2024 UC Field Safety Leadership Retreat
Bodega Marine Lab & Reserve
March 8-10, 2024
Welcome to Bodega Marine Laboratory & Marine Reserve

U.C. Davis Boating and Diving Safety Team
Boating Safety Officer: James Fitzgerald Boating@UCDavis.edu
Diving Safety Officer: Jason Herum Diving@UCDavis.edu
ABDSO’s: Greg Flederman & Abbey Dias
UCD-BML Marine Operations Manager: David Dann
"Dedicated to Providing a S.A.F.E. Learning Environment"

Supportive - Accepting - Focused - Engaging

Instructor Pledge:

We dedicate ourselves to delivering excellence and are motivated by learning with our students.

We are accountable for respectable and ethical conduct in the classroom and in the field.

We will conduct ourselves with honesty, integrity and personal responsibility.

We strive to create and maintain an environment that builds meaningful relationships among our students, staff and community partners.

We challenge ourselves to be innovative in our pursuits that will enhance and build a robust and rich learning environment, one that is built on quality communication, diverse experiences, acceptance of new ideas and creative solutions.

We strive to provide an optimal course setting and instructional support to help achieve your personal goals. Our goal is to provide a S.A.F.E. Learning Environment that invites participation, values each individual’s contributions and provides inclusive equity for ALL of our participants while serving their academic and vocational pursuits in spirit with the UC Principles of Community.

Our instructional commitment is to YOU. We value your input and ask that you share your individual needs and expectations to have success in the learning environment.

Please list and share the things you find important and helpful in providing you with a “S.A.F.E. Learning Environment” and which contribute to each participant’s success!
<table>
<thead>
<tr>
<th>Instructor Values = Student Values</th>
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<tr>
<td><strong>INSTRUCTOR CREDIBILITY</strong></td>
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<tr>
<td>Professional Integrity</td>
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<td>Engaging and Effective</td>
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<tr>
<td>Open and Receptive</td>
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<td>Respectful and Honest</td>
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<td>Trusting and Supportive</td>
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<td>Understanding and Accepting</td>
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<td>Non-Judgmental</td>
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<td>Qualified and Capable</td>
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<td>Advanced and Innovative</td>
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<tr>
<td>Open to Learning from Students</td>
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<td>Honor All Questions</td>
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<td><strong>POSITIVE LEARNING ENVIRONMENT</strong></td>
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<td>Safe Environment (Pyramid of Needs)</td>
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<td>Course Schedule and Learning Objectives</td>
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<td>Clear Goals and Expectations</td>
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<td>Student Readiness and Preparedness</td>
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<td>Relevant Climate for Course Content</td>
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<td>Learner Participation is Optimized</td>
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<td>Activities Support Course Content</td>
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<td>Positive Reinforcement and Feedback</td>
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<td>Objective and Fair Evaluations</td>
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<td>Learning Outcome= Real World Expectations</td>
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List and communicate any additional Essential Needs you may have:
Training Course Expectations
UC Davis Boating & Diving Safety Program

Courses offered by the UC Davis Boating and Diving Safety Program involve intensive (typically multi-day) training and evaluation components. Training courses incorporate classroom instruction, field demonstrations, and hands-on training opportunities. Arriving well-prepared will help you get the most from the training.

**Arrive well rested.**
Training courses tend to have an ambitious schedule that require long days (up to 12 hour days) during which you will either be in class, in the field, or having a meal. There is little down time during the training course.

**Know the schedule.**
Know the plan and what is expected of you prior to each classroom or field training exercise. You should bring a writing utensil, course books and binders and keep a copy of the schedule with you.

**Be physically and mentally prepared.**
Field exercises may cause fatigue especially when coupled with long training days. Physical fitness and prior experience in the field may be used to your advantage. Ensure you have reviewed pre-requisite course materials, have completed your homework, and flagged any questions you may have.
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Prepare your gear.
Make sure you have all required course gear (outlined in course syllabus) ready and accessible for training. Make sure you have considered the optional/recommended equipment. Labeling your gear is also a good idea. Please contact an Instructor prior to training if you need to borrow any gear items.

Be flexible and use situational awareness.
Field portions of the course may require schedule changes or modification to accommodate weather/water conditions, vessel availability, and group progress. Being flexible and situationally aware of your surroundings (environment, crew, vessel, mission), will be important for individual and team success in the field.

Self-assessment and care.
Communicate to Instructors how you feel with your progress and how you feel both physically and mentally. Bring food, snacks and fluids for hydration, medications, supplemental clothing and Personal Protective Equipment/Items to class. Your safety and well-being is our primary concern.
This Afternoon
Using the GAR Tool & Coldwater Survival

Skills & Activities

• When emergencies happen: Fire & Flooding
• Egress & Evacuation
• Sudden Cold Water Immersion
• 1-10-1 Rule
• Moving Water -vs- Big Water
• Self-Rescue
• Survival Equipment
• Signaling Equipment
• Survival Strategies

GAR Risk Calculation Worksheet

THE GAR IS BASED ON A TEAM DISCUSSION TO UNDERSTAND THE MISSION AND EVALUATE THE RISKS INVOLVED AND HOW THEY WILL BE MANAGED.

ACURATELY ASSESSING AND MANAGING THE RISK IS WHAT IS IMPORTANT: NOT THE ABILITY TO ASSIGN NUMBERS AND COLORS. THEY ARE TOOLS TO HELP YOU FACTOR AND QUANTIFY THE RISK.

Assign a risk code 1 (minimal risk) through 10 (maximum risk) to each of the eight elements below.

The discussion should start with the least experienced member speaking about the perceived risks for each category and should include the opportunity for team members to ask questions.

SUPERVISION: off-site management / total liability / qualifications / experience / communication clarity
PLANNING: assets / clarity / emergency action plan / hazards / transportation / route planning / flood plan
CONTINGENCY RESOURCES: available emergency services / fuel & water / first aid / shelter / evacuation
COMMUNICATIONS: two-way radios / satellite phone / weather beacon & transponders
TEAM SELECTION: matching / qualifications / experience / aptitude / familiarity / feedback
TEAM FITNESS: physical fitness / mental and emotional state / health concerns / rest & fatigue cycles
ENVIRONMENT: weather: temperature, wind, visibility, precipitation / terrain / water / remoteness / severity
EVENT & EVOLUTION COMPLEXITY: direct / step-procedures / task load / number of people-actors

TOTAL RISK SCORE: Combine the risk scores for each element and apply score to GAR evaluation scale.

If there is a risk score of 8 or higher in any category, the mission may need to be canceled, rescheduled or delayed until proper resources, personnel and mitigation factors can be employed. Consider not mobilizing assets and personnel, or sheltering in place.

GAR Evaluation Scale - Color Coding the Level of Risk

<table>
<thead>
<tr>
<th>Score</th>
<th>Color</th>
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<tbody>
<tr>
<td>0</td>
<td>GREEN</td>
</tr>
<tr>
<td>1-14</td>
<td>AMBER</td>
</tr>
<tr>
<td>15-32</td>
<td>ORANGE</td>
</tr>
<tr>
<td>33-50</td>
<td>RED</td>
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If the total falls in the GREEN zone risk is minimum, avoid becoming complacent.
If the total falls in the AMBER zone risk is moderate, adopt procedures and precautions to minimize the risk.
If the total falls in the RED zone avoid initiating the mission, until procedures, personnel and resources can be repositioned or conditions change that will reduce the risk.
“The Normalization of Deviance”
M/V Conception & R/V Titan
~Industry Impacts & Lessons Learned~

UC Davis Boating & Diving Safety Officers: BSO-James Fitzgerald & DSO-Jason Herum
Boating@UCDavis.edu / Diving@UCDavis.edu
Topic Agenda and Objectives:

• **Objective:** Provided with an overview of institutional and industry mishaps, discuss how the “Normalization of Deviance” influences your acceptance of risk and the importance of Informed Team Decision Making (I.T.D.M.) to help you manage those risks, and your potential strategies for evacuation, survival and rescue.

• **References & Resources:** UC Mishaps / MV Conception / RV Titan / NASA Challenger / GAR Tool

• **Discussion:** Normalization of Risk and Contributing Human Behaviors

• **Individual Readiness:** Informed Assessments and Situational Awareness for Safety and Survival
A Recent Historical Reflection and Memorial

U.C. Maritime Incidents

**UC Davis:** 2000 Sea of Cortez Boating Accident ~ 5 lives lost

**UC Santa Barbara:** 2018 UCSB Rancho Marino NRS ~ 1 life lost

**UC Santa Cruz:** 2019 Glacier Bay NP Diving Accident ~ 1 life lost

U.C. Davis Chancellor Larry Vanderhoef, who flew to San Diego to accompany the group home, called the accident "the most tragic in the history of the university."
What are the common threads and similarities that link our UC incidents with other industry related incidents?
Why Do Accidents Happen?
Human Error / Mechanical Failure / Inadequate Resources / Lack of Training / Poor Planning
Time Crunch (Clock & Calendar) / Funding & Supervision

~ Industry Mindset & Complacency ~

What do We do when we recognize Unsafe Situations?
Who is responsible for Your safety?
Recognizing the Normalization of Deviance
Mike Mullane ~ NASA
https://www.youtube.com/watch?v=NcgeWkG1HCg

Write down your thoughts.
What are some causing factors for the Normalization of Deviance in the work place?
Normalization of Risk -vs- Normalization of Deviance

Risk normalization is the gradual process through which higher-risk or dangerous practices become accepted over time.

**Normalization of Risk = Complacency**
The *normalization of risk* encompasses gradually accepting risky behaviors in a broad sense.

**Normalization of Deviance = False Sense of Security**
The *normalization of deviance* specifically addresses *socially accepted* deviation from established best practices that increase the risk.
Similarities & Differences
R/V Cyclops & Titan Submersible -vs- Space Shuttle Challenger

The Acceptance of the Risks and Potential Consequences
{Is it....., Trust, Complacency or BLIND FAITH?}

Do you have enough information?

- Knowledge: System Design and Fabrication Facts
- Performance Inspections and Corrective Actions
- Mission Controls and Safety Thresholds
- Communications and Emergency “ALL STOP”
- Trust & Faith in Human Systems
  - Awareness & Detection
  - Alarms & Communication
  - Prevention & Mitigation Actions
  - Emergency Response Actions
  - (Terminate the Mission?)
A Fact about Submersibles:
Once you are underwater you have to accept that you may be beyond saving....
Ocean Gate Submersible

In 2018, OceanGate's director of marine operations, David Lochridge, composed a report documenting safety concerns he had about *Titan*.

*OceanGate sued Lochridge for allegedly breaching his confidentiality contract and making fraudulent statements.*

James Cameron, who directed the 1997 film *Titanic*, visited its wreckage site 33 times, and piloted *Deepsea Challenger* to the bottom of the Mariana Trench, said he was "struck by the similarity" between the submersible’s implosion and the events that led to the *Titanic* disaster. He noted that both disasters seemed preventable, and were indirectly caused by someone deliberately ignoring safety warnings from others. Cameron expressed regret for not being more outspoken about concerns before the accident.
Submersible Research

What other less risky options and alternatives are available?
What about the What If’s?

• What if the rules & laws don’t cover it?
• What if the supervisor and plans don’t cover it?
• What if the other participants aren’t prepared?
• What if the environmental conditions are different than originally communicated?
• What if responsive emergency actions aren’t ready or close by?
• What if it is up to You?

Do you have these options if you choose to go?
• Egress & Escape-Self Rescue
• Evacuation Routes
• Survival Strategies & Supplies
• Signaling & Communications
• Rescue & Recovery
M/V Conception

Normalization of Risk and the Contributing Human Behaviors

- Ignorance?
- Arrogance?
- Negligence?
- Ego?
- Career Fear?
- Apathy?
- Fear of being Wrong?
- Not being Heard?
- Administrative Agendas?
  - Deadlines (Clock & Calendar)
  - Financial Constraints / Demands
  - Exposure- Press & Media
- Workplace Communications Climate?
- Fatigue?
- Other thoughts & ideas........?
Figure 8. Photo taken during accident voyage (August 31, 2019) of devices plugged in to charge at the port side aft corner of the salon on the Conception. (Source: J. Dignam).

Figure 18. Left: Photo from a previous voyage of stairway to the upper deck and restrooms of the Conception. Note the regular stowage of a polyethylene trash can under the stairway aft of the salon. Right: Still image from a 2019 video taken of the stairway on board the Conception with shelving installed. (Source: M. Ryan [left], R. Clevenger [right]).
M/V Conception
~Egress~
M/V Conception
~Time until Rescue~

Figure 12. Small passenger vessel Conception at sunrise prior to sinking. (Source: VCFD)

Figure 11. The accident site in relation to emergency response assets. The red triangle marks the site of the Conception fire. (Background: Google Maps)
Contributing & Causing Human Factors

Normalizing Unsafe Behaviors & Practices

• **Confirmation Bias:** Seeking out information that confirms existing beliefs.
• **Anchoring Bias:** Relying heavily on the first piece of information; it’s inconsequential or a justified deviation.
• **Hindsight Bias:** After a deviation people can believe that it was less significant, normalizing the behavior.
• **Groupthink:** When group consensus and harmony are valued over critical evaluation. ~Self-Censoring~
Contributing & Causing Human Factors
Normalizing Unsafe Behaviors & Practices

- **Status Quo Bias**: Preferring the current state of affairs versus honestly evaluating and correcting behaviors.
- **Optimism Bias**: Underestimating the likelihood of negative outcomes; “it’s all going to work out fine.”
- **Authority Bias**: Unquestioningly following the lead of authority figures, even when leaders deviate from best practices.
- **Dunning-Kruger Effect**: Individuals with low competence and low experience may tend to overestimate their knowledge and abilities.
What about the What If’s?

• What if the rules & laws don’t prevent it?
• What if the supervisor and plans don’t cover it?
• What if the other participants aren’t prepared?
• What if the environmental conditions are different than originally communicated?
• What if responsive emergency actions aren’t ready or close by?
• What if it is up to You, are You Ready?
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~Thank You~
Keep the Conversation Flowing!