How Thingamajigs Work? Moving Beyond the Technical Lingo
Syllabus FSEM, Fall 2021

Course Description. This course is actually an academic enrichment program that is intended to cultivate problem solving through critical evaluation and skill building through hands-on activities. *How Thingamajigs Work* is appropriate for students of any discipline who are just curious about how things work. The course will be conducted in an informal educational environment where students are expected to participate in the discussions on assigned topics and integral activities. The activities will include information gathering, discussions, hands-on technical activities, and team competitions that are specially designed to improve the students understanding of the modern technology. Instead of spoon-feeding the students with information, they will be expected to gather information about topics of interest from all the sources available to them. Then the students will be challenged with designing and building a working model of a technical device from odds and ends.

Intelligent devices are rapidly entering into our everyday life. We are constantly bombarded with technical lingo - intranet, GPS navigation, bandwidth, DSL, multi-media... Unfortunately, these jargons make it difficult to sort out important terms from technical trivia and contribute to the fear and ignorance towards technology that many people have. The aim of this seminar course is to ease students' fear of technology and improve their understanding of how modern technology works. This course is an academic enrichment program that is intended to cultivate problem solving through critical evaluation and skill building through hands-on activities. How Thingamajigs Work is appropriate for students of any discipline who are just curious about how things work. The aim of this seminar course is to ease students' fear of technology and improve their understanding of how modern technology works. When you learn how to do something, you have a skill, all you can do is use it the same way over and over. But when you understand how something works, you can reason and expand upon them infinitely, you simply own it intellectually. The course will be conducted in an informal educational environment where students are expected to participate in the discussions on assigned topics and integral activities. The activities will include information gathering, deductive reasoning, hands-on technical activities, and team competitions that are specially designed to improve the students understanding of the modern technology.

Assessment: Students will be evaluated through various reports, both analytical review article on selected topics and reports on technical device projects. Process skills will be assessed by their level of creativity; ability to produce working model of technology devices. Reports will be evaluated for their quality, student's grasp of the basic scientific principles (factual information), logical reasoning, and clarity and completeness in describing the process and procedures involved in the projects.

Attendance	200 points
Reports	300 points

Tentative day and time course will be offered:

Class will meet in Sturm Hall 453 on Tuesdays and Thursdays from 12:00 to 1:50 pm. We will meet in Olin 225 on days of hands-on projects.

Instructor's Information:

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Tentative Course Syllabus

Week of	Topic	Assignments
Sept 11th	Introduction to the course Processors and definitions Components of a PC.	Put together a component list (shopping list) for building a ***Gaming*** quality computer under $500. All components must be available on-line or locally, and the list must be in the form of Excel Spread Sheet, detailing Manufacturer, Model and part number, Price, Vendor for each component. A separate text document giving brief technical reasoning for the choice of motherboard, CPU and Video card etc. **Due Oct. 1.**
Sept. 19th	Anatomy of a Computer Components and functions. Building computers.	Completely dismantle a fully working computer and reassemble. You need to be very careful and pay attention to all the details when disassembling.
Sept 27th	Building a Computer	
Oct. 3rd Oct. 20th	Computer network. Subnetting	IP address, binary digits, hexadecimal system, Basics of subnetting
Oct. 27th	How to build a Hover Craft. Discussion: Components and mechanics.	Gather information on how a Hover Craft works. Propose a well thought plan showing a sketch of the craft with all components clearly marked. **Due Oct. 27th.**
Oct. 24th Oct. 31st	Discussion: Refining plans, component list, building Hover Craft.	Building the craft.
Nov. 7th	Team competitions	Building a hovercraft from house hold items
Nov. 21st		Write a report describing step by step procedure for building a riding Hover Craft (methods, materials and an instruction manual clearly explaining the procedure for building the device) **Due Nov. 25th**.

Required Course Items:
There are no texts for this course. However, you can get all the necessary information on the internet. It is your responsibility to research the topics covered in class.