



Additive manufacturing (AM) for environmental, social, and economic sustainability



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Introduction

Additive manufacturing (AM), also known as 3D printing, produces a complex shaped product directly from 3D model data, layer by layer, with high precision and much less material wastage.

AM can significantly enhance the environmental (through reducing the resources consumption, pollution control, waste management, etc.), social (through the product quality, healthcare improvement, social benefits, etc.), and economic (through the supply chain management, and reducing production cost) sustainability.



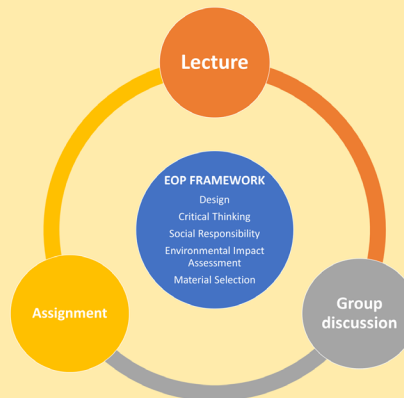
Sustainable Additive Manufacturing Ecosystem

Project Overview

- Implementing the EOP framework to integrate principles of sustainability, justice, equity, diversity, and inclusion into three key courses in the Mechanical and Civil Engineering Department.
- Introduce and enhance the understanding of sustainability concepts for students in engineering and education programs.
- Harness the unique capabilities of AM to infuse sustainability concepts into higher education curricula.

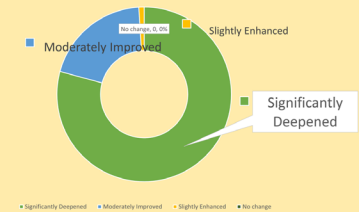
Method and Progress

Courses with EOP Curricular Changes	Level	Number of Students
ENGR-19000-Elementary Engineering Design (for Engineering Students)	First Year	110
ENGR-19000-Elementary Engineering Design (for Education Students)	Third year	17
MSE-34400-Materials in Engineering	Third year	11

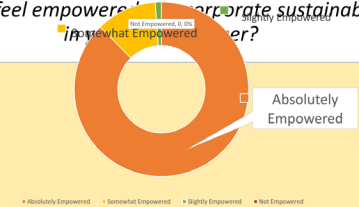


Evaluation/Impact

Has your understanding of sustainability changed or deepened?



Do you feel empowered to address corporate sustainability issues?



References

[1] Mohd Javid et al., Advanced Industrial and engineering polymer research journal, Vol 4, Issue 4, pp. 312-322

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