

Information Resources

Engineering Design

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Liaison Librarian for Engineering



Introduction

- This presentation will build on what you have learnt in ENGL101 and UNIV101
- Refer to the online tutorials, handouts and research guides in Blackboard
- Quiz in Blackboard Learn
- Go through the online modules and this presentation carefully

Bb Tutorials

- IEEE style
- Controlled vocabulary
- Electronic reference books
- Google advanced search
- Use authoritative sources

Bb Exercises

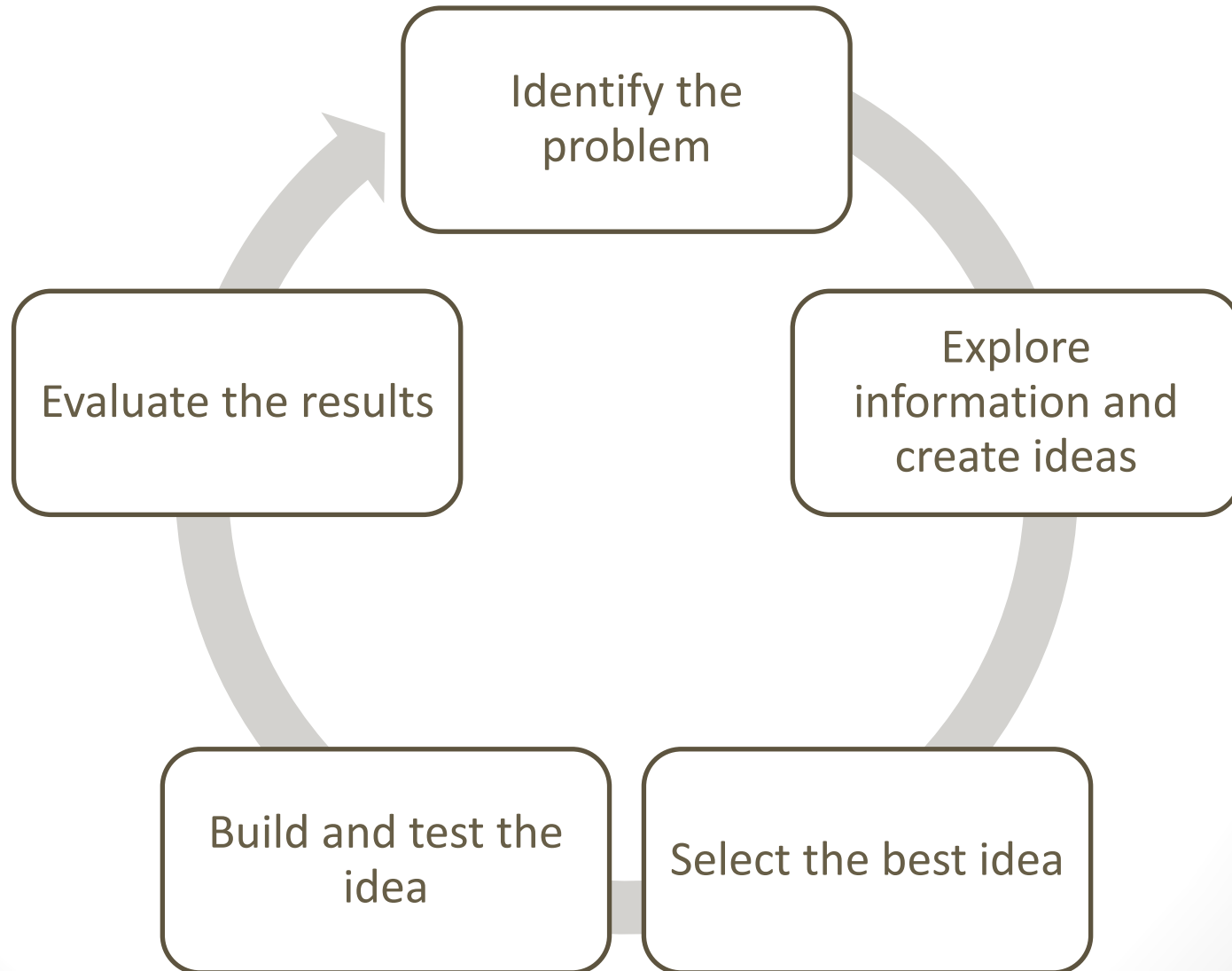
- Retake until you earn 80% or better
- You do not need to complete in one sitting
- You may not work with others to complete
- Read directions carefully

Search Strategy

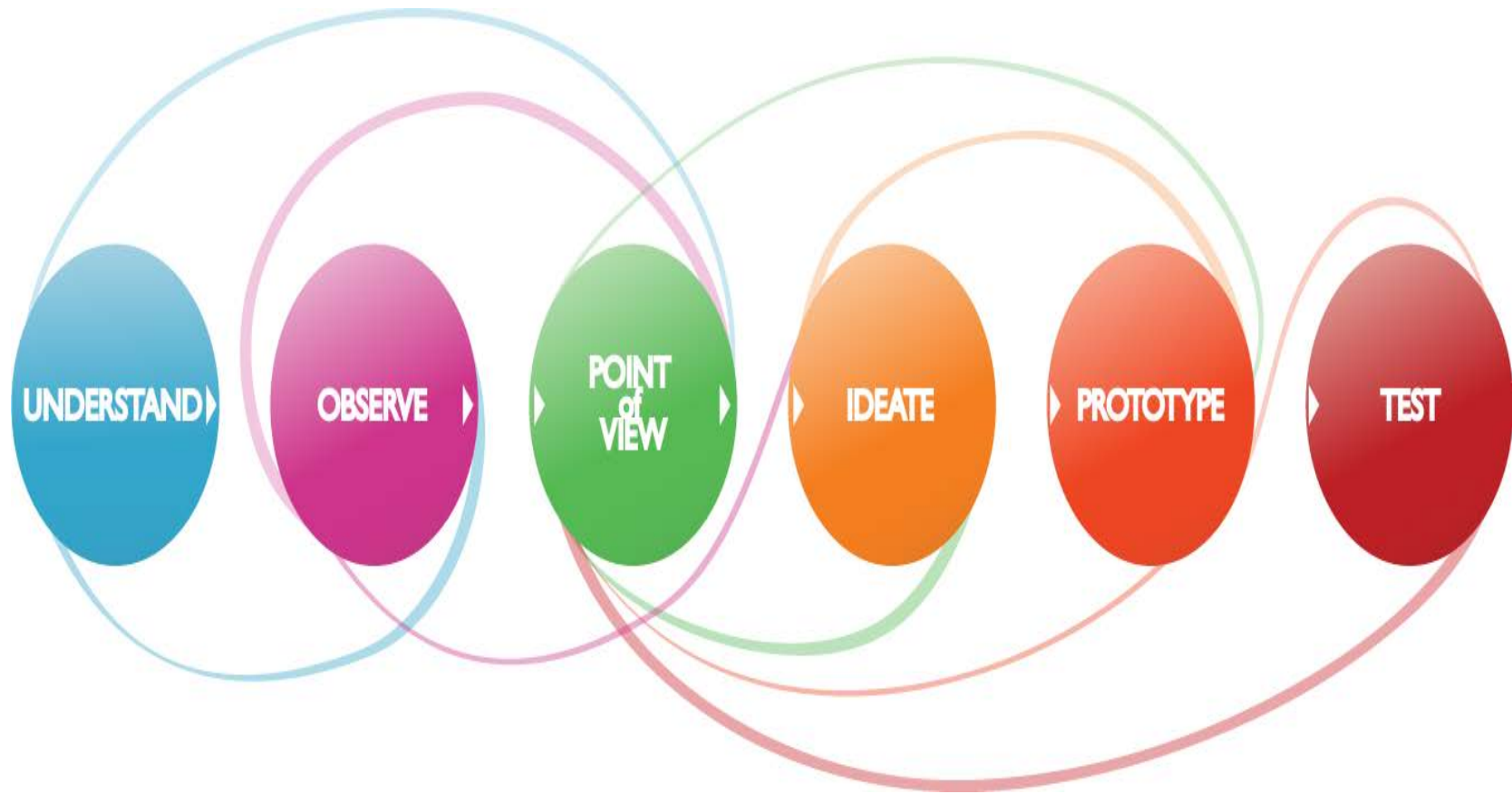
- What is my design problem?
- What are alternative solutions?
- What information is needed to build the prototype?
- What are the design constraints?



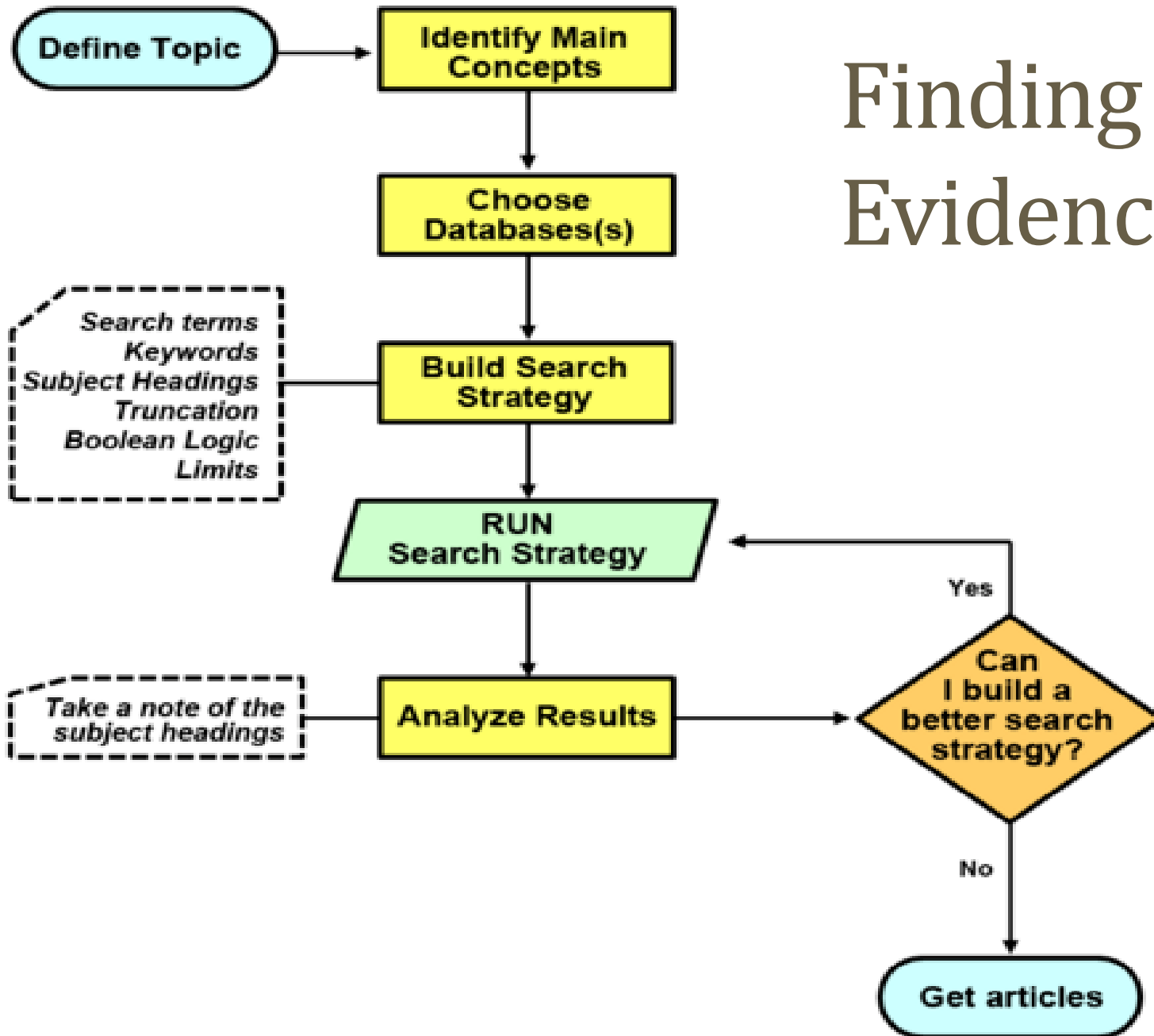
Problem Solving Loop



Design Thinking



Finding Evidence



Example: Sumo Robot Design

Ask questions to identify your needs

Mechanicals

- Plates
- Gears
- Assembly

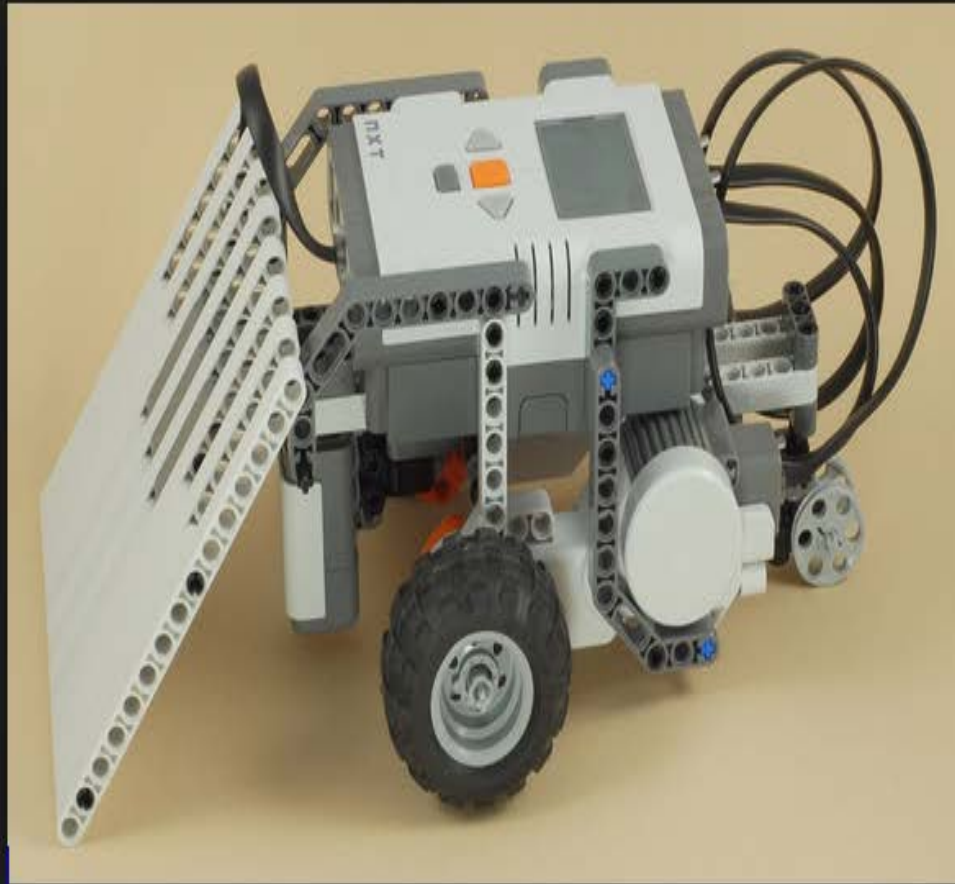
Electronics

- Sensors
- Software
- Testing

Google Advanced Search

- Search strategy
- Concepts
- Design examples
- Patents
- Videos
- Images

Google Image Search



NXT Mini Sumo Bot

www.nxtprograms.com - 736 × 438 - More sizes

[Visit page](#)

[View original image](#)

[Image details](#)

Try these too:



Schematics



sumo robot schematic



Web

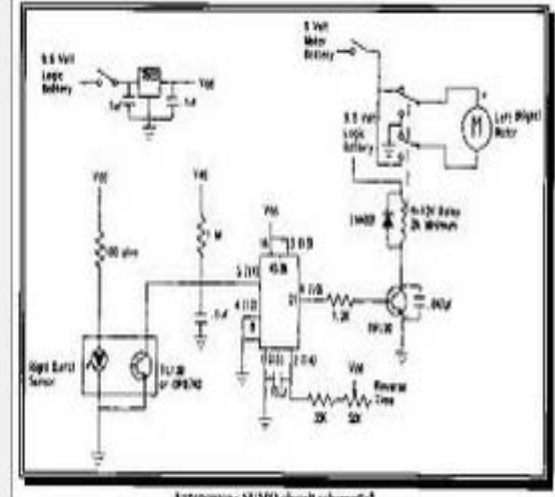
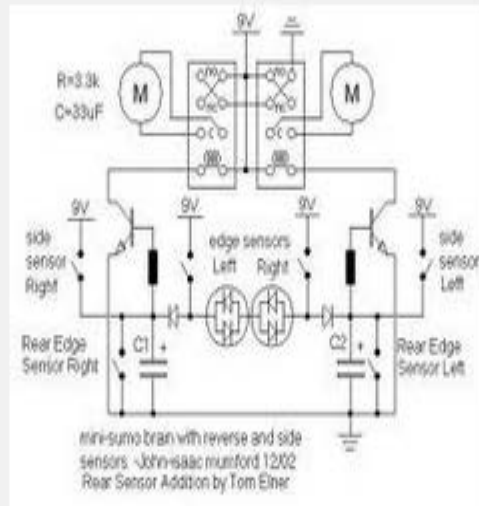
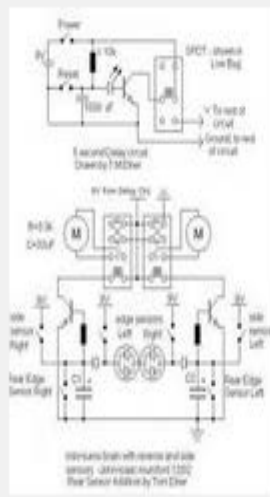
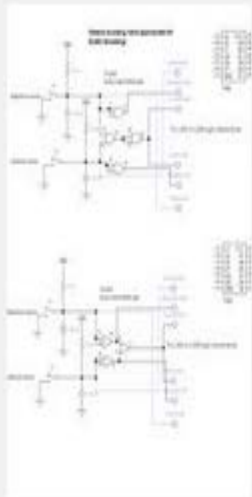
Images

Maps

Shopping

More ▾

Search tools





gray water harvesting site:.gov



Limit to .gov domain

LEARN THE ISSUES SCIENCE & TECHNOLOGY LAWS & REGULATIONS ABOUT EPA

Green and Gray Infrastructure Research

Water infrastructure may be considered “gray” or “green.” Gray infrastructure refers to traditional practices for stormwater management and wastewater treatment, such as pipes and sewers. Green infrastructure refers to sustainable pollution reducing practices that also provide other ecosystem services.

- [Gray Infrastructure](#)
- [Green Infrastructure](#)

Gray Infrastructure

Gray infrastructure takes wastewater away from our fields, homes and businesses. In cities and towns, we rely on sewers to move and treat human or commercial waste. Storm sewers carry rain and snowmelt. Often this water contains:

- pathogens and bacteria from human and animal waste,
- chemicals and heavy metals from our industries,
- gas & oil from roads, and
- fertilizers and pesticides from farms and gardens.

EPA document on Gray Infrastructure Research

Background information

Search for electronic reference books

- Online library catalog
- AccessScience
- ENGnetBASE
- Knovel

Electronic Books



Robot Building for Beginners, Second Edition

by David Cook

Apress © 2009 (490 pages) *Citation*

ISBN:9781430227489

Aimed at teenagers and adults who have an avid interest in science and dream of building household explorers, this book offers a solid amateur base of understanding so that you can begin creating your own robots to vacuum your house or maybe even rule the world.

Recommend? yes no

Table of Contents

- ▣ Robot Building for Beginners, Second Edition
 - ⊕ Introduction
- ▣ ⊕ Chapter 1 - Welcome Robot Inventor!
- ⊕ Chapter 2 - Where to Obtain Tools and Parts
- ⊕ Chapter 3 - Safety
- ⊕ Chapter 4 - Digital Multimeter
- ⊕ Chapter 5 - Numbers and Units
- ⊕ Chapter 6 - Robot Line-Following
- ⊕ Chapter 7 - Nine-Volt Batteries
- ⊕ Chapter 8 - Clips and Test Leads
- ⊕ Chapter 9 - Resistors
- ⊕ Chapter 10 - LEDs
- ⊕ Chapter 11 - Power On!
- ⊕ Chapter 12 - Solderless Prototyping

Search examples

- Solar based energy infrastructure
- Robotics: Intelligent vehicles
- Developing efficient composting process
- Biodiesel production
- Energy Environment – Infrastructure

Exploring Databases

Knovel

- Developing efficient composting process
- Find materials and properties

Engineering Village

- Robotics: Intelligent vehicles
- Find research papers

Standards

A standard is “a prescribed set of rules, conditions, or requirements concerning definitions of terms; classification of components; specification of materials, performance, or operations; delineation of procedures; or measurement of quantity and quality in describing materials, products, systems, services, or practices.”

Accessing Standards

Available by request (with faculty advisor's approval)

- IEEE
- MAD CAD (building codes, fire protection codes, ASHRAE standards)
- ASTM (American Society for Testing Materials)
- SAE (Society for Automotive Engineers)

Information Resources

Engineering Design

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