Master your **FLEET**

<table>
<thead>
<tr>
<th>High School</th>
<th>Standard(s): HS-ETS1-2, 1-3, 1-4, HS-PS2-2, CCS-ELA.SL.1,2,4</th>
<th>Topic: Working cooperatively to master the physics of <strong>FLEET</strong></th>
<th>Developed by: ASNE</th>
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**Overview:** During the next two lessons students will experiment with different solution processes for the Search & Rescue mission.

**Sample Lesson Flow**
- : Set high score in **FLEET** search and rescue mission (40 min), summary discussion (5 min)
- : Set high score in **FLEET** search and rescue mission (80 min), summary discussion (5 min)

**Prior Student Knowledge Required:**
- Using your engineering design process
- Experience with Search & Rescue discussion from Week 6

**Student Learning Objective:**
- Use an engineering design process to solve a real-world problem.

**Materials:**
- Computers with **FLEET** installed
  (Optional, Step #6) Students may want notetaking materials to record and share data.

**LESSON PLAN – (This uses the 5-E Model)**

**Engage**
1. Now you are pivoting to mastering **FLEET** and earning the high score. You have physics content knowledge and an engineering design process to guide your work. Start Week 8’s work by saying your engineering design process starts with a question or problem, our challenge for the next two lessons is:  
   Get highest score on **FLEET** Search and Rescue mission by (date of Week 10 class).
2. Start the group work by saying that many engineering problems have smaller engineering problems, so it is ok to have a big engineering solution like high score with smaller engineering solutions like determine the proper weight and balance of a ship to maximize maneuverability and speed.
3. We suggest that you let your group work as independently as possible. Your class could work together by forming teams focused on specific problems/solutions, or your class could work in teams that compete with each other and the larger **FLEET** community.
4. A couple suggestions:
   a. **Specialization is fine** – Engineering teams specialize, NASCAR teams specialize, and your team(s) may specialize too.
   b. **Ensure students brainstorm a few competing solutions and then test them** – It’s easy to rush through the engineering process to just use the simulator, but it will not be effective.
   c. **Communicating findings and theories is important** – Students may want to start a text group for texting and remembering their thoughts and findings, or start a team journal, or make quick videos summarizing this information.
   d. **Find the best solution, do not stress over the perfect solution.** Engineering is rarely about perfection, but students should use data to ensure they are moving toward better solutions.
5. Give your students a 15-minute warning before the end of class because tests may take up to 20 minutes.
6. (Optional) Consider what tools students may want to sketch solutions, document data, and share results with teammates.

**Evaluate**
7. Take a quick check at the end of class. Ask students to describe where they are in the design process and 1 interesting discovery they made during today’s class.

**Additional Resources**

A. The FLEET Forum is a resource that will grow over the course of the school year. You can seek and find answers to questions about the game, creating FLEET Clubs, and a place to share superlatives and awards. Log-in using your ASNE account at any time!

B. If your group wants to move to a college-level of understanding, the Naval Engineering Education Consortium has a YouTube channel that describes the basics of hydrostatics:

[https://www.youtube.com/playlist?list=PLxHEvq_hK_PzM0HSINlvSFrmisGC2sC1](https://www.youtube.com/playlist?list=PLxHEvq_hK_PzM0HSINlvSFrmisGC2sC1)