

Course 9: Integrating GDE into research

Academic coordinator: Mr. Andrew Lamb

Andrew was the first staff Chief Executive of Engineers Without Borders UK until summer 2013 where he made significant progress in the organisation's scope and effectiveness, including a much stronger focus on reforming engineering education. Andrew is a director of the Appropedia Foundation which runs the Appropedia website – a sustainability wiki. He is a trustee of disaster relief organisation RedR UK and of the Humanitarian Centre in Cambridge. He was the technical editor of the world's first UNESCO Engineering Report and was a Visiting Lecturer for EngineeringUK. Andrew is now working as a consultant for the World Federation of Engineering Organisations and the World Bank. He is an advisor to Field Ready (an organisation that is looking to use innovative technologies to transform relief supply chains), to the Institution of Civil Engineers development policy panel and to Engineers Without Borders International.

Syllabus

Overview

This final course is aimed at engineering and technical academics interested in adapting or developing research programs aligned with global dimension topics. Sessions will provide participants with an overview of engineering education research for development, a selection of different research methods for studying global dimension topics in education, and a description of processes or methods which could be used to bring an existing research program into alignment with global dimension principles.

This course will not focus primarily on research into education, and participants should find useful information for their existing, technically-focused research programs. In addition, the final sessions provide practical information, including funding opportunities and collaboration principles, which can apply to any research topic.

Learning outcomes:

By the end of the course the participant will be able to:

1. Understand how the implementation of GD-related programming can be informed through action and applied research.
2. Understand how to start adapting research programs to include more GD-related topics.
3. Understand the application of appropriate research methodology to conduct a research study in topics related to the global dimension or the global dimension in engineering education.
4. Understand where to find sources of funding for GD-related topics.



5. Understand the importance of collaboration to research stakeholders, understand open-source as a concept and practical tool.

The course at a glance:

Session	Week	Topic covered
1	1	Why? How to align your research with priority areas in Global Dimension
2	1	Research methods for Global Dimension of Engineering
3	2	Engineering education research, with a focus on engineering for development
4	2	Funding routes
5	3	Collaboration
0	3	Final Exam

Estimated time commitment

This course will run for 3 weeks beginning on **March 23rd, 2015**. In total, the course should take approximately 20-25 hours to complete, including readings, assignments and activities. Each session is equivalent to two hours in the classroom plus 3 hours of personal study, broken down as follows.

N.	Activity	Estimated time commitment
1	Reading & Coursework	100 minutes
2	Explore Further Materials	60 minutes
3	Review Quizzes	20 minutes
4	Academic Activity	90 minutes
5	Participation in Discussion Forums	(Minimum of) 30 minutes



Course structure:

New lecture materials will be posted every Monday. Once posted, materials will be up for the duration of the course.

Each week, lecture material for two sessions will be posted. The lecture materials for each session will be comprised of one assigned reading, an Academic Activity, and a set of web resources, carefully selected to help participants deepen their understanding of the topics covered.

Session Review Quizzes will be posted online twice per week. They will be graded and passing the Review Quizzes is a requirement for passing the course. (For more information on course grading, please read the section entitled "Passing the Course").

The Academic Activity, included with each session, is designed to test your ability to put into practice what you have learnt during the sessions. **Only 2 of the 5 available Academic Activities will be graded. The course coordinator will announce the Academic Activities to be graded at the beginning of the course.** You will only be required to complete the 2 graded activities.

The Final Exam will take place in the last week of the course. It will be comprised of 30 questions covering all of the course material. Passing the Final Exam is a requirement of the course.

In addition to the graded activities, a discussion forum will run throughout the duration of the course. Each week, the course coordinator will post a discussion question related to the session topics. Participation in the discussion forum is not required to pass the course, and participants' discussion contributions will not be graded. However, students are **strongly encouraged** to participate in the discussion forum as the discussion and debate which will take place in the forums will greatly enhance student learning and topic engagement.

Quizzes/Assignments/Final exam:

Review Quizzes

There are 5 quizzes in total, each comprised of 10 questions and worth 10 possible points. 2 review quizzes will be posted each week, evaluating participants understanding of the weekly session topics. All quizzes count towards the final grade and can be attempted twice. The quiz format is a mixture of True/False and Multiple Choice questions.

Academic activities

Each session includes an academic activity for practicing key concepts learnt. Only 2 academic activities will be evaluated for grading. The course coordinator will indicate at

the beginning of the course which activity will be evaluated, as well as provide detailed instructions and evaluation criteria. The completed activity must be uploaded on the platform upon completion. Activities can be attempted only once; they worth a maximum of 10 points each, for a total of 20 points.

Final exam

The final exam consists of a mix of 30 True/False and Multiple Choice questions covering all the course topics. It worth a maximum of 30 points. It can be attempted twice.

Passing the Course

To pass the course you should:

- Have submitted all review quizzes before the due date
- Have submitted the academic activities before the due date
- Have submitted the final exam before the due date
- Obtain a grade of at least 70 points in total

Grading Policy

Students who successfully complete the course will be offered a Statement of Accomplishment according to the following grading policy.

Grading Policy	
Statement of accomplishment	at least 70 points
Statement of accomplishment with distinction	at least 90 points

Course 8: Integrating GDE into teaching: theory and practice – COURSE TIMELINE

Course Start: September 29th

Sessions	Learning Outcomes By the end of the course you will be able to:		Due GA (Graded Activity)
Orientation	<ul style="list-style-type: none"> • Navigate the course • Know the other participants 	WEEK 0	<ul style="list-style-type: none"> • Read carefully the Syllabus • Complete the orientation questionnaire • Introduce yourself to others participants (Forum)
1. Why? How to align your research with priority areas in GD	<ul style="list-style-type: none"> • Understand that multiple opportunities exist for researchers in many different engineering disciplines to align their research priorities with Global Dimension priorities. • Understand how to develop practical ideas and to develop action plans to start aligning your own research priorities with Global Dimension priorities. 	WEEK 1	<ul style="list-style-type: none"> • Reading & Coursework 1 (Release 23.03) • Quiz 1 (Release 24.03 – Due 10.04) GA • Discussion Forum (Release 24.03) • Reading & Coursework 2 (Release 23.03) • Quiz 2 (Release 24.03 – Due 10.04) GA • Academic Activity 1 (Release 25.03 – Due 10.04) GA
2. Research Methods for GDEE	<ul style="list-style-type: none"> • Acknowledge and discuss the need of a more collaborative production of knowledge to deal with sustainability challenges. • Distinguish Participatory Action Research and other approaches as alternatives to cope with complex problems and environmental risks. • Describe the key issues that characterise each of the approaches presented. 		



<p>3. Engineering Education research, with a focus on Engineering for Development</p>	<ul style="list-style-type: none"> • Understand the connections between research and teaching • Understanding the role of education research in improving teaching and learning of the Global Dimension in Engineering Education. 		
<p>4. Funding routes</p>	<ul style="list-style-type: none"> • Understand where to find sources of funding for GDEE-related topics. • Understand the process of writing a proposal. • Know the evaluation mechanisms you will require after applying for funds. • Know what skills and knowledge are needed to write funding applications. 	WEEK 2	<ul style="list-style-type: none"> • Reading & Coursework 3 (Release 30.03) • Quiz 3 (Release 31.03 – Due 13.04) GA • Discussion Forum (Release 31.03) • Reading & Coursework 4 (Release 30.03) • Quiz 4 (Release 31.03 – Due 13.04) GA • Academic Activity 2 (Release 31.03 – Due 13.04) GA
<p>5. Collaboration</p>	<ul style="list-style-type: none"> • Acknowledge the benefits of collaboration. • Understand the relevance of collaboration to all stakeholders during the entire research process. • Understand the use of collaboration agreements. • Understand the open science, technology and innovation as a concept 	WEEK 3	<ul style="list-style-type: none"> • Reading & Coursework 5 (Release 30.03) • Quiz 5 (Release 31.03 – Due 13.04) GA
<p>Final exam</p>			<ul style="list-style-type: none"> • Exam (Release 07.03 – Due 15.04) GA • Post-course evaluation survey (Release 07.03)