

IC470 Software Engineering (w/Capstone Design)

- Software engineering: Analyzing user needs and designing, building, testing software systems that satisfy these needs.
- Course Coordinator: Major Brian Hawkins, USMC
 - Office: Michelson 348, x3-6803, bhawkins@usna.edu
 - Extra Instruction (availability, scheduling)
- Fly Marines!
- Roll call
- Pick section leaders
- Course Web Page: <http://faculty.cs.usna.edu/IC470>



IC470 Software Engineering (w/Capstone Design)

- Software engineering: Analyzing user needs and designing, building, testing software systems that satisfy these needs.
- Instructor: CAPT(sel) Rick Sarmento, USNR
 - Office: Michelson 331, x3-6810, sarmento@usna.edu
 - Extra Instruction (availability, scheduling)

○ Go Navy Intel!

- Roll call
- Pick section leaders

○ Course Web Page: <http://faculty.cs.usna.edu/IC470>



Course includes the start of your Capstone Project

- **Team Software Development Project:**
 - More on this later today
- **Team size.** 4 mids +/- 1. Do NOT have to be from same section
 - You **MUST** have at least 1 CS major *and* at least 1 IT major on your team. Dual Majors (CS/IT) may count as either CS or IT for this purpose.
 - Instructor reserves right to add a Mid to a 3 person team or otherwise balance teams
- **Team leader** (duties: admin/tie breaker):
 - e-mail instructor the names of team members (see syllabus for due date)
 - (cc rest of team),
 - Otherwise team-members randomly assigned.



Sample Project: Autonomous Underwater Vehicle Competition

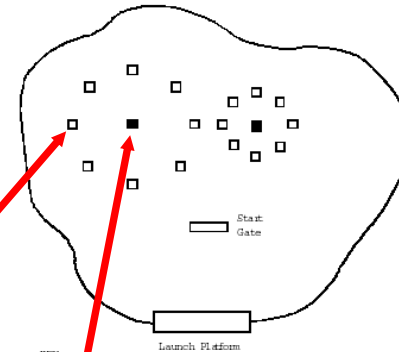
- Goal: To stoke interest in AUVs and associated technologies by challenging a new generation of engineers to perform realistic underwater missions.



Previous USNA Entry

Typical AUV Mission

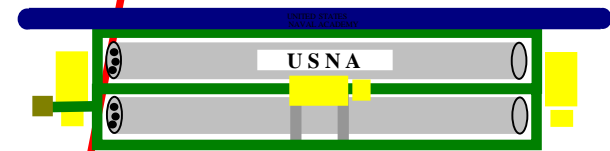
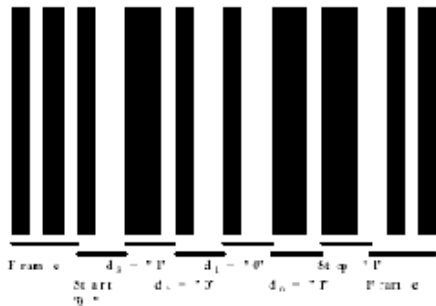
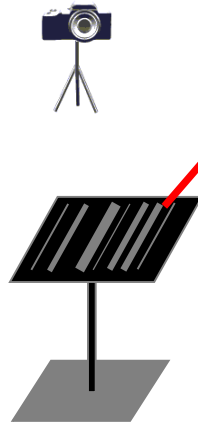
DIAGRAMS:



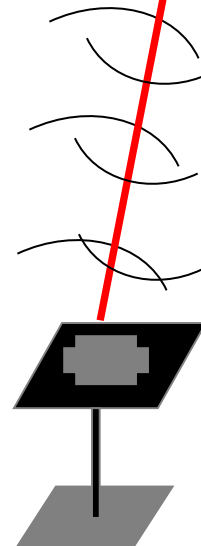
KEY
 ■ Center man-made object & pinger
 □ Circumferential man-made object
 Figure 1 Possible arrangement of the Arena.



Camera takes picture and stores barcode in file – the depth of the barcode is also stored



Depth Sensor and Altimeter work together to figure out depth of pinger



Sample: AUV Controller Software

The screenshot displays the AUV Controller software interface with three main windows:

Options Window

- Exit:** A dropdown menu currently set to "Dead Recon Nav".
- Missions Selected:** A list of mission phases: Initial Setup, Dead Recon Nav, Search and Track, and Mission Complete.
- Run Buttons:** Run Autonomous Mission, Run Simulated Mission, and Run Manual Mission.

Manual Mission Window

Manual Power Settings

Bow Power: 5

Port Power: 3

Starboard Power: 2

Stern Power: 1

Buttons: Finish, Cancel

Mission Status Window

Current Mission Phase: Manual Mission

Current Mission Data		Target Data	
Current Depth	30	Target Depth	45
Current Heading	324	Target Heading	332
Current Bearing	52	Targeted Freq	1234
Last Known Bearing	64		

AUV Power Settings

AUV Power Settings	
Bow Power	5.0
Port Power	3.0
Stern Power	1.0
Starboard Power	2.0

AUV SEA TRIALS

The AUV in action . . .

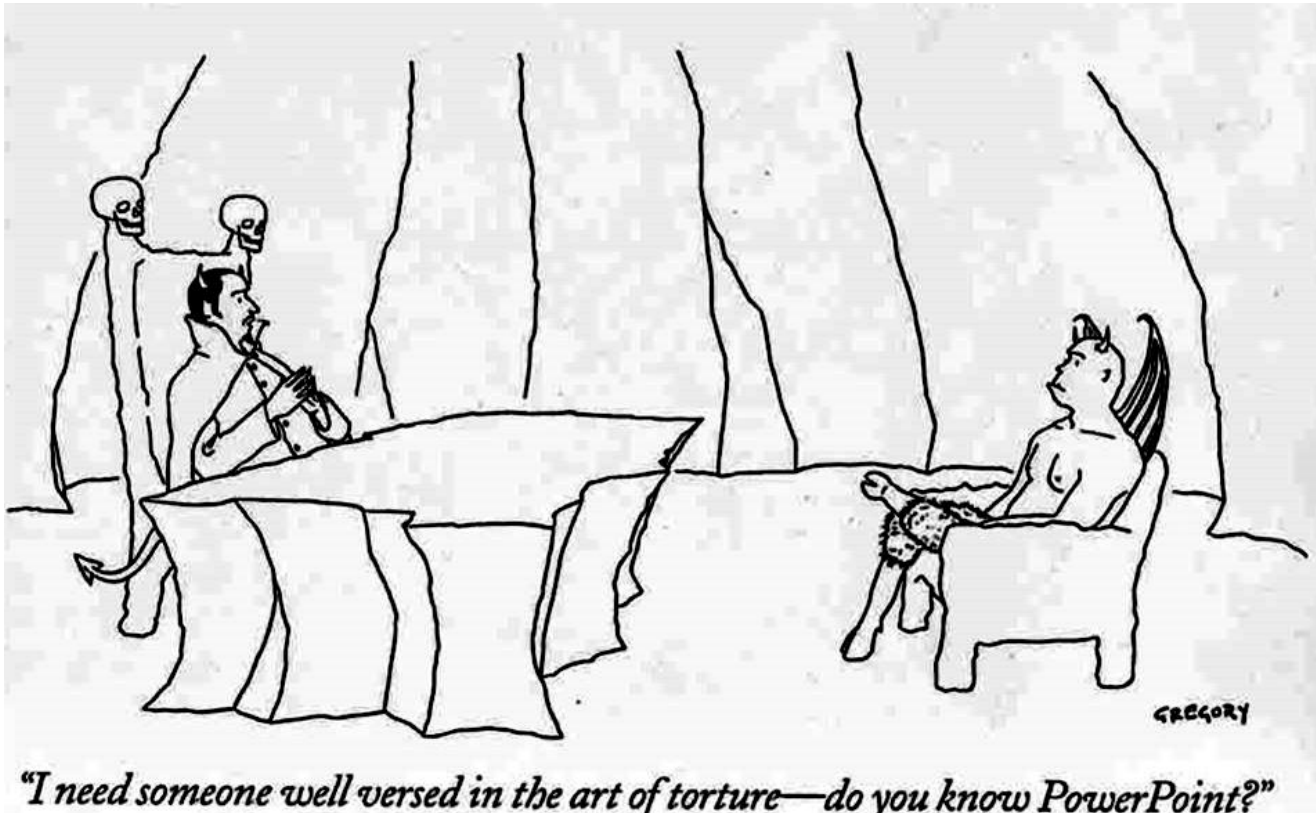


Your IC480 Capstone Project

- As part of IC470, teams will propose, design and begin to implement their capstone project, and continue development thru IC480:
 - Milestone 0 focuses on picking a project.
 - Course webpage has some capstone project topics.
 - Contact indicated Customers to ensure that they are available. Customer involvement is very important!



Online Notes



- Slides available from the course web page.
- Next: **Course Policy/Course Syllabus**