

# Title: EOP in Black: Implementing the EOP framework in a Survey Course to Promote African Americans in Engineering

Francis Mensah, PhD, Virginia Union University; Roneisha Worthy, PhD, Kennesaw State University; Terrell Strayhorn, PhD, Virginia Union University.

## Introduction:

Virginia Union University has recently created two dual degree programs such as physics and engineering and chemistry and engineering. To promote these courses and encourage students to be interested in engineering education, a course called NSC 290 African Americans Perspectives in Science is created. It is required for science majors. One of the goals of this course is to use it as a recruitment tool in the engineering dual degree programs. In this project, EOP framework is introduced in NSC 290 curriculum to see how it will impact students' motivation and engagement and therefore enhance their recruitment.

**Research question:** How does participation in a course designed to enhance engagement in science and engineering influence students' perceptions of its necessity, engagement level, interest in STEM disciplines, motivation to promote engineering education, and likelihood of pursuing a career in an engineering field?

## Procedure/Methods:

The following EOP frameworks are used: Systems Thinking, Environmental Literacy, Responsible Business and Economy, Social Responsibility, Materials Selection and Design.

Each lecture was structured as follows:

20 min lecture and video on famous African Americans in Science

15–20-minute watching videos on the EOP framework

15-20 minutes classroom discussion on the videos.

## Progress and Plan for Scaling Up:

A survey was conducted in the class and here are the results:

**How engaging have you found the content and structure of this course?**

Strongly agree 83.33%-Agree 100%-Neutral 75%.

**To what degree has this course increased your interest in science and engineering disciplines?** Moderate Increase 66.7-Significant Increase 83.3%-Exceptional Increase 66.7%.

**Has this course motivated you to encourage others, such as friends or family members, to explore opportunities in engineering education? If so, how?**

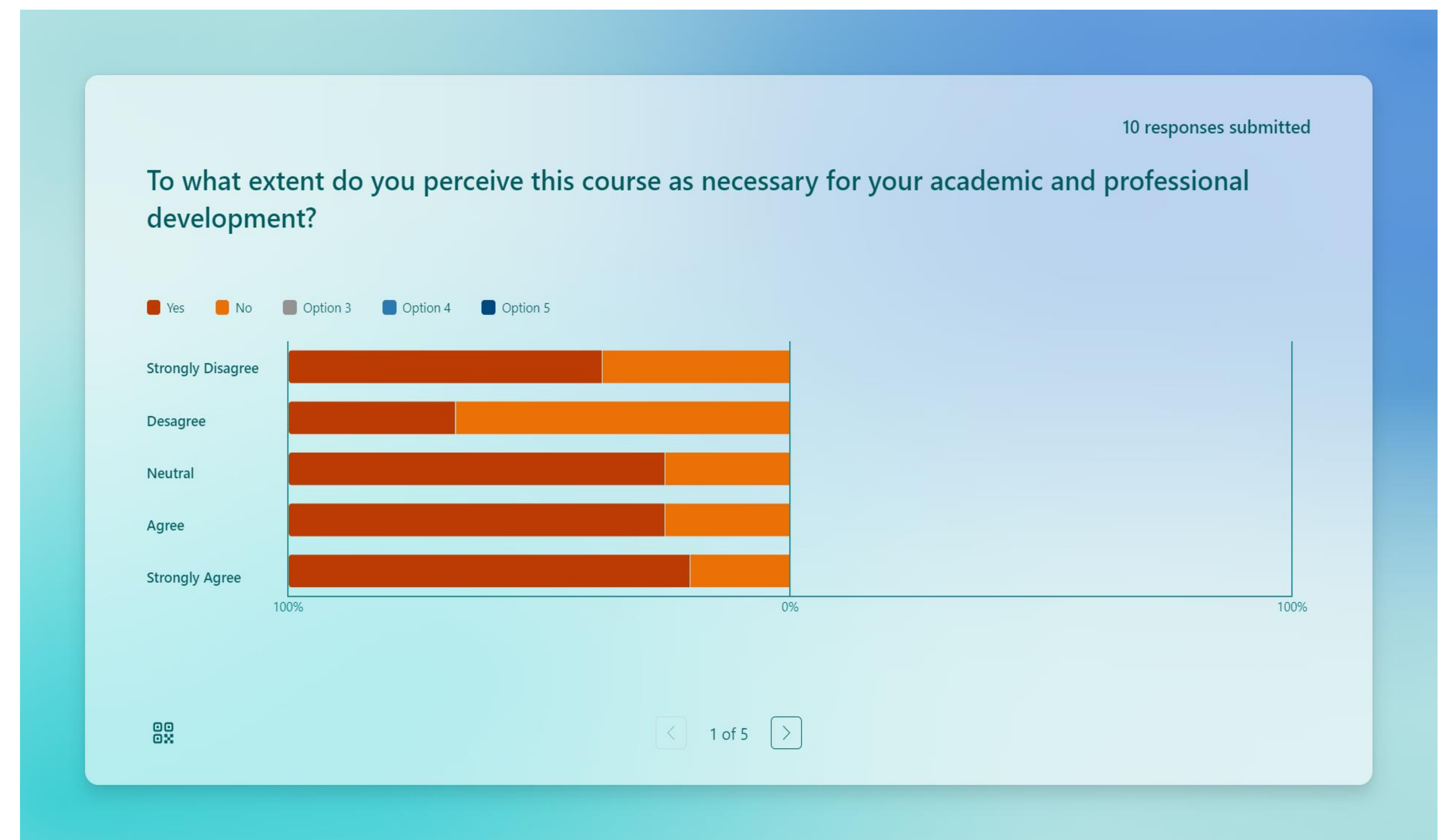
Neutral 60%-Agree 80%-Strongly Agree 80%.

## Progress and Plan for Scaling Up:

**How likely are you to pursue a specialization or career in an engineering field because of your participation in this course?**

Very likely 60%-Somewhat likely 20%-Neither likely nor unlikely 20%.

## Evaluation and Impact



Example of the graph of one survey's response

## Conclusion

The use of the EOP framework has made the course motivational, attractive to students and more engaging. A high percentage of students has been positively impacted and is willing to promote engineering education. This experience constitutes the basis for future instructors of the course.

**References:** The Engineering for One Planet Framework: Essential Sustainability-focused Learning Outcomes for Engineering Education (2022). Retrieved [December 19, 2023] from EOP\_Framework\_2023.pdf (engineeringforoneplanet.org).

## Acknowledgments:

Dr. Roneisha Worthy, Dr. Terrell Strayhorn, NSC 290 class at VUU.