Engineering Analysis and Problem Solving

Welcome

to

ENG1101

Some “engineers”:

Scott Adams - cartoonist and creator of "Dilbert"

Roger Corman (Film Director) - directed the original version of Little Shop of Horrors, and shot it in a record two days and a night. (Stanford University – industrial engineer)

Alfred Hitchcock (Film Director) – directed and produced many brilliantly contrived films, most of them psychological thrillers including *Psycho, The Birds, Rear Window*. (Saint Ignatius Col.)

Herbie Hancock (Jazz Musician) - legendary jazz musician, pioneer of jazz fusion. (Grinell College – electrical engineer)

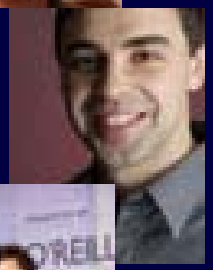
Hedy Lamarr (Actress) - Although not formally trained as an engineer, this famous 1940s actress is credited with several sophisticated inventions, among them a unique anti-jamming device for use against Nazi radar --- still used/sold today by Sylvania Elec.

Arthur Nielsen - developed the Nielsen rating system, which tells us how popular a television show is. (U of Wis – electrical eng.)

Bill Nye (TV Personality) - The "Science Guy“. (Cornell Univ.)

http://www.engineeringk12.org/students/What_Is_Engineering/Famous_Engineers/default.php

Some other “engineers”:



Andrew Grove - co-founded Intel (chemical engineer)
Steve Wozniak - co-founded Apple Computer Inc. (Berkeley - electrical engineer)
Thomas Neuville - U.S.Senator from Minnesota (MTU – chemical engineer)
William Hewlett and **David Packard** - co-founders of Hewlett-Packard.
Katherine Stinson – founded the Society of Women Engineers. (NC State)
Bill Joy - co-founded of Sun Microsystems. (U of Michigan – electrical engineer)
Ray Dolby - founded Dolby Laboratories, won an Academy Award and a Grammy! (electrical engineer)
Henry Ford – founded Ford Motor Corp.
Sergei Brin and **Larry Page** – co-founded Google. (U of Maryland, U of Michigan)

http://www.engineeringk12.org/students/What_Is_Engineering/Famous_Engineers/default.php

Some other “engineers”:

Lee Iacocca - former chairman and CEO of Chrysler Corp. (Lehigh University)
David L. House - president of Nortel Networks. (MTU – electrical engineer)
Philip Condit - CEO, the Boeing Corp. (mechanical/aeronautical engineer)
Roberto C. Goizueta - former chairman and chief executive of Coca-Cola, Co. (Yale University - chemical engineering)
John F. Welch Jr. – chairman and CEO of General Electric. (U of Illinois – chemical engineer)
Edmund T. Pratt, Jr. - former CEO of Pfizer Inc. (electrical engineer)

http://www.engineeringk12.org/students/What_Is_Engineering/Famous_Engineers/default.php

Some other “engineers”:

Jimmy Carter - The 39th President of the United States. (US Naval Academy – nuclear engineer)

Bonnie Dunbar - NASA astronaut. (U of Washington, ceramics engineer)

Frederick Calvetti - Patent lawyer, and Probate Judge. (MTU – chemical engineer)

Herbert Hoover - The 31th President of the United States. (Stanford – Mining Engineer)

Neil Armstrong - first man to walk on the moon. (Purdue – aeronautical engineer)

Grace Hopper - Rear Admiral in the U.S. Navy, developed the first computer compiler in 1952 and the computer program language COBOL ... upon discovering that a moth had jammed the works of an early computer, Hopper popularized the term "bug." (computer engineer)

Fredrick Olesek - Pilot/flight officer for United Airlines. (MTU – chemical engineer)

http://www.engineeringk12.org/students/What_Is_Engineering/Famous_Engineers/default.php

Today's Agenda

- Introductions
- Course Information
- Logon to computers
- Graphics Survey
- Personal Survey

ENG1101 – Engineering Analysis and Problem Solving

Instructor: Jim Hertel

Website: www.geneng.mtu.edu/~jehertel

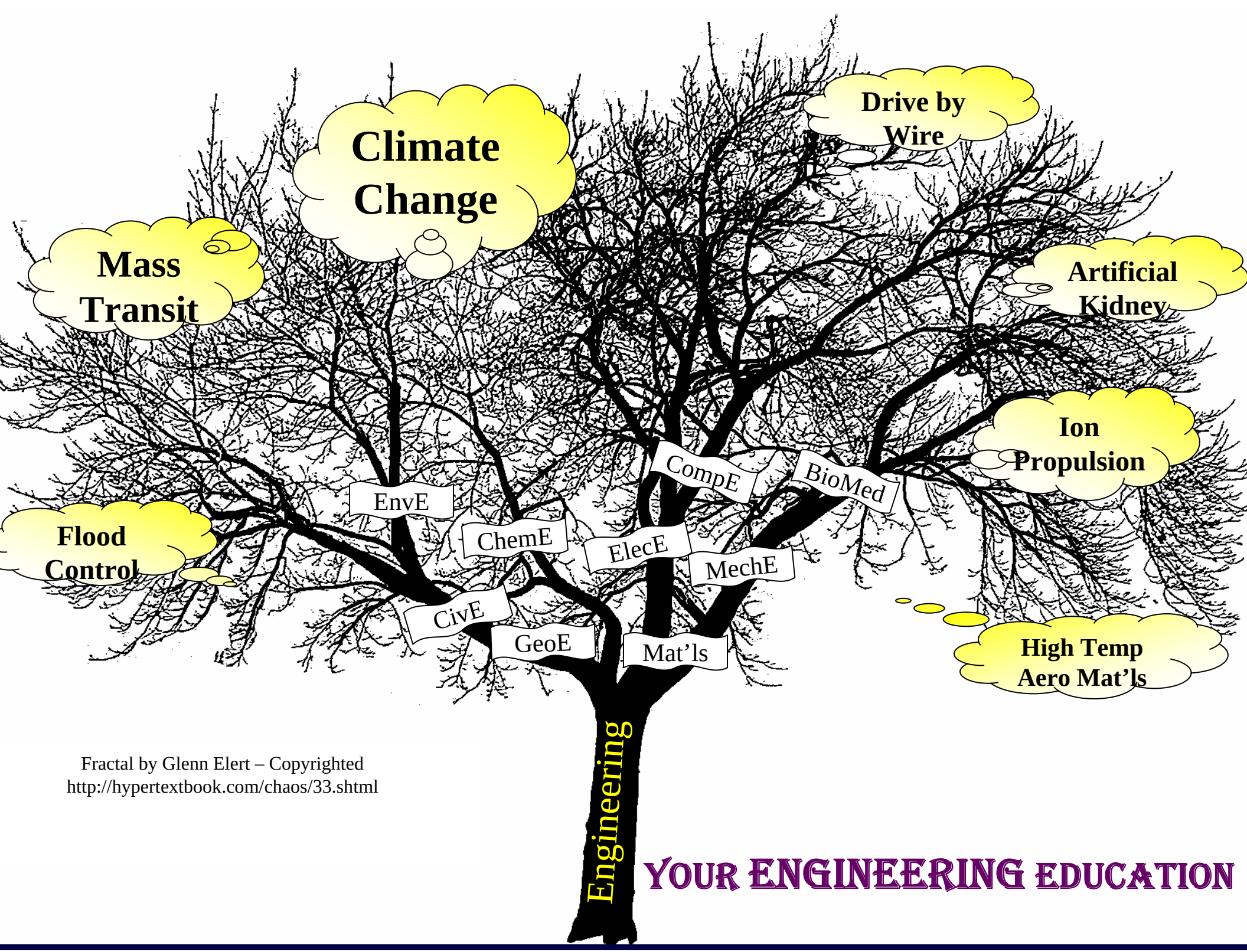
... follow links to JEH 1101 course web page

TA's:

Sec 04 - Mr. Punit Gandhi	**pbgandhi@mtu.edu**
Sec 06 – Mr. Nitesh Patel +	**npatel@mtu.edu**
Sec 09 – Ms. Amy Meyers	**almeyers@mtu.edu**

ENG1101 Objectives

1. To develop an appreciation for the engineering profession and its various disciplines
2. To develop proficiency in the use of computers to solve engineering problems
3. To introduce many of the fundamental engineering and design concepts
4. To improve communication skills, especially technical communication
5. To begin to understand ethics and its importance to the engineering profession



Fractal by Glenn Elert – Copyrighted
http://hypertextbook.com/chaos/33.shtml

YOUR ENGINEERING EDUCATION

Outline

- **Intro to 3d Solid Modeling (UG-NX3)**
- **Intro to Engineering Design Process (team project)**
- **Problem Solving using Spreadsheets**
- **Fundamental Engineering Tools for working with data**
- **Intro to Programming using VBA**
- **Technical Communication (memos, sketching, reports, presentations)**

Expectations - Syllabus

- Attendance
- Teamwork
- Collaboration
- Academic Integrity
- Work hard and have fun

Required Textbooks

- Engineering Fundamentals & Problem Solving, MTU Edition, *Eide, et. al.*
- Visualization, M odeling, and Graphics for Engineering Design, Lieu & Sorby
- A Guide to Writing as an Engineer, *Beer*
- *ENG1101 Lab Manual*

Course Requirements

- Individual Assignments & Attendance 20%
- Team Assignments 10%
- Semester Design Project 15%
- Mid-term Exams 20%
- Lab Practical 5%
- Drawing Exam 5%
- Final Exam 20%
- Engineering Explorations 5%

Note: You will need to pass the individual portion of the class in order to pass the class regardless of your team grade!

Engineering Explorations

- Hands-on activities designed to introduce the engineering disciplines to you
- You are required to earn 10 exploration points.
- Official Registration for the explorations begins Soon.
- Watch Exploration Bulletin Board Daily (hallway by room 209)

Exploration Points

- 4 point Explorations – Signature/Stamp Required
  - Typically limited to 20 Students
  - Must sign-up
  - Check bulletin board Daily (board is outside Dillman 208/209)
- 2 point Explorations – Signature/Stamp Required
  - Officially Recognized Department Socials
  - Officially Recognized Larger Technical – Department Seminars
  - Check Bulletin Board Daily - Webpage

Exploration Points

- 1 point explorations
  - Attendance of professional society meeting
  - Senior Seminars
  - Graduate Defense
  - Pre-approved seminars (Career Center)
  - Posted Seminars from “Seminar Central”
  - Instructor will initial passport

Things that don’t count

- Club activities
- Music Groups (Pep-Band, Jazz band, etc.)
- Non-Technical seminars
- Non professional group meetings

- When in doubt, ask your Instructor!!!

Engineering Explorations

- Only official Explorations will count for credit.
- Official Explorations will be posted in hallway outside of Dillman 209 and Webpage
  - **Check daily for new postings!!**

- A minimum of 6 points must be from 4 or 2 point explorations

Exploration Passport

- To receive credit you must get your passport signed ***and*** filled out completely.
  - Please take your passport to each exploration you attend.
  - At most explorations you will be able to receive a signature from the person running the exploration. (Some large seminars will not require signatures)
  - Take notes during seminars
  - **Passport must be filled out at the time of the exploration for credit**
  - **All Explorations must be completed by 12th week.**

Lost Passport

- Do NOT Lose your Passport
- It is YOUR job to keep it current

- The Passport is worth 5% of your final grade!!!

Three other expectations ...

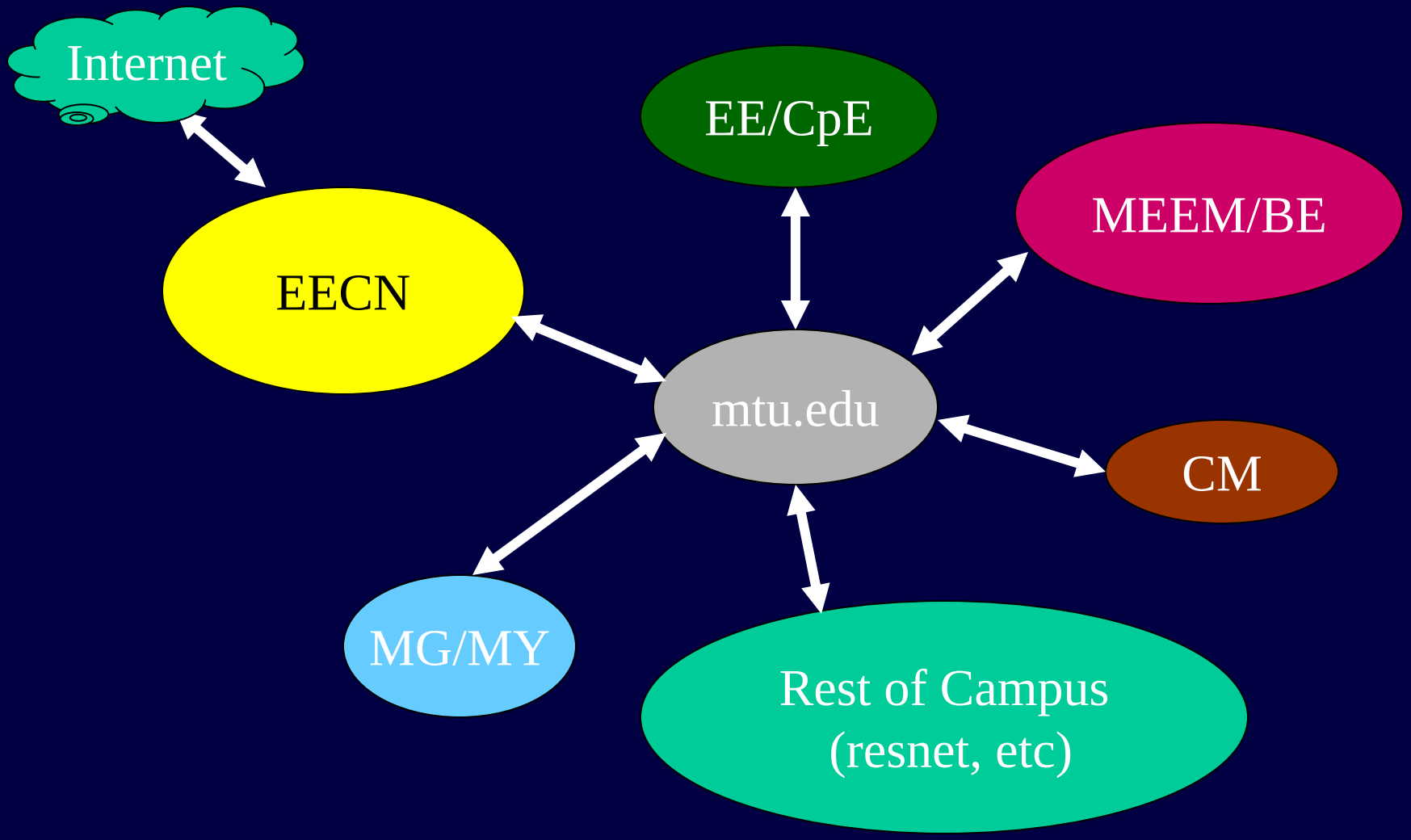
1. Questions !!!
2. Thought
3. Effort = Time * Energy

Questions?

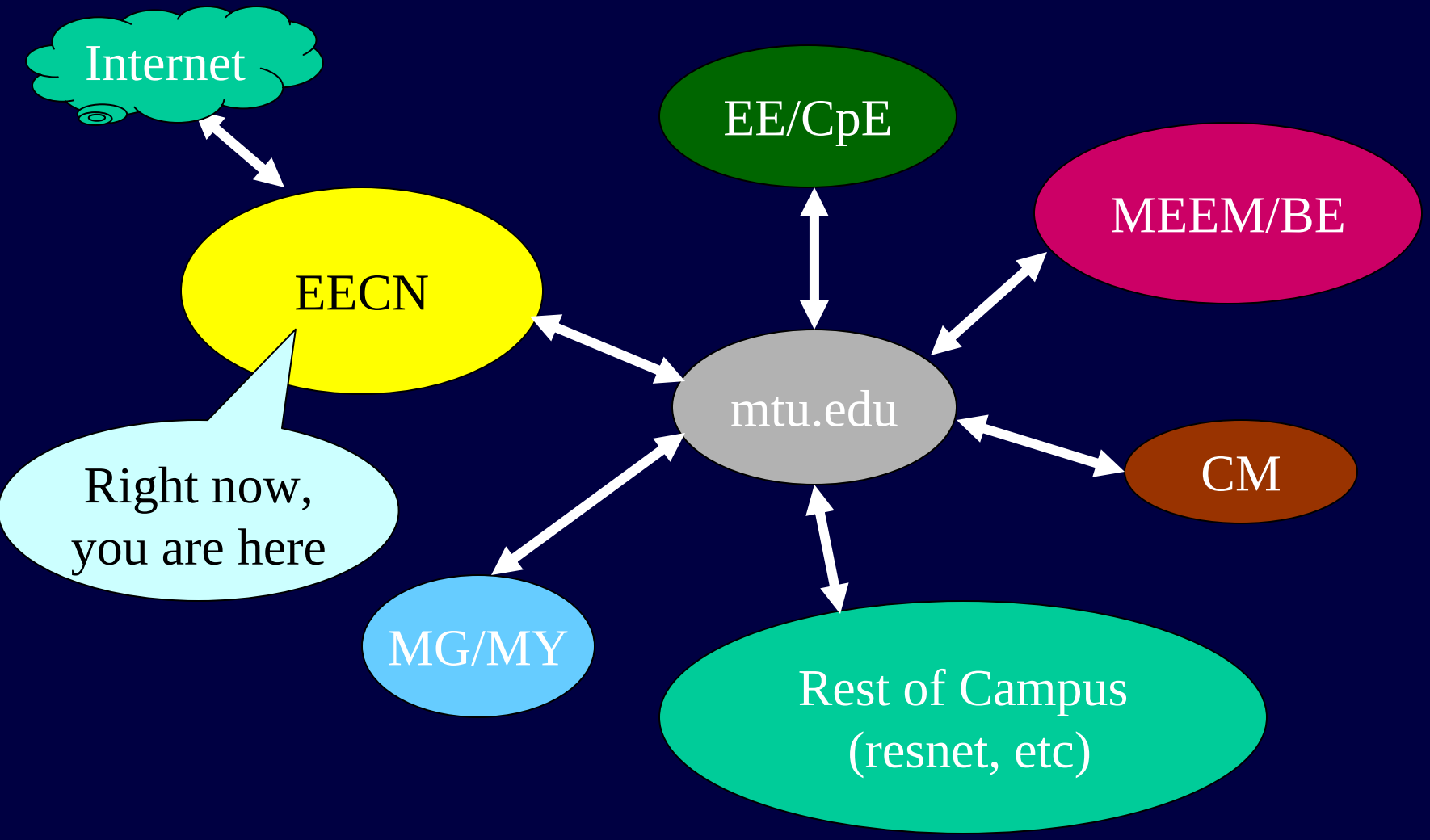
Using MTU Computer Labs

- MTU Student's Rights and Responsibilities handbook
  - Computer misuse and fraud
  - Identification/keys/access to facilities
- MTU Computer Use Policy (http://www.admin.mtu.edu/urel/studenthandbook/policies.html)

Michigan Tech's Campus Network



Michigan Tech's Campus Network



Computer Lab Location for Engineering Departments

Engineering Department	***Computer Lab Location ****
Mechanical Engineering	ME-EM, first floor
Chemical Engineering	Chem. Sci., basement
Civil, Environmental & Engineering Undecided	Dillman (see below)
Electrical & Computer Engineering	EERC, first floor
Geological Engineering	DOW, seventh floor
Biomedical & Materials Engineering	M & M, second floor

* General Location only. Check with your department for additional computer labs & room numbers.

Civil, Env & Undecided Eng Labs

Computer Lab Location	***Printer***
Dillman 101 **	Yellowtail
Dillman 203	Redridge
Dillman 208 **	Hoover
Dillman 209**	Nickajack
Dillman 211	Cooley
Dillman 213	No Printer

** ENG1001, 1002, 1101 & 1102 Student Access 8am-5pm weekdays

Programs Used in ENG1101/1102

- Word
- Excel
- Visual Basic (VBA)
- MS Visio
- NX3
- Matlab*

* Used in ENG1102

Logging Onto Computers

- Login: userid
  - Standard Userid: fmlastna
  - Userid is lowercase
- Same password as your e-mail password
  - Initial Password: Student ID Number
    - Password for ID# 123-45-6789 is: 123456789
    - For "M" ID #'s type an upper case "M"

Everyone on your team….make sure you can login!!

Your Computer Account

- Home directory: h drive
- Where you store your files
- Create directories to organize files

To Change our Password or Sync your account:

- *1. Get online anywhere/any-account*
- *2. Go to **http://www.login.mtu.edu/***
- *3. The menu on the left allows you to:*
  - *- **Change your password** (choose a hard pw to hack)*
  - *- **Synchronize** your account so your password is recognized on the different servers at MTU*

So where do you go with questions???

Dillman 211 Consultants: answer computer system questions (i.e., can't login, can't get a program to run, can't find a directory, your computer is satan incarnate, etc.)

- If they cannot answer your question, they will direct you to the right source.
- Hours: 8-Midnight, every day, but some slots are not filled.