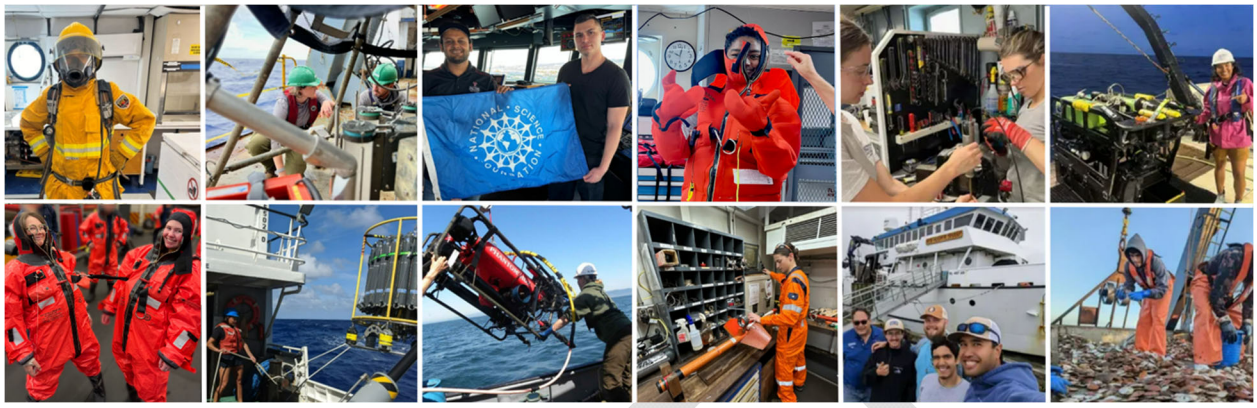
UNOLS-MATE Marine Technical Internship Program

A Guide to Mentoring Marine Technical Interns



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Student interactions with Faculty Advisors, the Program Manager and Professional Mentors

Figure 1 summarizes the student/intern tasks and personnel interactions during the entire program, including the application/interview period.

Figure 1
Student/Intern Tasks & Interactions with Faculty Advisors, Program Manager, Mentors, & Other Professionals

Before the internship starts	During the internship, interns	After returning home, interns
Before intern selection, students • receive guidance and support from Faculty Advisors • participate in student webinars with Program Manager, Alumni and Marine Technicians • review blog postings, career path stories, videos, and other resources • email Program Manager with follow-up questions, submit application with supporting documents • with assistance from the Program Manager, research ship/facility information, review practice interview questions and prepare responses, and conduct mock interviews **After intern selection, interns** • participate in preparation meetings with Program Manager, Mentors, UNOLS Technical Services Manager, Alumni, Marine Technicians, and peer students/interns • complete pre-internship Marine Technician Skills Self-Evaluation form and initial draft of the Internship Agreement and Work Plan • watch training videos, complete required exercises and preparation tasks, and submit pre-boarding forms • post introductory blog and submit the signed intern task check list • coordinate logistics with Program Manager, pack, and travel to the internship site	• participate in ship/facility tours, get-acquainted activities with mentor, peer interns/students, and other shipboard personnel, and settle in • participate in orientation/safety drills • meet with Mentor to complete the Internship Agreement and Work Plan (schedule rest, meals and leisure activities during personal time off) • participate in shipboard/facility projects, receive training and perform assigned duties • meet with Mentor regularly to plan daily activities, review work, and receive feedback • whenever possible, complete informational interviews, solicit professional career advice, and shadow other shipboard/facility personnel • keep a reflection journal (daily tasks, exposure to new instruments and equipment, skills acquired, contacts, feedback, milestones, etc.) • take photos/record videos if possible • post weekly blogs about internship activities and experiences • participate in weekly check-ins with the Program Manager • complete Marine Technician Skills Self-Evaluation form before departing, discuss with mentor, and solicit final feedback and professional career advice	• reflect on skill development, learning outcomes, feedback, and complete reflection essay • participate in post-internship meeting with Program Manager • complete confidential online evaluation of the program, the Mentor and the Program Manager • discuss professional development with UNOLS Technical Services Manager and Marine Technicians • receive Certificate of Completion for the specialized technical training received during the internship • complete a 5-year career plan • complete updated employment packet (cover letter, resume, professional references, letters of recommendation) • join professional listservs, UNOLS-MATE Alumni group, and UNOLS Tech Pool • participate at RVTEC meeting and other professional events, receive additional technical training, network, and explore employment opportunities • become established member of RVTEC community, join webinars, working groups, and contribute to committee projects • share internship experiences at home institution, contribute to internship program, and advance studies • apply for employment opportunities

Faculty Advisor: Faculty advisors share announcements with their students, encourage them to apply, assist them with the application process, including writing letters of recommendation, and provide ongoing support. Many of these faculty run marine technical and engineering programs at their institutions. They organize events and design course projects that help students develop competitive skills and prepare them for potential placements in the Internship Program. The Program Manager shares announcements, conducts webinars, and maintains relationships with faculty advisors from nationwide colleges and universities.

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Program Manager: The Program Manager oversees all aspects before, during and after the internship, and acts as ombudsman as needed. This communication begins with advising potential candidates about the initial application process to help them meet all the requirements for consideration into the program. Candidates are encouraged to provide application responses and supporting documents that demonstrate their technical aptitude, relevant training/education, transferable skillsets, and show a genuine interest in pursuing a marine technical career. The Program Manager also provides guidance for successful interviews with practice interview questions, and conducts mock interviews to help candidates prepare for the interviews with hosts.

Before the internship starts, the Program Manager provides interns with a packet that includes all the program instructions, logistic and contact information, safety procedures, all the forms and assignments that will be completed, and a list of resources (reports, articles, videos, etc.). A step-by-step check list of all the intern responsibilities is also included to help the intern track their progress. The Program Manager meets with interns to go over all the materials, travel plans, safety requirements, explain required forms and assignments, offers packing suggestions, and even discusses tips on how to interact professionally (e.g., be civil, listen actively, ask questions, stay focused, show interest in learning and being involved). These discussions allow the interns and the Program Manager to build a relationship and build trust, even though they are geographically separated. They take place by video conferencing as often as needed to ensure interns are set up to succeed. To help interns understand their responsibilities and prepare for the experience, they are required to complete pre-internship tasks with follow-up discussions, including watching the *UNOLS Ship Safety Orientation* and the *3-Module Shipboard Civility Program* training videos [19-20].

During the internship, the Program Manager maintains communication with the interns via email, text, voice and video calls. For short-term internships, weekly check-ins are scheduled and for long-term interns, weekly check-ins take place the first month and bi-weekly after the first month. Interns are also encouraged to contact the Program Manager if any issues arise outside the scheduled check-ins. The Program Manager is always available to offer guidance, discuss communication strategies, help resolve conflicts, and assist with travel changes as needed. Intern experiences and tasks are also tracked via the weekly postings on the *Marine Technical Internship Blog* [4].

After the internship, the Program Manager schedules a meeting with the interns to review all the completed tasks, paperwork, discuss their favorite activities, feedback they received, and hear any constructive criticism about the overall internship experience. The Program Manager also guides interns through a career development component to review the new skills acquired, develop a 5-year career plan, put together a job-ready employment packet, and a plan to continue networking with the marine technical community. A more detailed description is included in the section on intern professional development.

Professional Mentor (Host): Mentors help interns prepare before the internship starts, provide training, support, and supervision during the internship, and ongoing professional career advice. Each intern is paired with a host mentor for the entire internship period. The Program Manager makes sure the mentors are prepared to support interns. Information on mentor preparation is included in the section on mentor professional development. Before the internship starts, the Program Manager coordinates pre-internship meetings between the interns and mentors to

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discuss preparations, describe daily activities, each party's obligations during the internship, and give interns the opportunity to ask questions and build rapport with their mentors before traveling to the field. During these meetings, mentors also ask interns what they hope to get out of the experience and plan projects of interest whenever possible. During the internship, the mentor is responsible for supervising the intern, assigning tasks according to the proposed work plan, providing technical training, and offering guidance, feedback and support throughout the internship. Since most interns have limited or no prior experience with the ship's research instruments, the mentor guides them through the tasks, awarding greater independence as the internship progresses.

At the end of the internship, mentors give interns positive feedback, suggestions for improvement, and professional career advice. Mentors also have the opportunity to interact with interns during RVTEC community projects and meetings. The Program Manager also checks-in with mentors during the internships on a bi-weekly basis. Mentors complete written mid-term and final assessments, and a confidential post-internship evaluation for all interns. Two mid-term assessments and one final evaluation are completed for the long-term intern. Mentors are also encouraged to contact the Program Manager if any issues arise outside the scheduled check-ins.

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PART I

Strategies for Supporting Interns and Their Mentors

A Brainstorming Session

The purpose of this session is to discuss intern support strategies, and what mentors need to provide essential support for interns while meeting demanding shipboard responsibilities. Participants discuss challenges interns and mentors face, and the resources needed to mentor effectively.

DISCUSSION PROMPTS (participants answer questions in groups and share with class):

- Participants answer questions in separate pairs or groups
- Each team share results with the whole class
- Facilitator guides a final whole class discussion

1. What challenges do interns face?
2. What challenges do mentors face?
3. What assistance and/or resources do mentors need?
4. What should be included in a Mentor Resource Guide?

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PART II

Improving Communication Strategies

Ensuring A Respectful Team Environment

The purpose of this session is to discuss mentor responsibilities in more depth, and list what mentors can do to help new members feel welcomed and supported. Participants are assigned four challenging scenarios and asked to explore communication strategies for amicably resolving each situation.

WHOLE CLASS BRAINSTORMING DISCUSSION PROMPT (Facilitator prompts participants to share examples with the whole class and records responses on white board):

What can mentors do to help new cruise participants feel welcomed and supported?

GROUP DISCUSSION PROMPTS:

- Participants discuss scenarios in separate groups
- Each group share results with the whole class
- Facilitator guides a final whole class discussion

SCENARIO A Two or more new team members with varying levels of skill and experience are working together for the first time. How can mentors adjust training to help all participants contribute and feel part of the team?
SCENARIO B The mentor is not always able to provide direct supervision or training every shift. How can the mentor help the new team member feel supported and use time efficiently when unsupervised?
SCENARIO C The new team member is not following the work plan and has become disconnected or distanced from the rest of the team. How can the mentor help resolve this situation?
SCENARIO D The new team member is upset and reports to the mentor that someone on board the ship is being disrespectful. How can the mentor help create and maintain a respectful team environment?

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PART III

Improving Communication Strategies

Role Playing for Conflict Resolution

The purpose of this session is to engage participants in role-playing exercises so they can practice communication strategies in a safe environment while simulating real-life situations. The participants are assigned roles with clearly defined scenarios, and work together in character to find solutions for solving specific conflicts.

Approximate Time (minutes)	Guided Tasks
5	Facilitator groups participants and assigns a role card to each A-E
10	Facilitator introduces session, instructions and discussion prompts
5	Each group executes the role play scenario and observers take notes
5-10	Each groups answers discussion prompts
5-10 each	Facilitator or group member reads each role-play prompt to whole class and group members share resolutions, comments, and take-aways
Alternate 10-15 each	Players act out scenario in front of the class and invite whole group discussion
5	Final comments (whole class)

ROLE-PLAY 1	ROLE-PLAY 2	ROLE-PLAY 3	ROLE-PLAY 4	ROLE-PLAY 5
PLAYERS: **A:** Michelle (Intern) F **B:** Felix (Marine Technician 1) M **C:** Amira (Marine Technician 2) F **D:** Observer 1 **E:** Observer 2 (optional)	**PLAYERS:** **A:** Alejandro (Chief Scientist) M **B:** Kimmi (Graduate Student) F **C:** Katherine (Marine Technician) F **D:** Observer 1 **E:** Observer 2 (optional)	**PLAYERS:** **A:** Nadia (PI) F **B:** Amanda (Graduate Student) F **C:** Elian (Marine Technician) M **D:** Observer 1 **E:** Observer 2 (optional)	**PLAYERS:** **A:** Jia (Ship's Engineer) F **B:** Albin (Marine Technician) M **C:** Steve (Scientist) M **D:** Observer 1 **E:** Observer 2 (optional)	**PLAYERS:** **A:** Hazel (Marine Technician) F **B:** Liam (Intern 1) M **C:** Oliver (Intern 2) M **D:** Observer 1 **E:** Observer 2 (optional)

ROLE-PLAYER CARDS

A	B	C
D	E	E

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ROLE-PLAY 1

GOAL: De-escalate tensions and help everyone feel respected.

INSTRUCTIONS:

STEP 1: Read the scenario and discussion prompts; it's ok to switch roles (2 minutes).
STEP 2: Players role-play the described scenario and improvise additional interaction to resolve the conflict (3 minutes).
STEP 3: Observers watch the interaction and take notes about the behavior, non-verbal communication, missed opportunities, and constructive feedback that can be shared with the group.
STEP 4: Share insights with the group during a post role-play discussion (5-10 minutes).
STEP 5: Share solution with the class (5 minutes).

PLAYERS:

A: Michelle (Intern)
B: Felix (Marine Technician 1)
C: Amira (Marine Technician 2)
D: Observer 1
E: Observer 2 (optional)

SCENARIO: Michelle, a new intern assisting the marine technical team on board a research vessel, joins Felix, an experienced Marine Technician working on deck. While Michelle is preparing equipment for deployment, Felix playfully tells her he is very impressed with her ability to troubleshoot technical problems despite being a girl. Michelle feels insulted. She wants to be taken seriously and be appreciated for her skills and hard work. However, she also feels very uncomfortable and isn't sure how to respond since she is new and a subordinate. Amira, another Marine Technician, happens to be standing nearby and hears the comments. She steps in and tells Felix his behavior is inappropriate. Felix tells her he was complementing Michelle and doesn't see anything wrong with his comment. **Players improvise the next few comments in an attempt to resolve the situation.**

POST ROLE-PLAY DISCUSSION:

1. Each player shares how they felt about their own performance.
2. Observers offer feedback.
3. The group shares:
    a. ideas about what went well, any positive behavior
    b. insights about ways to improve communication and calm tensions
    c. a time when they encountered a similar situation and how they would handle it differently
    d. the biggest take-away from this exercise; gained insights that can be put to practice
    e. Share with the class: communication strategies to diffuse tensions and help everyone feel respected.

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ROLE-PLAY 2

GOAL: Use equipment safely while satisfying the goals of the science expedition.

INSTRUCTIONS:

STEP 1: Read the scenario and discussion prompts (2 minutes).
STEP 2: Players role-play the described scenario and improvise additional interaction to resolve the conflict (3 minutes).
STEP 3: Observers watch the interaction and take notes about the behavior, non-verbal communication, missed opportunities, and constructive feedback that can be shared with the group.
STEP 4: Share insights with the group during a post role-play discussion (5-10 minutes).
STEP 5: Share solution with the class (5 minutes).

PLAYERS:

A: Alejandro (Chief Scientist)
B: Kimmi (Graduate Student)
C: Katherine (Marine Technician)
D: Observer 1
E: Observer 2 (optional)

SCENARIO: Alejandro, the Chief Scientist comes on board with a scientific instrument he built in his workshop. He wants to install it on the ship's equipment and send it down to collect samples. He tells Kimmi, the science team's Graduate Student, to give the instrument to Katherine, the Marine Technician, and to complete the sampling. Katherine is concerned this new instrument might damage the equipment on the ship and tells Kimmi they cannot proceed with the sampling. Kimmi goes back to Alejandro and shares the message. Alejandro tells Kimmi to go back to Katherine and let her know she is interfering with the scientific objectives of the expedition. Kimmi is caught in the middle and feels stressed out. She doesn't understand what went into making this instrument, and doesn't know what to do to ensure its safe use while completing the sampling. **Players improvise the next few comments in an attempt to resolve the situation.**

POST ROLE-PLAY DISCUSSION:

1. Each player shares how they felt about their own performance.
2. Observers offer feedback.
3. The group shares:
    a. ideas about what went well, any positive behavior
    b. insights about ways to improve communication and reduce Kimmi's stress
    c. a time when they encountered a similar situation and how they would handle it differently
    d. the biggest take-away from this exercise; gained insights that can be put to practice
    e. Share with the class: communication strategies to resolve this situation and satisfy the goals of the expedition.

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ROLE-PLAY 3

GOAL: Reach consensus and use ship time efficiently.

INSTRUCTIONS:

STEP 1: Read the scenario and discussion prompts (2 minutes).
STEP 2: Players role-play the described scenario and improvise additional interaction to resolve the conflict (3 minutes).
STEP 3: Observers watch the interaction and take notes about the behavior, non-verbal communication, missed opportunities, and constructive feedback that can be shared with the group.
STEP 4: Share insights with the group during a post role-play discussion (5-10 minutes).
STEP 5: Share solution with the class (5 minutes).

PLAYERS:

A: Nadia (PI)
B: Amanda (Graduate Student)
C: Elian (Marine Technician)
D: Observer 1
E: Observer 2 (optional)

SCENARIO: Graduate Student Amanda is onboard sampling a medium for PI Nadia who is not on the ship but in communication via telephone. Amanda is also told to collect samples for another PI with a different funding source who is also not on the ship. This other request does not align with Nadia's objectives. Amanda is trying to complete the requests for both PIs and asks Elian, the Marine Technician, for assistance. Elian tells Amanda that bad weather is causing delays and the sampling needs to be completed within 24 hours. He asks Amanda which task has priority because both cannot be completed within the available time. Amanda says she doesn't feel comfortable answering this question and Nadia is busy. Elian gets frustrated. He doesn't think it's his decision to make, but since he functions as a bridge between science and deck operations, he feels he is being forced to decide. **Players improvise the next few comments in an attempt to resolve the situation.**

POST ROLE-PLAY DISCUSSION:

1. Each player shares how they felt about their own performance.
2. Observers offer feedback.
3. The group shares:
    a. ideas about what went well, any positive behavior
    b. insights about ways to improve communication and reach consensus
    c. a time when they encountered a similar situation and how they would handle it differently
    d. the biggest take-away from this exercise; gained insights that can be put to practice
    e. Share with the class: communication strategies to resolve this situation and use ship time efficiently.

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ROLE-PLAY 4

GOAL: Make the best use of ship time while keeping everyone safe.

INSTRUCTIONS:

STEP 1: Read the scenario and discussion prompts (2 minutes).
STEP 2: Players role-play the described scenario and improvise additional interaction to resolve the conflict (3 minutes).
STEP 3: Observers watch the interaction and take notes about the behavior, non-verbal communication, missed opportunities, and constructive feedback that can be shared with the group.
STEP 4: Share insights with the group during a post role-play discussion (5-10 minutes).
STEP 5: Share solution with the class (5 minutes).

PLAYERS:

A: Jia (Ship's Engineer)
B: Albin (Marine Technician)
C: Steve (Scientist)
D: Observer 1
E: Observer 2 (optional)

SCENARIO: Jia, the ship's Engineer, reports an electrical issue in one of the labs and needs to turn off the power while she inspects the system. Albin, the Marine Technician, is instructed to go around and ask all the scientists to unplug the equipment. Albin asks Steve, one of the scientists running samples in the lab if he can unplug the equipment he's currently using. Steve says it's not possible because all the hard work of bringing the samples up from the deep will be lost. Since Steve is not cooperating, Albin's communication skills are being tested. He's trying to figure out how to proceed. It's his job to communicate ship malfunctions between the operators and scientists, so he needs to figure out how to best communicate this issue while trying to satisfy the science goals. **Players improvise the next few comments in an attempt to resolve the situation.**

POST ROLE-PLAY DISCUSSION:

1. Each player shares how they felt about their own performance.
2. Observers offer feedback.
3. The group shares:
    a. ideas about what went well, any positive behavior
    b. insights about ways to improve communication and diffuse tensions
    c. a time when they encountered a similar situation and how they would handle it differently
    d. the biggest take-away from this exercise; gained insights that can be put to practice
    e. Share with the class: communication strategies to resolve this situation, make the best use of ship time and keep everyone safe.

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ROLE-PLAY 5

GOAL: Help both interns feel part of the team while meeting challenging shipboard responsibilities.

INSTRUCTIONS:

STEP 1: Read the scenario and discussion prompts (2 minutes).
STEP 2: Players role-play the described scenario and improvise additional interaction to resolve the conflict (3 minutes).
STEP 3: Observers watch the interaction and take notes about the behavior, non-verbal communication, missed opportunities, and constructive feedback that can be shared with the group.
STEP 4: Share insights with the group during a post role-play discussion (5-10 minutes).
STEP 5: Share solution with the class (5 minutes).

PLAYERS:

A: Hazel (Marine Technician/Mentor)
B: Liam (Intern 1)
C: Oliver (Intern 2)
D: Observer 1
E: Observer 2 (optional)

SCENARIO: Liam and Oliver have been selected to intern with the Marine Technical Team during a multi-week science expedition running 24-hour operations. Oliver has prior experience working on a research vessel, but it's Liam's first at-sea expedition. Hazel, the Marine Technician is assigned to mentor both interns. She is also tasked with extremely demanding shipboard responsibilities. She decides to assign some of the more difficult tasks to Oliver since he has more experience, but Liam claims that Oliver is getting to participate in more interesting projects and feels like he's not part of the team. Hazel asks Oliver to involve Liam, but the interns are not able to agree on task allocation. A rivalry is developing between the two. Hazel feels overwhelmed. She needs to function as a mediator between the two interns, but she can't provide direct supervision during the entire shift. **Players improvise the next few comments in an attempt to resolve the situation.**

POST ROLE-PLAY DISCUSSION:

1. Each player shares how they felt about their own performance.
2. Observers offer feedback.
3. The group shares:
    a. ideas about what went well, any positive behavior
    b. insights about ways to improve communication so all participants contribute
    c. a time when they encountered a similar situation and how they would handle it differently
    d. the biggest take-away from this exercise; gained insights that can be put to practice
    e. Share with the class: communication strategies to resolve this situation, help both interns feel part of the team while meeting challenging shipboard responsibilities.

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UNOLS-MATE Knowledge and Skills Guidelines for Marine Technical Interns

These guidelines have been developed to assist internship mentors in providing student interns with a broad exposure to the tasks performed by and responsibilities of a marine technician. These guidelines were developed for the six-month MATE/UNOLS internship but they are also appropriate for internships of shorter duration, however less breadth and depth would be expected. These guidelines were developed by MATE and UNOLS staff and technicians aboard UNOLS vessels using the Knowledge and Skills Guidelines (KSGs) for *Marine Technicians who work aboard research vessels* and the KSGs for *Oceanographic Instrumentation Technicians*. These guidelines are simply just that, guidelines. The actual internship will depend greatly on the science that will be conducted on the cruises in which the intern participates and also the knowledge and expertise of the internship host. We ask that the host keep the following guidelines in mind as the internship progresses.

I General Skills/Attributes

Below is a list of general skills/attributes we hope the intern will possess prior to the internship and also anticipate to develop further throughout the internship. When working with the *Areas of Specific Interest/Exposure* (see below), the internship host should make an effort to develop projects that require the intern to use and demonstrate the following General Skills/Attributes. For example, the host could give the intern a project that may be a bit beyond the intern's capabilities with the expectation that the intern will have to first work on his/her own, and if he/she gets stuck, he/she would have to figure out his/her limitations, define the problem and then seek additional resources or instruction to complete the project. The host could also require the intern to first put the problem in writing and then talk about the problem to practice both written and oral communication.

The Attitudes and Attributes of a successful intern are as follows:

- ☐ Resourceful
- ☐ Responsible
- ☐ Mechanical aptitude and dexterity
- ☐ Self-starter
- ☐ Able to communicate clearly both orally and in writing
- ☐ Patience
- ☐ Attention to detail
- ☐ Able to read and interpret manuals
- ☐ Able to troubleshoot and problem-solve
- ☐ Confident in decision making
- ☐ Able to work independently and in teams
- ☐ Able to recognize his/her limitations, seek help as needed
- ☐ Able to define & grasp the essence of the problem
- ☐ Follow-through, does not leave jobs unfinished
- ☐ Knowledge of and ability to use good customer relations skills
- ☐ Able to multi-task
- ☐ Able to think outside the box

General Academic Knowledge and Skills include:

- ☐ General computer skills, such as use of Microsoft Office programs, internet searches, and email
- ☐ Knowledge of and ability to apply basic electronic and mechanical skills

II Pre-Internship Reading

- ☐ MATE pre-internship quiz and associated resources
- ☐ Ship specifics for the internship host vessel(s)
- ☐ Cruise Planning Manual for the ship(s)
- ☐ UNOLS Research Vessel Safety Standards Manual
- ☐ Proposals/pre-cruise planning information for all science cruises on which they will participate
- ☐ Basic Navigation
- ☐ Basic Oceanography
- ☐ Basic Knots
- ☐ MATE Knowledge and Skill Guidelines for *Oceanographic Instrumentation Technicians* and *Marine Technician who work aboard research vessels*

III Areas of Specific Interest/Exposure

Cruise Preparation / Logistics

Expose the candidate to the pre-cruise preparation that occurs before each cruise. Some areas for the intern to observe/review/practice include:

- ☐ Pre-cruise databases or forms completed by the scientists
- ☐ Pre-cruise meetings/phone conversations
- ☐ Deck plans – understanding why certain equipment must go in certain places
- ☐ Scheduling of shared-use instrumentation
- ☐ Instrumentation preparation
- ☐ Coordination of shipboard scientific operations
- ☐ Loading/unloading and setup logistics
- ☐ Shipping procedures and time lines
- ☐ Customs requirements

Basic Seamanship

Expose the candidate to basic seamanship. Some areas to include:

- ☐ Common knots (square knot, sheet bend, clove hitch, trucker's hitch)
- ☐ Pertinent ship specifications
- ☐ Radio communication
- ☐ Beaufort Scale
- ☐ Basic navigation (see *Basic Navigation Further Suggestions/Activities* below)
- ☐ Ship terminology

Deck Rigging & Safety

Expose the intern to basic deck rigging and shipboard safety procedures. Some areas for the intern to observe/practice include:

- ☐ Hazmat receipt, storage, & basic clean-up (MSDS)
- ☐ Low Level Radioisotope Safety
- ☐ Safe operation of deck gear (e.g., winches, A-frames, cranes)
- ☐ Understanding of and ability to apply underway deck safety protocol
- ☐ Recognizing unsafe conditions and reacting properly
- ☐ Securing equipment (use of a ratchet strap, knots, etc)
- ☐ Basic deck & crane hand signals
- ☐ Launch and recovery of equipment and instrumentation and the rigging of equipment involved.
- ☐ Line handling, especially under tension
- ☐ When equipment can be safely deployed & why
- ☐ Parts of a block
- ☐ Dynamic vs. static loading
- ☐ Safe Working Loads (SWL) & breaking strength of wires, ropes, and equipment

Instrument set-up, operation and troubleshooting

Expose the intern to instrument set-up, operation, and troubleshooting. Specific instrumentation is listed in a separate section. Some areas for the intern to observe/practice include:

- ☐ Recognizing valid data, basic quality control procedures
- ☐ Reading, following, and understanding technical manuals and written procedures
- ☐ Reading schematics and mechanical drawings
- ☐ Troubleshooting systems
- ☐ Basic electronics repair and tool usage (soldering, etc.)
- ☐ Interfacing equipment (serial, GPS, data source)
- ☐ Calibrating procedures and standards
- ☐ Writing clear, concise log entries
- ☐ Maintaining calibration records & properly entering subsets of coefficients
- ☐ Completing an inventory of equipment and supplies
- ☐ Using correct units of measure

IT, Networks and Comms

Expose the intern to IT systems, networking and shipboard communication systems. Some areas for the intern to observe/practice include:

- ☐ Using software such as databases, spreadsheets, word- processing, communication (e-mail), ArcGIS, and PowerPoint
- ☐ Installing and maintaining operating systems, software, firmware, hardware, and networks
- ☐ Understanding peripherals, such as monitors, switches, adapters, routers, hubs
- ☐ Using basic network applications
- ☐ Using basic Linux Commands
- ☐ Processing, reducing, displaying, and storing data
- ☐ Backing up and storing data
- ☐ Distributing data, including Rolling Deck to Repository (R2R)

Introduction to Ocean Sciences and Communicating with Scientists

Although knowing the technical aspects is essential to succeeding as a Marine Technician, knowing the science behind why the technical aspects are needed is beneficial to see the big picture. Additionally, in order to fully support the science, communication is essential between the technician and the science party. Expose the intern to the science occurring on the cruises and encourage appropriate discussions with the scientists to develop rapport.

IV Instrumentation and Equipment

Expose the intern to the following instrumentation as much as possible with an emphasis on Level 1 instrumentation, followed by exposure to and experience with the level 2 and 3 instruments (see below).

Level 1: the goal is for the intern to become as proficient as possible in set-up, use, monitoring and troubleshooting this equipment alone by the end of the 6 months

- ☐ CTD and carousel (including sampling)
- ☐ Wire Termination (EM & Wire rope)
- ☐ Underway instrumentation (TSG, fluorometer, etc.)
- ☐ Met Sensors
- ☐ Echosounders
- ☐ Basic Test Equipment (e.g. multimeters, megohmmeter, etc.)

Level 2: the goal is for the intern to have experience in using and troubleshooting this equipment by the end of the 6 months

- ☐ Shipboard Networks
- ☐ Satellite Communication Systems
- ☐ Shipboard Data Acquisition System
- ☐ ADCP

Level 3: the goal is for the intern to have exposure to and perhaps experience using this equipment by the end of the 6 months

- ☐ Multibeam
- ☐ Dredging
- ☐ Nets/Trawls (including MOCNESS)
- ☐ XBT
- ☐ Salinometer
- ☐ Coring (multi-coring, gravity coring, Kaston, Box)
- ☐ Mooring Deployment and Recovery

V Additional Ideas for Mentors

Basic Navigation

- ☐ Convert decimal degrees to degrees and decimal minutes and reverse
- ☐ Understand why miles are measured on the sides of a chart and not the top and bottom
- ☐ Understand the difference between a nautical mile and a statute mile
- ☐ Understand why Greenland looks so big on a Mercator projection
- ☐ Understand the difference between Magnetic and True compass directions
- ☐ Understand the difference between compass variation and deviation
- ☐ Understand what differentiates uncorrected GPS, differential GPS, and WAAS GPS
- ☐ Plot the ship's position
- ☐ Plot the current position, a latitude/longitude pair
- ☐ Draw a course line (of say 235 degrees)
- ☐ Assuming no current, determine and plot the ship's new latitude/longitude after 2.5 hours at 10knots.

Basic Knots

The intern should be proficient in at least the following knots:

- ☐ Bowline
- ☐ Square Knot
- ☐ Sheet Bend
- ☐ Clove Hitch
- ☐ Trucker's Hitch

About UNOLS

University-National Oceanographic Laboratory System (UNOLS) is an organization of 61 academic institutions and National Laboratories involved in oceanographic research and joined for the purpose of coordinating oceanographic ships' schedules and research facilities. The original UNOLS Charter was written in 1972 and most recently revised in 2010. As of May 1, 2009, the office for UNOLS is located at the University of Rhode Island Graduate School of Oceanography in Narragansett, Rhode Island. One of the primary functions of UNOLS is to ensure the efficient scheduling of scientific cruises aboard the 21 research vessels located at 16 operating institutions in the UNOLS organization.

RVTEC Code of Conduct

1. RVTEC is committed to creating a welcoming environment.
The RVTEC Code of Conduct is intended as a supplement to the UNOLS Code of Conduct[1]. Developed collaboratively by the RVTEC community, this document reflects our dedication to creating a welcoming environment and provides the guiding principles for how we engage with one another respectfully and hold ourselves accountable.

A welcoming environment includes:

- Encouraging ideas and contributions from everyone.
- Having equal access and opportunity for participation.
- Being accountable to each other and considerate in our language.
- Recognizing that our behaviors affect those around us.

2. Having a Code of Conduct matters.
Developing a RVTEC code of conduct shows that we intend to hold ourselves responsible to live up to values that support and positively impact our community. Our code helps us create a welcoming environment by clearly defining the behaviors we encourage, as well as those we discourage. It also helps all of our members feel empowered and welcomed to participate fully within RVTEC no matter their gender, sexual orientation, disability, physical appearance, age, body size, race, religion, education, national origin, political affiliation, or cultural identity.

3. Who does the Code of Conduct apply to and when?
The Code of Conduct applies to interactions and behaviors between representatives of the RVTEC community, guests and other attendees during professional events and related social gatherings, including:

- RVTEC annual meetings
- RVTEC subcommittee meetings
- RVTEC online communications (email, social media, virtual events, etc.)
- Social events under the umbrella of RVTEC

4. Examples of appropriate behaviors:

- Act in a constructive manner free from any form of discrimination, harassment, unwanted attention, or retaliation.
- Support fellow technicians' access to information, tools, and resources necessary to be successful in their position and encourage asking questions. Credit sources and receive permission to share original ideas.
- Be considerate, respectful, and collaborative. Be aware of language and behavior that can be perceived as insensitive. Be mindful of people's personal space.
- Be accountable for your actions, learn from other viewpoints and experiences, and be open to change. It is ok to make mistakes; excellent community members learn from them.
- Be mindful of your surroundings. Respect the rules and policies of meeting venues, hotels, online platforms or other contracted facilities.
- Speak up when you identify someone in distress, dangerous situations, or failures to meet these guidelines by organizers or participants. Collaborate to improve policies and practices for the betterment of the RVTEC community.

5. Examples of inappropriate behaviors:

- Don't use intentionally offensive or insulting language, gestures or images. Hostile or derogatory comments are not permitted.

[1] https://www.unols.org/sites/default/files/202211ann_apII.pdf

- Don’t engage in unwanted physical or sexual attention, which includes but is not limited to questions of a sexual nature, asking for sexual favors, repeatedly asking for dates or contact information, or the inappropriate display of nudity or sexual images.
- Don’t engage in illegal activities. This includes but is not limited to engaging in violent and threatening behavior, inciting violence, stalking, intimidating, bullying, trolling, or retaliating against anyone who files a complaint.
- Don’t engage in sustained or willful disruption of talks or other conference activities, including online discussion and continued communication after a request to cease.
- Don’t post inappropriate images, comments or jokes on RVTEC community forums, including the mailing list, Slack, Zooms or other virtual formats.
- Don’t misuse or share private communications or personal information including deliberate “outing” of any aspect of a person’s identity without their consent.

6. Dealing with or reporting problems:
Anyone requested to stop unacceptable behavior as covered by this Code of Conduct is expected to comply immediately. In most cases a direct conversation between individuals may resolve a conduct issue.

For more information, or if you wish to report an issue, need assistance, and would like someone to follow-up, contact the RVTEC Chair, RVTEC Chair-Elect, or the UNOLS office. Contact information is available on the UNOLS website: https://www.unols.org/committee/research-vessel-technical-enhancement-committee-rvtec.

Meeting Organizers will discuss reports and may take any action deemed necessary and appropriate, including immediate removal from the meeting without warning, a formal report to the individual’s employer, or legal action.

Lastly, be aware of your own employer’s resources and reporting responsibilities while attending RVTEC meetings or traveling for work. Additional institutional resources may be found at https://www.unols.org/shipboard-civility.

For urgent or emergent issues, please contact the appropriate local jurisdiction.

7. Commitment to a process of continual improvement for the RVTEC community.
The "E" in RVTEC defines our community's purpose as the *Enhancement* of the Academic Research Fleet. To ensure that RVTEC has access to top talent with a variety of skills and perspectives it is imperative that RVTEC be a welcoming community with equitable opportunity and access for everyone. Commitment to this code of conduct (as a community and as individuals) is one of many iterative steps toward the continual improvement of service to RVTEC’s core mission.

FORM 3 UNOLS-MATE INTERNSHIP AGREEMENT AND WORK PLAN

Upon arrival, set-up a time to discuss, fill out and sign this document with your assigned mentor. Please email to maria@unols.org within the first two weeks of your internship.

The purpose of this agreement is to ensure that the internship experience is productive and beneficial to both parties. This agreement outlines the obligations of the intern and the hosting organization.

This internship agreement is between UNOLS-MATE Intern _____ (print intern's name), and _____ (print mentor and host organization's name) which has agreed to serve as a partner organization in the UNOLS-MATE At-Sea Technical Internship Program. This internship will begin ___/___/_____ and end ___/___/_____ (including travel days). In addition to the training the intern will receive, UNOLS will cover travel expenses and provide a $___ weekly stipend to cover all other expenses connected with participation in program. Either party may terminate the internship at any time.

Intern Agreement

I acknowledge that I have been given a unique opportunity to gain valuable professional experience. I have reviewed the enclosed internship work plan and feel confident that I will be able to fulfill the job duties described in a timely and professional manner. If I am unable to complete my work plan, I may lose my rights to any monetary compensation for this experience. I also acknowledge that this internship is to be considered an academic experience and that my performance will be evaluated based upon the following criteria:

- My ability to perform in a professional manner, as indicated by my ability to arrive on time, my ability to meet deadlines, my ability to take initiative in learning, and my ability to interact with my mentors and colleagues;
- My learning during the internship, as indicated by my ability to fulfill the work plan and my development of the skills identified in the work plan;
- The evaluation of my supervisor; a self-evaluation of my skill development, and a reflection essay to be completed within two weeks of the end of the internship describing my learning experience.

_____ ____/____/_____

Intern's Signature Date

Mentor Agreement

I agree to mentor the UNOLS-MATE Intern. I acknowledge that this will be an academic experience as well as a professional experience for the intern, and agree to provide learning assistance and supervision throughout the internship. I certify that during the internship, the intern will gain experience with the skills outlined in the attached work plan. I agree to consult with both the intern and the internship program manager before making any major changes to the work plan.

_____ ____/____/_____

Mentor's Signature Date

Program Manager Agreement

I, Maria Osiadacz, UNOLS-MATE Program Manager, will support the intern before, during and after their internship with logistics, conflict resolution and any other concerns that may arise for the intern or the host. Based upon my interactions with the intern, I feel confident that they will be able to successfully participate in the internship.

_____ ____/____/_____

Program Manager's Signature Date

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WORK PLAN

Internship Description:

Major duties, expected products and timeline:

Duties/Tasks	Expected Products	Approximate Timeline

Technical and other skills to be developed during this internship:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

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Primary criteria for evaluation of intern's performance:

Learning Objectives: (NOTE: These have a specific required format. Please refer to the document "How to Write a Learning Objective" for instructions and examples.)

Objective 1:	
Objective 2:	
Objective 3:	

Other notes and comments:

_____ ____/____/_____
Intern's Signature Date

_____ ____/____/_____
Mentor's Signature Date

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UNOLS-MATE Marine Technical Internship Program
FORM 4 Marine Technician Skills Self-Evaluation

The purpose of this evaluation is to document the skills and knowledge you have developed during your education and internship experience. Please complete this form, sign it, and have your mentor review and sign it. Please keep a copy for yourself and submit one to the Program Manager, maria@unols.org.

I. OVERALL PERFORMANCE

Please rate your performance during the internship in the following areas (complete with post-evaluation only):

My effort level was:	low	modest	high
I was on time:	rarely	usually	always
I paid close attention and followed instructions:	rarely	usually	always
I completed projects in a timely manner:	rarely	usually	always
I asked questions:	rarely	sometimes	often
I completed _____ of my work plan:	some	most	all

II. Cruise Preparations / Logistics

Please rate your skill level and experience with the following instruments and equipment using a scale of 1-4, where:

1 = No Experience
2 = Novice (limited knowledge/experience)
3 = Competent (Need help on occasion)
4 = Expert (Very confident with use)

Task	Pre-Internship Skill Level	Amount of exposure during internship	Post-Internship Skill Level
Pre-cruise information completed by the science party	1 2 3 4	None some a lot	1 2 3 4
Deck Plans	1 2 3 4	None some a lot	1 2 3 4
Scheduling of Equipment	1 2 3 4	None some a lot	1 2 3 4
Instrumentation preparation prior to cruise	1 2 3 4	None some a lot	1 2 3 4
Loading for a science cruise	1 2 3 4	None some a lot	1 2 3 4
Unloading after a science cruise	1 2 3 4	None some a lot	1 2 3 4
Shipping procedures	1 2 3 4	None some a lot	1 2 3 4
Customs Requirements	1 2 3 4	None some a lot	1 2 3 4

III. Basic Seamanship

Please rate your skill level and experience with the following instruments and equipment using a scale of 1-4 as described in Section II.

Task	Pre-Internship Skill Level	Amount of exposure during internship	Post-Internship Skill Level
Common Knots	1 2 3 4	None some a lot	1 2 3 4
Radio Communication	1 2 3 4	None some a lot	1 2 3 4
Beaufort Scale	1 2 3 4	None some a lot	1 2 3 4
Units of Measure	1 2 3 4	None some a lot	1 2 3 4
Basic Navigation	1 2 3 4	None some a lot	1 2 3 4
Ship Terminology	1 2 3 4	None some a lot	1 2 3 4

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IV. Deck Rigging and Safety

Please rate your skill level and experience with the following instruments and equipment using a scale of 1-4 as described in Section II.

Task	Pre-Internship Skill Level	Amount of exposure during internship	Post-Internship Skill Level
Hazmat receipt, storage & basic cleanup	1 2 3 4	None some a lot	1 2 3 4
Low Level Radioisotope Safety	1 2 3 4	None some a lot	1 2 3 4
Safe Operation of deck gear (eg winches, A-frames, cranes)	1 2 3 4	None some a lot	1 2 3 4
Deck Safety Protocols	1 2 3 4	None some a lot	1 2 3 4
Ability to recognize unsafe conditions and react properly	1 2 3 4	None some a lot	1 2 3 4
Securing Equipment (using ratchet straps, line, etc)	1 2 3 4	None some a lot	1 2 3 4
Basic Deck and Crane Hand Signals	1 2 3 4	None some a lot	1 2 3 4
Instrumentation/Equipment rigging, launch & recovery	1 2 3 4	None some a lot	1 2 3 4
Line Handling, especially under tension	1 2 3 4	None some a lot	1 2 3 4
When Equipment can be safely be deployed & why	1 2 3 4	None some a lot	1 2 3 4
Parts of a block	1 2 3 4	None some a lot	1 2 3 4
Dynamic vs. Static Loading	1 2 3 4	None some a lot	1 2 3 4
Safe Working Loads (SWL) and Breaking Strengths of wires, ropes and equipment	1 2 3 4	None some a lot	1 2 3 4

V. Instrument set-up, operation & troubleshooting

Please rate your skill level and experience with the following instruments and equipment using a scale of 1-4 as described in Section II.

Task	Pre-Internship Skill Level	Amount of exposure during internship	Post-Internship Skill Level
How to recognize valid data, basic quality control procedures	1 2 3 4	None some a lot	1 2 3 4
How to read, follow, and understand technical manuals and written procedures	1 2 3 4	None some a lot	1 2 3 4
How to read schematics and mechanical drawings	1 2 3 4	None some a lot	1 2 3 4
Basics of how to troubleshoot systems	1 2 3 4	None some a lot	1 2 3 4
How to interface equipment (serial, GPS, data source)	1 2 3 4	None some a lot	1 2 3 4
Calibration procedures and standards	1 2 3 4	None some a lot	1 2 3 4
Write clear, concise log entries	1 2 3 4	None some a lot	1 2 3 4
Maintain calibration records & properly enter subsets of coefficients	1 2 3 4	None some a lot	1 2 3 4
Inventory of equipment and supplies	1 2 3 4	None some a lot	1 2 3 4
Units of measure	1 2 3 4	None some a lot	1 2 3 4

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VI. IT, Network and Communications

Please rate your skill level and experience with the following instruments and equipment using a scale of 1-4 as described in Section II.

Task	Pre-Internship Skill Level	Amount of exposure during internship	Post-Internship Skill Level
Use software such as databases, spreadsheets, word- processing, communication (e-mail), ARC-View, and Power Point	1 2 3 4	None some a lot	1 2 3 4
Install and maintain operating systems, software, firmware, hardware, and networks	1 2 3 4	None some a lot	1 2 3 4
Understand peripherals, such as monitors, switches, adapters, routers, hubs	1 2 3 4	None some a lot	1 2 3 4
Use of basic network applications	1 2 3 4	None some a lot	1 2 3 4
Basic Linux Commands	1 2 3 4	None some a lot	1 2 3 4
Process, reduce, display, and store data	1 2 3 4	None some a lot	1 2 3 4
Data back-up techniques and storage media	1 2 3 4	None some a lot	1 2 3 4
Data Distribution including Rolling Deck to Repository (R2R)	1 2 3 4	None some a lot	1 2 3 4

VII. EQUIPMENT AND INSTRUMENTS

Please rate your skill level and experience with the following instruments and equipment using a scale as described in Section II.

Task	Pre-Internship Skill Level	Amount of exposure during internship	Post-Internship Skill Level
CTD set-up and calibration	1 2 3 4	None some a lot	1 2 3 4
CTD use and deployment	1 2 3 4	None some a lot	1 2 3 4
CTD troubleshooting and maintenance	1 2 3 4	None some a lot	1 2 3 4
CAROUSEL troubleshooting and maintenance	1 2 3 4	None some a lot	1 2 3 4
NISKIN bottles set-up, maintenance & deployment	1 2 3 4	None some a lot	1 2 3 4
Thermosalinograph use	1 2 3 4	None some a lot	1 2 3 4
Thermosalinograph trouble shooting and maintenance	1 2 3 4	None some a lot	1 2 3 4
Fluorometer use	1 2 3 4	None some a lot	1 2 3 4
Fluorometer trouble shooting and maintenance	1 2 3 4	None some a lot	1 2 3 4
Transmissometer use	1 2 3 4	None some a lot	1 2 3 4
Transmissometer trouble shooting and maintenance	1 2 3 4	None some a lot	1 2 3 4
Echosounders use and troubleshooting	1 2 3 4	None some a lot	1 2 3 4
Meteorological Instrumentation troubleshooting and data acquisition	1 2 3 4	None some a lot	1 2 3 4
Basic Test Equipment (e.g. multimeter)	1 2 3 4	None some a lot	1 2 3 4
Wire Terminations (EM & Wire Rope)	1 2 3 4	None some a lot	1 2 3 4
Shipboard computers use and troubleshooting	1 2 3 4	None some a lot	1 2 3 4
Shipboard Networks use and troubleshooting	1 2 3 4	None some a lot	1 2 3 4
ADCP use	1 2 3 4	None some a lot	1 2 3 4
ADCP trouble shooting and maintenance	1 2 3 4	None some a lot	1 2 3 4

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Shipboard Data Acquisition System use and troubleshooting	1 2 3 4	None some a lot	1 2 3 4
Multibeam use and troubleshooting	1 2 3 4	None some a lot	1 2 3 4
Corers set-up, deployment and recovery	1 2 3 4	None some a lot	1 2 3 4
Dredges set-up, deployment and recovery	1 2 3 4	None some a lot	1 2 3 4
Nets and Trawls Set-up and Deployment	1 2 3 4	None some a lot	1 2 3 4
Expendable Bathythermograph deployment and data acquisition	1 2 3 4	None some a lot	1 2 3 4
Salinometer use and calibration	1 2 3 4	None some a lot	1 2 3 4
Salinometer trouble shooting and maintenance	1 2 3 4	None some a lot	1 2 3 4
Mooring Deployment and Recovery	1 2 3 4	None some a lot	1 2 3 4
Shipboard Communication Systems use and troubleshooting	1 2 3 4	None some a lot	1 2 3 4

What was the most beneficial part of this internship?

Describe an area in which you wish you could have had more exposure/experience.

_____ _____

Signature of Intern Date

_____ _____

Signature of Mentor Date

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UNOLS-MATE Marine Technical Internship Program ~ Five Year Career Plan

Please complete the self-assessment table below. This will help you organize and schedule your goals. Once you are finished with the table, write your five-year plan in response to the questions and guidelines in #3 below. Assemble all the material required in numbers 1, 2 and 3 below in one document and upload it to fulfill this assignment. Finally, don't forget to take the end-of-semester survey that will help us improve the course.

1. **Self-assessment table:** Make a list like the one below of the education/training/certification, experience and general skills you will need to enter the career you have chosen. For each, note whether they are required or simply add value to your "package," then note whether you have it or need it and where/how you can get it.

2. **Your Strategy:** Now you are ready to plan the next steps in your career path. For this exercise, you will list the steps you plan to take to gain the education, certification, and/or experience you need to enter the career of your choosing. Write a paragraph in complete sentences and in your own words listing needs you have identified in the table above and outlining generally the things you plan to do to address each need. Ideally, this should be a real-life strategy, considering your current situation and your overarching goals.

   In addition to education and certification, you should include plans on getting experience and for working on general skills that will help you get and keep a job in your chosen field. Throughout your timeline, you should focus on the qualifications required for your chosen career and for those that will add value to your "package" as a job seeker when you enter the labor market.

3. **Your Five-Year Plan!** Write a timeline for the time period you choose to cover with your plan (see below). The timeline will be a list of dates and the goals you have for that date. Be specific about where and how you will accomplish those goals. For example, don't say, "2025: Hydrographic Surveying License." Instead say something like…

   EXAMPLE:
   Based upon this internship, my interest in seafloor mapping has increased and I would like to prepare for a position in the hydrographic survey industry.

   Spring 2021: Complete A.S. Degree, Marine Technology, Cape Fear Community College (including courses in Hypack and GIS).
   Fall 2021: Apply for jobs in the Hydrographic Survey field
   Or Transfer to Northwest Michigan College to earn a Bachelor's in Marine Technology
   - Take courses in drone technology and mapping
   - Work on a Six Pack Coast Guard License

   2023: Enter the Hydrographic Survey workforce
   2023: Work towards professional certification in Hydrographic Surveying (THSOA)
   2025: Take test to earn a professional certification in Hydrographic Surveying and the Six Pack Coast Guard License

   Remember, this is a flexible process. You can change the five-year plan at any time to go in a new direction or to account for unforeseen circumstances. Also, if the five-year timeframe doesn't make sense in your situation, you may lengthen or shorten the timeframe of your plan to suit your circumstances. Perhaps you plan to pursue a Ph.D. in marine biology, and depending on where you are in your education, you may have far more than five years to go until the end of your education. In that case, you may want to lengthen the timeframe of your plan. If instead you plan to enter a one-year certificate program in GIS, work in a six-month internship, and then enter the workforce, a shorter timeframe might make sense. As a rule of thumb, the timeframe of your plan should be no longer than you can realistically foresee and long enough for you to plan your entry into the workforce beyond school or training. Hand in this project in the usual way and print out a copy to keep with you.

My name:				
My career goal:				
Education, training or certification	**Required/ added value**	**I have it.**	**I need it.**	**Where/ How can I get it?**
Experience	**Required/ added value**	**I have it.**	**I need it.**	**Where/ How can I get it?**
General skills	**Required/ added value**	**I have it.**	**I need it.**	**Where/ How can I get it?**

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SCORING RUBRIC: UNOLS-MATE Marine Technical Internship Program

Maria Osiadacz, Program Manager

		Least Qualified ⟵ SCORES (ranking 1 through 5 with 0.5 increments) ⟶ Most Qualified						
		assign 1 or 1.5	assign 2 or 2.5	assign 3 or 3.5	assign 4 or 4.5	assign 5	Criteria	Sample
	Assessment criteria	Poor, unprofessional	Adequate, with limitations	Satisfactory, good	Very good, professional	Outstanding, very impressive	Weight	Score
1: Interest in Marine Technology	**Demonstrated interest or enjoyment in learning about the fields of Marine Technology, Oceanographic Instrumentation & Equipment, Engineering, Electronics, or another closely related field**	No demonstrated interest	Demonstrated some interest in closely related discipline	Demonstrated some interest specifically in Marine Technology, Engineering or Robotics, or other Electronics/Technical discipline	Demonstrated high interest specifically in Marine Technology, Engineering or Robotics, or other Electronics/Technical discipline	Demonstrated very high interest specifically in Marine Technology, Engineering or Robotics, or other Electronics/Technical discipline; considering pursuing a career in these fields	**13%**	**4.00**
2: Soft Skills	**Soft skills: demonstrated enthusiasm for learning; positive attitude; respecting and working well with others; strong communication skills (good writing skills, ability to listen, ask questions and follow instructions); ability to work under pressure, meet deadlines and work effectively with teams***	No demonstrated interest in learning; no experience working with others; poor communication skills; no evidence of managing deadlines effectively or working well with teams	Some demonstrated interest in learning; little experience working with others; adequate communication skills with some limitations; limited evidence of managing deadlines effectively or working well with teams	Demonstrated some enthusiasm for learning with a good attitude; satisfactory experience working with others; satisfactory communication skills; satisfactory ability to meet deadlines and work effectively with teams	Demonstrated high enthusiasm for learning and very positive attitude, very good experience working with others; very good communication skills; high ability to meet deadlines and work effectively with teams	Demonstrated very high enthusiasm for learning and extremely positive attitude; excellent ability to work well with others; excellent communication skills; proven ability to meet deadlines and work effectively with teams	**11%**	**3.00**
3: Data Collection, Lab Safety	**Experience with and knowledge of field surveying/sampling methods, data collection/analysis, and laboratory safety protocols**	No evidence of skill development or knowledge	Demonstrated some, but very limited skills and knowledge (e.g., introductory classroom instruction with very limited application)	Demonstrated a satisfactory level of skills and knowledge (e.g., some training and application or informal practice)	Demonstrated very high level of skills and knowledge (e.g., formal training with practice or work experience)	Demonstrated outstanding level of skills and knowledge (e.g., formal training with lots of practice or significant work experience)	**5%**	**3.50**
4: Work with Tools, Instruments, Equipment	**Experience working with different types of hand and power tools; maintaining or repairing equipment, including experience working with oceanographic equipment and instrumentation**	No evidence of any experience	Demonstrated some, but very limited experience (e.g., introductory classroom instruction with very limited application)	Demonstrated a satisfactory level of experience (e.g., some training and application or informal practice)	Demonstrated very high level of experience (e.g., formal training with practice or work experience)	Demonstrated outstanding level of experience (e.g., formal training with lots of practice or significant work experience)	**11%**	**4.00**
5: Electronics	**Experience with and knowledge of electricity, electronic components and electrical wiring**	No evidence of skill development or knowledge; not familiar with electronics or electricity	Demonstrated some, but very limited skills and knowledge (e.g., introductory classroom instruction with very limited application)	Demonstrated a satisfactory level of skills and knowledge (e.g., basic skills with soldering and using a multimeter or similar tool)	Demonstrated very high level of skills and knowledge (e.g., some formal training and/or experience, can troubleshoot some systems)	Demonstrated outstanding level of skills and knowledge (e.g., advanced training and/or experience; can troubleshoot many systems)	**7%**	**3.00**
6: Engineering, Robotics, Industrial Skills	**Training in and/or experience with Engineering and/or Robotics; experience with industrial skills (i.e., hydraulics, welding, pneumatics, other fabrication processes)**	No evidence of skill development or knowledge	Demonstrated some, but very limited skills and knowledge (e.g., introductory classroom instruction with very limited application)	Demonstrated a satisfactory level of skills and knowledge (e.g., some training and application or informal practice)	Demonstrated very high level of skills and knowledge (e.g., formal training with practice or work experience)	Demonstrated outstanding level of skills and knowledge (e.g., formal training with lots of practice or significant work experience)	**7%**	**3.50**

SCORING RUBRIC: UNOLS-MATE Marine Technical Internship Program

Maria Osiadacz, Program Manager

		Least Qualified ⇐ SCORES (ranking 1 through 5 with 0.5 increments) ⇒ Most Qualified						
		assign 1 or 1.5	assign 2 or 2.5	assign 3 or 3.5	assign 4 or 4.5	assign 5	Criteria	Sample
	Assessment criteria	Poor, unprofessional	Adequate, with limitations	Satisfactory, good	Very good, professional	Outstanding, very impressive	Weight	Score
7: Computer Software, Programming	**Experience with computer software, programming languages**	No evidence of skill development or knowledge	Can use basic programs (MS Word, Excel, PowerPoint, email, etc.)	Can use basic programs (MS Word, Excel, PowerPoint, email, etc.); plus other software; limited proficiency in computer programming and/or analytics	Can use basic programs (MS Word, Excel, PowerPoint, email, etc.); other relevant software; proficient in computer programming and/or analytics	Can use basic programs (MS Word, Excel, PowerPoint, email, etc.); applicable software and experinced computer programmer and/or data analyst/scientist	**9%**	**4.50**
8: Computer Networking/IT Skills	**Experience networking computer systems, IT skills, and/or troubleshooting computer issues**	No evidence of skill development or knowledge	Beginner level; setting up home network and computers	Able to troubleshoot basic computer and networking issues; installing software; changing software configuration	Able to troubleshoot more advanced networking issues; installing software; changing software configuration; familiarity with server-client computing concepts	All previous plus experience with server-client computing environment, virtualization, cloud computing, etc.	**11%**	**1.50**
9: Marine Vessels, Time on the water	**Experience working or traveling on board marine vessels**	No evidence of any experience; never been at sea or on a lake	Introductory classroom instruction with very limited application; been on a boat a few times including tourist boats (e.g., tourist cruise, whale watching, educational tour, etc.)	Some training and application or informal practice; taken online course(s) about marine safety; spent time sailing or working on a boat (e.g., scuba diving at sea, sailing instruction, fishing)	Formal training with practice or work experience; taken class with practical boating experience; worked or studied on a research vessel or other professional vessel for less than to weeks	Formal training with lots of practice or significant work experience; significant boating and marine safety experience; worked on a research vessel or other professional ship for more than two weeks	**9%**	**3.00**
10: Managing Motion Sickness	**Ability to manage seasickness****	Never been on the water, don't know	Had difficulty managing motion sickness	Able to manage motion sickness after a short period of adjustment	Able to manage motion sickness enough to work in most conditions	Never experienced motion sickness; able to manage it always without interfering with work	**4%**	**2.50**
11: Technical Aptitude	**Overall technical aptitude; interest and ability in performing hands-on activities to maintain, repair and deploy equipment; ability to think critically about and troubleshoot technical problems*****	No evidence of technical aptitude	Very limited technical aptitude (e.g., introductory classroom instruction with very limited practice)	Satisfactory technical aptitude (e.g., some training and application or informal practice)	Very high level of technical aptitude (e.g., formal training with practice or work experience)	Outstanding technical aptitude (e.g., formal training with lots of practice or significant work experience)	**13%**	**3.50**
						Sample Final Score Calculation =	**100%**	**3.32**

* Soft skills is an overall assessment that can be gleaned from short responses and letter of recommendation.

** Motion sickness itself is not a disqualifying factor; it's helpful if candidate is aware of ways to manage it.

*** Technical aptitude is an overall assessment that can be gleaned from a combination of different responses.

ADDITONAL CONTENTS (in development)

- Internship program overview
- Mentorship – the Driving Principles
- How do interns prepare for the internship
    - Meetings with Program Manager, Technical Services Manager, Mentors, former MATE Interns, other Marine Technicians, other interns/peers
        - Discuss requirements before, during and after the internship
        - Introduction to life and work balance on board research vessels
        - Project description and logistics
    - Interns complete online learning assessment with resources about:
        - Oceanographic instruments;
        - Critical duties of marine technicians;
        - Appropriate behavior of shipboard personnel;
        - Maritime definitions related to UNOLS vessels; and
        - Marine safety on UNOLS vessels.
    - Interns watch the MERAS Shipboard Civility videos and review online resources
    - Interns watch the UNOLS Safety Videos
    - Interns complete Marine Technician Skills Self-evaluation Form
- How do Mentors prepare for and get to know interns before their arrival
    - Mentors review application materials
    - Mentors review the Pre-Internship Marine Technical Skills Self-evaluation Form
    - Mentors review the Internship Agreement and Work Plan Form
    - How to plan for the Pre-internship Zoom Meeting with Intern(s)
        - Introductions
        - Cruise planning and onboarding documentation requirements
        - Required online training
        - Discuss daily tasks and expectations
        - Site/ship-specific packing requirements
        - Site-specific travel requirements
    - Communicating with other team members and ship personnel about interns
- Supporting interns during the internship
    - Helping interns feel welcome
    - Introductions, facilities tour, stateroom assignments
    - Safety protocols/drills
    - Daily procedures and expectations
    - Mentors review and sign Internship Agreement and Work Plan
    - Shadowing and technical training
    - Providing ongoing support and feedback
    - Mid-internship check-in with Program Manager
    - Tasks interns can work on independently
    - Regular check-ins, constructive feedback, answering questions
    - Mentors review and sign the Marine Technical Skills Evaluation Form

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    - Final feedback/recommendations at the end of the internship
- Dealing with workplace challenges
    - Balancing work responsibilities with the time needed to teach/train interns
    - Understanding how much supervision/independence interns need
    - Dealing with personality differences/conflicts
    - What if things are not working out?
- Evaluating interns and the internship program after the internship
    - Reflecting on what worked well and what can be improved
    - Post-internship discussions with Program Manager
    - Completing the post-internship online evaluation
- What do interns do after the internship?
    - Reflect on experience
    - Informational Interview
    - 5-Year Career Plan
    - Update employment documents
- Resources

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LIST OF RESOURCES

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UNOLS Maintaining an Environment of Respect Aboard Ships Committee, https://www.unols.org/committee/maintaining-environment-respect-aboard-ships-meras.

Cruise Leadership Beyond the Science Mission: Training Guide for Chief Scientists in ARF, https://docs.google.com/document/d/14I00PyqzxxcGPQ-a3OyhcjNMRv4HhO3rpfxFn58n2O4/edit?tab=t.0#heading=h.ij9hfpe3w1xx.

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Training Leaders for Seagoing Polar Oceanography (2025), https://oceanographydigital.tos.org/flip-book/110286/2289254/page/22

"You don't have to push yourself until you break": Exploring rest during undergraduate field experiences (2025), "You don't have to push yourself until you break": Exploring rest during undergraduate field experiences

Life and Science at Sea: Advice for your First Scientific Research Cruise from Experienced Oceanographers (2025), lifeandscienceatsea.pdf

Navigating Gender at Sea (2023), Navigating Gender at Sea - McMonigal - 2023 - AGU Advances - Wiley Online Library

Know Before You Go: A Community-Derived Approach to Planning for and Preventing Sexual Harassment at Oceanographic Field Sites (2023), Know Before You Go: A Community-Derived Approach to Planning for and Preventing Sexual Harassment at Oceanographic Field Sites | Oceanography

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UNOLS-MATE Marine Technical Internship Blog (updated in 2023; with archived posts 2012-2022), https://mateblog.unols.org/.

UNOLS-MATE Marine Technical Internship Program Announcements, Fleet Highlights and Updates (2023-2026), UNOLS Quarterly Newsletters, Volumes 37-40 (1-4), https://www.unols.org/documents/unols-newsletters.

UNOLS-MATE Marine Technical Career Paths, MATE Alumni Career Path Stories, https://www.unols.org/unols-mate-marine-technical-internship-program#career-paths.

UNOLS-MATE Knowledge & Skills Guidelines for Marine Technical Interns, https://www.unols.org/document/document/unols-mate-guidelines-marine-technical-interns.

UNOLS-MATE Internship Program Marine Technician Skills Self-Evaluation, https://www.unols.org/document/document/unols-mate-internship-program-marine-technician-skills-self-evaluation.

UNOLS-Designated Facilities, Woods Hole Oceanographic Institution National Deep Submergence Facility and Other ARF Supporting Equipment and Services Facilities, https://www.unols.org/ships-facilities/national-deep-submergence-facility-ndsf/national-deep-submergence-facility-ndsf; https://www.unols.org/ships-facilities/unols-vessels/unols-designated-vessels/unols-designated-vessels/other-facilities.

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