



MATE ROV COMPETITION

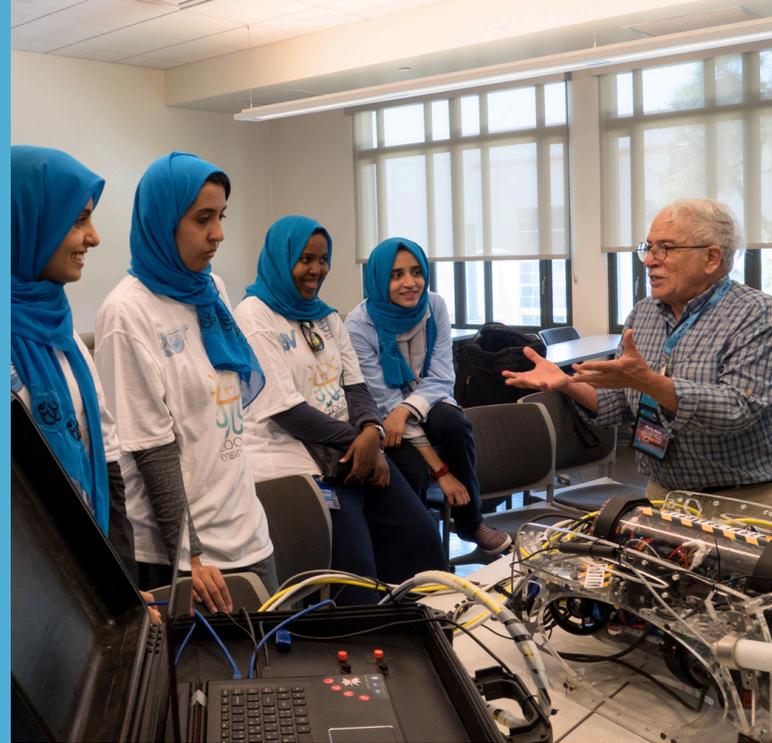
THIS IS MATE
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MATE is an underwater robotics competition, an education and training academy, and a collection of products and resources designed to support students, educators, and innovators diving into marine science and technology.

MATE is a global community of learners — students, educators, parents, mentors, and working professionals — inspiring and advancing innovative ideas for the sustainable use of our ocean.



BUILDING THE FUTURE WORKFORCE

MATE uses underwater robotics to excite and engage students in science, technology, engineering, and math (STEM) and connect classroom learning to real-world applications and careers. MATE brings learning to life through professional development workshops that impart knowledge and skills. Its robotics kits ignite creativity, while its competitions immerse participants in authentic science and technology scenarios and connect them with professionals from the workplace. Together, these experiences catalyze the development of the technical workforce through underwater robotics.



MISSION

MATE's mission is to inspire and challenge students to learn and creatively apply STEM skills to solving real world problems in a way that strengthens their critical thinking, collaboration, entrepreneurship, and innovation — and prepares them for the ocean technical workforce.

MATE ties together the **MATE ROV Competition**, the **MATE ROV Academy**, and the **SeaMATE Store** — three interconnected programs that can stand alone or combine to form a powerful learning journey. From educator training to student learning, to real-world competitions, MATE helps chart the course from the classroom to a career in the ocean workforce.



MATE is an integral part of the Marine Technology Society (MTS) — a global community dedicated to advancing marine technology and fostering collaboration across industry, academia, government, an education. . To learn more about MTS, visit mthsociety.org.

MTS 
marine technology society



MATE ROV COMPETITION

Few experiences prepare students for the real-world like the MATE ROV Competition.

MATE competitions use ROVs as a vehicle to show how STEM applies in the real world. Students take on the role of entrepreneurs, transforming their teams into companies that design, build, and operate technology solutions. From surveying shipwrecks to collecting data and maintaining offshore platforms, participants tackle real challenges, think creatively, work collaboratively, and gain valuable business and technical skills — all essential for success in the ocean workforce and beyond.

In addition to underwater technologies, student teams are required to prepare technical documentation and deliver engineering presentations to professionals who serve as judges, solidifying the connection to real-world workplace practices and showcasing examples of potential careers. Students are also required to create a marketing (poster) display that communicates information about their vehicle design, their team, the problems they were tasked to solve, and how these problems relate to the real world.

OPPORTUNITIES FOR EVERY AGE & EXPERIENCE LEVEL

The MATE ROV Competition welcomes K-12 public and private schools, community and technical colleges, universities, homeschools, and community organizations to participate. Student teams can join any of the **five competition classes** based on grade level and their experience with robotics. Although SeaMATE ROV Kits are not required to compete, the kits offer a starting point and remove the uncertainty of what and where to source components.

IMPACT

- **Students** report an increase in their ability to apply STEM knowledge and skills to solving real-world problems.
- **Educators** saw improvements in team building, critical thinking, and problem-solving.
- **Parents** reported that their children's grades had improved.
- **Industry professionals** agree that MATE prepares students for the workplace.
- **Alumni** report that MATE had a positive impact on their education and careers.
- For more information, please visit materovcompetition.org for the annual **MATE Impact Report**.



COMPETITION CLASSES

SCOUT

ELEMENTARY — MIDDLE SCHOOL | BEGINNER



The **SCOUT Class** allows learners to explore science, engineering, and mission operations. Learning resources introduce simple circuits and concepts such as Ohm's Law, physical science and Newton's Law of Motion, buoyancy and Archimedes' Principal. Recommended for elementary and middle schools new to robotics.

- 12 VDC
- 15 AMPS
- NO CAMERA

SeaMATE ROV Kit:



NAVIGATOR

MIDDLE — HIGH SCHOOL | BEGINNER/INTERMEDIATE



NAVIGATOR Class teams dive further into learning the engineering design process, the role of technology in society, electrical circuits, mechanical engineering, physical science, ocean engineering, and computer science. Recommended for middle school teams with robotics experience and high schools new to robotics.

- 12 VDC
- 15 AMPS
- REQUIRED

SeaMATE ROV Kit:



RANGER

MIDDLE — HIGH SCHOOL | INTERMEDIATE



RANGER Class teams apply critical thinking skills to accomplish complex tasks with innovative solutions, autonomous vehicle operations, digital or analog control systems, and computer coding. Recommended for middle and high school students with a good understanding of robotic systems and circuitry.

- 12 VDC
- 25 AMPS
- REQUIRED

SeaMATE ROV Kit:



PIONEER

COLLEGE — UNIVERSITY | INTERMEDIATE/ADVANCED



The **PIONEER Class** provides an entry point for post-secondary schools. These collegiate teams build advanced robots with more sophisticated systems, fabricate vehicle frames and components, and complete complex mission tasks. Recommended for two-year community and technical colleges and universities new to MATE.

- 12-48 VDC
- 25-30 AMPS
- REQUIRED

SeaMATE ROV Kit:



EXPLORER

HIGH SCHOOL — UNIVERSITY | ADVANCED



The **EXPLORER Class** is the most advanced level. Teams must create a custom and complex vehicle, demonstrate applied understanding of electronics and computer programming, integrated circuits and sensors, and waterproofing canisters. Recommended for two-year colleges, universities, and high schools with advanced robotics programs.

- 48 VDC
- 30 AMPS
- REQUIRED

SeaMATE ROV Kit:





MATE ROV ACADEMY

Education and training resources are housed within the MATE ROV Academy. The Academy supports educators to develop and build upon their own knowledge and skills so they can guide and mentor students through the process of engineering and constructing underwater technologies. The MATE ROV Academy provides professional development workshops for educators as well as facilitates student-focused experiences that introduce ROVs and allow students to apply knowledge and skills, practice operating their creations, and receive feedback from professionals in the field.

Professional development workshops are designed around the **five SeaMATE ROV Kits and Building Guides**, allowing educators to choose which training is right for them. During the workshops, educators gain practical experience building and operating ROVs, learn foundational engineering and electrical concepts, and explore proven classroom strategies for engaging students in hands-on learning and implementing underwater robotics into their classroom, afterschool program, or informal learning environment. MATE ROV Academy workshops are designed to build confidence and skills step by step, so that educators can provide their students with meaningful, career-connected experiences from day one.

MATE ROV ACADEMY

These materials, activities, and resources are aligned with educational standards, such as the Next Generation Science Standards (NGSS), Common Core, International Society for Technology in Education (ISTE), and Ocean Literacy Principles, that make it easy for educators to incorporate MATE underwater robotics into their classrooms, afterschool programs, and informal learning environments. SeaMATE kits and instructional resources are designed to support educators in meeting their teaching requirements in a way that excites, inspires, engages, and empowers students in learning.





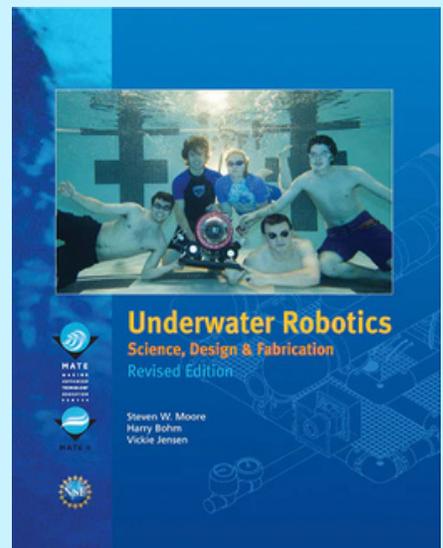
SEAMATE STORE

Each SeaMATE ROV Kit comes with the core components needed to get started — including motors, propellers, control box parts, wiring, connectors, and tether materials. Each kit also includes a **Building Guide with instructional materials and resources**, such as lesson modules, build sequences, hands-on activities, team-building exercises, how-to videos, PowerPoints, references to the **MATE textbook *Underwater Robotics: Science, Design & Fabrication***, and more.

SeaMATE kits and instructional materials are aligned with educational standards and ocean literacy principles, which speak to academic rigor and allow educators to meet their teaching requirements. Educators leave professional development workshops with certificates that validate their achievements and provide formal recognition of the knowledge and skills attained through the MATE ROV Academy.

Created to support student learning and remove barriers to participation, the SeaMATE Store is a one-stop shop for affordable ROV kits, components, skill-building activities, sensors and tooling, power supplies, tool kits, spare parts, and more.

SeaMATE products are developed to overcome the hurdle of how to get started and then continue to build upon and apply knowledge and skills to underwater robotics. Like the classes that make up the MATE ROV Competition, the progression of five SeaMATE ROV Kits complements the educational pipeline, allowing students to advance from one kit to the next as they advance their understanding and abilities and are ready to tackle more complex challenges.



For more information about SeaMATE Kits, Building Guides, and the *Underwater Robotics* Textbook, visit seamate.org.



MATE engages a diverse global community of learners in developing tangible skills and technical solutions to the societal and environmental challenges that can impact us all.

Here's how you can participate:



Join a student team in your area



Coach or mentor a student team



Host a regional competition event



Sponsor a team, event, or program



Volunteer at a local event



Donate to support the mission

GET IN TOUCH

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 materovcompetition.org



READY TO DIVE IN?
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