



Abstract

**Development of a minor in Sustainable Manufacturing for Manufacturing Systems Engineering program**

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A growing wave of companies in all sectors such as technology, financial services, energy, retail, and manufacturing are embracing environmentally safe practices and saving hundreds of millions of dollars. Alongside the green trend of the market, Manufacturing Systems Engineering department at California State University Northridge has decided to design a minor in Green Manufacturing Engineering to educate students about the fundamental concepts of environmentally conscious manufacturing. It is designed to supplement education in other disciplines and to provide knowledge of the considerations necessary to make decisions in a world where resources are limited. The program will comprise three newly designed core courses and three electives to be selected from existing courses within departments throughout the university. The design of these three courses is based on the fact that it is crucial to reconsider the environmental impact of the manufacturing processes.

These courses will discuss briefly various domains of sustainability which include environmental, social and economic (Triple Bottom Line) – all of which are required to co-exist for sustainability to be truly effective and feasibly implemented. Specific topics under the above mentioned domains would include green energy, energy efficiency, and socially-conscious system design. The main focus of the courses will be on practical considerations for implementing sustainable practice and design in the manufacturing process field, as well as a summary of the three domains of sustainability in order to facilitate decision making for sustainable projects.

Sustainable manufacturing focuses on different issues such as Material and Solid Waste Management, Energy Management, Climate Change and Air emission Management, Water waste in Industries as well as Environmental Business Management.

These courses will address the three most popular topics in sustainable manufacturing:

- a) Material and Solid Waste Management
- b) Energy and Water Management in Industries
- c) Environmental Business Management