**Science and Engineering at Sea**

**Materials List**

1. Build a Boat for Scientific Research (Groups of 3)
   1. Aluminum foil (1 piece per group)
   2. Tape (1 piece per group, 1.5ft)
   3. Straws (2 per group)
   4. Skewers (2 per group)
   5. Pipe cleaners (2 per group)
   6. Popsicle sticks (4-6 per group)
   7. Corks (2 per group)
   8. Cups (1 per group)
   9. Worksheet (1 per group)
2. Mission Submersible (Groups of 3)
   1. Strips and various size pieces of cardboard (3-4 per group)
   2. Syringes (2 per group)
   3. Plastic tubing (1.5 ft per group)
   4. Pulley wheel (2 per group)
   5. Binder clips, brads, and paperclips (4 per group)
   6. Clothespins (2 per group)
   7. Popsicle sticks (4-6 per group)
   8. Rubber bands (4-6 per group)
   9. Tape (1 strip per group)
   10. Fishing line, twine, and rope (2 ft per group)
   11. Scientific Equipment (toy truck, net with fish, etc.) (1 per group or enough to share during testing)
3. Plastic Soup
   1. Marine Debris PPT
   2. Trash Cards (serval copies for whole class, cut out each type of trash and stash them around the room)
   3. Whale Feeding Cards (1 card per student)
   4. A variety of trash (for containers to demonstrate how trash floats at different levels)
   5. Medium sized clear container (for demos)
   6. Small Fan (or something to move water with)
4. Ocean Engineering Challenge Save the Soup (put out varying amounts for teams to select from, or prepare a small amount of materials per team to get them started)
   1. Student Worksheets (optional, 1 per group)
   2. Cost Sheet (optional, 1 per group)
   3. Water Source (to fill testing stations)
   4. Bucket or Sink area for Testing (2 or more recommended, 1 can be for testing and one for prototyping)
   5. Soup or Vegetable Cans (must be identical for each team, 1 per team)
   6. Paper Cups
   7. Straws
   8. Paper Towels
   9. Rubber Bands
   10. Paper Clips
   11. Tape
   12. Balloons
   13. Plastic Bags
   14. Glue
   15. Corks
   16. Foam Pieces
   17. String
   18. Foil
   19. Pipe Cleaners
   20. Small Containers
   21. Miscellaneous Items
5. Volcanoes: The ring of fire in the pacific northwest
   1. PPT
   2. Volcano Cards
   3. Paper
   4. Pencil
6. Ocean Engineering Helping Hands (put out varying amounts for teams to select from, or prepare a small amount of materials per team to get them started).
   1. Student Redesign/Testing Sheet (optional)
   2. Cost Sheet (optional)
   3. Paint Sticks
   4. Popsicle Sticks
   5. Fasteners
   6. Small Cups
   7. Straws
   8. Paper Towels
   9. Sand Paper
   10. Rubber Bands
   11. Paper Clips
   12. Tape
   13. Wire
   14. Glue
   15. Corks
   16. Foam
   17. String
   18. Foil
   19. Pipe Cleaners
   20. Small Things to Move/Collect
   21. Miscellaneous Items
7. Life on a Vent: The Axial Seamount
   1. Printouts (1 per team, 3-5 students per team)
   2. Painters Tape (1 yard per team)
   3. Dry Erase markers (if using a board, or markers/crayons for paper)
   4. 1 large piece of paper or something to post animal cards too (e.g. wall, floor, etc.)
8. Ocean Careers - part 1 is whole class, part 2 is 1 per group at a PC
   1. PowerPoint for holland games (part 1)
   2. 1 worksheet per student (part 2)
   3. Internet access (part 2)

A 2 Part RCRV Careers activity where students learn about their interests and then do a web search about RCRV careers will be completed by February 2020, IF your students want that lesson let me know and I can add it! Email – Adam.Talamantes@oregonstate.edu