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[Filename: CMPOSTBN.DOC]

# Composting Bin


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**Type:** Design problem
**Student time:** Four weeks
**Location:** Laboratory and take home

## Summary


This project is developed for first year engineering students in the first week or two of classes as an introduction to the field of engineering and cooperative learning. Students will work in a group of three to design and construct a composting bin. The aesthetics and strength of the composting bin may be considered as evaluation criteria.

This project will enable the students to understand the design of a structure to help solve an organic waste disposal problem. The project will also help in demonstrating the concepts of object representation techniques such as orthographic and isometric projections.


## ABET Descriptors

Engr Sci Content: First Year Engineering
Type: Component and system
Elements: Analysis, construction, testing and evaluation
Features: Design methodology, creativity, open-ended, environmental responsibility
Constraints: Limited materials, time, strength and aesthetics
Effort: Team

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**Problem Statement:**

This project is designed to familiarize you with recycling techniques. Students will work in groups of three.

Study the problem of organic waste disposal in a nearby city. Write a report on organic waste disposal. Design a composting bin having 125 cu. ft. volume. Build a 1:5 scale prototype of your model.

**Resources:**

Construction materials available at a local lumber yard, hardware store or garage sale. Maximum allowable cost will be $15.00.

**Evaluation Criteria:**

Design procedure
Pictorial representation
Ease of fabrication and assembly
Ease of access
Wildlife proof design
Cost
Aesthetics
Project Report
    Style
    English usage.

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**Engineering notes:**

The primary objective of this project is to familiarize the students with the importance of recycling. It will make the students appreciate the role of social issues in design. Students will get hands-on training in measurements, dimensioning, and 2D and 3D representation of objects.

**Expected outcome:**

The professor should observe the solution procedure followed by the students. The students can be asked how the limitations in their proposed designs can be overcome.

**Discussion/follow-on activities:**

Measure the temperature variation in the composting bin as a function of time during the day at various levels of the organic waste. Study the impact of seasons on the temperature variation.

Study the bacterial growth as a function of temperature, humidty, pH, etc.

Study the solid waste disposal problem in a nearby city. (Evaluation in English and Engineering courses).

Measure the quantity and rate of methane generated.

This project can be assigned in the form of a memorandum within a manufacturing company.