**iCREAT I - Module 1 - Homework:**

**Final Project Requirements**

# MicroMouse General 03.jpgMicromouse Project Right Aligned Image.jpg

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# Objectives

* Understand the goal of the course project
* Understand the research process
* Be able to identify major components and design considerations for the telepresence base
* Compile requirements for the telepresence base project

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# Background / Scenario

Throughout this course you will be working as a team on a design project. You will be tasked to create an autonomously moving base. The base is what makes the system mobile. As an example of a mobile device take a look at the **micromouse**: <https://en.wikipedia.org/wiki/Micromouse>

<https://www.youtube.com/watch?v=CLwICJKV4dw>

**For more information, please also refer to all the materials posted for this Module.**

The next step in any project is to learn what others have done and already know - **research**. Research plays an important part in any project that you undertake. With the World Wide Web so easily accessible and containing so much information on any topic imaginable, our primary research for this course will happen on the web as well as talking to others. But how valid and current is the information? You have to qualify sources to ensure that information that you find is trustworthy.

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# Required Resources:

* Access to the Internet
* [Telepresence](https://en.wikipedia.org/wiki/Telepresence) base display (physical model)
* Word Processing Software

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# Part 1: Research

### Step 1: Validating your research

1. The first step is to identify a problem we are trying to solve and constraints we are trying to meet. We also need to make sure that the problem has not been solved already. Research and see what others have done to solve similar problems. Our problem for this course is to:

*Design an autonomous (no user interaction allowed) robot based on a typical device used in MicroMouse events.*

*The robot’s job is to navigate an obstacle course without collision.*

*The robot should be built using existing materials including:*

* *A 2-wheels robotic chassis*
* *An Arduino microcontroller with a ”motor shield“*
* *Motors, sensors, and other electronic components as necessary (provided).*
* *The robot will include at least one unique supportive or decorative structure that fits well with in the design of the system. The structure must be designed using SolidWorks software and manufactured. The structure can not exceed 6”x4”x3”.*

1. Research topics on assistive robotics, telepresence, and micromouse
   1. As you research topics above, note some of the things that might be helpful for building your project. This will help you complete the list of requirements. Below are a few things to look into:
      1. What are some physical requirements for your device and why they are important?
      2. Three major physical components that have to be included when building your base.
      3. Three major design considerations when building your base. *For example, the Size of the chassis among other things is governed by the size and location of necessary components and maneuverability of the device*
      4. Examples of how the device can be used
   2. Take careful notes on any relevant information you find
   3. Be sure to note all references used in your research.

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# Part 2: Gathering and writing the requirements

### Step 1: Gather necessary information and write down requirements

1. Having read the project description carefully, underline any words that sound like a requirement.  
     
   **Project Description:**  
   *Design an autonomous (no user interaction allowed) robot based on a typical device used in MicroMouse events.*

*The robot’s job is to navigate an obstacle course without collision.*

*The robot should be built using existing materials including:*

* *A 2-wheels robotic chassis*
* *An Arduino microcontroller with a ”motor shield“*
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1. Make a list of requirements and constraints (bulleted list)  
   List at least 3 physical and functional requirements and/or constraints for the project. For each bullet briefly describe what are some of the things that need to be considered in placement and functionality of this component.



1. References  
   Be sure to keep a list of references as you do your research
2. Sketch ideas of what a physical model might look like