (necessary to launch and sustain the program)

A. Required resources:
Describe any new resources required for this program’s success, such as new support staff, new facilities, new library resources, new technology resources, etc.

We anticipate offering large sections of HSE 101 and depending on the mode of delivery may require Vidyo capabilities as well as large classrooms holding 100 - 200 students.

B. Resource acquisition:
Explain how the resources to support this program will be obtained.

Vidyo capabilities exist at the Polytechnic campus and the Ira A. Fulton Schools of Engineering understand the need for larger classrooms on the Polytechnic campus.
1. Program Name (Major): Human Systems Engineering

2. Program Description (150 words maximum)
The BS in human systems engineering provides students with the theoretical background and methodological skills to design and build technology and systems for humans that place the human at the center. The bachelor’s in human systems engineering is a unique blend of psychology and engineering offered by psychologists in an engineering college. By extending psychology (cognitive, physiological, perceptual, social, organizational) to engineering problems, the program will produce students well-grounded in psychological science, and students will be capable of understanding the implications of this science for engineering endeavors.

Human systems engineering skills are increasingly valued by industry, yet are not typically covered in traditional psychology or engineering programs. Students with a major or a minor in human systems engineering will enhance their employment potential.

3. Contact and Support Information

   Building Name, code and room number: (Search ASU map) WANER 240J
   Program office telephone number: (i.e. 480/965-2100) 480/727-1874
   Program Email Address: technology@asu.edu
   Program Website Address: http://innovation.asu.edu/hse

4. Delivery/Campus Information Delivery:
   On-campus only (ground courses and/or iCourses)

   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 University 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
   - [x] Polytechnic
   - [ ] Tempe
   - [ ] West
   - [ ] Other:

6. Additional Program Description Information

   A. Additional program fee required for this program? Yes
   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)

   The human systems engineering program prepares students for industry and government positions in a career such as a:
   - game designer
   - human factors engineer
   - human systems integrator
   - interface designer
   - user experience designer

   Graduates may work as a member of a product or system design team.

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. N/A

9. Keywords

   List all keywords used to search for this program. Keywords should be specific to the proposed program.
human systems engineering, human factors, human systems integration, psychology, cognitive science, human-computer interaction, interface design

10. Advising Committee Code
   List the existing advising committee code to be associated with this degree. UGES51
   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.
   MAT 170: Precalculus

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

13. Math Intensity:
   a. List the highest math course required on the major map. (This will not appear on Degree Search.) MAT 170
   b. What is the math intensity as indicated by the highest math required on the major map? Math intensity categorization can be found here: https://catalog.asu.edu/mathintensity Moderate

14. CIP codes
   Identify CIP codes that should be displayed on Degree Search. CIP codes can be found at:
   http://www.onetonline.org/crosswalk/CIP/.

   30.3101

   Are any specific career codes (SOC/ONET codes) to be omitted from the CIP codes selected above? (i.e. “Omit 25-10312.00 Engineering Teachers, Postsecondary from CIP code 14.0501 Bioengineering and Biomedical Engineering.”)

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

   - Architecture & Construction
   - Arts
   - Business
   - Communications & Media
   - Computing & Mathematics
   - Education & Teaching
   - Engineering & Technology
   - Entrepreneurship
   - Exploratory
   - Health & Wellness
   - Humanities
   - Interdisciplinary Studies
   - Law & Justice
   - STEM
   - Science
   - Social and Behavioral Sciences
   - Sustainability

   B. Select one (1) secondary area of interest from the list below that applies to this program.

   - Architecture & Construction
   - Arts
   - Business
   - Communications & Media
   - Computing & Mathematics
   - Education & Teaching
   - Engineering & Technology
   - Entrepreneurship
   - Exploratory
   - Health & Wellness
   - Humanities
   - Interdisciplinary Studies
   - Law & Justice
   - STEM
   - Science
   - Social and Behavioral Sciences
   - Sustainability

   The following fields are to be completed by the Office of the University Provost.
CIP Code: 

Plan Code: 

PROPOSAL TO ESTABLISH A NEW UNDERGRADUATE DEGREE
## 2016 - 2017 Major Map
### Human Systems Engineering (BS), (Proposed)

**OLSORPZ**

<table>
<thead>
<tr>
<th>Term 1</th>
<th>0 - 14 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASU 101: The ASU Experience</td>
<td>1</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HSE 101: Introduction to Human Systems Engineering (SB) or PSY 101: Introduction to Psychology (SB)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAT 170: Precalculus (MA)</td>
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<td>C</td>
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<tr>
<td></td>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
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<td></td>
<td>Biological Science (SG or SQ) AND Natural Science - General (SG) or Natural Science - Quantitative (SQ)</td>
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<tr>
<td><strong>Term hours subtotal:</strong></td>
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<td></td>
<td></td>
<td>14</td>
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<table>
<thead>
<tr>
<th>Term 2</th>
<th>15 - 30 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EGR 101: Foundations of Engineering Design Project I OR EGR 104: Critical Inquiry in Engineering (L)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HSE 230: Statistics for Human Systems Research I (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)</td>
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<tr>
<td></td>
<td>Natural Science - Quantitative (SQ)</td>
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<tr>
<td><strong>Term hours subtotal:</strong></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
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</table>

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<thead>
<tr>
<th>Term 3</th>
<th>31 - 45 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HSE 223: Applied Biology of Human Behavior (SB)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HSE 290: Experimental Methods for Human Systems Research (L)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Related Area (Focus)</td>
<td>3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete ENG 101 OR ENG 105 OR ENG 107 course(s). Complete Mathematics (MA) requirement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Term hours subtotal:</strong></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Term 4</th>
<th>46 - 60 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HSE 224: Applied Social Science (SB)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HSE 225: Human Systems Integration</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EGR 219: Computational Modeling of Engineering Systems OR CPI 101: Introduction to Informatics (CS)</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>CIS 105: Computer Applications and Information Technology (CS) OR CSE 180: Computer Literacy (CS) OR SER 100: Object-Oriented Software Development OR EDT 180: Technology Literacy: Problem Solving using Digital Technology Applications (CS)</td>
<td>3</td>
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<tr>
<td></td>
<td>Global Awareness (G)</td>
<td>3</td>
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<td><strong>Term hours subtotal:</strong></td>
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<table>
<thead>
<tr>
<th>Term 5</th>
<th>61 - 75 Credit Hours</th>
<th>Necessary course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
The Related Area (Focus) is made up of 12 credit hours from courses with the prefixes below. 3 credit hours must be upper division.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological Science (SQ)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BIO 100: The Living World (SQ)</td>
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<tr>
<td>BIO 181: General Biology I (SQ)</td>
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<tr>
<td>BIO 182: General Biology II (SQ)</td>
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<tr>
<td>BIO 201: Human Anatomy and Physiology I (SG)</td>
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<tr>
<td>Related Area (Focus)</td>
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<tr>
<td>Upper Division Elective</td>
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<tr>
<td>Upper Division Human Factors Elective</td>
<td></td>
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<tr>
<td>Upper Division Training Elective</td>
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<tr>
<td>Upper Division Related Area (Focus)</td>
<td></td>
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<tr>
<td>Upper Division Elective</td>
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<tr>
<td>Elective</td>
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</tbody>
</table>

| Total Hours Subtotal                         | 15    |       |       |

**Term 6**: 76 - 90 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSE 323: Perceptual Systems</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>HSE 325: Human-Computer Interaction</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Human Factors Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Related Area (Focus)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective</td>
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<td></td>
</tr>
</tbody>
</table>

| Total Hours Subtotal                         | 15    |               |       |

**Term 7**: 91 - 105 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Human Factors Elective</td>
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<td></td>
</tr>
<tr>
<td>Upper Division Training Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Related Area (Focus)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td>3</td>
<td></td>
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<tr>
<td>Elective</td>
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</tbody>
</table>

| Total Hours Subtotal                         | 15    |               |       |

**Term 8**: 106 - 120 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>HSE 477: Human Systems Engineering Capstone Experience</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Complete 2 courses: Upper Division Elective</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete 2 courses: Elective</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Total Hours Subtotal                         | 15    |               |       |

- The Related Area (Focus) is made up of 12 credit hours from courses with the prefixes below. 3 credit hours must be upper division.

---

**Related Area (Focus)**

- BMI Elective
- CSE Elective
- EEE Elective
- EGR Elective
- GIT Elective

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<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Human Factors Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HSE 423: Human Factors in Transportation</td>
<td></td>
<td></td>
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<tr>
<td>HSE 424: Human Automation Interaction</td>
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<tr>
<td>HSE 425: Human Factors in Medical Systems</td>
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<tr>
<td>HSE 428: Judgment and Decision Making</td>
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<tr>
<td>HSE 429: Product Design and Evaluation</td>
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<tr>
<td>PSY 449: Human Factors in Sport</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Training Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HSE 426: Training and Expertise</td>
<td></td>
<td></td>
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<tr>
<td>HSE 427: Designing for Learning</td>
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</tbody>
</table>
HSE Elective

IEE Elective

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 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, Arts and Design (HU)
- Social-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 2016 - 2017 academic year.
All,

I am delighted to support the proposal to establish an undergraduate degree in Human Systems Engineering, BS from the Fulton Schools of Engineering.

This is will be an exciting degree.

Best,
Duane

Duane Roen
Dean, College of Letters and Sciences
Dean, University College
Arizona State University | Undergraduate Academic Services Building, Room 228
Box 871901 | Tempe, AZ 85287-1901
Voice: 480-727-6513 | Fax: 480-727-6344| Email: duane.roen@asu.edu
IMPACT STATEMENT, DEPARTMENT OF PSYCHOLOGY (CLAS)

Nancy-

Thank you for the opportunity to review the new Human Systems Engineering degree programs by Fulton.

On behalf of the Psychology Department, I am pleased to support the proposal to establish a BS degree program in Human Systems Engineering (as well as the accompanying minor).

This program (with its new prefix and more clearly articulated mission) appears to have great potential to build on the existing strengths of the existing I/O Psychology program to benefit the students at Fulton directly by making more explicit the important human dimensions of successful engineering applications, and more generally will (hopefully) reduce some of the natural confusion of the multiple PSY Psychology degrees.

Many of the courses have understandable overlap with PSY courses from which they have evolved, but the overall program as proposed will more clearly differentiate the new program from the psychology degree programs that our department maintains.

The articulation of the specific courses will be worked out by the programs over time on a course-by-course basis.

Our understanding is that these new HSE courses will replace the current offerings, and that moving forward that PSY courses would no longer be offered by the unit at Poly.

We look forward to the success of your new program.

Clark

--

Clark C Presson

Professor and Director of Undergraduate Studies

Department of Psychology

Arizona State University-Tempe

presson@asu.edu
Hi Nancy,

Thanks for your note and effort to reach out and run this by us. We do not see any problems from this end.

And wish you the best in developing and launching the new program.

Best,

Jeff

Jeffrey W. Kassing
Professor/Director
School of Social & Behavioral Sciences
New College of Interdisciplinary Arts & Sciences
Arizona State University
(602) 543-6631
jkassing@asu.edu
dissentworks.com
Dear Professor Cooke,

I have asked the Design School to review this proposal, and we have no objections to the course. All the best with your new program!

Best,

Jennifer Setlow
Associate Dean for Students

ASU Herberger Institute for Design and the Arts
Dixie Gammage Hall, Rm. 132
PO Box 872102
Tempe, AZ 85287-2102
p: 480.965.0050
f: 480.727.6529
BIOMEDICAL INFORMATICS IMPACT CONCERNING EGR 422: HUMAN MEDICAL SYSTEMS

From: George Runger  
Sent: Monday, August 04, 2014 12:08 PM  
To: Nancy Cooke  
Subject: RE: proposed course for human systems engineering

Ms. Cooke

We reviewed the outline. There are no objections to the proposed course.

George C. Runger
Chair, Department of Biomedical Informatics
School of Computing, Informatics and Decision Systems Engineering
Arizona State University
Mayo Clinic, Samuel C. Johnson Research Bldg
13212 East Shea Boulevard
Scottsdale, AZ 85259
runger@asu.edu
480-884-0225
Hi Nancy,

This is fine. You’ve completely changed this course, and we really appreciate it. This offering is distinct from MKT 402, Consumer Behavior. Thanks for addressing our concerns.

Beth

Beth A. Walker
Chair, Department of Marketing, W. P. Carey School of Business
AT&T Professor of Services Marketing and Management
Arizona State University
P O Box 874106
Tempe, AZ 85287-4106
Phone: 480 965 3621
Fax: 480 965 8000
beth.walker@asu.edu
Kay, Beth:

Please see the attached syllabus. The faculty have completely re-oriented to course toward applied judgment and decision making with applications that include consumer decision making but that are much broader. Please let me know if this seems distinct from your consumer behavior course and if you anticipate any impact of this revised course.

Thanks,

Nancy