

This form should be used for academic units wishing to propose a new concentration for existing graduate degrees.

A concentration is a subspecialty within a degree and major. It indicates the fulfillment of a designated, specialized course of study, which qualifies the student with skills and training in one highly concentrated area of the major. Concentrations are formally-recognized educational designations (including the assignment of a university plan code for reporting/record-keeping purposes and appearance on the ASU transcript). Concentrations are distinguished from more informal academic distinctions such as “emphases,” “tracks,” “foci,” “options,” etc.

This proposal template should be completed in full and submitted to the University Provost’s Office [mail to: curriculumplanning@asu.edu]. 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.

GRADUATE CONCENTRATION

College/School:	Ira A. Fulton Schools of Engineering
<i>Note: Program ownership is coded at the College/School level first and may not be a center, department or division apart from it.</i>	
Department/Division/School:	The Polytechnic School
Proposing faculty group (if applicable):	Human Systems Engineering (CAPPSYCH)

Existing graduate degree and major under which this concentration will be established:	Master of Science (MS) in Human Systems Engineering
Name of proposed concentration:	Intelligent Systems
Requested effective term and year: Fall	2021

(The first semester and year for which students may begin applying to the concentration)

Is a program fee required?	No, a program fee is not required.
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Note: for more information about program fee requests, visit <https://provost.asu.edu/curriculum-development/changemaker/form-instructions#fees>

Is the unit willing and able to implement the program if the fee is denied?	Not applicable.
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Delivery method and campus or location options: *select all locations that apply*


- Downtown Phoenix Polytechnic Tempe West Other: _____
- Both** on-campus and ASU Online* - (check applicable campus(es) from options listed above)
- ASU Online only (all courses online and managed by ASU Online)

Note: Once students elect a campus or Online option, students will not be able to move 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. Please complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request. Prior to completing the online Curriculum ChangeMaker form, please contact EdPlus at asuonline@asu.edu who can provide you with additional information regarding the online request process.

Do Not Fill in this information: <u>Office Use Only</u>	CIP Code:
Plan Code:	

PROPOSAL CONTACT

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

DEAN APPROVAL(S)	
<p>This proposal has been approved by all necessary unit and college/school levels of review, and the college/school(s) has the resources to offer this degree program. I recommend implementation of the proposed concentration.</p> <p><i>Note: An electronic signature, an email from the dean or dean's designee, or a PDF of the signed signature page is acceptable.</i></p>	
College/School/Division Dean name:	James S. Collofello
Signature:	
Date:	10/19/2020

Please note: Proposals for new concentrations also require the review and recommendation of approval from the University Graduate Council, Curriculum and Academic Programs Committee (CAPC), the Academic Senate (Information item only), and the Office of the Provost before they can be put into operation.

The final approval notification will come from the Office of the Provost.

1. OVERVIEW

Provide a brief description (*no more than 150 words*) of the new concentration (including the focus of the new concentration, relationship to other concentrations within this degree program, etc.).

The MS program in Human Systems Engineering with a concentration in Intelligent Systems provides students with a deep understanding of human capabilities and limitations as they pertain to interactions with robots, autonomous vehicles, artificial intelligence, and decision aids. The concentration will also equip students with methodological skills to conduct research in the human-robot interaction and teaming space.

Students in this program will participate in courses focusing on methods and tools in applied cognitive science, foundations of human systems engineering, data analytics and statistics, human-automation interaction, and transportation human factors. This concentration will prepare students for facilitating the future of work when humans will work closely with heterogeneous technology in the military, space exploration, manufacturing, medicine, and agriculture.

Students in this concentration will be able to conduct human systems engineering research, with a focus on application to intelligent systems. Other concentrations in human systems engineering also provide students with a foundation in human systems engineering research, but apply the research and methods to different applications such as health care systems, aviation systems, or user experience.

2. IMPACT ASSESSMENT

A. 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, including enrollment, national ranking, etc.?

The MS program in Human Systems Engineering with a concentration in Intelligent Systems provides students with the knowledge base and skills required to work in research or product design, product development, and product evaluation functions within organizations focused on investing, developing, or evaluating the next generation of automated systems and intelligent agents.

Artificial intelligence revenues have grown by 20% since 2015 in what has been called the fourth industrial revolution. Artificial intelligence application, robotics, and autonomous systems are rapidly growing technologies and for good reason. "Accenture research on the impact of AI in 12 developed economies reveals that AI could double annual economic growth rates in 2035 by changing the nature of work and creating a new relationship between man and machine. The impact of AI technologies on business is projected to increase labor productivity by up to 40 percent and enable people to make more efficient use of their time."

These technologies will be ubiquitous in areas ranging from the military and medicine to space exploration, manufacturing, and agriculture. But the real change will be the way in which humans are able to interact with these new technologies. Individuals skilled in human interactions with robots, artificial intelligence agents and autonomous systems will be needed to design the future of work. In the future, human-machine systems may need to be composed of heterogenous human and non-human agents to be safe, effective, and have a positive impact on society and human well-being.

It is predicted that AI will affect 50-75 million jobs in the world by replacing tasks, not whole jobs. The individuals who design those interactions and who decide what tasks to allocate to AI will need to understand human capabilities and limitations and be able to work on robotic engineering or autonomous vehicle teams to ensure human considerations are taken into account. Human Factors Engineering jobs are expected to grow rapidly between 2016 and 2026 (O-Net), but moreover, individuals who understand human factors engineering from the perspective of these advanced technologies will be in great demand. It is difficult to find statistics on these career opportunities because this is a career of the future.

<https://www.accenture.com/us-en/insight-artificial-intelligence-future-growth>

<https://www.ubs.com/microsites/artificial-intelligence/en/ai-coming-age.html>

Students are expected to come from a mix of undergraduate programs including psychology, cognitive science, industrial engineering, robotics, and computer science.

This concentration which focuses on research to increase the usability of artificial intelligence and robots by placing the human at the center is consistent with ASU's mission to advance research and discovery of public value that is use-inspired. It is also interdisciplinary in nature, drawing from disciplines of cognitive science and engineering.

- B. Please identify other related ASU programs and describe how the new concentration will complement these existing ASU programs?** If applicable, statements of support from affected academic unit administrators should be included with this proposal submission.

MS Engineering

The MS in Human Systems Engineering with a concentration in Intelligent Systems is distinct from an MS in Engineering because of the focus on human capabilities and limitations and their relation to engineered systems. These two programs complement each other well by including humans in engineered systems.

MS Robotics and Autonomous Systems

The MS in Robotics and Autonomous Systems is similarly distinct from the MS in Human Systems Engineering with a concentration in Intelligent Systems which focuses on human capabilities and limitations and their relation to the technology covered by the MS in Robotics and Autonomous Systems. These two programs complement each other well with a focus on the technology vs. humans and their relation to the technology.

Four concentrations within Fulton Schools of Engineering:

Artificial Intelligence, CIDSE

Electrical Engineering, ECEE

Mechanical and Aerospace Engineering, SEMTE

Systems Engineering, Polytechnic School

These concentrations are focused on the technology. The MS in Human Systems Engineering with a concentration in Intelligent Systems is focused on the human capabilities and limitations and their relation to the technology. The focus on the technology complements the focus on human interactions with the technology.

See Appendix III for Statements of Collaboration and Impact.

- C. Is this an interdisciplinary concentration?** If yes, please address the relationship of the proposed concentration to other existing degree programs and any parallel or similar concentrations in those degree

programs. (Please include relevant Memoranda of Understanding regarding this interdisciplinary concentration from all applicable academic units.)

N/A

3. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Attach a PDF copy of the assessment plan printed from the University Office of Evaluation and Educational Effectiveness assessment portal demonstrating UOEEE’s approval of your assessment plan for this program. Visit the assessment portal at <https://uoeee.asu.edu/assessment-portal> or contact uoeee@asu.edu with any questions.

See Appendix II for Assessment Plan approved by UOEEE.

4. CURRICULAR STRUCTURE

Please ensure that all *new core* course proposals have been submitted to the Provost’s office through the Curriculum ChangeMaker online course proposal submission system before this initiative is put on the University Graduate Council and CAPC agendas.

Core Courses for the Degree			
<i>Ensure the core listed below is the same as for the standalone degree</i>			
Prefix and Number	Course Title	New Course?	Credit Hours
HSE 520	Methods and Tools in Applied Cognitive Science	No	3
HSE 530	Intermediate Statistics for Human Systems Engineering	No	3
HSE 531	Data Analytics: Modeling Human Subjects Data	No	3
HSE 542	Foundations of Human Systems Engineering	No	3
<i>Section sub-total:</i>			12
Required Concentration Courses (Select three courses (9 credit hours) from the following options)			
Prefix and Number	Course Title	New Course?	Credit Hours
EGR 545	Robotic Systems I	Yes	3
EGR 546	Robotic Systems II	Yes	3
HSE 524	Human Automation Interaction	Yes	3
IFT 598	Topic: Analyzing Big Data	Yes	3
IFT 598	Topic: Advanced Analytics for Big Data/AI	Yes	3
<i>Section sub-total:</i>			9
Elective or Research Courses			
<i>(as deemed necessary by supervisory committee)</i>			
Prefix and Number	Course Title	New Course?	Credit Hours
HSE 592	Research (Three credit hours required for those in thesis culminating experience; optional for all other students in the program)	No	0-3
	Graduate level elective options will include 500-level EGR, HSE, MAE courses. Others will require approval from the program chair.	No	0-9
<i>Section sub-total:</i>			3-9
Culminating Experience(s)			Credit Hours

<i>E.g. – Capstone course, portfolio, written comprehensive exam, applied project, thesis (must be 6 credit hours with oral defense), dissertation (must be 12 credit hours with oral defense)</i>	
Portfolio	0
HSE 593 Applied Project	6
HSE 599 Thesis	6
Section sub-total:	0-6
Total required credit hours	30

1. List all required core courses and total credit hours for the core (required courses other than internships, thesis, dissertation, capstone course, etc.).
2. Omnibus numbered courses cannot be used as core courses.
3. Permanent numbers must be requested by submitting a course proposal to Curriculum ChangeMaker for approval.

B. Please describe the culminating experience(s) required for completion of the existing degree and major, and the proposed concentration (e.g., thesis, dissertation, comprehensive exams, capstone course, portfolio, applied project).

The culminating experience options will be consistent with the MS Human Systems Engineering program, but with a focus in intelligent systems. The three culminating experience options include 1) a written thesis that is orally defended, 2) an industry-led applied project that is reported in writing and presented in a public forum (e.g., conference, brown bag seminar, Innovation Showcase), or 3) a portfolio that presents three projects from classes and reflections on them.

C. Please describe any other requirements for completion of the existing degree and major, and the proposed concentration (e.g., internships, clinical requirements, field studies, foreign language exam etc.).

N/A

5. COMPREHENSIVE EXAMS

(Please choose what is appropriate for the degree type selected)

A. Master’s Comprehensive Exam (when applicable), please select from the appropriate option.

N/A

6. COURSES

A. New Courses Required for Proposed Program: Provide course prefix, number, title, credit hours and brief description for any new courses required for this program.

- **EGR 545 Robotic Systems I** (3 credits) – Analysis and design of robotic systems focusing on kinematics, dynamics, coordinate transformations and modeling. *This course will also be used in other programs within the Polytechnic School.*
- **EGR 546 Robotic Systems II** (3 credits) – Design of robotic systems focusing on dynamics, modeling and controlling a robot. *This course will also be used in other programs within the Polytechnic School.*
- **HSE 524 Human Automation Interaction** (3 credits) – This course is designed to introduce graduate students to different perspectives and techniques for improving automation design and system integration. We will cover basic principles in human-technology interaction, key concepts in supervisory control automation, and promising approaches for increasingly autonomous automation, such as adaptive algorithms and embodied agents (robots). This course will emphasize literature review, concept synthesis and communication skills through writing, in-class presentations, and in-class discussion.

7. ADMINISTRATION AND RESOURCES

A. Administration: How will the proposed concentration be administered (including recommendations for admissions, student advisement, retention etc.)? Describe the administering body in detail, especially if the proposed concentration is part of a larger interdisciplinary initiative. How will the graduate support staffing needs for this proposed concentration program be met?

The Polytechnic School graduate advising team will manage the admission evaluation process, student advisement, and outreach efforts. The Human Systems Engineering program chair and graduate faculty will be involved in the application evaluation process and provide recommendations to advising for processing.

B. Projected Enrollment: How many students will be admitted immediately following final approval of the concentration? What are enrollment projections for the next three years?

3-YEAR PROJECTED ANNUAL ENROLLMENT			
Please utilize the following tabular format	1st Year	2nd Year <small>(Yr. 1 continuing + new entering)</small>	3rd Year <small>(Yr. 1 & 2 continuing + new entering)</small>
Number of Students in concentration (Headcount)	15	30	40

C. Resource requirements needed to launch and sustain the program: Describe any new resources required for this concentration’s success such as new staff, new facilities, new library resources, new technology resources, etc. and include projected budget needs. 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 new resources are needed at this time.

D. Current Faculty: Complete the table below for all current faculty members who will teach in the program.

Name	Rank	Highest Degree	Area of Specialization/Expertise	Estimated Level of Involvement
Nancy Cooke	Professor and HSE Program Chair	PhD	Human Systems Engineering, Aviation teamwork	High
Rob Gray	Professor	PhD	Human Systems Engineering, perception-action	High
Erin Chiou	Asst Professor	PhD	Human Systems Engineering, human-automation interaction, health systems	High
Robert Gutzwiller	Asst Professor	PhD	Human Systems Engineering, cybersecurity, human-automation interaction, applied attention	High
Scotty Craig	Associate Professor & Graduate Program Chair	PhD	Human Systems Engineering, cognitive science, educational technology	High
Rod Roscoe	Associate Professor	PhD	Human Systems Engineering, educational technology, design and design thinking in	Medium

			education, human-computer interactions	
David Becker	Associate Professor	PhD	Human Systems Engineering, cognitive science, complex social systems, role of computers within social dynamics	Medium
Wenlong Zhang	Assistant Professor	PhD	Design, modeling, and control of cyber-physical systems with applications to healthcare, robotics, and manufacturing	Medium
Spring Berman	Associate Professor	PhD	Mechanical engineering, robotics, systems and control theory	Medium
Yu (Tony) Zhang	Assistant Professor	PhD	Distributed robot systems, human-robot interaction, multi-agent systems, human-aware planning, multi-agent planning, and automated planning and scheduling	Medium

E. Is there a graduate faculty structure for this concentration program that will differ from the original degree program graduate faculty structure (for PhD programs only)? If yes, please include the name of the graduate faculty group and whether they will participate in offering this concentration.

n/a

8. REQUIRED SUPPORTING DOCUMENTS

(Please label accordingly, i.e., Appendix or Attachment A, B, etc.)

Please include the following with your proposal:

- A.** Statements of support from all deans – See Appendix III
- B.** Impact statements of heads of impacted academic units (programs with similar names/content, utilizing courses, faculty, etc.) – See Appendix III

APPENDIX I

OPERATIONAL INFORMATION FOR GRADUATE PROGRAMS

(This information is used to populate the Graduate Programs Search/catalog website.)

1. **Proposed name of concentration:** Intelligent Systems

2. **Marketing description** *(Optional - 50 words maximum. The marketing description should not repeat content found in the program description.)*

N/A

3. **Provide a brief program description** *(Catalog type (i.e. will appear in Degree Search) – no more than 150 words. Do not include any admission or curriculum information)*

The MS program in Human Systems Engineering with a concentration in Intelligent Systems provides students with a deep understanding of the science of human performance and experience in the engineering of intelligent systems, robotics, and autonomous systems industries.

Students in this program will participate in courses focusing on methods and tools in applied cognitive science, foundations of human systems engineering, including uses of simulation, and robotics, among others. This concentration will prepare students for facilitating the future of work when humans will work closely with heterogeneous technology in the military, space exploration, manufacturing, medicine, and agriculture.

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

5. **Campus(es) where program will be offered:**

ASU Online curriculum consists of courses that have no face-to-face content. iCourses are online courses for students in on-campus programs. iCourses may be included in a program but may not comprise the entirety of a program. On-campus programs must have some face-to-face content

Note: Office of the Provost approval is needed for ASU Online campus options.

ASU Online only (all courses online and managed by ASU Online)

All other campus or location options (please select all that apply):

Downtown Phoenix Polytechnic Tempe West Other: _____

Both on-campus and ASU Online* - (check applicable campus(es) from options listed above)

**Note: Once students elect a campus or Online option, students will not be able to move 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. Please complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request. Prior to completing the online Curriculum ChangeMaker form, please contact EdPlus at asuonline@asu.edu who can provide you with additional information regarding the online request process*

6. **Admission Requirements**

Applicants must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in engineering, robotics engineering, mathematics or related field from a regionally accredited institution. Students must have sufficient mathematics background for this concentration, including up to calculate III and linear algebra.

Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts

3. GRE scores
4. letter of intent
5. professional resume
6. three letters of recommendation
7. proof of English proficiency

Additional Application Information

Applicants whose native language is not English must provide proof of English proficiency regardless of current residency.

Global Launch at ASU offers an online alternative to standardized testing for international students who are seeking admission to ASU but need proof of English proficiency: <https://learnenglish.asu.edu/online/admission>.

A GRE waiver may be requested if the applicant received a bachelor’s degree in a related field from an accredited institution in the United States with a cumulative GPA of 3.0 or better. Applicants can also submit a GRE waiver request form if they have five years of full-time applicable professional experience. To request a waiver, applicants should email polygrad@asu.edu. An approved waiver does not guarantee admission.

7. Application Review Terms (if applicable session):

Indicate the first term and year in which applications will be opened for admission. Applications will be accepted on a rolling basis after that time.

Note: It is the academic unit’s responsibility to display program deadline dates on their website.

Terms	Years	University Late Fee Deadline
<input checked="" type="checkbox"/> Fall (regular) <input type="checkbox"/> Session B	(year): 2021 (year):	July 1st October 1st
<input checked="" type="checkbox"/> Spring (regular) <input type="checkbox"/> Session B	(year): 2022 (year):	December 1st February 8th
<input type="checkbox"/> Summer (regular) <input type="checkbox"/> Summer B	(year): (year):	May 14th May 14th
<p><i>Note: Session B is only available for approved online programs.</i></p>		

Program admission deadlines website address:

<https://poly.engineering.asu.edu/academics/graduate-programs-overview/>

8. Curricular Requirements:

Curricular Structure Breakdown for the Academic Catalog:
(To be completed by the Graduate College)

- 30 credit hours and a portfolio, or
- 30 credit hours and a thesis, or
- 30 credit hours including the required applied project course (HSE 593)

Required Core (12 credit hours)

- HSE 520 Methods and Tools in Applied Cognitive Science (3)
- HSE 530 Intermediate Statistics for Human Systems Engineering (3)
- HSE 531 Data Analytics: Modeling Human Subjects Data (3)
- HSE 542 Foundations of Human Systems Engineering (3)

Concentration (9 credit hours)

Electives and Research (3 or 9 credit hours)

Culminating Experience (0 or 6 credit hours)

- HSE 593 Applied Project (6) or
- HSE 599 Thesis (6) or
- portfolio (0)

Additional Curriculum Information

For electives and research coursework, enrollment in HSE 592 Research for three credit hours is required for students completing a thesis, and optional for students completing the applied project or portfolio culminating experience. Students in all culminating experience options should contact the academic unit for an approved electives list.

Students completing a portfolio for the culminating experience must complete 9 credit hours of electives and research coursework.

9. **Allow 400-level courses:** **Yes** **No**

Note: No more than six credit hours of 400-level coursework may be included on a graduate student plan of study.

10. **Keywords:** List all keywords that could be used to search for this concentration. Keywords should be specific to the proposed concentration – limit 10 keywords.

Intelligent systems, artificial intelligence, robotics, autonomous systems, human factors, human systems integration, automation, mechatronics

11. Area(s) of Interest

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

- | | |
|--|---|
| <input type="checkbox"/> Architecture & Construction | <input type="checkbox"/> Interdisciplinary Studies |
| <input type="checkbox"/> Arts | <input type="checkbox"/> Law & Justice |
| <input type="checkbox"/> Business | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Communication & Media | <input type="checkbox"/> Psychology |
| <input type="checkbox"/> Education & Teaching | <input type="checkbox"/> STEM |
| <input checked="" type="checkbox"/> Engineering & Technology | <input type="checkbox"/> Science |
| <input type="checkbox"/> Entrepreneurship | <input type="checkbox"/> Social and Behavioral Sciences |
| <input type="checkbox"/> Health & Wellness | <input type="checkbox"/> Sustainability |
| <input type="checkbox"/> Humanities | |

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

- | | |
|--|---|
| <input type="checkbox"/> Architecture & Construction | <input type="checkbox"/> Interdisciplinary Studies |
| <input type="checkbox"/> Arts | <input type="checkbox"/> Law & Justice |
| <input type="checkbox"/> Business | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Communications & Media | <input type="checkbox"/> Psychology |
| <input type="checkbox"/> Education & Teaching | <input checked="" type="checkbox"/> STEM |
| <input type="checkbox"/> Engineering & Technology | <input type="checkbox"/> Science |
| <input type="checkbox"/> Entrepreneurship | <input type="checkbox"/> Social and Behavioral Sciences |
| <input type="checkbox"/> Health & Wellness | <input type="checkbox"/> Sustainability |
| <input type="checkbox"/> Humanities | |

12. Contact and Support Information:

Office Location - Building Code & Room: <i>(Search ASU map)</i>	Wanner 101
Campus Telephone Number: <i>(may not be an individual's number)</i>	480-727-4723
Program Email Address: <i>(may not be an individual's email)</i>	polygrad@asu.edu
Program Website Address: <i>(if one is not yet created, use unit website until one can be established)</i>	poly.engineering.asu.edu
Program Director (Name):	Nancy Cooke
Program Director (ASURITE):	ncooke
Program Support Staff (Name):	Amy Riggs awolsey Meghan Vaughn mmackowi
Program Support Staff (ASURITE):	Amy Riggs awolsey Meghan Vaughn mmackowi
Admissions Contact (Name):	Amy Riggs awolsey Meghan Vaughn mmackowi
Admissions Contact (ASURITE):	Amy Riggs awolsey Meghan Vaughn mmackowi

13. Application and iPOS Recommendations: List the Faculty and Staff that will input admission/iPOS recommendations to Gportal **and** indicate their approval for Admissions and/or POS:

NAME	ASURITE	ADMSN	POS
Amy Riggs	awolsey	X	X
Bernadette Teran	bteran	X	X
Blake Holder	bholder	X	X
Meghan Vaughn	mmackowi	X	X

APPENDIX II

Assessment Plan

MS in Human Systems Engineering (Intelligent Systems)

MS1568745785
Approved

ES-Ira A Fulton
Schools of Engineering

Mission

The Master of Science in Human Systems Engineering at ASU seeks to train students in the skills needed to improve our world by applying psychologically-based principles. As teachers and mentors, we provided our students a guided experience that trains them in the theories and methods of experimental psychology and cognitive science. As researchers, the program investigates how humans interact with both other humans and new innovations in technology. We seek to improve these interactions by advancing knowledge of underlying psychological processes and by providing innovations in system design and training to facilitate optimal interactions. In so doing, we embrace ASU's goals of providing the highest quality of education possible to our students. We also help to answer ASU's challenge of helping people lead healthier more fulfilled lives through the use of applied science and technology.

Goals

We embrace ASU's goals of providing the highest quality of education possible to our students. We also help to answer ASU's challenge of helping people lead healthier more fulfilled lives through the use of applied science and technology.

Outcome 1

Ability to apply the appropriate statistical analysis, address violations of assumptions (e.g., sphericity), & run the analysis using SPSS.

Concepts

Principles of scientific investigation, one-way and factorial designs, contrasts, post-hoc tests, interactions, mixed designs, power, computer applications.

Competencies

Analysis of human-autonomy system components and interactions; quantitative skills pertinent to the development of such systems.

Assessment Process: Students will be assessed through student's work in HSE 530 and weekly through data analysis assignments in HSE 531. Instructors tailor future classes to target the weaker areas.

Measure 1

Student performance on assignment in HSE 530 (ANOVA) measured with a rubric.

Performance Criterion 1

95% of students will achieve mastery based on a faculty developed rubric.

Measure 2

Student Performance on assignment in HSE 531 (Data Analytics) measured with a rubric.

Performance Criterion 2

95% of students will achieve mastery based on a faculty developed rubric.

Outcome 2

Ability to apply the methods of human systems engineering to test a hypothesis or solve an applied problem

Last Action:
January 25, 2021 8:25 AM

Last User:
Erin DeBrimo (eleldrid)

MS in Human Systems Engineering (Intelligent Systems)

MS1568745785
Approved

ES-Ira A Fulton
Schools of Engineering

Concepts

Principles of scientific investigation, research methods and theories of human-systems engineering, system analysis, problem-solving, design, and communication.

Assessment Process: Students will be assessed in HSE 542 four times through the semester using design challenges. These challenge problems will be evaluated by the instructor using a rubric. Also, in HSE 520 students will be assessed 19 times through the semester by the instructor using a rubric. Instructors tailor future classes to target the weaker areas.

Measure 1

Student performance on assignments in HSE 520 (Methods and Tools in Applied Cognitive Science)

Performance Criterion 1

95% of students will show mastery of class concepts on the final class paper based on faculty created course concept rubric

Measure 2

Student performance on assignments in HSE 542 (Foundations of Human Systems Engineering)

Performance Criterion 2

95% of students will demonstrate mastery of class concepts based on their mean score on four design challenges throughout the class. A rubric designed by the instructor will guide the grading of the design challenges.

Outcome 3

Ability to conduct independent research to address problems in the space of humans teaming and interacting with robotics and autonomous systems

Concepts

Principles of scientific investigation and methods and theories of human-systems engineering, system analysis, problem-solving, design, and communication to conduct independent research.

Assessment Process: Students will be assessed by their advisor and committee members (thesis option) once in the semester at the defense of the culminating experience. Performance on the culminating experience will drive additional changes to the program and in particular, to the milestones for achieving the culminating experience.

Measure 1

Students demonstrate competency in their defense of his or her thesis or applied project or portfolio based on a faculty developed rubric.

Last Action:
January 25, 2021 8:25 AM

Last User:
Erin DeBrimo (eleldrid)

Competencies

Analysis of human-autonomy system components and interactions; design of human-autonomy experiments, measurement of human-autonomy interactions and performance; quantitative skills pertinent to the development of such systems.

Analysis of human-autonomy system components and interactions; measurement of human-autonomy interactions and performance, conduct of human-autonomy experiments.

MS in Human Systems Engineering (Intelligent Systems)

MS1568745785

Approved

ES-Ira A. Fulton
Schools of Engineering

Performance Criterion 1

100% of students will show mastery of concepts as measured on a faculty developed rubric.

Measure 2

Students demonstrate competency in their culminating projects based on a faculty developed rubric in the space of humans teaming and interacting with Intelligent Systems.

Performance Criterion 2

100% of students will show mastery of class concepts as measured on a faculty developed rubric.

APPENDIX III
Statements of Collaboration and Impact

Fulton Schools of Engineering – Official Submission

From: [Sergio Quiros](#)
To: [Curriculum Planning](#)
Cc: [Cindy Roglin](#); [Amy Riggs](#); [Erin DeBrino](#); [Jeremy Helm](#)
Subject: IAFSE - MS Human Systems Engineering (Intelligent Systems)
Date: Thursday, October 29, 2020 12:45:50 PM
Attachments: [new-graduate-concentration-proposal MS HSE Intelligent Systems.pdf](#)
[new-graduate-concentration-proposal MS HSE Intelligent Systems.docx](#)

Hello,

Attached is the following proposal:

Ira A. Fulton Schools of Engineering
The Polytechnic School
Establishment of a graduate concentration
MS Human Systems Engineering (Intelligent Systems)

Best,

Sergio Quiros

Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

Robotics and Autonomous Systems

Erin DeBrino

From: Jennifer Bekki
Sent: Monday, October 5, 2020 7:22 PM
To: Erin DeBrino
Subject: FW: Statement of Support from MS Engineering -- HSE MS Concentration Intelligent Systems

Hi Erin –

Please see support statement for the Intelligent Systems from MS Robotics.

Jennifer

From: Sangram Redkar <ssredkar@gmail.com>
Sent: Monday, October 5, 2020 4:20 PM
To: Jennifer Bekki <jennifer.bekki@asu.edu>
Subject: Re: Statement of Support from MS Engineering -- HSE MS Concentration Intelligent Systems

Prof. Bekki,

I have reviewed the proposal and discussed it with HSE faculty and Prof. Phelan, Associate Dean, Graduate Programs, FSE. The MS(RAS) program supports this concentration and the Robotics concentration classes included in this proposal are part of regularly taught robotics classes by our faculty.

If a formal letter is needed then we will be happy to provide letter of support,

Sangram Redkar, PhD

Graduate Program Chair, MS(RAS)

On Mon, Oct 5, 2020 at 4:09 PM Jennifer Bekki <jennifer.bekki@asu.edu> wrote:

Dear Sangram,

The Polytechnic School is proposing a new Intelligent Systems concentration within the graduate Human Systems Engineering MS degree, proposal attached. I am writing to ask if the MS Robotics program is willing to provide their support in our effort to develop this new concentration? If you support this new concentration proposal, please respond with an affirmative reply of that intent. When you reply, please provide me with your full name and title (ABC 101 Program Director, etc), having this information will aid in the processing of the proposal as it progresses through FSE and University level reviews.

If you have concerns regarding the concentration, please let me know those as well and we can work to hopefully resolve any issues.

Sincerely,

Jennifer M. Bekki

Associate Director

The Polytechnic School

Ira A. Fulton Schools of Engineering

Arizona State University

480.727.5127

jennifer.bekki@asu.edu

MS in Engineering

Erin DeBrino

Subject: RE: HSE MS Intelligent Systems concentration

From: Thomas Sugar <Thomas.Sugar@asu.edu>
Sent: Friday, October 16, 2020 10:39 AM
To: Erin DeBrino <Erin.DeBrino@asu.edu>
Cc: Jennifer Bekki <jennifer.bekki@asu.edu>; Amy Riggs <amyriggs@asu.edu>
Subject: RE: HSE MS Intelligent Systems concentration

As the program chair of the MS Engineering program, I support the proposed MS HSE (Intelligent Systems) concentration.

Sincerely
Tom Sugar

Dr. Tom Sugar, PE
Associate Dean, Barrett, The Honors College, ASU Polytechnic
Graduate Program Chair, Systems Engineering
Professor
<http://robotics.fulton.asu.edu>
thomas.sugar@asu.edu

The College of Liberal Arts and Sciences

From: [Fabio Milner](#)
To: [Sergio Quiros](#)
Cc: [James Collofello](#); [Jeremy Helm](#); [Fabio Milner](#)
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Tuesday, January 19, 2021 9:25:37 AM
Attachments: [image001.png](#)

Dear Jim,

The College has reviewed your proposal and is happy to support it. SHESC has some courses in our Anthropology, Global Health, and Environmental Social Science graduate programs that may be appropriate as electives for your program:

ASB 510 Health: Social and Biocultural Theories
ASB 503 Medical Anthropology
ASB 512 Social Science Applications in Community Health
ASB 502 Health of Ethnic Minorities
ASM 546 Principles of Human Genetics
ESS 513 Institutions
ESS 514 Urban and Environmental Health

Best,
Fabio

Fabio Augusto Milner, PhD
Associate Dean of Graduate Initiatives
Assistant Director, SA Levin MCMS Center
[The College of Liberal Arts and Sciences](#)
Director of Mathematics for STEM Education
[School of Mathematical and Statistical Sciences](#)
Arizona State University
[SACNAS Board of Directors Member](#)



Armstrong Hall, Office 214
P: 480/965-5877 | F: 480/965-2110
milner@asu.edu
URL: <https://isearch.asu.edu/profile/1278293>

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Thursday, January 7, 2021 at 10:20
To: Fabio Milner <milner@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Resent-From: <milner@asu.edu>

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

Edson College of Nursing and Health Innovation

From: Katherine Kenny <Katherine.Kenny@asu.edu>
Sent: Wednesday, February 24, 2021 10:05 AM
To: Sergio Quiros <Sergio.Quiros@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Dear Sergio – thank you for asking me to review your proposal for MS Human Systems Engineering (Intelligent Systems). I apologize for my tardiness in responding. I now realize there were three separate requests and I only responded to one. I was able to discuss this proposal with our faculty and program directors. We see no conflict nor duplication of courses and programs offered in the Edson College. On behalf of the Edson College of Nursing and Health Innovation we support your proposal. Best to you as you continue through the University Approval Process.

Kathy

Katherine (Kathy) Kenny, DNP, RN, ANP-BC, FAANP, FAAN
Associate Dean of Academic Affairs
Clinical Professor



500 North 3rd Street | Phoenix, AZ 85004
Ph: 602.496.1719 katherine.kenny@asu.edu
<https://nursingandhealth.asu.edu>

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Wednesday, February 24, 2021 9:21 AM
To: Katherine Kenny <Katherine.Kenny@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Dr. Kenny,

The Graduate College is asking for your academic units response to the for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. They have indicated the proposal cannot move forward on the university review process unless we provide a statement of support from your academic unit.

Please let us know if you have any questions or concerns.

Thank you,

Sergio Quiros

Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109

Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Sergio Quiros
Sent: Thursday, January 7, 2021 10:20 AM
To: Katherine Kenny <katherine.kenny@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

College of Integrative Sciences and Arts

From: [Duane Roen](#)
To: [Sergio Quiros](#)
Cc: [James Collofello](#); [Jeremy Helm](#)
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Thursday, January 7, 2021 12:35:34 PM

Sergio, Jim, and Jeremy,

CISA is happy to support the proposal for an MS in Human Systems Engineering (Intelligent Systems).

Best,
Duane

Duane Roen
Dean, College of Integrative Sciences and Arts
Vice Provost, Polytechnic campus
Arizona State University
Mail Code: 2780
7271 E Sonoran Arroyo Mall
Mesa, AZ 85212-6415
P: 480-727-1415

From: Sergio Quiros
Sent: Thursday, January 7, 2021 10:20 AM
To: Duane Roen <Duane.Roen@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim
James S. Collofello
Vice Dean for 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

Thunderbird School of Global Management

From: [Lena Booth](#)
To: [Sergio Quiros](#); [Sanjeev Khagram \(Dean\)](#)
Cc: [James Collofello](#); [Jeremy Helm](#)
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Thursday, January 7, 2021 5:04:25 PM
Attachments: [image002.png](#)

Dear Jim and Sergio:

Thunderbird supports the proposed MS in Human Systems Engineering (Intelligent Systems). All the best with this degree/concentration.

This Intelligent Systems concentration fits very well with Thunderbird's focus on the 4th Industrial Revolution. We would welcome a dual degree proposal or add Intelligent Systems as one of our Master of Global Management concentrations. Appreciate the opportunity to discuss this with you in more detail. Thanks.

Lena

Lena C. Booth, Ph.D. | Associate Dean of Graduate Programs and Associate Professor of Finance | Thunderbird School of Global Management | 400 E Van Buren, Suite 800 | Phoenix, AZ 85004 | Phone: 602-496-7061 | Email: lena.booth@thunderbird.asu.edu | Website: <https://thunderbird.asu.edu/>

> [Apply today](#) > [Refer a Future Thunderbird](#) |
#tbirdonlyhere | #tbirdlife | thunderbird.asu.edu



Times Higher Education/Wall Street Journal 2019



Thunderbird is a unit of the Arizona State University Enterprise

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Thursday, January 7, 2021 at 10:20 AM
To: "Sanjeev Khagram (Dean)" <Sanjeev.Khagram@thunderbird.asu.edu>, Lena Booth <Lena.Booth@thunderbird.asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

Jim

James S. Collofello

Vice Dean for 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

W. P. Carey School of Business

From: [James Collofello](#)
To: [Sergio Quiros](#)
Subject: Fw: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Monday, January 18, 2021 1:57:33 PM
Attachments: [image001.png](#)

James S. Collofello
Vice Dean for Academic and Student Affairs
Professor of Computer Science and Engineering
School of Computing, Informatics and Decision Systems Engineering
Ira A. Fulton Schools of Engineering

From: Amy Ostrom <AMY.OSTROM@asu.edu>
Sent: Monday, January 18, 2021 1:53 PM
To: James Collofello <JAMES.COLLOFELLO@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Hi Jim,

I have reviewed this information with the Chair of our Department of Information Systems. We support the establishment of the MS in Human Systems Engineering (Intelligent Systems).

Please let me know if you need any additional information.

Best wishes,
Amy

Amy L. Ostrom, PhD

Arizona State University | W. P. Carey School of Business
Interim Dean, President's Professor and PetSmart Chair in Services Leadership
amy.ostrom@asu.edu | Ph: 480.965.6412
wpcarey.asu.edu | news.wpcarey.asu.edu
Pronouns: she/her/hers – SafeZONE Ally



Arizona State University

Where Business Is Personal®

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Thursday, January 7, 2021 at 10:19 AM
To: Amy Hillman <AMY.HILLMAN@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

Mary Lou Fulton Teachers College

From: Carole Basile (Dean) <Carole.Basile@asu.edu>
Sent: Wednesday, February 24, 2021 9:26 AM
To: Sergio Quiros <Sergio.Quiros@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

The MLFTC is supportive of the proposed MS in Human Systems Engineering (intelligent systems) concentration. We hope that we may be able to work with you and faculty as this overlaps with education and the use of AI in education systems.

Thanks,

Carole

Carole G. Basile
Dean
Arizona State University
Mary Lou Fulton Teachers College
[P.O. Box 871811, Tempe, AZ 85281-1811](#)
O: [480.965.3463](tel:480.965.3463) | M: [480.310.6887](tel:480.310.6887)

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Wednesday, February 24, 2021 at 9:21 AM
To: Carole Basile (Dean) <Carole.Basile@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Dr. Basile,

The Graduate College is asking for your academic units response to the for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. They have indicated the proposal cannot move forward on the university review process unless we provide a statement of support from your academic unit.

Please let us know if you have any questions or concerns.

Thank you,

Sergio G. Quiros

Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Sergio Quiros
Sent: Thursday, January 7, 2021 10:20 AM
To: Carole Basile (Dean) <Carole.Basile@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

Herberger Institute for Design and the Arts

From: [Stephani Etheridge Woodson](#)
To: [Sergio Quiros](#)
Cc: [James Collofello](#); [Jeremy Helm](#)
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Wednesday, February 24, 2021 10:24:17 AM
Attachments: [image001.png](#)

Apologies.

Herberger Institute for Design and the Arts approves of this undergraduate program. Arts Media and Engineering offers the following course that might be useful as an approved elective.

AME 494/598 Machine Learning for Media Arts and Sciences

And, they suggest that the MS in Digital Culture is a solid articulation for students interested in graduate pursuits.

with appreciation, Stephani

Stephani Etheridge Woodson
Interim Associate Dean of Students
Herberger Institute for Design and the Arts
The FDT Evelyn Smith Professor | School of Music, Dance and Theatre
Director, Design and Arts Corps | herbergerinstitute.asu.edu/design-and-arts-corps
She/Her/Hers



[COVID-19 Resources for Students](#)

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Wednesday, February 24, 2021 at 9:21 AM
To: Stephani Etheridge Woodson <swoodson@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Dr. Woodson,

The Graduate College is asking for your academic units response to the for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. They have indicated the proposal cannot move forward on the university review process unless we provide a statement of support from your academic unit.

Please let us know if you have any questions or concerns.

Thank you,

Sergio Quiros
Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Sergio Quiros

Sent: Thursday, January 7, 2021 10:20 AM

To: Stephani Etheridge Woodson <swoodson@asu.edu>

Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>

Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello

Vice Dean for 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

College of Health Solutions

From: [Deborah Helitzer \(Dean\)](#)
To: [Sergio Quiros](#)
Cc: [James Collofello](#); [Jeremy Helm](#)
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Thursday, January 7, 2021 4:38:01 PM

The College of Health Solutions wishes to offer our support for the MS in Human Systems Engineering (Intelligent Systems).

Deborah
Deborah Helitzer, Sc.D.
Dean and Professor
College of Health Solutions
Arizona State University

For all questions or appointments, please contact Daniel Eckstrom
r

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Thursday, January 7, 2021 at 10:19 AM
To: Deborah Helitzer (Dean) <Deborah.Helitzer@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

New College of Interdisciplinary Arts and Sciences

From: [Patricia Friedrich](#)
To: [Sergio Quiros](#)
Cc: [James Collofello](#); [Jeremy Helm](#)
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review
Date: Tuesday, March 16, 2021 8:41:19 AM

Attachments: [image001\[67\].png](#)

Hi Sergio,

This is just to confirm that New College has no concerns regarding the User Experience

Research concentration and is in support. Good luck! Patty

**Patricia Friedrich,
PhD She, Her, Hers
Associate Dean of Academic
Programs and Faculty Affairs,
New College of Interdisciplinary
Arts and Sciences Professor of
Sociolinguistics,
School of Social and Behavioral Sciences**



**Arizona State University
P. O. Box 37100
4701 W. Thunderbird Rd. Mail
Code 3051 Phoenix, AZ, USA
85069-7100
voice 602 543-6046**

From: Sergio Quiros
<Sergio.Quiros@asu.edu> **Date:**
Wednesday, February 24, 2021 at 9:21
AM **To:** Patricia Friedrich
<Patricia.Friedrich@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>, Jeremy Helm
<JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College
Review

Dr. Friedrich,

The Graduate College is asking for your academic units response to the for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. They have indicated the proposal cannot move forward on the university review process unless we provide a statement of support from your academic unit.

Please let us know if you have any questions or concerns. Thank you,

Sergio Z. Quiros
Specialist Senior, Academic and
Student Affairs Ira A. Fulton Schools
of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

Watts College of Public Service and Community Solutions

From: William Terrill <wcterrill@gmail.com>
Sent: Wednesday, February 24, 2021 11:37 AM
To: Sergio Quiros <Sergio.Quiros@asu.edu>
Cc: William Terrill <wcterrill@mainex1.asu.edu>; James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: Re: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

My sincere apology Sergio for letting this slip through the cracks on my end.

The Watts College is supportive of the proposed concentration.

Best regards, Bill

William Terrill, PhD
Arizona State University
Associate Dean, Watts College of Public Service and Community Solutions
Professor, School of Criminology & Criminal Justice
Co-Editor, *Policing: A Journal of Policy & Practice*

On Wed, Feb 24, 2021 at 9:21 AM Sergio Quiros <Sergio.Quiros@asu.edu> wrote:

Dr. Terrill,

The Graduate College is asking for your academic units response to the for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. They have indicated the proposal cannot move forward on the university review process unless we provide a statement of support from your academic unit.

Please let us know if you have any questions or concerns.

Thank you,

Sergio G. Quiros

Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Sergio Quiros
Sent: Thursday, January 7, 2021 10:19 AM
To: William Terrill <wcterril@mainex1.asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

Walter Cronkite School of Journalism and Mass Communication

From: Kristin Gilger <Kristin.Gilger@asu.edu>
Sent: Wednesday, February 10, 2021 7:08 PM
To: Sergio Quiros <Sergio.Quiros@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

We have no objections to this proposal.

Kristin Gilger

Interim Dean

Reynold Professor in Business Journalism

Walter Cronkite School of
Journalism and Mass Communication

Arizona State University

Home of Arizona PBS

mobile: [480-273-6128](tel:480-273-6128)

email: kristin.gilger@asu.edu



From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Wednesday, February 10, 2021 3:43 PM
To: Kristin Gilger <Kristin.Gilger@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: RE: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Dr. Gilger,

The Graduate College is asking for your academic units response to the for our proposed [MS in Human Systems Engineering \(User Experience Research\)](#) concentration. They have indicated the proposal cannot move forward on the university review unless we provide a statement of support before February 23rd, the date of the UGC meeting.

Do you have any questions or concerns?

Thank you,

Sergio S. Quiros

Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Sergio Quiros
Sent: Thursday, January 7, 2021 10:19 AM
To: Kristin Gilger <Kristin.Gilger@asu.edu>
Cc: James Collofello <JAMES.COLLOFELLO@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: FW: MS in Human Systems Engineering (Intelligent Systems) - Graduate College Review

Sent on behalf of Dr. James S. Collofello

Hello,

I am writing to request an impact/support letter (email will suffice) for our proposed [MS in Human Systems Engineering \(Intelligent Systems\)](#) concentration. This degree program is offered by The Polytechnic School.

Please let me know if you have any questions or concerns.

jim

James S. Collofello
Vice Dean for 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

(NEW GRADUATE INITIATIVES)

PROPOSAL PROCEDURES CHECKLIST

Academic units should adhere to the following procedures when requesting new curricular initiatives (degrees, concentrations or certificates).

Obtain the required approval from the Office of the Provost to move the initiative forward for internal ASU governance reviews/approvals. Please see the academic strategic plan website at: <https://provost.asu.edu/curriculum-development>.

Submit any new courses that will be required for the new curricular program to the Curriculum ChangeMaker online course approval system for review and approval.

- Additional information can be found at the Provost's Office Curriculum Development website: [Courses link](#)
- For questions regarding proposing new courses, send an email to: courses@asu.edu

Prepare the applicable proposal template and operational appendix for the proposed initiative.

Obtain letters or memos of support or collaboration (if applicable).

- When resources (faculty or courses) from another academic unit will be utilized
- When other academic units may be impacted by the proposed program request
- if the program will have an online delivery option support will be required from the Provost's office and ASU Online. *(Please complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request.)*

Obtain the internal reviews/approvals of the academic unit.

- Internal faculty governance review committee(s)
- academic unit head (e.g. Department Chair or School Director)
- academic unit Dean (will submit approved proposal to the curriculumplanning@asu.edu email account for further ASU internal governance reviews (as applicable, University Graduate Council, CAPC and Senate)

Additional Recommendations

All new graduate programs require specific processes and procedures to maintain a successful degree program. Below are items that the Graduate College strongly recommends that academic units establish after the program is approved for implementation.

Establish satisfactory academic progress policies, processes and guidelines – Check within the proposing academic unit and/or college to see if there are existing academic progress policies and processes in place. If none have been established, please go to http://graduate.asu.edu/faculty_staff/policies and scroll down to the **academic progress review and remediation processes** (for faculty and staff) section to locate the reference tool and samples for establishing these procedures.

Establish a Graduate Student Handbook for the new degree program – Students need to know the specific requirements and milestones they must meet throughout their degree program. A Graduate Student Handbook provided to students when they are admitted to the degree program and published on the website for the new degree gives students this information. Include in the handbook the unit/college satisfactory academic progress policies, current degree program requirements (outlined in the approved proposal) and provide a link to the Graduate Policies and Procedures website. Please go to http://graduate.asu.edu/faculty_staff/policies to access Graduate Policies and Procedures.