# Project ROVe: Introduction to ROVs (online course)

*Project ROVe (Remotely Operated Vehicles for Educators) educates and empowers Teacher at Sea Alumni to integrate maritime technology into their curriculum through underwater robots.*

In this course, you will collaborate with other alumni and representatives from the National Marine Sanctuary Foundation and/or NOAA's Office of National Marine Sanctuaries (ONMS) to explore ROV technology, build simple underwater ROVs, and create an implementation plan for your classroom.

## Project ROVe Goals:

- To bridge engineering and other subjects in a transdisciplinary and engaging way, while meeting required standards.
- To infuse maritime technology into course curriculum.
- To introduce students to various STEM career fields.
- To create opportunities for alumni to collaborate around a topic area.
- To promote team development with the Teacher at Sea Alumni Association and its alumni, NOAA, the National Marine Sanctuary Foundation, and other partners, locally and globally.

# Course Overview and Statement of Work

## Course Goals:

This course will be conducted through an online learning management system and will feature both synchronous and asynchronous activities including required reading/videos, participation in online discussions, monthly virtual cohort meetings (sometimes twice a month), online webinars and guest speakers, and hands-on activities. See the monthly schedule at-a-glance below for more detailed information.

**Tasks/Responsibilities (before, during, and after the course):**

- Active participation in both synchronous and asynchronous activities of the virtual course (this will include participation in online forums, monthly meetings, and completion of required activities).
- Create a plan for integration into your curriculum (e.g., unit plan).
- An ongoing commitment to the use of ROVs in your programming.

# Project ROVe: Introduction to ROVs

## Monthly Schedule At-A-Glance*

| ROV Kick-off | Robots & ROV Systems | Engineering Design |
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| We will kick off this cohort with our first virtual meeting and a fun simulation to get your feet wet with ROVs. You will also be receiving your welcome kit with materials for the course.<br><br>• **Kick off meeting:** Welcome ROVers!<br>• **Activities**: M8R-SIM Challenge<br>• **Reading/Discussion**: No reading assigned this month, but feel free to peruse the book.<br>• **Homework**: Sign and return Statement of Work in online portal | We will take a look at a variety of robots and a closer look at ROVs. What defines a robot? What are the different types of underwater robots? What is an ROV and what systems make up an ROV?<br><br>• **Activities**: "Thinking Outside the Box" and Coat Hanger ROV<br>• **Reading/Discussion**: Underwater Robotics Chapter 1 (optional readings may be added)<br>• Webinar/Guest Speaker<br>• Cohort meeting | We will delve into the engineering design process and discuss frame designs for ROVs, including a variety of challenges you can pose to your students. This is where you can get creative!<br><br>• **Activities**: Give Hercules a Helping Claw<br>• **Reading/Discussion**: Underwater Robotics Chapter 2 & 4 (optional readings may be added)<br>• Webinar/Guest Speaker<br>• Cohort meeting |
| **Electricity & Circuits** | **Buoyancy, Ballast, & Payloads** | **Curriculum Connections & Implementation Plan** |
| This month, we dive into the brains of ROVs and look at simple circuits and circuit applications in your classrooms.<br>• **Activities**: SeaMATE Simple Circuits Kit/Lab; PhET online circuits lab<br>• **Reading/Discussion**: Underwater Robotics Chapter 8 & 9 (optional readings may be added)<br>• Webinar/Guest Speaker<br>• Cohort meeting | We will wrap up with a few other important concepts related to ROVs. You will also work on your implementation plan.<br>• **Activities**: Pressure and Density Stations<br>• **Reading/Discussion**: Underwater Robotics Chapter 6 & 7 (optional readings may be added)<br>• Cohort meeting<br>• Work on your implementation plan | This final month will be dedicated to finalizing your plan to implement ROVs in your educational setting.<br><br>• Cohort meeting<br>• Finalize implementation plan |

*Some components may be subject to change*

**Deliverables for Successful Course Completion (approximately 30 hours):**

1. Signed Statement of Work
2. Required homework assignments
3. Participation in webinars and cohort meetings
4. Implementation/Unit Plan

**Costs Associated with Course to be Paid for by the Alumni Association:**

- [Underwater Robotics](#) book $120
- Simple Circuits Kit + materials $85
- The course is free of charge to alumni, but graduate credits must be paid for by the alum (see below).

**Opportunity for Graduate Credit/Course Completion Certificate:**

This course is considered a graduate level course and we have partnered with the University of St. Francis (the same institution we use for graduate credits for the Teacher at Sea experience) to offer three graduate credits for successful completion of the course and three additional assignments [as detailed in this syllabus](#).

Alumni are responsible for registering and paying for the course (RECT 694: Remotely Operated Vehicles I) and completing the final assignments for the University. TASAA will share updated registration information when it becomes available. If you do not need graduate credits for your professional development, you will be provided with a certificate to document your hours upon successful completion of the course.

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I _____understand that if I fail to participate in the course activities, I may be required to return the course materials to the Alumni Association. I also understand that I must complete all required activities in order to receive a certificate of course completion and/or apply for graduate credits. Additionally, I understand that if I wish to register for Project ROVe: Design and Build, I must successfully complete Project ROVe: Intro to ROVs.


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Signature                                          Date