781: HUMANITARIAN ENGINEERING CERTIFICATE

In Workflow

1. APA Coordinator Programs (janice.nave-abele@oregonstate.edu)
2. Catalog Coordinator (none)
3. Provost Designee (alix.gitelman@oregonstate.edu)
4. MIME Head (andy.dong@oregonstate.edu)
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6. 14 Day Review (none)
7. Carley Ries (College of Engineering, Assistant Dean-Online Learning) (carley.ries@oregonstate.edu)
8. APA Undergraduate Assessment (heath.henry@oregonstate.edu)
9. 16 College Committee Approver (Brian.Bay@oregonstate.edu)
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12. Budgets and Fiscal Planning Committee Chair (frank.chaplen@oregonstate.edu)
13. Curriculum Council Co-Chairs (ping-hung.hsieh@bus.oregonstate.edu; iannie@oregonstate.edu)
14. Executive Committee (vickie.nunnemaker@oregonstate.edu)
15. Faculty Senate (vickie.nunnemaker@oregonstate.edu)
16. NWCCU (janice.nave-abele@oregonstate.edu; joanne.bunnage@oregonstate.edu)
17. Catalog Coordinator (none)

Approval Path

1. Fri, 22 Oct 2021 18:49:45 GMT
   Janice Nave-Abele (Curriculum Management, Curriculum Coordinator) (janice.nave-abele): Rollback to Initiator
2. Tue, 26 Oct 2021 19:22:16 GMT
   Janice Nave-Abele (Curriculum Management, Curriculum Coordinator) (janice.nave-abele): Approved for APA Coordinator Programs
3. Wed, 03 Nov 2021 09:31:20 GMT
   Belinda Sykes (Office of the Registrar, Catalog & Curriculum Coordinator) (belinda.sykes): Approved for Catalog Coordinator
4. Wed, 03 Nov 2021 14:58:24 GMT
   Alix Gitelman (Vice Provost for Academic Affairs) (alix.gitelman): Approved for Provost Designee
5. Wed, 03 Nov 2021 15:03:32 GMT
   Andy Dong (School of Mechanical, Industrial & Manufacturing Engineering, Head) (andy.dong): Approved for MIME Head
6. Fri, 12 Nov 2021 18:22:38 GMT
   powellma: Approved for Ecampus Programs
7. Sat, 27 Nov 2021 10:10:57 GMT
   0/1 votes cast.
   Yes: 0% No: 0%
   Approved for 14 Day Review
8. Sat, 27 Nov 2021 16:54:35 GMT
   Carley Ries (College of Engineering, Assistant Dean-Online Learning) (carley.ries): Approved for riesca
9. Wed, 01 Dec 2021 17:11:35 GMT
   Heath Henry (Academic Programs & Assessment, Assessment Coordinator) (heath.henry): Approved for APA Undergraduate Assessment
10. Wed, 06 Apr 2022 22:15:26 GMT
    Brian Bay (School of Mechanical, Industrial & Manufacturing Engineering, Associate Professor) (Brian.Bay): Approved for 16 College Committee Approver
11. Wed, 06 Apr 2022 22:17:40 GMT
    Janice Nave-Abele (Curriculum Management, Curriculum Coordinator) (janice.nave-abele): Approved for APA Coordinator Programs
12. Wed, 06 Apr 2022 23:06:15 GMT
    Carley Ries (College of Engineering, Assistant Dean-Online Learning) (carley.ries): Approved for riesca
13. Mon, 25 Apr 2022 21:00:56 GMT
    Frank Chaplen (Biological & Ecological Engineering, Associate Professor, and Budgets & Fiscal Planning Committee Chair) (frank.chaplen): Rollback to riesca for Budgets and Fiscal Planning Committee Chair
14. Mon, 25 Apr 2022 21:32:19 GMT
    Carley Ries (College of Engineering, Assistant Dean-Online Learning) (carley.ries): Approved for riesca
15. Mon, 23 May 2022 23:13:50 GMT

Frank Chaplen (Biological & Ecological Engineering, Associate Professor, and Budgets & Fiscal Planning Committee Chair) (frank.chaplen): Approved for Budgets and Fiscal Planning Committee Chair

16. Wed, 12 Oct 2022 18:14:09 GMT
Ping-Hung Hsieh (College of Business, Professor) (ping-hung.hsieh): Approved for Curriculum Council Co-Chairs

New Program Proposal

Date Submitted: Mon, 25 Oct 2021 18:19:47 GMT

Viewing: : Humanitarian Engineering Certificate

Last edit: Wed, 25 May 2022 06:40:19 GMT

Changes proposed by: riesca

Proposal

Effective Term

Fall 2022

Justification

This program is expected to enroll students from inside and outside of OSU, including professionals who are currently employed in industry and looking for professional development opportunities to further their innovation and community engagement credentials.

Primary Originator

Name
Carley Ries (College of Engineering, Assistant Dean-Online Learning)
Nordica MacCarty (School of Mechanical, Industrial & Manufacturing Engineering, Assistant Professor)
Andy Dong (School of Mechanical, Industrial & Manufacturing Engineering, Head)

Liaisons

Academic Unit
College of Business - Undergraduate (BA, HM)
College of Engineering - Undergraduate (ENGR, OP)
School of Mechanical, Industrial & Manufacturing Engineering (AAE, ESC, ESE, HEST, IE, MATS, ME, MFGE, MIME, ROB)
College of Public Health & Human Sciences (H)
College of Agricultural Sciences (AGRI, BRR, IAWS, SUS)
College of Science (GS, SCI)
Applied Economics (AEC)
School of Communication (COMM, NMC)
School of Public Policy (ECON, MPP, PS, PPOL, SOC)
School of Social & Behavioral Health Sciences (HDFS)
Agricultural Education & General Agriculture (AED, AG, LEAD)
Geography - Undergraduate (GEOG)
School of Language, Culture & Society (all languages, ANTH, CSSA, ES, FCSJ, LING, QS, WGSS, WLC)
Biological & Ecological Engineering (BEE)

Program Information

Program Level

Undergraduate

Program Type

Certificate

Program Name

Humanitarian Engineering Certificate

CIP Code

140101 - Engineering, General.

College
Engineering (16)

Academic Unit
School of Mechanical, Industrial & Manufacturing Engineering

Is this program jointly administered?
No

Date the Early Alert was submitted for this proposal
08/18/2021

What degree types are available for this undergraduate program?
Certificate

Is this certificate available as standalone?
Yes

Do you want this standalone certificate to be eligible for financial aid?
No

Campus Locations
Ecampus

Is this program currently or planned to be offered in hybrid format?
No

Will this program lead to professional licensure in any U.S. state or territory?
No

Executive Summary

Executive Summary
This program teaches students to co-design, evaluate, and implement appropriate engineering solutions with communities who experience the effects of resource-constrained environments. The program teaches interdisciplinary methods that are grounded in engineering, social science, and public health. Students will collaborate directly with communities as part of their education. The projects will typically focus on areas such as clean water, sanitation, energy, and agriculture. In doing so, students will obtain both new knowledge and skills in sustainable development in resource-constrained environments while contributing to community development. Students can further their career in existing companies or move into humanitarian engineering roles in non-profits, NGOs, and other community-development oriented organizations.

HECC - Higher Education Coordinating Commission

Program Description

HECC Description
Drawing on methodology and faculty from engineering, entrepreneurship, and social sciences, the humanitarian engineering certificate will teach students to design and evaluate solutions for resource-constrained environments considering their technical, social, environmental, and economic context. Program learning objectives center around use of diverse knowledge and frames of reference to think critically; systems thinking with a contextual understanding; analysis of relationships among science, technology, and society; and community engagement. This Ecampus program includes core courses in innovation, global health, systems modeling, and case studies paired with elective track options in sustainability, public health, or project management. It also includes an experiential requirement. Courses will be developed and taught by OSU's world class faculty who are subject-matter experts and open to students from diverse educational, demographic, and cultural backgrounds with low barriers to entry. Historically, humanitarian engineering programs have been particularly attractive to students who are traditionally underrepresented in STEM fields.

Brief overview of the proposed program, including its disciplinary foundations and connections; program objectives; programmatic focus; degree, certificate, minor, and concentrations offered
Undergraduate Learners will complete 27 total credits including (i) 12 cr of HEST courses; (ii) 13 cr of additional HEST courses or other listed elective courses in tracks of sustainability, public health, or project management; and (iii) a guided experiential learning component.

Manner in which the program will be delivered, including program location (if offered outside of the main campus), course scheduling, and the use of technology (for both on-campus and off-campus delivery)

This undergraduate certificate program will be offer via Ecampus as a fully online program. This will not require any on-campus attendance.

Adequacy and quality of faculty delivering the program

The faculty for this program consists of a diverse slate of instructors from across disciplines, backgrounds, and organizations. These include:Dr. Nordica MacCarty, Associate Professor of Mechanical Engineering, Richard & Gretchen Evans Scholar of Humanitarian Engineering, Dr. Carolyn Fonyo --Associate Director, Environmental Sciences Graduate Program, Dr. Shaozeng Zhang –Assistant Professor of Applied Anthropology, Science, Technology, & Society, Dr. Jeffrey Walters –Assistant Professor, Civil Engineering, University of Washington, Dr. Elain Fu–Associate Professor, Bioengineering, Dr. Bryan Tilt, Professor, Environmental Anthropology, Michelle Marie –Instructor, College of Business; Program Manager, InnovationX

Adequacy of faculty resources – full-time, part-time, adjunct

The instructors listed have extensive experience with the proposed courses. They have advanced degrees, research, scholarly, and/or professional experience in the subject matter, college level teaching experience, and a desire to see this program launched and be successful. The faculty listed above have confirmed their participation in development and offering of their respective courses for the program. Should they no longer have bandwidth to teach classes in the future, a suitable part-time instructor will be found and trained by the developer of the course.

Other staff

A director for the certificate program will be hired at 0.5 FTE for the first 3 years of the program to be responsible for assessment, recruiting, logistics, and other management. This person will also be qualified to serve as instructor for courses as needed.

Adequacy of facilities, library, and other resources

Because this is a fully online program this should not impact any classroom needs, but it would impact any library resources for online requests of materials, and other resources. Student resources may be impacted due to all online students are allowed to utilize all the same student resources as on-campus students. However, these services are already in place for other online students within the college of engineering and the university as a whole.

Relationship to Mission and Goals

Manner in which the proposed program supports the institution's mission, signature areas of focus, and strategic priorities

As a land grant institution committed to teaching, research and outreach and engagement, Oregon State University promotes economic, social, cultural and environmental progress for the people of Oregon, the nation and the world. This mission is achieved by producing graduates competitive in the global economy, supporting a continuous search for new knowledge and solutions and maintaining a rigorous focus on academic excellence..."
Within the engineering industry there is a need to create an educational pathway for engineers who are seeking additional education to further their careers. Access to this humanitarian engineering certificate in an online modality will allow working adults to further their education within a suitable schedule, or allow engineers of another field to enhance their skills with this knowledge. As a land grant institution, it is part of our mission to allow our graduates and community members at-large to achieve excellence in the form of additional education. In addition, this program will help to advance the COE strategic focus in advancing engineering education and research while removing barriers to allow a diverse, equitable and inclusive learning environment.

Manner in which the proposed program contributes to institutional and statewide goals for student access and diversity, quality learning, research, knowledge creation and innovation, and economic and cultural support of Oregon and its communities

Offering this program online expands the reach of the institution not only within Oregon, but globally. By launching an online humanitarian engineering certificate we are able to meet the needs of a very diverse audience. We are able to attract working adults, students with time constraints due to family and employment obligations, rural and out of state students seeking this area of knowledge and the like. The ability to offer this program online expands Oregon State's reach and increase accessibility and supports DEI efforts.

Manner in which the program meets regional or statewide needs and enhances the state's capacity to:

Improve educational attainment in the region and state:

Similar to the comments above this online program allows students who are unable to meet in person, travel to Corvallis or attend in a synchronous fashion are able to expand their educational knowledge by attending online.

Respond effectively to social, economic, and environmental challenges and opportunities:

This program will enable students to advance their knowledge and skills while remaining in their home communities, which will reduce disruption to their work and family life. In addition, upskilling its workforce will allow industry to operate in a more efficient manner.

Address civic and cultural demands of citizenship

A central experience within the certificate will be the requirement for students to work with a community in a resource-constrained context to co-design and co-develop solutions to challenging real-world problems. This collaboration could take place under the

auspices of for-profits and not-for-profits and in communities from Oregon and beyond. Supporting communities to build capacity builds civic engagement and reinforces the responsibilities of citizenship.

Accreditation

Accrediting body or professional society that has established standards in the area in which the program lies, if applicable

This program is not accreditable, but best practices from accreditation systems in the home disciplines (ABET, etc.) will be applied as possible.

Ability of the program to meet professional accreditation standards. If the program does not or cannot meet those standards, the proposal should identify the area(s) in which it is deficient and indicate steps needed to qualify the program for accreditation and date by which it would be expected to be fully accredited

There are no accreditation standards for a multidisciplinary certificate such as this.

If the proposed program is a graduate program in which the institution offers an undergraduate program, proposal should identify whether or not the undergraduate program is accredited and, if not, what would be required to qualify it for accreditation

n/a

If accreditation is a goal, the proposal should identify the steps being taken to achieve accreditation. If the program is not seeking accreditation, the proposal should indicate why it is not

The certificate is not an accreditable program.

Need

Anticipated fall term headcount, FTE enrollment, and expected degrees/certificates produced over each of the next five years

Year One:
Fall Term Headcount:
30
FTE Enrollment:
13
Expected Degrees/Certificates
15

Year Two:
Fall Term Headcount:
50
FTE Enrollment:
22
Expected Degrees/Certificates:
25

Year Three:
Fall Term Headcount:
70
FTE Enrollment:
31
Expected Degrees/Certificates
40

Year Four:
Fall Term Headcount:
90
FTE Enrollment:
39
Expected Degrees/Certificates
55

Year Five:

Fall Term Headcount:

110

FTE Enrollment:

48

Expected Degrees/Certificates

70

Characteristics of students to be served (resident/nonresident/international; traditional/ nontraditional; full-time/part-time, etc.)

This certificate is unique in that it will be serving a diverse audience. There may be some full time students seeking additional credentials for knowledge of humanitarian engineering, but the major source of students will be working engineers and engineering and other majors at various institutions. This is also attractive to companies within the utilities field and oil industry. Currently, OSU Ecampus partners with some companies which either reimburse employee's tuition or pay upfront. This program will be attractive to such audiences both by the employees and by the employers. Once the certificate is approved, we anticipate a large increase in enrollments within this program serving the state, region, and nation, which will result in an inflection point in growth compared to when the certificate program is being launched.

Evidence of market demand

Companies seeking to leverage continuing education benefits for demonstrable positive social impact (an employer could request that an employee cohort works on a 'local' problem as a capstone certificate project)
• Engineering or other professionals looking to boost marketability or redirect career path toward the humanitarian/development sector, humanitarian or disaster relief, and global health
• OSU Students
• Students from other universities – inside & outside U.S.
• Students interested in applying to graduate programs
• NGO staff
• Government employees (US or otherwise)

If the program's location is shared with another similar Oregon public university program, the proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts)

This program's location is not shared with another similar Oregon public university program.

Estimate the prospects for success of program graduates (employment or graduate school) and consideration of licensure, if appropriate. What are the expected career paths for students in this program?

Students who graduate from this program can be expected to specialize within their existing organization, gain the necessary expertise to apply to a graduate program focused on humanitarian engineering, and/or demonstrate the skills and knowledge necessaryfor placement within a global development organization. The first option would be useful for students whose employers are financing their graduate education and are looking for opportunities to move within the company. The second would be valuable for acceptance into competitive graduate programs at places like the University of California-Berkeley or Colorado School of Mines. The third recognizes that securing positions within global development organizations such as governmental, non-governmental, and multinational organizations that often require prior experience in the area of interest –a requirement which participation in this program can help to fulfill.

Outcomes and Quality Assessment

Expected learning outcomes of the program

-Co-design and facilitate the co-design of solutions for low-resource contexts
-Articulate how technology can be used to improve the human condition and achieve positive, sustainable outcomes, particularly in low-resource environments
-Demonstrate knowledge of principles for effective field and community engagement skills such as field project planning, data collection and analysis, effective community partnership development and reporting of outcomes to stakeholders
-Evaluate social context for technology-driven solutions
-Demonstrate effective communication with individuals from diverse backgrounds
-Demonstrate understanding of basic ethical principles in cross-cultural communication and global development
-Compare suitability of social enterprise models in diverse contexts
-Articulate role of multiple disciplines in developing technology solutions
Program assessment will track the following learning outcomes:
A. Uses knowledge, diverse cultural frames of reference, and alternate perspectives to think critically and solve problems
B. Apply systems thinking, interdisciplinary approaches, or an understanding of context (economic, environmental, sociocultural) to the analysis of a HEST problem
C. Analyze relationships among science, technology, and society in the development of solutions to local or global problems
D. Demonstrates engagement with local or global community through service-learning, international study/work, or other community engagement
Graduates will acquire skills in co-design, social sciences, systems thinking, interdisciplinary teamwork, sustainability, social entrepreneurship, and impact assessment.

Methods by which the learning outcomes will be assessed and used to improve curriculum and instruction

The humanitarian engineering program outcomes are formally assessed through the collection of course learning outcome data that is mapped to the program outcomes.

Nature and level of research and/or scholarly work expected of program faculty; indicators of success in those areas

Scholarly work in the area of humanitarian engineering and externally competitive research grants. Indicators include the amount of research funding and the number of publications.

Program Integration and Collaboration

Closely related programs in this or other Oregon colleges and universities

There are no closely related programs offered by Oregon institutions, though any engineering or other technical or non-technical programs can serve as feeders into and/or concurrent enrollment with this certificate program.

Ways in which the program complements other similar programs in other Oregon institutions and other related programs at this institution. Proposal should identify the potential for collaboration

There are no similar programs offered by Oregon institutions.

If applicable, proposal should state why this program may not be collaborating with existing similar programs

There are no similar programs.

Potential impacts on other programs

There are no similar programs.

Program Learning Outcomes (click the green plus button to add learning outcome)

Learning Outcome

A. Uses knowledge, diverse cultural frames of reference, and alternate perspectives to think critically and solve problems

Expected reporting year (all outcomes must be assessed within a 5 year period)

2

List courses where this outcome will be taught

ANTH/HEST 201, HEST 412, HEST 320, HEST 462

Assessment measures used to assess the outcome. Label each measure as either direct (D) or indirect (I)

Project and other student work (D), exit surveys (I)

Benchmarks of success used to determine if the outcome has been satisfactorily met by students

Students can describe how cultural context influences design
Students can apply tools from 2 or more disciplines to design and evaluate a solution

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Learning Outcome

B. Apply systems thinking, interdisciplinary approaches, or an understanding of context (economic, environmental, sociocultural) to the analysis of a HEST problem

Expected reporting year (all outcomes must be assessed within a 5 year period)

3

List courses where this outcome will be taught

HEST 462, HEST 412

Assessment measures used to assess the outcome. Label each measure as either direct (D) or indirect (I)

Project and coursework (D), Exit surveys (I)

Benchmarks of success used to determine if the outcome has been satisfactorily met by students

Students can describe the interrelationship between stakeholders, objectives, and disciplines for a given problem

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Learning Outcome

Analyze relationships among science, technology, and society in the development of solutions to local or global problems

Expected reporting year (all outcomes must be assessed within a 5 year period)
4

List courses where this outcome will be taught
HEST 412, HEST 320

Assessment measures used to assess the outcome. Label each measure as either direct (D) or indirect (I)
Student projects and assignments (D), exit surveys (I)

Benchmarks of success used to determine if the outcome has been satisfactorily met by students
Students can describe relationships between science, technology, and society with regard to a given problem

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Learning Outcome
Demonstrates engagement with local or global community through service-learning, international study/work, or other community engagement

Expected reporting year (all outcomes must be assessed within a 5 year period)
5

List courses where this outcome will be taught
HEST 201, experiential requirement

Assessment measures used to assess the outcome. Label each measure as either direct (D) or indirect (I)
Student projects (D), exit surveys (I)

Benchmarks of success used to determine if the outcome has been satisfactorily met by students
Students have interacted with a given community in a meaningful way

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Information for the Catalog

How many total credits are required for completion of this program?
27-29

Catalog Description (this will display on the Overview tab in the Catalog)
The Humanitarian Engineering Undergraduate Certificate provides multidisciplinary academic coursework for students interested in the application of engineering, science, and technology-based solutions to global development challenges such as access to basic resources (e.g., clean water, clean energy), improved quality of life, and increased ability to earn a livelihood particularly in rural, resource-limited or low-to-middle income settings. A core of coursework in humanitarian engineering, science and technology (HEST) is required. Both in the core coursework and in the electives, there is an emphasis on context including social, cultural, economic, resource, political, and environmental.

Requirements (this will display on the Requirements tab in the Catalog and be coded into MyDegrees)
Requirements include the completion of:

- 12 credits of required courses
- 13 credits of elective courses in any of the tracks listed
- A minimum of 2 credits of guided experiential learning

It is recommended that students have satisfactorily completed MTH 111 or other college-level algebra course.

Code	Title	Credits
Required Core		
ANTH 201/HEST 201	INNOVATION FOR SOCIAL IMPACT	3
HEST 320	*ENGINEERING FOR GLOBAL HEALTH SOLUTIONS	3
HEST 412	MULTIDISCIPLINARY CASE STUDIES IN HUMANITARIAN ENGINEERING, SCIENCE AND TECHNOLOGY	3
HEST 462	SYSTEM DYNAMICS MODELING FOR HUMANITARIAN ENGINEERING	3
Electives		
Select a minimum of 13 credits in any of the following tracks:		13
General Track		
ANTH 482	*ANTHROPOLOGY OF INTERNATIONAL DEVELOPMENT	
BA 362	SOCIAL ENTREPRENEURSHIP AND SOCIAL INITIATIVES	
Sustainability Track		
GEOG 300	*SUSTAINABILITY FOR THE COMMON GOOD	
GEOG 331	*POPULATION, CONSUMPTION, AND ENVIRONMENT	

PPOL 447	INTEGRATED POLICY: FOOD, ENERGY, WATER, CLIMATE	
Public Health Track		
ANTH 374	*ANTHROPOLOGY AND GLOBAL HEALTH	
H 333	*GLOBAL PUBLIC HEALTH	
HDFS 447	*FAMILIES AND POVERTY	
Project Management Track		
AEC 250	*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY	
BA 354	^MANAGING ETHICS AND CORPORATE SOCIAL RESPONSIBILITY	
BEE 411	GLOBAL ENVIRONMENTAL CHANGE: USING DATA TO INFORM DECISIONS	
LEAD 342	*TEAM AND ORGANIZATIONAL LEADERSHIP	
NMC 280	GLOBAL MEDIA	
NMC 311	INTRODUCTION TO NONPROFIT MANAGEMENT	
Guided Experiential Learning		
Select a minimum of 2 credits from the following courses:		2-4
HEST 241 & HEST 242	HOUSEHOLD ENERGY IN GUATEMALA: BACKGROUND and HOUSEHOLD ENERGY IN GUATEMALA: APPLICATIONS	
HEST 310	*INTRO TO COMMUNITY ENGAGEMENT AND COMMUNITY-BASED DESIGN	
HEST 444	CO-DESIGN FOR DEVELOPMENT: A REMOTE COLLABORATIVE EXPERIENCE	
HEST 415	UAV ENGINEERING	
or ENGR 416	^ENGINEERING CAPSTONE DESIGN II	
Total Credits		**27-29**

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Baccalaureate Core Course (BCC)

^
Writing Intensive Course (WIC)

Letters of Support

External Letters of Support

Puralytics Support Letter for OSU Humanitarian Engineering.pdf
Humanitarian Engineering LOC Aprovecho.pdf

Accessibility Form

Accessibility Guidelines

I have reviewed the listed documents

Faculty Guidelines

I have reviewed the listed documents

Information Technology Guidelines

I have reviewed the listed documents

By submitting this form, we affirm that we have reviewed the listed documents and will apply a good faith effort to ensure accessibility in curricular design, delivery, and supporting information.

Library Evaluation

Will this program require the creation of new courses?

No

Faculty CVs

I will provide individual CVs if requested by Faculty Senate Curriculum Council

Acknowledge

Enter faculty below: (click the green plus button to add faculty members)

Faculty Name	Academic Home	Highest Degree	Position Title	Area of Expertise/ Interest	Role Within Program
Nordica MacCarty	MIME	PhD	Associate Professor	Humanitarian Engineering	Director/Lead

Carolyn Fonyo	Environmental Sciences	PhD	Associate Director	Natural Sciences, Technology, and Society	Faculty
Shaozeng Zhang	Applied Anthropology	PhD	Assistant Professor	Science, Technology, and Society	Faculty
Jeffrey Walters	Civil Engineering	PhD	Assistant Professor	Systems Engineering	Faculty
Elain Fu	CBEE	PhD	Associate Professor	Global Health	Faculty
Bryan Tilt	Environment Anthropology	PhD	Professor	Environmental Anthropology	Faculty
Michelle Marie	College of Business	PhD	Instructor	Design and Innovation	Faculty

Budget Information

Budget Worksheet and Narrative

Copy of HEST budget Oct 2021 CR Sig.xlsx
HEST Budget Narrative Oct 2021.docx
HEST additional enrollment information.docx

Supporting Documentation

BG HEST report Oct 2021 skills_postings.pdf
State-of-EGD-North-America_graphic.pdf

Reviewer Comments

Janice Nave-Abele (Curriculum Management, Curriculum Coordinator) (janice.nave-abele) (Fri, 22 Oct 2021 18:49:46 GMT): Rollback: Removed graduate level courses from the program as this is an undergraduate certificate. Removed inactive course BEE 411 as CIM, Banner, and the catalog cannot recognize it. Please review updated proposal and make any edits as needed. When ready, you may resubmit the proposal. Thank you.

Belinda Sykes (Office of the Registrar, Catalog Curriculum Coordinator) (belinda.sykes) (Wed, 03 Nov 2021 09:26:11 GMT): I have fixed the issue that was causing BEE 411 not to display correctly. The course has been re-added to the electives. Minor formatting changes made to the requirements to align with catalog standards. More liaisons added given the interdisciplinary nature of this certificate. The Space Evaluation is being skipped in workflow because this program is 100% online.

Andy Dong (School of Mechanical, Industrial Manufacturing Engineering, Head) (andy.dong) (Wed, 03 Nov 2021 15:03:30 GMT): I have been working on this proposal with the promoters. I approve this certificate.

Tjodie Richardson (Applied Economics, Head Advisor) (tjrichardson) (Fri, 12 Nov 2021 18:29:00 GMT): No objections.

Carley Ries (College of Engineering, Assistant Dean-Online Learning) (carley.ries) (Fri, 12 Nov 2021 18:43:43 GMT): Supported!

Jennifer Alix-Garcia (Applied Economics, Department Head) (jennifer.alix-garcia) (Mon, 15 Nov 2021 16:24:16 GMT): I think that AEC 243 could be an important course to include for this certificate. It would give students an understanding of some of the foundations of economic thinking about poverty alleviation, including market failures that cause major problems in the adoption of engineering solutions. An alternative would be ECON 555 which covers similar issues at a more advanced level.

Catherine Bolzendahl (School of Public Policy, Director) (catherine.bolzendahl) (Tue, 16 Nov 2021 01:08:14 GMT): The only class listed from the Sociology/Economics/Political Science/Public Policy arena is from a (highly valued) part-time instructor in our school. In talking this over with my leadership, we are concerned that other classes or areas aren't included. We did for example, share Jen's concerns over including some Economic perspectives. There are a number of courses that would be relevant for the sustainability track and/or relevant to thinking about social/energy nexus: PPOL 441/SOC 482 Energy, Climate and Society PS 474/PPOL 474 International energy politics and policy PS 473 US energy policy PS 478 Renewable energy policy Including these would give students more options and allow them to achieve their certificate more easily

Susan Bernardin (School of Language, Culture Society, Director) (susan.bernardin) (Wed, 24 Nov 2021 00:44:33 GMT): SLCS supports.

Nordica MacCarty (School of Mechanical, Industrial Manufacturing Engineering, Assistant Professor) (nordica.maccarty) (Mon, 28 Mar 2022 17:45:05 GMT): Thanks to Jennifer and Catherine for these comments. Unfortunately all of the courses that we include in the certificate must be available on Ecampus. Only two that were suggested are available on Ecampus (PS 473 US energy policy PS 478 Renewable energy policy), however these are a bit too specialized in energy policy rather than the broader thematic areas of the electives. Therefore we have not made any changes to the proposal.

Frank Chaplen (Biological Ecological Engineering, Associate Professor, and Budgets Fiscal Planning Committee Chair) (frank.chaplen) (Mon, 25 Apr 2022 21:00:56 GMT): Rollback: Additional support for enrollment numbers would be helpful. Thanks.

Key: 781