International ROV Curriculum Focused on 2-Year Colleges

Memorial University, St. John's Newfoundland
September 19, 2014

International ROV Curriculum

- Provide a comprehensive curriculum that will cover defined ROV competencies.
  - MATE ROV Workforce competencies
  - Oceaneering ROV Technician competencies
  - IMCA ROV Technician competencies

- Electrical Engineering Technology – Provides the foundation for work in multiple sectors of the economy.

- Build upon existing programs in defining the Guidelines.
  - Memorial University ROV Curriculum
  - Long Beach City College State Approved Electrical Curriculum
  - Others…

If you understand how to build an ROV, what else can you do?

DOL's Mechatronic Competency Model

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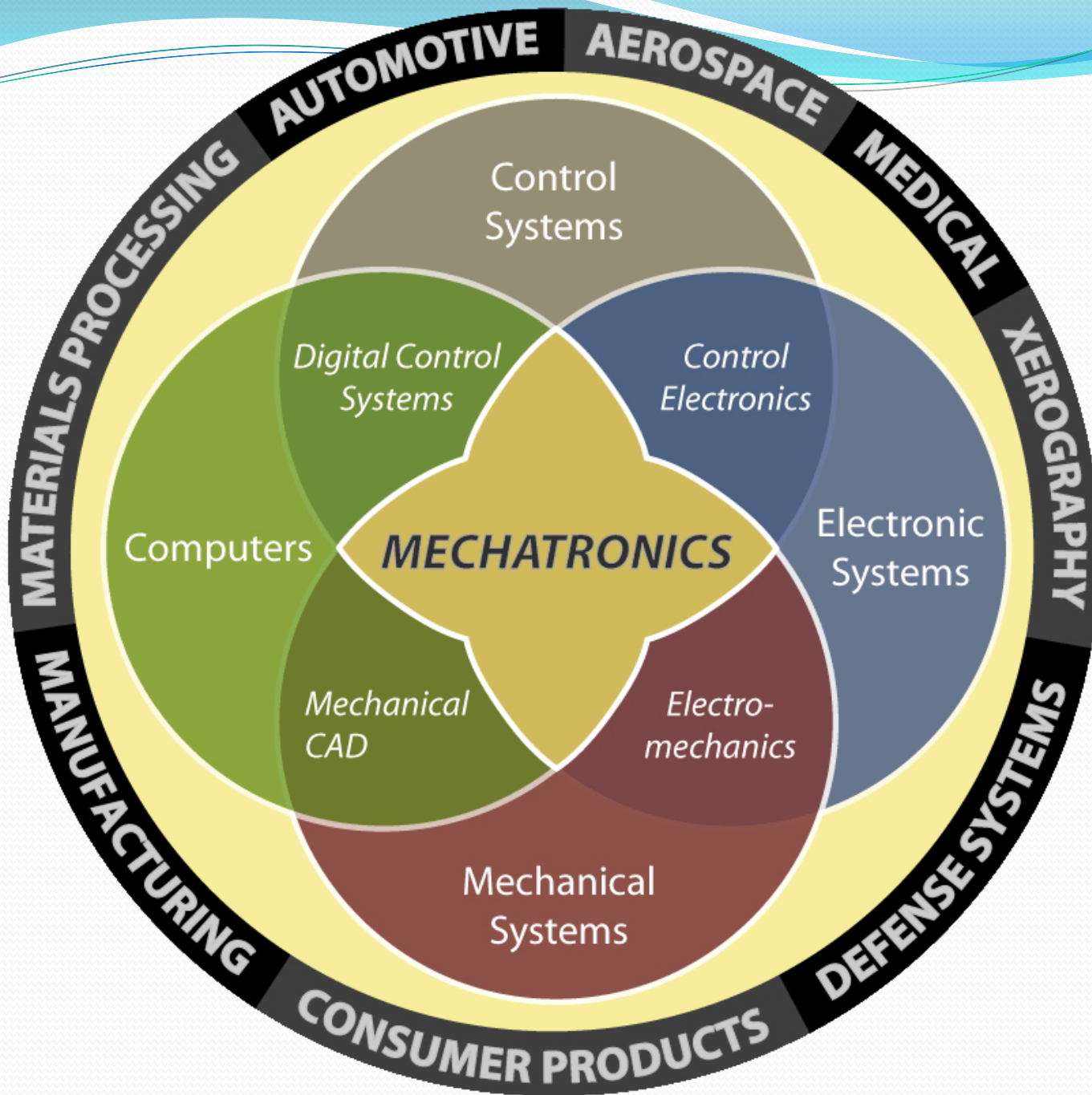
Mapping Competencies to Occupations

- Curriculum utilizes the ROV industry to provide the applied framework and hands on training.

- This curriculum is not limited to the ROV Technician. It will provide mapping to foundational skills/knowledge required in multiple industries & occupations.
  - Factory Automation & Manufacturing
  - Robotics Technician
  - Wind Power Technician
  - Electrical Test Technician – NETA http://www.netaworld.org/
  - Industrial Maintenance Technician

Transfer Path to 4 Year University

- Very limited transfer options exist for students in this field without having to take the entire Calculus and Physics series of classes.

- Examples- Technology Degrees 2 + 2
  - Memorial University
  - Cal State University Dominguez Hills

- Additional transfer opportunities needed that will:
  - Develop advanced technology skills
  - Develop technology management skills

Assessment Pathway for Incumbent Workers

- Utilize developed assessments to allow workers to "test out" of many of the entry level competencies.

- Demonstrate hand's-on skill along with knowledge assessment

- This process can also be utilized for those coming from other programs wishing to receive credit by exam.

  - High School students
  - Transfer students

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Digging In

- Three main areas of study divided into 15 groups and 538 topics.

  - Foundational Topics

  - Technical Topics

  - Advanced Topics

Foundational Topics

- **Math** – Basic Math through algebra & trigonometry up to preCalculus

- **Communication Skills** – Technical communication

- **Science** – Basic Physics

Technical Topics

- Safety
- CAD & Blueprint Reading
- Electrical
- Electronics
- Electrical Control Systems
- Automation Controllers (Microprocessors and Programmable Logic Controllers)
- Electrical Code & Regulations
- Fluid Power
- Machine Design & Fabrication
- Fiber Optics

Advanced Topics

- ROV Materials

- ROV Operations

Topic Layout

- Topics are divided into fifteen groups
- Each topic is identified as a level 1, 2 or 3

149		*Electrical*		
150	1		Ohm's Law, electrical circuit theory	
151	1			Electrical diagrams, symbols, and nomenclature
152	1			Electrical characteristics, polarity, electron flow, voltage drops, power loss.
153	1			Basic Ohm's Law formulas
154	1			Series circuits / diagrams
155	1			Series circuits; wiring, measurements and proper operation
156	1			Parallel circuits / diagrams
157	1			Parallel circuits; wiring, measurements and proper operation
158	1			Combination circuits / diagrams
159	1			Combination circuits; wiring, measurements and proper operation.
160	1			Troubleshooting techniques
161	1		Voltage Sources	

Topic Layout

Level	Description of Levels
1	General course work that could be offered at most colleges
2	More specialized course work that requires higher levels of equipment & training
3	Highly specialized ROV coursework, requiring significant equipment support

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Today's Goals

- Review of Topic List

- Identify additional Topics

- Remove extraneous/redundant Topics and ensure proper placement in Levels 1, 2 and 3

Future Work

- Formalize today's list for further review.

- Develop Student Learning Outcomes and assessment methods for each topic.

- Develop a bank of questions for each topic that can be utilized for assessments.

- Develop a bank of performance assessments for hands on demonstrations.

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