

# Two-Year Sequence: Marine Engineering

## Marine Engineering/Physics – Junior Level

(half year, double period course – 1 credit)

### **Drafting/Mechanical Drawing 2 weeks**

Architectural Lettering  
Orthographic Projection  
Scale/Centering/Layout

### **Computer Aided Drafting (CAD) 4 weeks**

2-Dimensional Drafting  
Solid Modeling  
Rotations  
Extrusions  
Wireframe Conversions

### **Electronics 4 weeks**

Units/Unit Conversion  
Circuit Diagrams/Construction  
Soldering Techniques  
Ohm's Law  
Multimeter Use/Troubleshooting

### **Physics 2 weeks**

Simple Machines  
Levers/Pulley Systems  
Rotary/Linear Motion  
Gears/Belts/Torque

### **Pneumatics/Hydraulics 3 weeks**

Pressure  
Pumps/Valves  
Compressibility of Fluids  
Flow & Cylinder Movement  
Circuit Diagrams/Symbols  
Simple Circuits

### **Remotely-Operated Vehicles (ROVs) 4 weeks**

Structure  
Buoyancy/Flotation  
Ballast/ Stability  
Propulsion Systems  
Control Systems  
Project Management  
Special Project - Fresh Water ROV  
Intraclass ROV Competition

### **Marine Tech Careers – throughout**

## Marine Engineering/Underwater Technology

– Senior Level

(full year, double period course – 2 credits)

### **Computer Aided Drafting (CAD) 4 weeks**

Advanced Solid Modeling  
Construction Planes  
Detail Drawings  
Curved Surfaces  
Assembly Views

### **Mechanical Engineering 4 weeks**

Subassemblies  
Motion/Power Sources  
Project Design/Construction

### **Electronics 4 weeks**

12-Volt Systems  
Digital Electronics  
Logic Circuits  
BASIC Stamp  
Industrial Controls

### **Robotics 5 weeks**

System Design  
Programming  
Data Logging  
Remote Control  
Autonomous Operation

### **Underwater Technology 4 weeks**

Dynamic Positioning/GPS  
Sonar Imaging  
Side Scan  
Multi Beam

Special Project – LI Sound Bathymetry

### **Remotely-Operated Vehicles (ROVs) 12 weeks**

Control Systems  
Navigation  
Special Project – Fresh Water ROV  
Intraclass ROV Competition  
Construction Project - Hydrophone  
Construction Project - CTD Sensors  
Special Project –MATE Center Nationals ROV  
Inventory/Pricing/Cost Analysis  
Purchasing  
Project Management/Engineering  
Design  
Construction  
Testing/Reconfiguration

### **Autonomous Underwater Vehicles 5 weeks**

Guidance Systems  
Mission Programming  
Special Project – Fresh Water AUV

### **Marine Tech Careers - throughout**