MS in
Artificial Intelligence Engineering (Sustainable Engineering and Built Environment)

Under Review | Fall 2026

Proposal Information

Workflow Status

In Progress

Graduate Council Agenda Preparation, Graduate College Curriculum expand

Waiting for Approval | Graduate Council Agenda Preparation

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Proposal to Establish a New Program

Requested Term & Year (The first term for which applications will be accepted and students admitted.)

Fall 2026

This proposal can also be viewed at:
https://asu.kuali.co/cm/#/programs/view/6784387e5f11e9c2f8f79130

General Information

Select Program Level and Type
Graduate master's concentration

General Program Information

College/School/Institute
Ira A. Fulton Schools of Engineering (CES)

Department/Division/School
School of Sustainable Engineering & Built Environment (CSUSENG)

Name of Program
MS in - Artificial Intelligence Engineering (Sustainable Engineering and Built Environment)

Program

Artificial Intelligence Engineering (Sustainable Engineering and Built Environment)

Degree Type

Master of Science (MS)

Proposing Faculty Group
N/A

Responsible Faculty Member or Director
Ravi Yellavajjala

Campus or Location options
Tempe

Add a Different Campus or Location
No

Are you requesting an online offering?
No

Program Description/Justification

The use of Artificial Intelligence (AI) approaches, including machine learning, natural language processing, computer vision, robotics, pattern recognition, etc., is becoming widespread in many fields including all engineering disciplines. Some prominent universities, such as Carnegie Mellon University (Master's of AI Engineering-Civil Engineering), are already offering degrees similar to the proposed MS in AI Engineering (Sustainable Engineering and Built Environment). The proposed degree combines advanced study in AI approaches with deep domain expertise in civil engineering. The MS in AI Engineering (Sustainable Engineering and Built Environment) program will combine a deep understanding of artificial intelligence and machine learning with the principles of theoretical and applied civil engineering. This goal is supported through core classes that include both AI-based courses and fundamental civil engineering courses, and additional concentration and elective courses. Students will learn how to develop and customize relevant AI approaches, such as those mentioned above, to civil engineering problems.

Graduates from this program will understand AI systems and how they are created or used both technically and societally. Graduates will know how these systems/tools work “under the hood” so that they can make them effective and ethical. This may not necessarily mean programming or building AI, but ready to use, apply, question, evaluate, and implement AI technologies in diverse fields. Graduates will become the “go to” employees when others in a company need AI explained to them “in plain language," to help evaluate AI-based solutions, or to help “translate” between different teams (developers, marketing, users, admins). Skills in programming languages, relevant mathematics, AI models such as Naive Bayes, linear discriminant analysis, Hidden Markov, Gaussian mixture models, etc., machine learning algorithms such as linear regression, support vector machines, decision trees, platforms such as Keras, PyTorch, and Theano, as well as familiarity with ethical issues and constraints on the use of AI will be developed through core classes required of all graduates and concentration-specific classes.

The proposed MS in AI Engineering (Sustainable Engineering and Built Environment) meets the ASU design aspiration to “fuse intellectual disciplines” by extending AI subjects normally offered mostly for computing students to graduate students from a variety of engineering disciplines. The proposed concentration would allow students with a civil engineering background to learn what AI has to offer while continuing their learning in civil engineering. Particular applications of AI in civil engineering include infrastructure inspection, automated project management, enhanced digital twins of buildings, etc. Similarly, the proposed degree concentration addresses aspirations to “be socially embedded” and “practice principled innovation” by explicitly considering human needs and impact in AI design. This concentration not only emphasizes the technical mastery of AI tools and their applications but also promotes a holistic understanding of their ethical, environmental, and societal impacts, preparing graduates to make significant contributions to the field while adhering to the highest standards of professional integrity.

Program Need

Although the U.S. Bureau of Labor Statistics Occupational Outlook Handbook does not yet have the category “AI Engineer,” ZipRecruiter notes that the “job outlook for careers in artificial intelligence is excellent” (https://www.ziprecruiter.com/e/What-Is-the-Job-Outlook-for-Careers-in-Artificial-Intelligence; accessed 3/24/2024). Indeed, on the other hand, provided a list of 18 jobs “that may offer AI opportunities,” including computer engineer, manufacturing engineer, mechanical engineer, aerospace engineer, electrical engineer, robotics engineer, software engineer, etc. (https://www.indeed.com/career-advice/finding-a-job/jobs-in-ai; accessed 3/24/2024). It is important to note that this list includes many engineering disciplines that are not normally associated with AI, such as mechanical, aerospace, manufacturing, and electrical engineering. The proposed MS in AI Engineering (Sustainable Engineering and Built Environment) targets civil, environmental, and sustainable engineering, as well as construction management and construction engineering. The American Society of Civil Engineers (ASCE) reports that "civil engineering projects can benefit from the accuracy and efficiency of AI in areas such as structural health monitoring, infrastructure sustainability analysis, optimization in structural design, construction safety monitoring, and disaster response, among others" ("What does human-machine intelligence mean for civil engineers?," accessed 5/30/25). Finally, it has been estimated that AI could contribute as much as $15.7 trillion to the global economy by 2030, thus highlighting its immense potential (https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html; accessed 3/24/24).

ASU is already a leader in the use of AI, as evidenced by its partnership with OpenAI (https://ai.asu.edu/), but it does not yet offer an AI graduate program in engineering that meets the needs and expectations of the future civil engineering workforce. For example, The Wall Street Journal reports that "tech" jobs are flat or slightly declining, while "AI" jobs continue to increase (Sep 11, 2024). The intended audience for this program is students with an undergraduate degree in civil, environmental, sustainable, or construction engineering, as well as math, chemistry, or other civil engineering-related degrees, who desire advanced skills in civil engineering while also enhancing their AI skills. In other words, we are targeting students who recognize that the civil engineering jobs of the future will require the skilled use of AI tools to remain competitive. Anecdotally, we have found that an MS in AI Engineering (Sustainable Engineering and Built Environment) degree is attractive to prospective students, as evidenced by recent recruiting events. Complementary programs at ASU include the MS in AI in Business degree. Outside of ASU, the Carnegie Mellon University degree (master's degree in AI engineering with a focus on

civil engineering, as mentioned above) is also complementary. There is overlap with the Carnegie Mellon University program, as it also targets civil engineering students; however, the size of the market is considered sufficiently large to support both programs. On the other hand, the W. P. Carey degree targets business students, so the overlap is not considered significant.

Specialized Accreditation

State Authorization and Professional Licensure:

State Authorization and Professional Licensure:

Does this degree program include learning placement opportunities (clinical, externship, internship, research, student teaching, etc.)?
N

Will this degree program be offered via distance education (whole or in-part)?
N

Will in-person instruction be occurring in any jurisdiction, other than the State of Arizona?
N

Does this degree program potentially lead to professional licensure or certification (attorney, nurse, physician, teacher, etc.) for the student?
N

Collaborating Units

Are two or more academic units collaborating on this program?
Yes

Collaborating Units
School for Engineering of Matter, Transport and Energy (CMULTISCI)
School of Computing and Augmented Intelligence (CCMPINFDEC)Electrical Engineering Program (CELECENG)
Polytechnic School (CPOLY)School of Biological & Health Systems Engineering (CBIOHEAENG)
School of Manufacturing Systems and Networks (CMSN)School of Sustainable Engineering & Built Environment (CSUSENG)

Nature of Collaboration

The proposed MS in AI Engineering (Sustainable Engineering and Built Environment) will be housed administratively within the School of Sustainable Engineering and Built Environment (SEBE) of the Fulton Schools of Engineering (FSE).

Is this an officially recognized joint program?
No

Collaboration and Impact

List other academic units or programs 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) and how the programs might complement each other. If there are no comparable programs, describe why the program is unique at ASU.
Recently a new degree entitled “MS in Artificial Intelligence in Business” was developed by the ASU WP Carey School of Business, and there is an Artificial Intelligence concentration in the existing MS in Robotics & Autonomous Systems degree offered by the ASU Fulton Schools of Engineering. The former is clearly focused on business applications, while the latter is focused on robotics applications. The proposed degree program will have little or no overlap with these existing degree programs. The University of Arizona offers a BS in Applied Computing and describes it as an “artificial intelligence degree,” but this will not compete with our proposed graduate degree. Northern Arizona University does not appear to offer any degrees comparable to the proposed MS in AI Engineering.

The proposed concentration targets students from civil, environmental, or construction engineering, or from construction management. It therefore complements the other MS AI Engineering concentrations which target students from other engineering disciplines.

Attach a PDF copy of the letter of collaboration and impact from each Dean, or Dean’s designee at the Assistant or Associate Dean level, from impacted programs and units consulted.
- FROM_Herberger Institute for Design and the Arts Statement.pdf
- FROM_HEALTH_SOLUTIONS Statement.pdf
- FROM_LAW Statement.pdf
- FROM_THE_COLLEGE Statement.pdf
- TBIRD Statement.pdf
- FROM_WPCAREY Statement.pdf
- From_GLOBAL.pdf
- FROM_TECH_PUBLIC_HEALTH.pdf

Related Programs Offered at ASU

Identify other related ASU programs and describe how the new concentration will complement these existing ASU programs. If this is an interdisciplinary concentration, please describe the interdisciplinary nature of the program further. As applicable, Statements of Collaboration and Impact should be included from affected academic unit administrators and college and school deans.

Course Development

Will a new course subject be required for this program?
No

Will new courses be established?
No

Graduate Degree Curriculum

Allow 400-level courses?
No

Minimum Credits Required for the Program
30

Curriculum Requirement Option 1
30 credit hours including a portfolio

Add another option?
Yes

Curriculum Requirement Option 2
30 credit hours including the required applied project course (CEE 593) (CON 593) or (EVE 593)

Add another option?
Yes

Curriculum Requirement Option 3
30 credit hours and a thesis

Add another option?
No

Curriculum Requirement Option 1

30 credit hours including a portfolio

Min credits required for this option
30

Primary Requirement (Culminating experience)
Portfolio

Additional Requirement(s)

Required number of committee members

1

Curriculum option course requirements

Required Core

3
Total Credits

- Complete 3 credits from the following courses:
  - FSE561 - Artificial Intelligence Ethics and Social Responsibility (3)

AI Engineering Foundations

3
Total Credits

- Complete 3 credits from the following courses:
  - CSE571 - Artificial Intelligence (3)
  - CSE576 - Topics in Natural Language Processing (3)
  - CSE575 - Statistical Machine Learning (3)
  - EEE515 - Machine Vision and Pattern Recognition (3)
  - AME515 - Machine Vision and Pattern Recognition (3)
  - EEE511 - Artificial Neural Computation (3)
  - EEE560 - Mathematical Foundations of Machine Learning (3)
  - STP550 - Statistical Machine Learning (3)
  - FSE560 - Artificial Intelligence Engineering Foundations (3)
  - RAS585 - Machine Learning and Artificial Intelligence (3)

AI Systems & Tools

3
Total Credits

- Complete 3 credits from the following courses:
  - MFG523 - Artificial Intelligence for Smart Manufacturing (3)
  - MAE551 - Applied Machine Learning for Mechanical Engineers (3)
  - MSE551 - Applied Machine Learning for Mechanical Engineers (3)
  - EEE511 - Artificial Neural Computation (3)
  - EEE549 - Statistical Machine Learning: From Theory to Practice (3)
  - IFT536 - Natural Language Processing for Information Technology (3)
  - ACT561 - Machine Learning and Risk Management Applications (3)
  - AME534 - Machine Learning for Media Arts (3)
  - CEE501 - Artificial Intelligence for Civil Engineers (3)
  - CSE578 - Data Visualization (3)

Data Collection & Evaluation for AI Systems

3
Total Credits

- Complete 3 credits from the following courses:
  - EEE554 - Probability and Random Processes (3)
  - IEE520 - Statistical Learning for Data Mining (3)

- IEE577 - Data Science for System Decision Analytics (3)
- IFT511 - Analyzing Big Data (3)
- IFT512 - Applied Machine Learning for Information Technology (3)
- CEE579 - Transportation Data Collection and Analysis Methods (3)
- ACO501 - Database Systems and Cloud Computing (3)
- CHM547 - Data Modeling for the Natural Sciences (3)
- CSE510 - Database Management System Implementation (3)
- CSE511 - Data Processing at Scale (3)
- CSE512 - Distributed Database Systems (3)
- CSE515 - Multimedia and Web Databases (3)
- CSE572 - Data Mining (3)
- DSE501 - Statistics for Data Analysts (3)
- GIS531 - Spatial Databases (3)
- HSE531 - Data Analytics: Modeling Human Subjects Data (3)

Concentration

9

Total Credits

- Complete all of the following
  - Complete 3 credits from the following courses:
    - CEE501 - Artificial Intelligence for Civil Engineers (3)
  - Complete 6 credits from the following courses:
    - CEE532 - Developing Software for Engineering Applications (3)
    - CEE548 - Advanced Environmental Analysis (3)
    - CEE578 - Activity-Travel Behavior Modeling (3)
    - CEE579 - Transportation Data Collection and Analysis Methods (3)
    - EVE568 - Environmental Risk Assessment (3)

Electives

9

Total Credits

- Complete 9 credits from the following course sets:

▾ iPOS open courses (500 level)

▾ iPOS open courses (600 level)

Grand Total Credits: 30

Additional Curriculum Information

Any additional core classes taken will be treated as electives. No class can be taken to satisfy both a core requirement and a concentration requirement. Available concentration courses are listed in an attached file ("MS AI Engineering SEBE Approved Courses"). Other available electives are listed in an attached file ("MS AI Engineering Approved Electives"), and additional electives will be decided by the Graduate Program Committee.

Multiple culminating experience courses are available, depending on the background of the student. For example, CEE courses are appropriate for civil engineering students, EVE courses for environmental engineering students, and CON courses for construction management students.

Curriculum Requirement Option 2

30 credit hours including the required applied project course (CEE 593) (CON 593) or (EVE 593)

Min credits required for this option

30

Primary Requirement (Culminating experience)

Applied Project

Additional Requirement(s)

Required number of committee members

1

Curriculum option course requirements

Required Core

3
Total Credits

- Complete 3 credits from the following courses:
  - FSE561 - Artificial Intelligence Ethics and Social Responsibility (3)

AI Engineering Foundations

3
Total Credits

- Complete 3 credits from the following courses:
  - CSE571 - Artificial Intelligence (3)
  - CSE576 - Topics in Natural Language Processing (3)
  - CSE575 - Statistical Machine Learning (3)
  - EEE515 - Machine Vision and Pattern Recognition (3)
  - AME515 - Machine Vision and Pattern Recognition (3)
  - EEE511 - Artificial Neural Computation (3)
  - EEE560 - Mathematical Foundations of Machine Learning (3)
  - STP550 - Statistical Machine Learning (3)
  - FSE560 - Artificial Intelligence Engineering Foundations (3)
  - RAS585 - Machine Learning and Artificial Intelligence (3)

AI Systems & Tools

3
Total Credits

- Complete 3 credits from the following courses:
  - MFG523 - Artificial Intelligence for Smart Manufacturing (3)
  - MAE551 - Applied Machine Learning for Mechanical Engineers (3)
  - MSE551 - Applied Machine Learning for Mechanical Engineers (3)
  - EEE511 - Artificial Neural Computation (3)
  - EEE549 - Statistical Machine Learning: From Theory to Practice (3)
  - IFT536 - Natural Language Processing for Information Technology (3)
  - ACT561 - Machine Learning and Risk Management Applications (3)
  - AME534 - Machine Learning for Media Arts (3)
  - CEE501 - Artificial Intelligence for Civil Engineers (3)
  - CSE578 - Data Visualization (3)

Data Collection & Evaluation for AI Systems

3
Total Credits

- Complete 3 credits from the following courses:
  - EEE554 - Probability and Random Processes (3)
  - IEE520 - Statistical Learning for Data Mining (3)

- IEE577 - Data Science for System Decision Analytics (3)
- IFT511 - Analyzing Big Data (3)
- IFT512 - Applied Machine Learning for Information Technology (3)
- CEE579 - Transportation Data Collection and Analysis Methods (3)
- ACO501 - Database Systems and Cloud Computing (3)
- CHM547 - Data Modeling for the Natural Sciences (3)
- CSE510 - Database Management System Implementation (3)
- CSE511 - Data Processing at Scale (3)
- CSE515 - Multimedia and Web Databases (3)
- CSE572 - Data Mining (3)
- DSE501 - Statistics for Data Analysts (3)
- GIS531 - Spatial Databases (3)
- HSE531 - Data Analytics: Modeling Human Subjects Data (3)
- CSE512 - Distributed Database Systems (3)

Concentration

9
Total Credits

- Complete all of the following
  - Complete 3 credits from the following courses:
    - CEE501 - Artificial Intelligence for Civil Engineers (3)
  - Complete 6 credits from the following courses:
    - CEE532 - Developing Software for Engineering Applications (3)
    - CEE548 - Advanced Environmental Analysis (3)
    - CEE578 - Activity-Travel Behavior Modeling (3)
    - CEE579 - Transportation Data Collection and Analysis Methods (3)
    - EVE568 - Environmental Risk Assessment (3)

Electives

6
Total Credits

- Complete 6 credits from the following course sets:

iPOS open courses (500 level)

iPOS open courses (600 level)

Culminating Experience

3
Total Credits

- Complete 3 credits from the following courses:
  - CEE593 - Applied Project (1 - 12)
  - CON593 - Applied Project (1 - 12)
  - EVE593 - Applied Project (1 - 12)

Grand Total Credits: 30

Additional Curriculum Information

Any additional core classes taken will be treated as electives. No class can be taken to satisfy both a core requirement and a concentration requirement. Available concentration courses are listed in an attached file ("MS AI Engineering SEBE Approved Courses"). Other available electives are listed in an attached file ("MS AI Engineering Approved Electives"), and additional electives will be decided by the Graduate Program Committee.

Multiple culminating experience courses are available, depending on the background of the student. For example, CEE courses are appropriate for civil engineering students, EVE courses for environmental engineering students, and CON courses for construction management students.

Curriculum Requirement Option 3

	Min credits required for this option
30 credit hours and a thesis	30

Primary Requirement (Culminating experience)	**Additional Requirement(s)**
Thesis	

Required number of committee members

3

Curriculum option course requirements

Required Core

3
Total Credits

- Complete 3 credits from the following courses:
    - FSE561 - Artificial Intelligence Ethics and Social Responsibility (3)

AI Engineering Foundations

3
Total Credits

- Complete 3 credits from the following courses:
    - CSE571 - Artificial Intelligence (3)
    - CSE576 - Topics in Natural Language Processing (3)
    - CSE575 - Statistical Machine Learning (3)
    - EEE515 - Machine Vision and Pattern Recognition (3)
    - AME515 - Machine Vision and Pattern Recognition (3)
    - EEE511 - Artificial Neural Computation (3)
    - EEE560 - Mathematical Foundations of Machine Learning (3)
    - STP550 - Statistical Machine Learning (3)
    - FSE560 - Artificial Intelligence Engineering Foundations (3)
    - RAS585 - Machine Learning and Artificial Intelligence (3)

AI Systems & Tools

3
Total Credits

- Complete 3 credits from the following courses:
    - MFG523 - Artificial Intelligence for Smart Manufacturing (3)
    - MAE551 - Applied Machine Learning for Mechanical Engineers (3)
    - MSE551 - Applied Machine Learning for Mechanical Engineers (3)
    - EEE511 - Artificial Neural Computation (3)
    - EEE549 - Statistical Machine Learning: From Theory to Practice (3)
    - IFT536 - Natural Language Processing for Information Technology (3)
    - ACT561 - Machine Learning and Risk Management Applications (3)
    - AME534 - Machine Learning for Media Arts (3)
    - CEE501 - Artificial Intelligence for Civil Engineers (3)
    - CSE578 - Data Visualization (3)

Data Collection & Evaluation for AI Systems

3
Total Credits

- Complete 3 credits from the following courses:
    - EEE554 - Probability and Random Processes (3)
    - IEE520 - Statistical Learning for Data Mining (3)

- IEE577 - Data Science for System Decision Analytics (3)
- IFT511 - Analyzing Big Data (3)
- IFT512 - Applied Machine Learning for Information Technology (3)
- CEE579 - Transportation Data Collection and Analysis Methods (3)
- ACO501 - Database Systems and Cloud Computing (3)
- CHM547 - Data Modeling for the Natural Sciences (3)
- CSE510 - Database Management System Implementation (3)
- CSE511 - Data Processing at Scale (3)
- CSE515 - Multimedia and Web Databases (3)
- CSE572 - Data Mining (3)
- DSE501 - Statistics for Data Analysts (3)
- GIS531 - Spatial Databases (3)
- HSE531 - Data Analytics: Modeling Human Subjects Data (3)
- CSE512 - Distributed Database Systems (3)

Concentration

9
Total Credits

- Complete all of the following
  - Complete 3 credits from the following courses:
    - CEE501 - Artificial Intelligence for Civil Engineers (3)
  - Complete 6 credits from the following courses:
    - CEE532 - Developing Software for Engineering Applications (3)
    - CEE548 - Advanced Environmental Analysis (3)
    - CEE578 - Activity-Travel Behavior Modeling (3)
    - CEE579 - Transportation Data Collection and Analysis Methods (3)
    - EVE568 - Environmental Risk Assessment (3)

Electives

3
Total Credits

- Complete 3 credits from the following course sets:

▾ iPOS open courses (500 level)

▾ iPOS open courses (600 level)

Culminating Experience

6
Total Credits

- Complete 6 credits from the following courses:
  - CEE599 - Thesis (1 - 12)
  - CON599 - Thesis (1 - 12)
  - EVE599 - Thesis (1 - 12)

Grand Total Credits: 30

Additional Curriculum Information

Any additional core classes taken will be treated as electives. No class can be taken to satisfy both a core requirement and a concentration requirement. Available concentration courses are listed in an attached file ("MS AI Engineering SEBE Approved Courses"). Other available electives are listed in an attached file ("MS AI Engineering Approved Electives"), and additional electives will be decided by the Graduate Program Committee.

Multiple culminating experience courses are available, depending on the background of the student. For example, CEE courses are appropriate for civil engineering students, EVE courses for environmental engineering students, and CON courses for construction management students.

Projected Enrollment

Enrollment Headcounts

	Number of Students Majoring
1st Year	10
2nd Year (Yr 1 continuing + new entering)	20
3rd Year (Yr 1 & 2 continuing + new entering)	30
4th Year (Yrs 1, 2, 3 continuing + new entering)	30
5th Year (Yrs 1, 2, 3, 4 continuing + new entering)	30

Additional Enrollment Information

Estimated Timeframe to Complete Program

What is the minimum timeframe that this program can be completed?
1-2 years

If necessary, please provide additional information.

Resources (Faculty, Staff and Others)

Current Faculty

Name	Title	Highest Degree Obtained	Area of Specialization or Expertise	Estimated Level of Involvement
Ravi Yellavajjala	Associate Professor	PhD	Experimental and theoretical mechanics, damage mechanics and data-driven structural engineering	High
Kenneth Sullivan	Professor	PhD	Project delivery, procurement, organizational transformation, benchmarking, team optimization, and performance measurement	High
Narayanan Neithalath	Professor	PhD	Decarbonization of concrete through innovations in cement manufacturing	Low
Oswald Chong	Associate Professor	PhD	System optimization, AI applications in engineering	Medium
Siyuan Song	Associate Professor	PhD	Construction safety and health, workforce development, AI in construction, and engineering education	Low
Shiva Pooladvand	Assistant Professor	PhD	Construction automation and safety, human-machine interaction, immersive environments, AI, sensing technolgies	Low
Tianfang Xu	Assistant Professor	PhD	Numerical simulation of groundwater flow and solute transport, uncertainty quantification and applications of machine learning in geoscience	Low

Name	Title	Highest Degree Obtained	Area of Specialization or Expertise	Estimated Level of Involvement
Xiang (Jason) Zhang	Assistant Professor	PhD	Data-driven modeling of building energy performance, building simulation, building-integrated photovoltaics, and environmental building evaluation and design	Medium

New Faculty
The FSE Dean's Office will provide additional lecturers to teach FSE 561 AI Ethics & Social Responsibility.

Is your college in the process of reviewing the new faculty? Or has new faculty already been approved?
No

Administration of the Program
The proposed MS in AI Engineering (Sustainable Engineering and Built Environment) will be housed administratively within the School of Sustainable Engineering and Built Environment (SEBE) of the Fulton Schools of Engineering (FSE), while other concentrations will be housed within other Schools. The concentrations will collaborate through the core classes required of all students in the program. Any changes in the curriculum will be made through a Graduate Program Commitee comprised of two faculty from each of the participating Schools, and led by a Graduate Program Chair appointed by the FSE Dean. The Graduate Program Committee will define admissions criteria and make admissions decisions, and make curriculum changes as needed. Academic advising and admissions for the Sustainable Engineering and Built Environment concentration will be addressed by the SEBE advising center. Patrick Phelan will be the temporary faculty director until a permanent faculty director has been selected

Required Resources
The FSE Dean's Office will provide additional lecturers to teach FSE 560 AI Engineering Foundations and FSE 561 AI Ethics & Social Responsibility.

Resource Acquisition
Internal communications within the FSE Dean's Office indicates resources will be provided to teach the FSE 560 and FSE 561 classes.

Graduate Program Admission Requirements

The below sections are for initial admission criteria setup for new programs. Once the program is approved, this section will display the admission text as it appears in the academic catalog/degree search.

Applicants must fulfill the requirements of both the Graduate College and the **[name of college]**. Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in **[subject area]** or related field; from a regionally accredited institution. Applicants must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of a

student's 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.

Name of College

Ira A. Fulton Schools of Engineering (CES)

Subject Area(s)

Computing, Engineering, Mathematics, Statistics, Construction, Transportation

Is the minimum required cumulative GPA in the last 60 hours of bachelor's degree higher than the standard minimum of 3.00?
No

Is the minimum required cumulative GPA in an applicable master's degree program higher than the standard minimum of 3.00?
No

Applicants are required to submit:

- graduate admissions application and application fee
- official transcripts
- proof of English proficiency

Select additional requirements:
professional resume

Additional Application Requirements/Materials

An applicant whose native language is not English must provide proof of English proficiency regardless of current residency. If applicable, list any English proficiency requirements that are supplementary to the Graduate College requirement.
An applicant whose native language is not English must demonstrate proficiency in the English language by scoring at least 90 on the Internet-based TOEFL (iBT) or 7 on the IELTS, and 115 on the duolingo.

If any required components require further explanation, explain here.

Additional Admission Information:
Familiarity with Matlab, Python, SQL, R, or other relevant programming skills (in the professional resume)

Graduate Application Information

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. The regular session is only available for summer.
Note: It is the academic unit's responsibility to display program deadline dates on their website.

Campus or Location	Term	Session
Tempe	Fall	Regular
Tempe	Spring	Regular

Application Deadlines

Modality	Term	Session	Deadline	Type
In-Person	Fall	Session A/C	2026/04/01	Priority
In-Person	Spring	Session A/C	2026/08/01	Priority

Program Admission Deadline Website Address
https://ssebe.engineering.asu.edu/graduate/

Fees

Is a program fee required?
Yes

Is the unit willing and able to implement the program if the fee is denied OR if an existing fee is determined to not apply to this program?
No, we are not able to implement the program.

Degree Search and Operational Information

Marketing Description
Learn the advanced skills needed to apply artificial intelligence (AI) and machine learning (ML) in civil and environmental engineering. Take high-demand core courses, disciplinary electives and select a culminating experience that fits your needs to graduate in one to two years.

Degree Search Program Description

The Master of Science program in artificial intelligence engineering with a concentration in sustainable engineering and built environment combines advanced study in AI approaches with deep domain expertise in civil, environmental, sustainable and construction engineering, as well as construction management.

The use of AI approaches, including machine learning, natural language processing, computer vision, robotics and pattern recognition, is becoming widespread in many fields, including all engineering disciplines. Yet, the majority of engineering occupations require subject matter expertise beyond AI.

Students learn how to develop and customize relevant AI approaches to civil and environmental engineering problems. A core curriculum in AI engineering foundations, AI systems and tools, AI ethics and social responsibility, and data collection and evaluation for AI systems is complemented by civil and environmental engineering-specific courses to ensure breadth and depth in AI and in civil and environmental engineering.

Provide a brief description of career opportunities available for this program.
Civil, environmental, sustainable and construction engineers, as well as construction managers, with a background in AI can pursue opportunities in a variety of fields to develop, customize and apply AI systems and tools while taking ethical and societal considerations into account. These skills can be applied to industries including:

- air and groundwater pollution modeling
- digital twins of buildings and other structures
- infrastructure construction
- transportation, including self-driving vehicles
- urban infrastructure monitoring

Global Experience: Provide a brief description of global opportunities or experiences (study abroad, international internships) available for this program.
N/A

ONET/SOC Codes: Career Options
15-1221.00 Computer Scientist15-2051.00 Data Scientist17-2199.08 Robotics Engineer17-2051.00 Civil Engineer 17-2081.00 Environmental Engineer17-2051.01 Transportation Engineer11-9021.00 Construction Manager

Professional Licensure
N/A

Additional Professional Licensure Information
N/A

Degree Search Contact Information and Support

Building Code
Paul C. Helmick Center (HLMK)

Room Number
507

Program Email Address
sebe.advising@asu.edu

Program Office Telephone Number
480-965-0595

Program Website Address
https://ssebe.engineering.asu.edu/graduate/

Keywords
Artificial IntelligenceEngineeringMachine LearningNatural Language ProcessingRoboticsCivil Engineering environmental engineeringConstruction ManagementConstruction Engineer

List New Keywords
Computer Vision

Select one (1) primary area of interest from the list below that applies to this program
Engineering & Technology

Select one (1) secondary area of interest from the list below that applies to this program
Computing & Mathematics

Program 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.
- MS1721671460_UOEEE_received Sustainable.pdf

Supporting Documents

Additional Supporting Documentation (Impact statements should be above under Collaboration and Impact)
- MS AI Engineering Approved Electives.pdf
- MS AI Engineering SEBE Approved Courses.pdf

Please describe the attached files and their relevance to the proposal.

Dependencies

Dependencies
There are no dependencies

From:	Althea Pergakis
To:	Sergio Quiros; Miki Kittilson; Lisa Murphy; Kate Eaton
Cc:	Teresa Wu; Amanda Morales-Calderon; Sophia Mcgovern; Jeremy Helm; Patrick Phelan (Professor); Kayla Durazo; Ravi Yellavajjala; Michael Sever
Subject:	Re: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Wednesday, November 5, 2025 1:02:02 PM

Sent on behalf of Kate Eaton

Hello!

The College of Global Futures has no concerns about this program.

Thanks!

Althea Pergakis

Curriculum Manager
College of Global Futures
Arizona State University

call:480.965.1010
meet: schedule a meeting

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Wednesday, November 5, 2025 12:59 PM
To: Althea Pergakis <Althea.Pergakis@asu.edu>; Miki Kittilson <Miki.Kittilson@asu.edu>; Lisa Murphy <Lisa.M.Murphy@asu.edu>; Kate Eaton <kkarnos@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: RE: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Hello,

The Graduate College has requested we follow up regarding impact/support letter for the proposed ***MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).***

Please let us know if you have any questions or need additional information.

Best,

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Althea Pergakis <Althea.Pergakis@asu.edu>
Sent: Thursday, October 9, 2025 3:41 PM
To: Sergio Quiros <Sergio.Quiros@asu.edu>; Miki Kittilson <Miki.Kittilson@asu.edu>; Lisa Murphy <Lisa.M.Murphy@asu.edu>; Kate Eaton <kkarnos@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: Re: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Looping in Kate Eaton.

Thanks!

Althea Pergakis

Curriculum Manager
College of Global Futures
Arizona State University

call:480.965.1010
meet: schedule a meeting

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Thursday, October 9, 2025 3:39 PM
To: Miki Kittilson <Miki.Kittilson@asu.edu>; Althea Pergakis <Althea.Pergakis@asu.edu>; Lisa

Murphy <Lisa.M.Murphy@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed *MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).*

Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From:	Kate Brown
To:	Teresa Wu
Cc:	Julie Liss; Sergio Quiros; Amanda Morales-Calderon; Sophia Mcgovern; Jeremy Helm; Patrick Phelan (Professor); Kayla Durazo; Ravi Yellavajjala; Michael Sever; Rebecca Scott
Subject:	Re: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Monday, October 20, 2025 2:42:45 PM
Attachments:	MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).pdf image.png Outlook-https em

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Sent on behalf of Julie Liss

Dear Teresa,

On behalf of the College of Health Solutions, I am pleased to express our support for the proposed **MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment)**. The program aligns well with the university's broader goals and presents no overlap or conflict with our existing programs in Biomedical Informatics and Data Science or Health Informatics.

We welcome any opportunities for collaboration and wish you the best of luck on this proposal.

Kind regards,
Julie

Julie Liss, PhD CCC-SLP
Senior Associate Dean of Academic Success
Professor of Speech and Hearing Science
Senior Editor of Registered Reports, *Journal of Speech, Language, and Hearing Research*
Fellow, American Speech-Language-Hearing Association

Arizona State University | College of Health Solutions
550 N. 3rd Street, Phoenix, AZ 85004 | Health North|
For assistance or to request a meeting, please email Bernadette.Elliott@asu.edu
**Note: If you have received this email outside of your working hours, please don't feel obligated to respond before your next workday begins.*
| chs.asu.edu

ASU College of Health Solutions
Arizona State University

Kate Brown, MEd (she/her/hers)
Sr. Director, Academic Success and Innovation
Arizona State University | College of Health Solutions
550 N. 3rd Street, Phoenix, AZ 85004 | Health North Room 512C
O: 480-727-4672 | katebrown@asu.edu | chs.asu.edu

ASU College of Health Solutions
Arizona State University

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Thursday, October 9, 2025 3:39 PM
To: Julie Liss <JULIE.LISS@asu.edu>; Kate Brown <KateBrown@asu.edu>; Rebecca Scott <Becky.Scott@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed ***MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).***

Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From:	Karen Schupp
To:	Teresa Wu
Cc:	Amanda Osman; Sergio Quiros; Amanda Morales-Calderon; Sophia Mcgovern; Jeremy Helm; Patrick Phelan (Professor); Kayla Durazo; Ravi Yellavajjala; Michael Sever
Subject:	Re: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Friday, October 24, 2025 3:33:56 PM

Hi Dean Wu:

Thank you for sharing this proposal with us, which we think offers a natural point of connection with The Design School's offerings. As such we ask that the following courses are considered as electives:

Jason Zhang's
ARC 494/598: Sustainability in the Built Environment

Courses by Wanda Dalla Costa:
Indigenous Placekeeping and Built Environment Electives
Electives (15 credit hours)
DSC 521 Futurity of Indigenous Knowledge (3)
DSC 522 Indigenous Design Media and Communication (3)
DSC 523 Resource-driven Construction and Design (3)
DSC 524 The Indigenous Landscape: Place Meaning and Attachment (3)
design elective (3)

Courses/Programs by Ana Herruzo
Microcertificate in Digital Twining (9 credit hour)
DSC 551 Immersive Experience Design (3)
DSC 553 Designing Digital Worlds (3)
DSC 556 Programming Fundamentals for IXD(3)

Certificate in Immersive Design Technologies (15 Credit hours)
DSC 551 Immersive Experience Design (3)
DSC 552 Interactive Art & Media Installations (3)
DSC 553 Designing Digital Worlds (3)
DSC 554 Introduction to Extended Realities (3)
DSC 556 Programming Fundamentals for IXD(3)

Please let me know your questions, and have a good weekend.

Thanks,

Karen

Karen Schupp (she/her)
Associate Dean of Academic Programs and Curriculum
Herberger Institute for Design and the Arts
Arizona State University

Professor of Dance

School of Music, Dance and Theatre
Arizona State University

Senior Global Futures Scholar
Julie Ann Wrigley Global Futures Laboratory
Arizona State University

Editor-in-Chief
Journal of Dance Education

Want to meet? Schedule an appointment via Outlook or Calendly.

On Oct 9, 2025, at 3:39 PM, Sergio Quiros <Sergio.Quiros@asu.edu> wrote:

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed ***MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).***

Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

<MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).pdf>

From:	Tamara Herrera
To:	Sergio Quiros; Lydia Montelongo
Cc:	Teresa Wu; Amanda Morales-Calderon; Sophia Mcgovern; Jeremy Helm; Patrick Phelan (Professor); Kayla Durazo; Ravi Yellavajjala; Michael Sever
Subject:	RE: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Thursday, October 16, 2025 10:26:46 AM

Good morning,

The College of Law has reviewed the proposed MS in Artificial Intelligence Engineering (Sustainable Engineering and Build Environment) and supports this proposal. This proposal does not impact any work in our unit (no duplication of efforts or negative effects).

Please let me know if you need anything additional. I am happy to help!

Tamara

Tamara Herrera Hear My Name
Associate Dean of Academic Affairs
Distinguished Endowed Professor in Legal Method & Clinical Professor of Law
Sandra Day O'Connor College of Law
Arizona State University

111 E. Taylor Street
Phoenix, AZ 85004
p: 480-727-7194
email: tamara.herrera@asu.edu
web: law.asu.edu

ASU Law acknowledges that the law school is located on the ancestral lands of the Akimel O'odham and further acknowledges that Arizona is home to 22 Tribal Nations that comprise 27% of Arizona's total land base.

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Thursday, October 9, 2025 3:39 PM
To: Tamara Herrera <Tamara.Herrera@asu.edu>; Lydia Montelongo <lydia.montelongo@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed ***MS in***

Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).

Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From:	Teresa Wu
To:	Sergio Quiros
Subject:	FW: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Sunday, November 9, 2025 9:38:24 PM
Attachments:	MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).pdf

---

From: Jyoti Pathak <pathakj@asu.edu>
Sent: Sunday, November 9, 2025 4:54 PM
To: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Cc: Marc Adams <Marc.Adams@asu.edu>; Rachel La Vine <Rachel.Lavine@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Dear colleagues,

Thank you for sharing the proposal for the Master's in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) program in FSE. After reviewing the concentration's rationale emphasizing a deep understanding of artificial intelligence and machine learning integrated with principles of theoretical and applied civil engineering, the School of Technology for Public Health finds no overlap with or impact on our degree programs.

We wish you success as you advance this program.

Regards,
Jyoti

Jyotishman Pathak, PhD, FACMI
Founding Dean and Foundation Professor
School of Technology for Public Health
Arizona State University, Phoenix, AZ
publichealthtech.asu.edu

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Wednesday, November 5, 2025 at 1:02 PM
To: Rachel La Vine <Rachel.Lavine@asu.edu>

Cc: Teresa Wu <Teresa.Wu@asu.edu>, Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>, Sophia Mcgovern <somcgove@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>, Patrick Phelan (Professor) <phelan@asu.edu>, Kayla Durazo <kydurazo@asu.edu>, Ravi Yellavajjala <ravi.kiran@asu.edu>, Michael Sever <Mike.Sever@asu.edu>
Subject: RE: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Hello,

The Graduate College has requested we follow up regarding impact/support letter for the proposed ***MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).***

Please let us know if you have any questions or need additional information.

Best,

Sergio Z. Quiros
Assistant Director of Academic Administration
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, October 9, 2025 3:39 PM
To: Rachel La Vine <Rachel.Lavine@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed ***MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).***

Let me know if you have any questions or need additional information.

Teresa Wu

Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From:	Bradley Ryner
To:	Sergio Quiros
Cc:	Kenro Kusumi; Jeffrey Cohen (Dean); Dan Cox; Magda Hinojosa; Kyle Rader; Brian Bottini; Teresa Wu; Amanda Morales-Calderon; Sophia Mcgovern; Jeremy Helm; Patrick Phelan (Professor); Kayla Durazo; Ravi Yellavajjala; Michael Sever
Subject:	Re: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Monday, October 13, 2025 11:57:46 AM

Dear Teresa,

The College of Liberal Arts and Sciences has reviewed your proposal to launch an additional "Sustainable Engineering and Built Environment" concentration in MS in Artificial Intelligence Engineering. As was the case for the degree's other concentrations, we foresee no significant impact on graduate programs in The College and support this concentration.

Again, we appreciate that the proposal allows courses in the School of Mathematical and Statistical Sciences (STP 550 Statistical Machine Learning and ACT 561 Machine Learning and Risk Management) and Geographical Studies and Urban Planning (GIS 531 Spatial Databases) and School of Molecular Sciences (CHM 547 Data Modeling for the Natural Sciences) to count as requirement options.

The College looks forward to this new degree and future collaborations.

With best,
Brad

Bradley D. Ryner (he/him)
Associate Dean of Graduate Initiatives
The College of Liberal Arts and Sciences
Associate Professor, Department of English
Arizona State University

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Date: Thursday, October 9, 2025 at 3:39 PM
To: Bradley Ryner <Bradley.Ryner@asu.edu>, Kyle Rader <kwrader@asu.edu>, Brian Bottini <Brian.Bottini@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>, Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>, Sophia Mcgovern <somcgove@asu.edu>, Jeremy Helm <JEREMY.HELM@asu.edu>, Patrick Phelan (Professor)

<phelan@asu.edu>, Kayla Durazo <kydurazo@asu.edu>, Ravi Yellavajjala <ravi.kiran@asu.edu>, Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed ***MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).***

Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Michele Pfund
To: Sergio Quiros
Cc: Teresa Wu; Ohad Kadan; Jessica Gallagher
Subject: RE: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date: Friday, October 10, 2025 3:18:58 PM

Thank you for including W. P. Carey in the review process.

W. P. Carey does not forsee negative impact from the launch in MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) and wishes your team a smooth implementation process.

Go Devils,
Michele

Michele Pfund
Sr. Associate Dean for Education
W. P. Carey School of Business
Calendar managed by: Bianca Birchfield

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Thursday, October 9, 2025 3:39 PM
To: Ohad Kadan <Ohad.Kadan@asu.edu>; Jessica Gallagher <Jessica.Gallagher@asu.edu>; Michele Pfund <Michele.Pfund@asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

Hello,

I am writing to request an impact/support letter (email will suffice) for the proposed *MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment).*

Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs
President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging

Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros
Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From:	Charla Griffy-Brown
To:	Sergio Quiros
Subject:	RE: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request
Date:	Friday, October 10, 2025 5:12:59 PM
Attachments:	image001.png image002.png

We approve. Thank you!

Dr. Charla Griffy-Brown
Director General and Dean | Professor Global Digital Transformation |
Thunderbird School of Global Management, Arizona State University|
c: 310-420-2524
thunderbird.asu.edu

› Apply today › Refer a Future Thunderbird |

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Thursday, October 9, 2025 3:39 PM
To: Charla Griffy-Brown <charla.griffybrown@thunderbird.asu.edu>
Cc: Teresa Wu <Teresa.Wu@asu.edu>; Amanda Morales-Calderon <AMANDA.MORALES-CALDERON@asu.edu>; Sophia Mcgovern <somcgove@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>; Patrick Phelan (Professor) <phelan@asu.edu>; Kayla Durazo <kydurazo@asu.edu>; Ravi Yellavajjala <ravi.kiran@asu.edu>; Michael Sever <Mike.Sever@asu.edu>
Subject: MS in Artificial Intelligence Engineering (Sustainable Engineering and Built Environment) – Statement of Support Request

Sent on behalf of Teresa Wu

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Let me know if you have any questions or need additional information.

Teresa Wu
Vice Dean, Academic and Student Affairs

President's Professor, School of Computing and Augmented Intelligence
Director, ASU-Mayo Center for Innovative Imaging
Ira A. Fulton Schools of Engineering
Arizona State University

Sergio Z. Quiros

Assistant Director of Academic Administration
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

MS in Artificial Intelligence Engineering (Sustainable Infrastructure and the Built Environment)

ES-Ira A Fulton Schools of Engineering

Mission

This mission of the MS in Artificial Intelligence (AI) Engineering (Sustainable Engineering and Built Environment) program is to enable students from a variety of engineering backgrounds to understand AI systems and how they are created and used both technically and societally. Students must know how these systems and tools work “under the hood” so that they can make them effective and ethical. We do this by making this degree accessible to students through a rigorous set of core classes emphasizing fundamental AI algorithms and methods, knowledge of existing and emerging AI tools and resources, the ethics and social responsibility associated with AI, and the data collection and evaluation essential for AI. A variety of electives tailored to civil and environmental engineering provides the skills needed to apply AI to their engineering domain, and a culminating experience consisting of a portfolio, applied project, or thesis will demonstrate his/her skills to problems inspired by industry and/or societal needs. This mission aligns with multiple ASU design aspirations, including “transform society,” “fuse intellectual disciplines,” “conduct use-inspired research,” and “practice principled innovation.”

Goals

The goals of the MS in Artificial Intelligence (AI) Engineering (Sustainable Engineering and Built Environment) program are to prepare graduates for technical positions where they can apply their engineering and AI skills. Graduates will be able to apply machine learning, AI approaches such as natural language processing, artificial vision, and the application of large language models, as well as to assemble and process the data needed to solve relevant problems in their engineering discipline with due consideration for ethical and societal factors.

Outcome 1

Graduates will evaluate AI systems and AI engineering specific to civil, environmental, and sustainable engineering.

Concepts	Competencies
Machine learning, artificial neural networks, natural language processing, artificial vision, large language models with application to civil, environmental, and sustainable engineering	Graduates will be able to understand and compare various AI methodologies, including their accuracy, interpretability, reliability, privacy, robustness, and mitigation of harmful bias in order to select the most promising approaches to solve applied engineering problems in civil, environmental, and sustainable engineering.

Assessment Process

For Measure 1.1 the culminating experience will be used, specific to the student and civil, environmental, and sustainable engineering. The applied project or thesis will be assessed by a rubric that measures how well graduates understand AI systems (scored from 1 to 5), and how well they are able to evaluate them (also scored from 1 to 5). For Measure 1.2 the Graduate and Law Student Report Card (GLSRC), specifically the question "How strong was your graduate program in providing training in each of the following areas [Subject matter knowledge in your field]?" will be used as students apply to graduate. This rubric is applicable to both culminating experience options. For both Measures the Graduate Program Chair, in consultation with the Graduate Program Committee, will specifically look at average rubric scores and survey results compared to historical data. Sustained dips in scores or survey results will prompt faculty to examine teaching methods and materials. Assessment data will be used for continuous improvement of the curriculum.

Measure 1	Performance Criterion 1
The culminating experience, whether an applied project (CEE 593, EVE 593, or CON 593) or thesis (CEE 599, EVE 599, or CON 599), will be assessed via a rubric.	At least 80% of the students will meet or exceed expectations using a faculty-developed rubric.

Measure 2	Performance Criterion 2
Graduating students will be surveyed (via the Graduate and Law Student Report Card, GLSRC) to determine their ability to apply the aforementioned AI engineering skills, specifically the question "How strong was your graduate program in providing training in each of the following areas [Subject matter knowledge in your field]?"	At least 80% of the surveyed graduating students answer this question as 'very strong' or 'strong.'

Outcome 2

Graduates will apply ethical standards and social responsibility to the application of AI in professional environments.

Concepts	Competencies
Code of ethics, social responsibility, legal system, AI principles and practices, AI benefits and risks	Graduates will be able to take into consideration the ethical and societal implications of AI technologies, including potential biases, privacy implications, preventing discrimination, and social inequalities.

Assessment Process

For Measure 2.1 the written report of the required semester project in FSE 561 AI Ethics & Social Responsibility will be used. The report will be assessed by a rubric that measures how well ethical and societal implications of AI technologies were taken into account (scored from 1 to 5). For Measure 2.2 the Graduate and Law Student Report Card (GLSRC), specifically the question "How strong was your graduate program in providing training in each of the following areas [Ethical standards in your field]"? will be used as students apply to graduate. Assessment tagging will be used to disaggregate data for each concentration. For both Measures the Graduate Program Chair, in consultation with the Graduate Program Committee, will specifically look at average rubric scores and survey results compared to historical data. Sustained dips in scores or survey results will prompt faculty to examine teaching methods and materials. Assessment data will be used for continuous improvement of the curriculum.

Measure 1	Performance Criterion 1
The written report for the required semester project in FSE 561 AI Ethics & Social Responsibility will be assessed via a rubric.	At least 80% of the students will meet or exceed expectations using a faculty-developed rubric.

Measure 2	Performance Criterion 2
Graduating students will be surveyed (via the Graduate and Law Student Report Card, GLSRC) to determine their ability to take ethical and societal considerations into account, specifically the question "How strong was your graduate program in providing training in each of the following areas [Ethical standards in your field]"?	At least 80% of the surveyed graduating students answer this question as 'very strong' or 'strong.'

Outcome 3

Graduates will communicate AI solutions effectively through both spoken and written expression to technical and nontechnical audiences.

Concepts	Competencies
Appropriate context, motivation, structure, organization, audience understanding, syntax, references, graphics, and visuals	Graduates will be able to develop and present written and oral presentations to both technical and nontechnical audiences, while demonstrating clarity, ethical communication, respect for the audience, process understanding, and credibility, while explaining costs versus benefits, public safety, sustainability, global, cultural, social, environmental, and economic factors.

Assessment Process

For Measure 3.1 the written report for the required semester project in CEE 501 Artificial Intelligence for Civil Engineers will be used. The presentation will be assessed by a rubric that measures how well graduates communicated AI concepts. For Measure 3.2 the Graduate and Law Student Report Card will be used, specifically the question "How strong was your graduate program in providing training in each of the following areas [Public speaking and presentation skills]". Assessment tagging will be used to disaggregate data for each concentration. For both Measures the Graduate Program Chair, in consultation with the Graduate Program Committee, will specifically look at average rubric scores and survey results compared to historical data. Sustained dips in scores or survey results will prompt faculty to examine teaching methods and materials. Assessment data will be used for continuous improvement of the curriculum.

Measure 1	Performance Criterion 1
The written report for the required semester project in CEE 501 Artificial Intelligence for Civil Engineers will be assessed via a rubric.	At least 80% of the students will meet or exceed expectations using a faculty-developed rubric.
Measure 2	**Performance Criterion 2**
Graduating students will be surveyed (via the Graduate and Law Student Report Card, GLSRC) to determine their ability to communicate their results, specifically the question "How strong was your graduate program in providing training in each of the following areas [Public speaking and presentation skills]".	At least 80% of the surveyed alumni answer this question as 'quite a bit' or 'very much.'

MS AI Engineering Approved Electives (All Concentrations)

May 28, 2025

Notes: Any class listed as a possible core class not taken towards a core requirement can be taken as an elective. Likewise, any class listed as a possible concentration class not taken towards a concentration requirement can be taken as an elective.

Other Approved Electives:

AME 598 AI for Social Good
AME 598 Minds and Machines
AME 598 Human-AI Interaction
BMI/BME/CSE/CEN 507 Image Processing and Analysis
BMI/CEN 598 Topic: Embedded Machine Learning
BMI 502: Foundations of Biomedical Informatics Methods I
BMI 505: Foundations of Biomedical Informatics Methods II
HSD 598: AI & Society: Ethics & Impact
TPH 554 Artificial Intelligence and Machine Learning in Public Health
CEN 598 Advanced Hardware and Systems for Machine Learning
EEE 517 Sensors and Machine Learning
EEE 598 Advanced Hardware and Systems for Machine Learning
MAE 598 Bio-Inspired Robotics
CDE 598 Pattern-centered Analysis
FSE 501: Technology Entrepreneurship

MS in AI Engineering (Sustainable Engineering and Built Environment) Concentration Courses

CEE 502 Front-End Planning

CEE 506 Life Cycle Assessment for Civil Systems

CEE 507 Urban Infrastructure Anatomy and Sustainable Development

CEE 511 Pavement Analysis and Design

CEE 512 Pavement Performance and Management

CEE 513 Pavement Evaluation, Maintenance, and Rehabilitation

CEE 514 Bituminous Materials and Mixture

CEE 515 Properties of Concrete

CEE 516 Sustainable Energy and Material Use

CEE 520 VLSI Design for Reliability

CEE 521 Stress Analysis

CEE 523 Structural Damage

CEE 524 Advanced Steel Structures

CEE 525 Composites for Infrastructure

CEE 526 Finite Elements for Engineers

CEE 527 Advanced Concrete Structures

CEE 528 Advanced Mechanics of Materials

CEE 529 Cohesive Fracture Mechanics

CEE 530 Prestressed Concrete

CEE 532 Developing Software for Engineering Applications

CEE 533 Structural Optimization

CEE 536 Structural Dynamics for Civil Engineering

CEE 540 Groundwater Hydrology

CEE 541 Surface Water Hydrology

CEE 542 Socio-Hydrological Systems Analysis

CEE 543 Water Resources Systems

CEE 544 Water Resources Engineering

CEE 545 Hydrology

CEE 546 Advanced Watershed Hydrology

CEE 548 Advanced Environmental Analysis

CEE 549 Ecohydrology of Semiarid Landscapes

CEE 550 Soil Behavior

CEE 551 Advanced Geotechnical Testing

CEE 552 Soil Improvement

CEE 553 Advanced Soil Mechanics

CEE 554 Shear Strength and Slope Stability

CEE 555 Advanced Foundations

CEE 557 Geoenvironmental Engineering

CEE 558 Unsaturated Soil Mechanics

CEE 559 Geotechnical Earthquake Engineering

CEE 560 Soil and Groundwater Remediation

CEE 561 Physical-Chemical Treatment of Water

CEE 562 Biological Wastewater Treatment

CEE 563 Environmental Engineering Chemistry

CEE 564 Contaminant Fate and Transport

CEE 565 Advanced Environmental Biotechnology

CEE 566 Water Reuse and Reclamation

CEE 567 Environmental Health Microbiology

CEE 569 Air Quality Engineering

CEE 570 Sustainable Environmental Biotechnologies

CEE 573 Transportation Operations

CEE 574 Transportation Systems Planning

CEE 576 Highway Geometric Design

CEE 578 Activity-Travel Behavior Modeling

CEE 579 Transportation Data Collection and Analysis Methods

CEE 581 Advanced Earth Systems Engineering and Management

CEE 582 Industrial Ecology and Design for Sustainability

CEE 585 Civil Engineering Project Management

EVE 568 Environmental Risk Assessment

EVE 571 Advanced Water Quality Modeling and Treatment

CON 502 Front-End Planning

CON 507 Safety Management for Construction Managers

CON 508 Engineering and Construction Failures

CON 509 Advanced Concrete Materials

CON 510 Sustainable Bio-Based Construction

CON 511 Hazard Mitigation Planning

CON 520 Construction Industry Best Practices

CON 530 Facilities Operations and Maintenance

CON 531 Facility Management: Building Energy Management

CON 532 Facilities Project Management

CON 534 Retrofit Construction

CON 540 Construction Productivity

CON 541 Public Works Capital Construction

CON 545 Construction Project Management

CON 546 Construction Branding and Business Development

CON 548 Sustainable Construction

CON 551 Project Delivery Methods

CON 554 Trenchless Construction Methods

CON 557 Principles of Leadership for Project Managers

CON 565 Deductive Logic, Leadership and Industry Structure

CON 567 Advanced Procurement Systems

CON 570 Introduction to Advanced Technology Facilities

CON 571 Construction of Advanced Technology Facilities

CON 575 Information Technology in Construction

CON 576 Computer Vision for Builders

CON 589 Construction Company Financial Control