

ECE 5570 (Approved): Antiracist Technology

Course Description

Discrimination against racial and ethnic minorities is prevalent, systemic, and global. Racism and racial justice principles are outlined. Case studies on racist technologies, those that promote or sustain racism, are studied. Engineering design methodology is used to modify or create several new technologies that help the antiracist oppose racism.

Transcript Abbreviation: Antiracist Tech

Grading Plan: Letter Grade

Course Deliveries: Classroom, 100% at a distance

Course Levels: Undergrad, Graduate

Student Ranks: Junior, Senior, Masters, Doctoral, Professional

Course Offerings: Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 4.0

Repeatable: No

Time Distribution: 4.0 hr Lec

Expected out-of-class hours per week: 8.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Sometimes

Campus Locations: Columbus

Prerequisites and Co-requisites: ENGR 1182 or 1282 or graduate engineering standing or permission of instructor.

Exclusions: None

Cross-Listings: None

Course Rationale: See attachment. Exposure of students to topic of great importance, and show in a tangible way that engineers have a real role to play in antiracism.

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: Yes

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0101

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
CpE	Computer Engineering
EE	Electrical Engineering

General Information

Please see attachment.

Course Goals

Familiarity with key forms of racism, personal, community, and global; from micro-aggressions to systemic/institutional racism.
Familiarity with current dominant antiracist/racist ideas and ideas from global challenges (health, education, economic, policy, political, environment).
Awareness of key ideas from systems of social justice (e.g., dignity, inequality, rights, structural/systemic), especially the relations between engineering and social justice.
Gain knowledge of current major strategies for antiracism (e.g., protest, boycott, education, policy change).
Understand engineering methodologies for development of antiracist technology, helping in a respectful way, the importance of community, needs and outcome assessment, and participatory technology development (co-creation).
Understand past technology failures and successes: Algorithmic bias, racial profiling in neighborhood web site functionality.
Case studies in innovation for antiracist technology for algorithmic bias, for reducing the incidence of racial profiling, community building/ action, fair policing/justice, structural injustices, transparency, illicit markets, and mental health.
Gain an ability to work on a {em diverse and inclusive} team to develop an approach to antiracist technology.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Introduction	4.0							
Racism	4.0							
Systemic Racism	4.0							
Racial Justice	4.0							
Antiracist Approaches, Part 1	4.0							
Antiracist Approaches, Part 2	4.0							
Engineering Methodology for Antiracist Technology	4.0							
Social Media and Racism/Antiracism	4.0							
Internet Search Engines, Web Sites, and Racism	4.0							
Algorithmic Bias	4.0							
Policing Using Big Data and Algorithms	4.0							
Antiracist Technologies for Systemic Racism, Part 1: Mental Health Disparities	4.0							
Antiracist Technologies for Systemic Racism, Part 2: Poverty and Food Access	4.0							
Antiracist Technologies for Systemic Racism, Part 3: Education, Infrastructure, and Environment	4.0							

Representative Assignments

Homework
Project Design Review #1
Midterm Project
Project Design Review #2
Final Project

Grades

Aspect	Percent
Homework	30%

Aspect	Percent
Project Design Review #1	15%
Midterm Project	20%
Project Design Review #2	15%
Final Project	20%

Representative Textbooks and Other Course Materials

Title	Author
<i>None available</i>	

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
***	c	An ability to design a system, component, or process to meet desired needs.
***	d	An ability to function on multi-disciplinary teams.
***	e	An ability to identify, formulate, and solve engineering problems.
***	f	An understanding of professional and ethical responsibility.
**	g	An ability to communicate effectively.
***	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
**	i	A recognition of the need for, and an ability to engage in life-long learning.
***	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

CpE ABET-EAC Criterion 9 Program Criteria Outcomes

Course Contribution		Program Outcome
***	1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
***	2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
**	3	an ability to communicate effectively with a range of audiences
***	4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
***	5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
	6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
*	7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

EE ABET-EAC Criterion 9 Program Criteria Outcomes

Course Contribution		Program Outcome
***	1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
***	2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
**	3	an ability to communicate effectively with a range of audiences
***	4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
**	5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
	6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
*	7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Additional Notes or Comments

(1) There is no need for concurrence from any other unit at OSU. The course is unique relative to other OSU courses.

(2) Please consider the course for use only as a technical elective first, then later it can be considered as a GE when there is more time. This was a recommendation from Dean Tomasko.

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