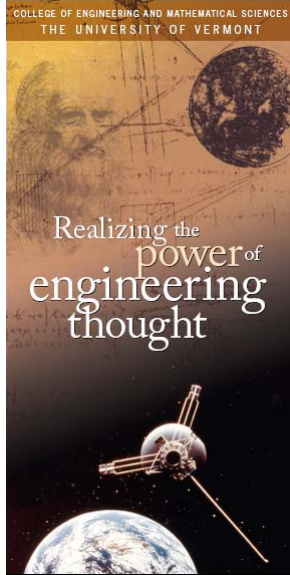


TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”



The University of Vermont (UVM) College of Engineering and Mathematical Sciences (CEMS) invites you to create a device that can use wind to compete on several different “ocean” courses (competition arenas, not actual water). Courses will include an uphill course, a downwind course, an across-the-wind course, and a course with ports of call among which cargo must be shipped. This is the final project description; it provides the details of this year’s Technology and Society Connection (TASC) project.

As the global community expands, the amount of energy consumed to ship materials and products around the planet is significant. Between 10 and 15% of all oil is consumed in shipping oil. One potential solution is to harness wind power as motive power for international shipping.

Note: Questions concerning this project may be directed to Cap’n TASC on the TASC [Contact Us](#) page. All answers will be posted on the

TASC [Frequently Asked Questions \(FAQ\)](#) page.

- A. THE DESIGN CHALLENGE
- B. REQUIREMENTS AND REGULATIONS
- C. COURSES
 - 1) UPHILL
 - 2) ACROSS THE WIND
 - 3) DOWNWIND
 - 4) ISLAND TIME
- D. DESIGN NOTEBOOK:
- E. TABLE DISPLAY:
- F. AWARDS:
- G. SCORING
- H. APPENDICES
 - 1) Safety Considerations
 - 2) Acronyms/Definitions
 - 3) Standard Supplies
 - 4) Additional Information
 - 5) Day of the Event

A. THE DESIGN CHALLENGE

Teams must design and build a “ship” (wind-driven vehicle) capable of transporting “cargo” (various standard small weights) from one point to another over a “course” (specified pathway and task) within a prescribed amount of time, using only wind power. Wind from box fans *in fixed positions around each arena* will provide the sole source of power for

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

locomotion. Ships themselves will have no additional sources of motive power. Although the project was inspired by wind-powered transport/cargo ships, vehicles designed for this competition will perform their tasks on solid surfaces, not on the water. Competition courses will be located in the Patrick Gymnasium tennis courts. It is recommended that teams compete on all four courses; competing on at least one course is required.

B. REQUIREMENTS AND REGULATIONS

The following list imparts the current list of rules for the project and for the competition. More may be added but none of these will be deleted or changed.

- Teams may consist of two to five (5) students. Teams may determine who participates in each of the arenas.
- Teams shall use a standard remote controlled (R/C) receiver/transmitter kit around which to build their ships. (Futaba Model FUTJ25**) Kit is hobby grade, not toy grade. Kit includes one (1) transmitter, one (1) receiver, two (2) servos, and one (1) four-cell battery box.

Kits can be purchased at Vermont Toy & Hobby at a discount for \$40.00 (regularly \$65.00). Shipping is available for \$5.00. Please contact Stuart Wilkins, Manager of Vermont Toy & Hobby, for details. Kits will be available in early September.


Vermont Toy & Hobby
21 Essex Way, Essex Shops and Cinemas
Essex Junction, VT 05452
Phone 802-878-1757

The sole purpose of the R/C kit is to provide the teams with a standard remote control for the ship functions (except propulsion). How the channels of remote control are used will depend on what a team designs to compete in each course.

- The receiver chip in the ship **MUST BE EASILY ACCESSIBLE**. The chip will be changed out at each competition course.



Eight different frequencies will be used during the competition, one frequency for each competition course. Chips with a specific frequency and a matching controller will be provided at each course.

- The ship must be capable of transporting the cargo designated for the course(s) on which the team chooses to compete. Designated cargo for each course is defined in Section C. Cargo types include:

Washers	1 ½ inch Fender Washers	
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TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

Hex Nuts	½ inch Hex Nuts Course Thread, zinc plated #13	
Pennies		

- Official cargo will be provided at the competition.
- Cargo transported during each event will be weighed at the completion of the event.
- The ship design may include means for remote control of direction (through whatever means the team designs) to make it possible to navigate on the courses that require it.
- All ship(s) – assembled or disassembled – must fit completely inside a single standard paper box (11”x17.5”x10”). These are the boxes in which reams of paper are shipped. When a team arrives at each course, their ship and all its components must be inside the closed box in any orientation. Components that are folded, collapsed, or removable are allowed.

Setup will be considered part of the 5-minute competition run time; i.e. the clock for a course will be started as the team opens its box to deploy the ship and compete.

- A team may only deploy one ship per course. Every ship design will be based on the same radio control kit, but it is expected that different courses may require different specialized ship structures and/or different ways of deploying a single set of structures, and different ways of utilizing the control channels. However, *all ships and parts must fit in the required closed box at the same time.*
- Each ship must have a vertical line visibly marked on the side of the ship. The team can determine the location of this line. This line, or datum, will be used by the judges as the point that must start behind the starting line and that must cross the finish line before the longshoremen can unload the cargo. **Cargo must cross the finish line. If the ship has more than one part, the datum must be marked on the portion that contains the cargo.**
- **Manual placement of any separate parts outside the starting box is not permitted.**
- Events throughout the room and throughout the day will be synchronized on a ten-minute schedule, meaning ten (10) minutes per event. This time includes the actual competition time. The competition time for each and every course is five (5) minutes. Some teams in some courses may not need their full 5 minutes; others will. Events are scheduled back to back; however, individual teams may have ten (10) minutes to one (1) hour between events. All teams are encouraged to arrive at 8:00am.

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

- A penalty will be assessed for any manual assistance (not via the remote control channels) a ship requires to complete a course. Specific penalties are described in the course sections below.
- Control and cargo limitations:
 - All of the energy used to move the ships must come from wind generated by the box fans. Power from the batteries that are built into the radio controlled car *can* be used, but not for propulsion. No additional batteries may be added.
 - The fans that produce the winds for courses will remain stationary. Teams *may not adjust fan positions*.
 - *Fan speed may be adjusted* by the team members prior to deploying their ship to compete on a course. Fans can be set to any setting prior to the run. However, no fan speed adjustments are permitted once the team’s entry begins motion. Teams may not use baffles or any other means to divert or block the air flow.
 - Cargo will not be prepackaged into bundles of specific weight; the washers, nuts, and pennies will be loose when loaded on the ship.
- A repair area will be available for teams to use if any work or repairs are needed on the ships. The repair area is the only place with access to electricity for teams. Do NOT plug in anything anywhere else around the gymnasium.

C. COURSES

Each course will be set up on stage risers 4 ft high whose surface is a smooth and flat, a non-skid type of surface.

Fans used for the competition courses are Lasko 20" Weather-Shield Box Fan Model #3755.

The helmsman (team member controlling the ship) may stand anywhere around the competition arena as long as the airflow is not affected.

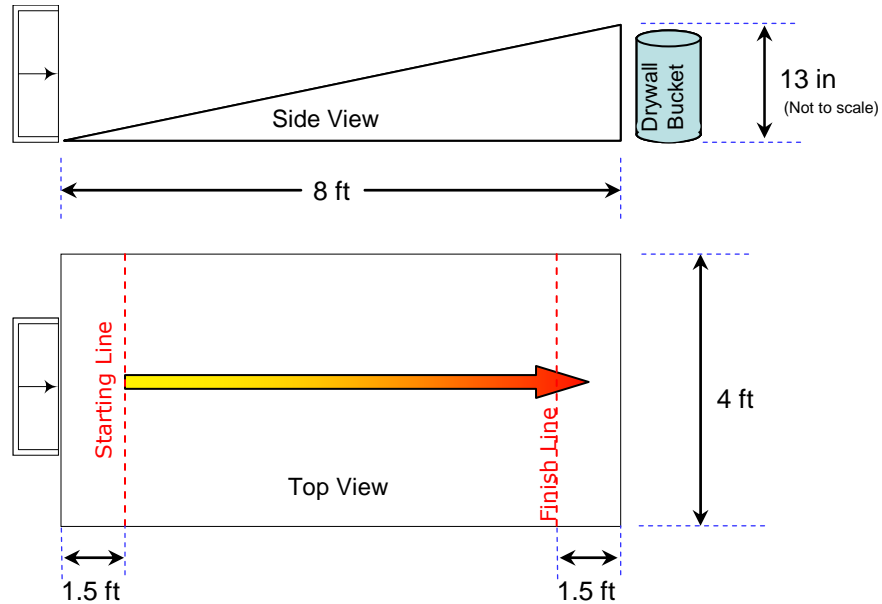
For each competition, the official time (t) starts when a team takes the ship out of the standard paper box to start the event. The competition time schedule is tight: 10 minutes per event. This includes the 5 minute competition time.

1) UPHILL

Theme song: “Wind in the Mountain”

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”



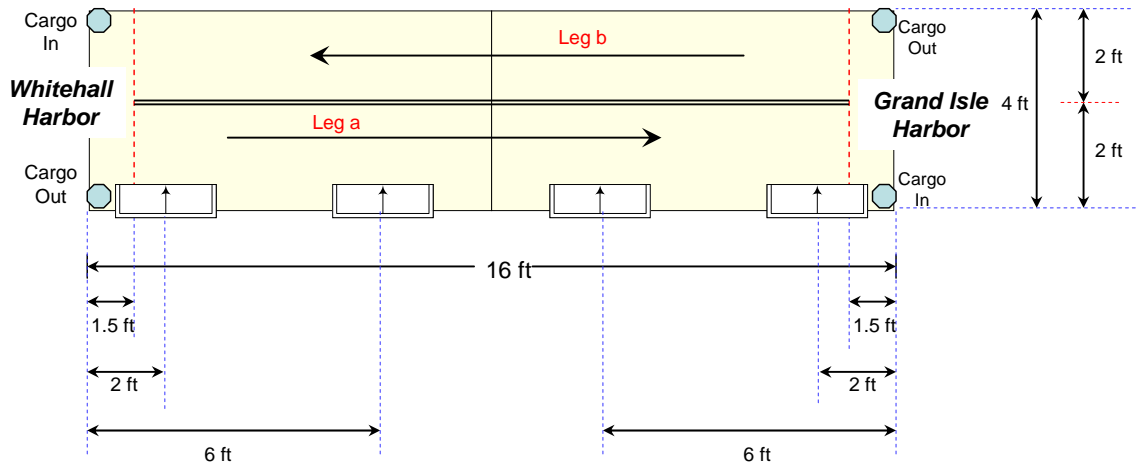
1. Uphill

- Goal: To move cargo up an incline.
- Cargo for this event is 1 ½ inch fender washers.
- Teams will make multiple climbs to move as much cargo as possible up the hill within 5 minutes. Score will be based on the sum for all complete runs.
- The ship and cargo must cross the finish line to count the run.
- Ship configuration cannot be changed once the clock starts; minor adjustments are allowed.
- Surface area: 4' x 8'; Incline created using one drywall bucket 13 inches tall.
- [Scoring](#)

2) ACROSS THE WIND

Theme song: “The Wind Beneath My Wings”

“BLOWING IN THE WIND”



2. Across the Wind

- Goal: The ship must move cargo through the defined course within the time allotted.
- The vertical datum line of the ship must start behind the starting line (either harbor border) and must cross the harbor border at the other end of the course before the cargo may be unloaded.
- Cargo for this event includes the fender washers and hex nuts as described in Section B. Once the ship reaches the opposite harbor, a team member manually unloads the cargo into a bin and new cargo is loaded onto the ship. Longshoremen (team members assigned this role) may move from harbor to harbor to manage the loading and unloading activities.

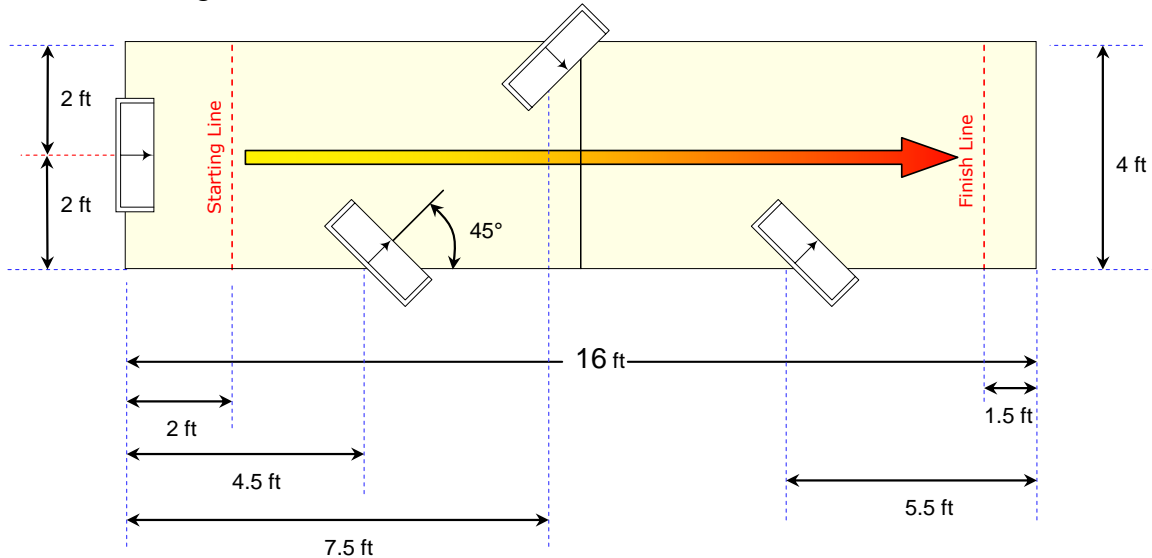
Note: Manually unloading cargo can include removing the cargo from the ship by hand or dumping the cargo out of the ship into the “Cargo In” bin.

- The crew may turn the ship around for the next leg of the competition after unloading the cargo from the previous leg.
- The course has a curb (shore) at each edge as well as another dividing the two channels. If there is any “allision” or “running aground” (contact with any of these curbs), the ship must return to the previous harbor before proceeding.
- Any manual intervention with the ship outside a harbor requires that it be returned to the previous harbor before continuing.
- Arena length: 16’ including harbor areas. Width: 4’ total (minus space for fans).
- Total score is based on mass of cargo transported successfully within 5 minutes. Teams choose their own cargo masses.
- [Scoring](#)

“BLOWING IN THE WIND”

3) DOWNWIND

Theme song: “Dust in the Wind”



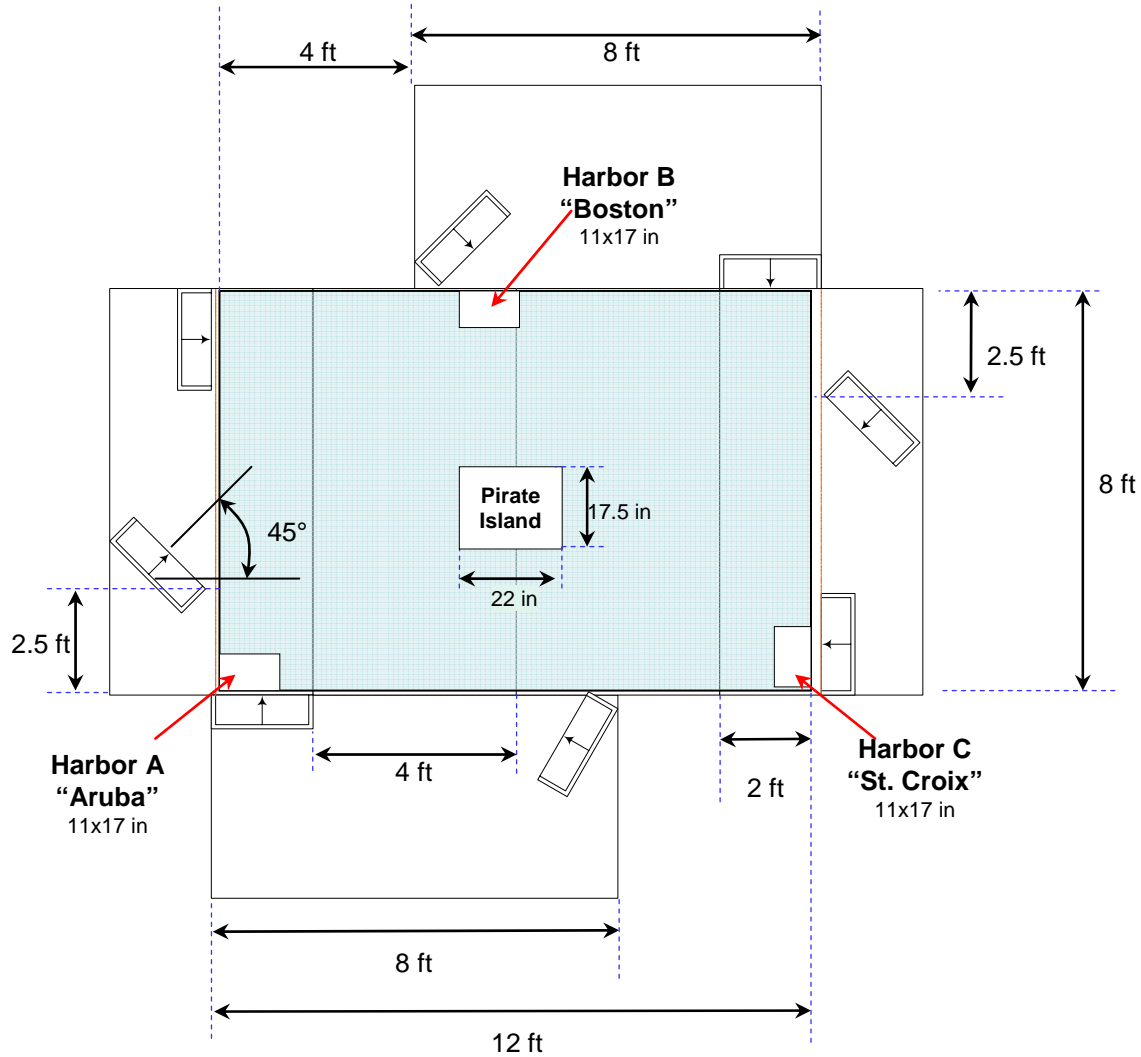
3. Downwind

- Goal: The ship must make it the full length of this course despite changing winds.
- No cargo is transported during this event. However, teams may use ballast.
- Ship must navigate the full length of the channel and cross the finish line to qualify. (The vertical datum line of the ship must start behind the starting line and must cross the finish line.) If the ship does not cross the finish line, the team will not receive a score.
- Distance is measured as a straight line perpendicular to the starting and finish lines. Maximum distance is 12.5 feet.
- No penalty will be assessed for allisions with the curbs or fans.
- Each team gets one opportunity. No manual intervention with the ship is permitted.
- Arena length: 16'. Width: 4' total (minus space for fans).
- One fan is positioned at the edge of the riser behind the starting line. The remaining three fans are placed at a 45 degree angle to the direction of movement and placed as shown in Figure 3.
- Scoring is based on speed.
- [Scoring](#)

“BLOWING IN THE WIND”

4) ISLAND TIME

Theme song: “Riders on the Storm”



4. Island Time

- Goal: The course requires complex navigation and cargo movement in the face of chaotic winds. Cargo must be shipped *from each harbor to both other harbors*.
- Teams will manually load and unload cargo at each harbor. Longshoremen may move from harbor to harbor to manage loading and unloading activities.
- "Arrival" at a harbor involves any part of the ship entering the harbor. Longshoremen may manually aim the ship in the general direction of its next destination after unloading the cargo. However, the ship must start within the harbor, meaning that one or more wheels need to be within the harbor at the start.

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“BLOWING IN THE WIND”

- Manually moving the ship to a different harbor is not allowed. Any manual intervention with the ship while underway (outside of the harbors) requires that it be returned to the previous harbor before continuing.
- Ballast may be used to provide stability. However, ballast cannot be the same or similar to the cargo. (e.g. marbles or something else; no nuts or washers)
- The course has a curb (shore) at the edge and an island in the center. Any allision or running aground (contact with any of these curbs) while the ship is underway (outside of the harbors) constitutes a penalty. The ship must return to the previous harbor before proceeding.
- Ocean area: 8 feet x 12 feet; Harbor area: 11 inches x 17 inches” (size of a tabloid piece of paper). Island will be the size of two standard paper boxes (22”x17.5”).
- Types of cargo to be transported include washers, hex nuts, and pennies. Each harbor is a source for a different type of cargo that needs to be transported to the other harbors. Scoring rewards carrying a large amount of cargo over the most profitable routes as defined in the scoring equation.
 - Harbor A Cargo: Pennies
 - Harbor B Cargo: Hex Nuts
 - Harbor C Cargo: Washers
- Harbormasters need to notify the judges of all cargo that was delivered and unloaded during the allotted competition time.
- [Scoring](#)

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

D. DESIGN NOTEBOOK:

This year, the design notebook (previously referred to as “portfolio”) requirements are structured to evaluate the process of design.

A UVM student mentor will be assigned to each team to provide guidance and communication throughout the project.

The standard phases of the design process include:

- Program planning and requirements development;
- Design;
- Fabrication and assembly;
- Integration and Test.

The following provides an idea of the expected content of the design notebook:

- A schedule and an understanding of the functional goals and requirements and a description of how you plan to design something to meet the requirements;
- A concept design and a [functional block diagram](#);
- Results of an internal design review and changes made as a result of the review ;
- Spectacular failures or designs that didn’t make the cut;
- Final design and parts list;
- Final notebook should include corrected/updated submittals (schedule, requirements, concept design/functional block diagram);

Figure 1 provides the schedule for submittal of the Design Notebooks. Content for each submittal is located in [Appendix 4](#).

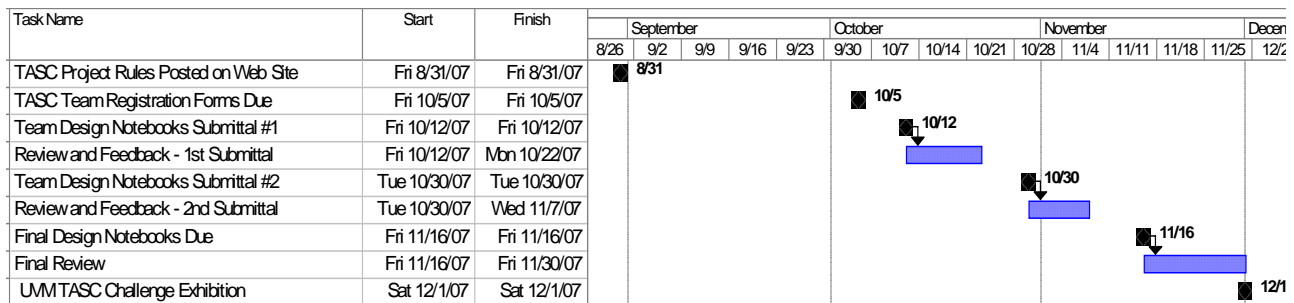


Figure 1. Design Notebook Submittal Schedule

A copy of the final notebook must be included as part of each team’s table display. (See Section E.)

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

E. TABLE DISPLAY:

This year, each team must develop a table display to showcase and to market the team’s design.

Teams may display more than required; however, the judging will be based on completeness of the required items and on the knowledge of the student "salespeople".

- Table display setup must have one side of visible area.
- Display is limited to table size: 96 inches x 30 inches. Displays will not have access to electricity.
- A standard tri-fold presentation board showing how the design works may be used.
- Display contents must include:
 - A [specification sheet](#): size, weight, materials, etc.;
 - A copy of the final design notebook;
 - Any prototype designs.

F. AWARDS:

Awards planned include the following:

	<u>AWARD</u>	<u>PRIZE</u>	
SCHOOL AWARD	IBM OVERALL HIGHEST SCORE AWARDS	Grand Prize	IBM ThinkPad
	1st Prize	IBM ThinkPad	
	2nd Prize	IBM ThinkPad	
	3rd Prize	IBM ThinkPad	
TEAM AWARD	PIZZAGALLI CARGO MOVEMENT ISLAND TIME WINNERS	1st prize	\$500
		2nd prize	\$250
		3rd prize	\$125
	QIMONDA FASTEST-DOWNWIND WINNERS	1st prize	\$500
		2nd prize	\$250
	3rd prize	\$125	
	GENERAL DYNAMICS MOST CARGO TRANSPORTED - ACROSS THE WIND WINNERS	1st prize	\$500
		2nd prize	\$250
		3rd prize	\$125
	GOODRICH UPHILL WINNERS	1st prize	\$500
		2nd prize	\$250
		3rd prize	\$125
	IEEE DESIGN NOTEBOOK AWARDS	1st prize	\$500
		2nd prize	\$250

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<u>AWARD</u>	<u>PRIZE</u>
	3rd prize \$125
HUSKY MARKETING AWARDS	1st prize \$500 2nd prize \$250 3rd prize \$125
TIAA-CREF SPECTATOR'S CHOICE AWARD	Prize \$500
NRG SYSTEMS TABLE DISPLAY AWARD	Prize \$500
VERIZON TEAM SPIRIT AWARD	Prize \$500

G. SCORING

Scores will be recorded and ranked in each category. The scores will be combined to calculate the winners in each of those events. Scores from each of the Performance Categories and the Applied Category rankings will be combined for the overall score. Teams with the highest overall rankings will win the IBM Combined awards. In the event of a tie, the judges will make the final determination to break the tie. Each team is limited to winning in two areas: once in the performance category and once in the applied category as described below.

Ordinal rankings will be established for each team in each of the categories (first, second, third, fourth, fifth). Where there is a tie for the ordinal ranking, all teams with the same ordinal ranking will be given the higher of the rankings (example: if there is a tie for the second place ranking between 3 teams, all 3 will be given the ordinal ranking of 2 and the ordinal ranking for the next team will be 5 – one team with ordinal ranking of 1, three teams with ordinal ranking of 2, and one team with the ordinal ranking of 5).

Each of the four performance categories will have three winners (1st, 2nd, and 3rd place). A team will be allowed to place in one and only one performance category; however, if a team places in more than one category, all scores would still count in the calculation of the Grand Prize. If a team places in several categories, the judges will take the team’s highest ordinal ranking and they will place in that category. If the team happens to have the same placement in two or more categories, they will place in the category that comes up first as listed in section F. If a team does not compete in a category, they will be assigned an ordinal ranking equal to the number of teams that have competed plus 1 ($N_{teams} + 1$).

There are also four non-performance or Applied awards (Design Notebook, Marketing, Table Display, and Team Spirit). The Design Notebook and Marketing categories will have three winners (1st, 2nd, and 3rd place). The Team Spirit and Table Display awards will have one winner. Again, each team will be allowed to place in only one of these categories.

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

	<u>Category</u>	<u>Scoring</u>													
OBJECTIVE PERFORMANCE CATEGORIES	Uphill	<ul style="list-style-type: none"> ▪ Cargo needs to start behind a point specified on the ramp. <p align="center">Score (S) = Total Cargo Weight (oz)</p>													
	Across The Wind	$S = (W_a) + (2W_b)$ where W_x = Cargo Weight on leg x (oz)													
	Downwind	<ul style="list-style-type: none"> ▪ $S = \frac{12.5 \text{ ft}}{t \text{ (sec)}}$ 													
	Island Time	<ul style="list-style-type: none"> ▪ Defined delivery route a – b – c ▪ Cargo movement <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Cargo Path, x to y</th> <th>Profit (\$/oz)</th> </tr> </thead> <tbody> <tr> <td>a to b</td> <td>1</td> </tr> <tr> <td>a to c</td> <td>1</td> </tr> <tr> <td>c to a</td> <td>2</td> </tr> <tr> <td>c to b</td> <td>3</td> </tr> <tr> <td>b to c</td> <td>5</td> </tr> <tr> <td>b to a</td> <td>8</td> </tr> </tbody> </table> <p align="center">$S (\\$) = W_{ab} + W_{ac} + 2W_{ca} + 3W_{cb} + 5W_{bc} + 8W_{ba}$</p>	Cargo Path, x to y	Profit (\$/oz)	a to b	1	a to c	1	c to a	2	c to b	3	b to c	5	b to a
Cargo Path, x to y	Profit (\$/oz)														
a to b	1														
a to c	1														
c to a	2														
c to b	3														
b to c	5														
b to a	8														
SUBJECTIVE CATEGORIES	Design Notebook	Ordinal rankings <i>Scoring will be based on required content, level of detail, clarity, grammar, and spelling.</i>													
	Marketing	Ordinal rankings <i>Scoring will be based on how well the presenter communicates knowledge of the design and on the artistic or capture value of the display.</i>													
	Table Display	Ordinal rankings <i>Scoring will be based on required content.</i>													
	Team Spirit	Ordinal rankings <i>Scoring will be based on sportsmanship, enthusiasm, T-shirts, team logo, and teamwork.</i>													

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“BLOWING IN THE WIND”

	<u>Category</u>	<u>Scoring</u>
OTHER	Spectator’s Choice	The Spectator's Choice award will be chosen by audience members (parents, scouts, friends, and other visitors, but not team participants or advisors.). Spectators will be given a ballot when they enter the hall. This prize is not tied to any of the other prizes. There will only be one winner.
	Best Overall Score	The overall grand prize will be awarded to the team that receives the best (numerically lowest) total of the ordinal rankings of the four Objective Performance Scores plus the four ordinal Subjective Rankings. The best possible score would go to a team that ranked 1 st in all categories, achieving an Overall Score of 8. The prizes for the four Best Overall Scores will recognize the four schools with the highest ordinal rankings. In case more than one of the teams achieving one of the four Best Overall Scores comes from the same school, only the best ranked team from that school will be able to win in this category.

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

H. APPENDICES

1) Safety Considerations

- Ships must be designed with safety in mind. Teams must not use anything deemed unsafe by the judges including but not limited to: projectiles, blades, toxic or radioactive substances, dry ice, liquid or other chemicals, living creatures, or flames of any type.
- Always take the proper safety precautions when working with tools or power equipment. Exercise the proper use of hand tools (<http://www.nsc.org/library/facts/agritool.htm>)
- Wear eye protection when fabricating, assembling or testing your design.
- Always take the proper safety precautions when lifting heavy objects; bend and lift with the knees or get help if the object is too heavy.

If you have a question, ask your advisor. Safety first!

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“BLOWING IN THE WIND”

2) Acronyms/Definitions

Some of the following nautical terms appear in this document and are defined here for the reader's convenience. Remaining terms provide further nautical knowledge.

Aft	In, near, or toward the stern of the vessel.
Allision	The act of striking or collision of a moving vessel against a stationary object.
Alongside	A phrase referring to the side of a ship. Goods delivered "alongside" are to be placed on the dock or barge within reach of the transport ship's tackle so that they can be loaded.
At Sea	In marine insurance this phrase applies to a ship which is free from its moorings and ready to sail.
Ballast	Heavy substances loaded by a vessel to improve stability, trimming, sea-keeping and to increase the immersion at the propeller. Sea water ballast is commonly loaded in most vessels in ballast tanks, positioned in compartments right at the bottom and in some cases on the sides, called wing tanks. On a tanker, ballast is seawater that is taken into the cargo tanks to submerge the vessel to a proper trim.
Boatswain (Bosun)	The highest unlicensed rating in the deck department who has immediate charge of all deck hands and who in turn comes under the direct orders of the master or chief mate or mate.
Bow	The front of a vessel.
Bulk	Cargo shipped in loose condition and of a homogeneous nature. Cargoes that are shipped unpackaged either dry, such as grain and ore, or liquid, such as petroleum products. Bulk service generally is not provided on a regularly scheduled basis, but rather as needed, on specialized ships, transporting a specific commodity.
C	Cargo.
Cable Length	A cable length is the length of a ship's cable, about 600 feet.
Capsize	To become upset or overturned.
Cargo	Freight loaded into a ship.
Cargo Handling	The act of loading and discharging a cargo ship.
Cargo Manifest	A manifest that lists all cargo carried on a specific vessel voyage.
CEMS	College of Engineering and Mathematical Sciences.
Complement	The number of officers and crew employed upon a vessel for its safe navigation and operation.
Crew	The personnel engaged on board ship, excluding the master and officers and the passengers on passenger ships.
Design Notebook	A design notebook is used to record information acquired and ideas developed during the design process. It demonstrates individual accomplishments and work completed on a project.

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

Even Keel	When the draft of a ship fore and aft are the same.
Fathom	6 feet. Man's arm span, finger tip to finger tip. (Also used as a verb: To measure the depth of; to get to the bottom of, to understand.)
Fore And Aft	The direction on a vessel parallel to the center line.
Freight	Refers to either the cargo carried or the charges assessed for carriage of the cargo.
Functional Block Diagram	The block diagram is a simple pictorial representation of a system and subsystems linked to illustrate the relationships between components and subsystems. At the initial stage of the design process, the block diagram serves to visualize the system and identify the interdependencies of all its elements.
Helm	A tiller or a wheel generally installed on the bridge or wheelhouse of a ship to turn the rudder during maneuvering and navigation. It is in fact the steering wheel of the ship.
Helmsman	An able-bodied seaman entrusted with the steering of a vessel. Also known as Quartermaster.
Hull	Shell or body of a ship.
Knot	A knot is the measure of speed on water. One knot is 1 nautical mile per hour.
Longshoreman	Individual employed in a port to load and unload ships.
Lookout	A member of the crew stationed on the forecastle, or on the bridge, whose duty it is to watch for any dangerous objects or for any other vessels heaving into sight.
Maritime	Business pertaining to commerce or navigation transacted upon the sea or in seaports in such matters as the court of admiralty has jurisdiction.
Nautical Mile	Distance of one minute of longitude at the equator, approximately 6,076.115 feet. The metric equivalent is 1852 meters. 1 nautical mile = 1.1508 miles
Off-Load	Discharge of cargo from a ship.
Port	The left-hand side of a ship when facing the front or forward end.
Portfolio	Term previously used during the TASC competitions for the Design Notebook.
R/C	Remote Controlled.
S	Score.
Specification Sheet	A one-sheet summary which provides an overview of a product and the materials from which it is manufactured. A specification sheet is often used as a marketing tool.
Standard Paper Box	Size: 11”x17.5”x10”
Starboard	The right-hand side of a ship when facing the front or forward end. The

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

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Stern	starboard side of a ship during darkness is indicated by a green light.
TASC	The rear end of a vessel.
UVM	Technology and Society Connection.
	University of Vermont.

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“BLOWING IN THE WIND”

3) Standard Supplies

All Teams

R/C Kit Futaba Model FUTJ25**

Kit is hobby grade, not toy grade. Kit includes one (1) transmitter, one (1) receiver, two (2) servos, and one (1) four-cell battery box.

Kits can be purchased at Vermont Toy & Hobby at a discount for \$40.00 (regularly \$65.00). Shipping is available for \$5.00. Please contact Stuart Wilkins, Manager of Vermont Toy & Hobby, for details. Kits will be available in early September.

Vermont Toy & Hobby
21 Essex Way, Essex Shops and Cinemas
Essex Junction, VT 05452
Phone 802-878-1757

Twelve (12) AA batteries are required: Eight (8) for the transmitter, four (4) for the receiver battery box.

Only two servo motors will be allowed in each ship. If teams damage or break the servos in their kits during fabrication or testing, additional servos can be ordered separately to replace the damaged ones.

Schools

Box Fans (for team practice)

Lasko 20" Weather-Shield Box Fan Model #3755

Fans are available on-line or at The Home Depot.

- [3755](#)

TECHNOLOGY AND SOCIETY CONNECTION (TASC) PROJECT

“BLOWING IN THE WIND”

4) Additional Information

SPECIFICATION SHEET

CONTENT

- Product Specifications (basic requirements including dimensions, weight, cargo capacity, etc.)
- Features and Accessories (as applicable)
- Picture or line drawing
- Capture Statement (Why Your Design Is Awesome)
- Team Specifics
 - Team Name (and logo, if you have one)
 - Team Members
 - School
 - School Address

EXAMPLES

In addition to the attached specification sheets, specification sheets can be found on the internet for a wide variety of products.

1. Cargo Bed Covers



CBC, Type III &
IV.pdf

2. HREE



HREE.pdf

JUDGING

- As part of the judging for the Table Display Award, the specification sheet must include all required content elements.
- As part of the judging for the Marketing Award, the specification sheet should present the information in a manner that generates interest in your product or design.

DESIGN NOTEBOOK

CONTENT AND SUBMITTALS

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FINAL SUBMITTAL DUE: NOV 16	<p>Title Page:</p> <ul style="list-style-type: none"> ▪ Team Name / Title of Project ▪ Team Members ▪ School ▪ Date <p>Table of Contents</p> <p>Final Design</p> <ul style="list-style-type: none"> ▪ Description of ship and intended competition strategies ▪ Drawing and photographs of ship and its subsystems (main components)
	<p>SUBMITTAL #1 DUE: OCT 12</p> <p>Initial Decisions</p> <ul style="list-style-type: none"> ▪ The Team’s decisions regarding design goals for the ship (i.e. which competitions to focus on, which to de-emphasize, which prizes to aim for) ▪ Design elements that need to be considered based on the goals (description of how you plan to design something to meet the requirements) ▪ Workplan for team design effort (for on-time achievement of the Major Milestones from the TASC schedule) <ul style="list-style-type: none"> - Team milestones for completing the work - Individual tasks required to achieve the milestones - Dates and responsible team member(s)
	<p>SUBMITTAL #2 DUE OCT 30</p> <p>System Design</p> <ul style="list-style-type: none"> ▪ Overall design description and sketches ▪ Draft parts list ▪ List of the different designs considered and rationale for their exclusion ▪ Functional Block Diagram(s) and schematics, as appropriate ▪ Design Review Results (include changes made as a result of the review) ▪ <i>Response to feedback from first submittal</i>

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	<p>Summary of Process and Findings</p> <ul style="list-style-type: none">▪ Retrospective work plan and how it differed from original plan▪ Testing strategies, data, and conclusions▪ Description of informative failures and ideas that didn't make the cut▪ Lessons Learned▪ <i>Include updated information based on feedback from previous submittals.</i>
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JUDGING

Judging for the Design Notebook involves required content, level of detail, clarity, grammar, and spelling.

- As part of the judging for the Table Display Award, a copy of the Design Notebook must be present.
- As part of the judging for the Marketing Award, the Design Notebook should generate confidence in the team's engineering ability and its use of a solid design process.

FUNCTIONAL BLOCK DIAGRAM

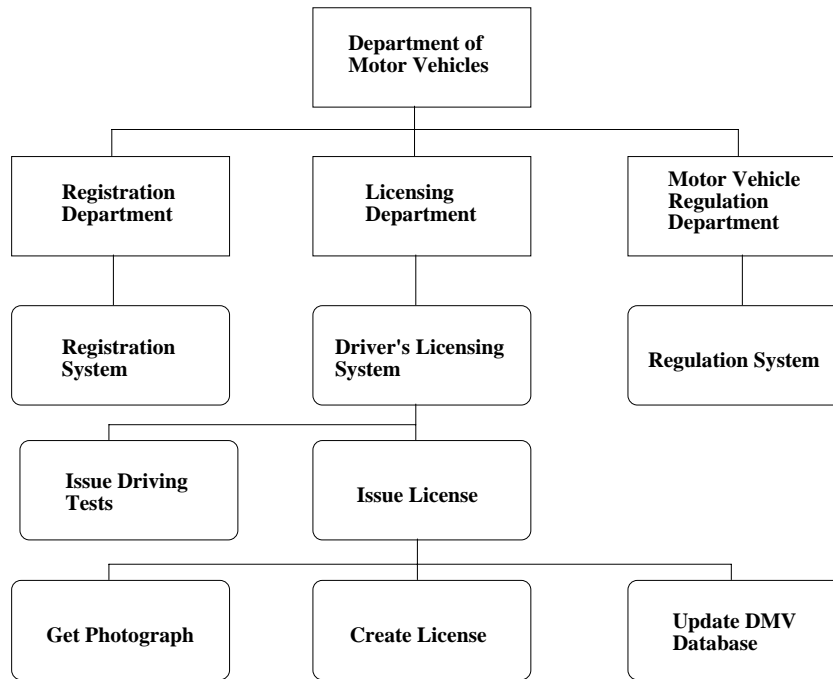
Block Diagrams can be used to:

- Establish the boundaries of a system under consideration
- Outline the elements contained within the scope of a task - helps in developing P-diagram, Flow Chart, FMEA and other documents
- Identify inputs and outputs for components within a system
- Identify relationships between systems/components
- Identify redundancies in systems
- Establish critical paths through systems

Example diagrams:

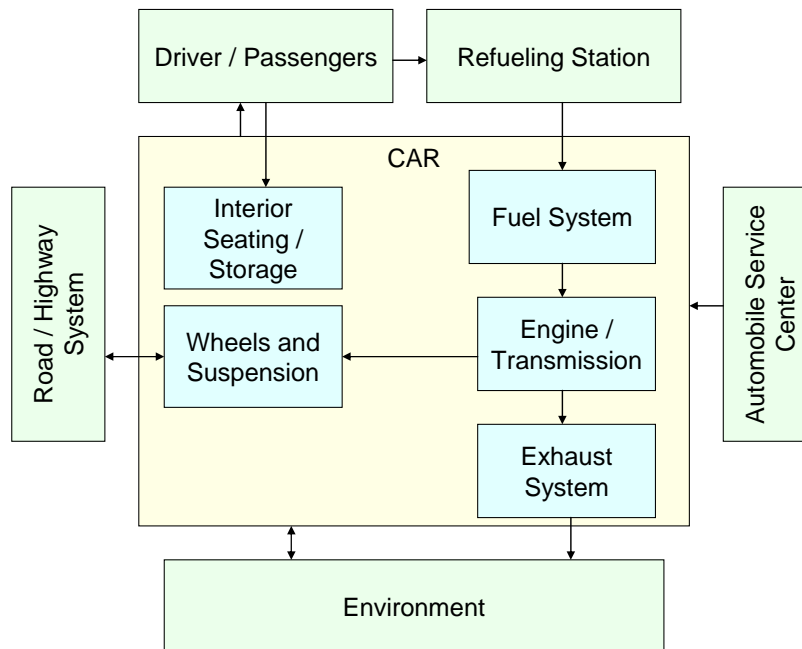
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www2.sims.berkeley.edu/courses/is208/s01

Department of Motor Vehicles Functional Decomposition Diagram



Simple Block Diagram for a Car Showing Interfaces

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5) Day of the Event

Please be courteous to other teams throughout the day or Cap'n TASC will hang ye scurvy dogs for the buzzards...

When You Arrive:

- Bring in your competition equipment and supplies. Do NOT bring radio controllers into the gymnasium. No testing is allowed in the gymnasium during the competition to avoid interference with the frequencies being used. A specific chip and matching controller will be provided at each course for use on that course.
- Register your team. Have any forms or identification information ready.

After You Register:

- Find your table location.
- Set up your display table.
- Know your competition schedule and locations.

During The Competition:

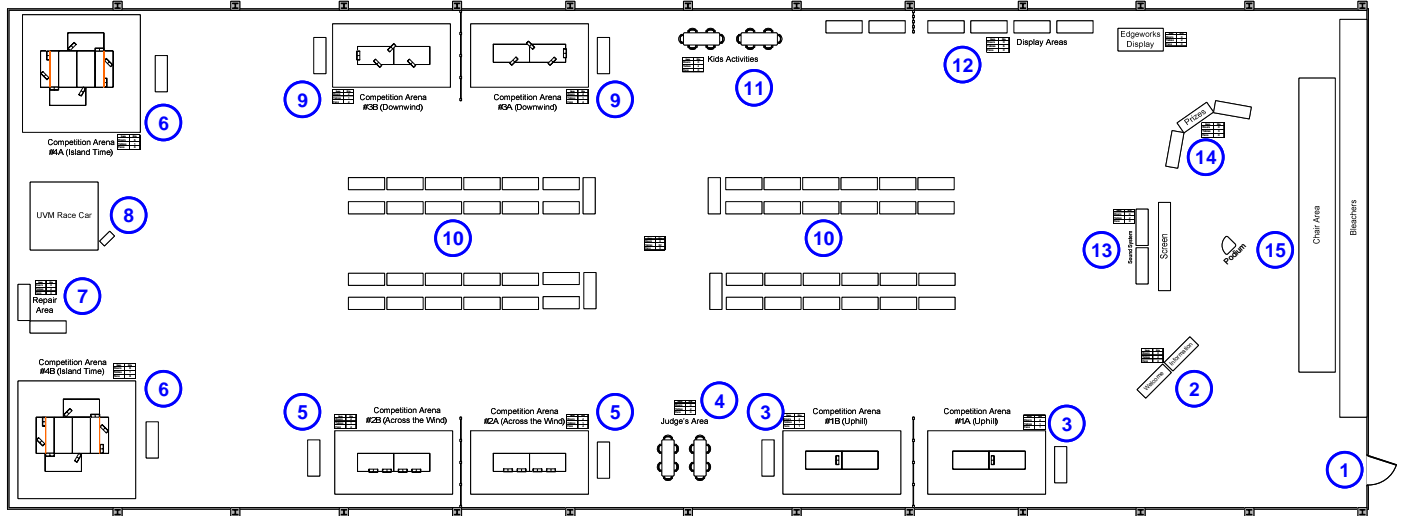
- Be at your competition arena ten (10) minutes BEFORE your scheduled time. Listen for on-deck information over the loud speakers. Be prompt; the schedule is tight. If you are late, that is time lost for your team in that event.
- Please keep the gymnasium clean.
- **HAVE FUN!!!**

After the Competition

- Complete and hand in your survey forms
- Clean up your team area. The area should be left as clean as you found it or Cap'n TASC will have ye sea scabs swabbin' the deck afterward...

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Patrick Gymnasium TASC Setup

1. Entrance to Patrick Gymnasium
2. Information Table
3. “Uphill” Competition Courses #1A and #1B
4. Judge’s Area
5. “Across the Wind” Competition Courses #2A and #2B
6. “Island Time” Competition Courses #3A and #3B
7. Repair Area
8. UVM Race Car
9. “Downwind” Competition Courses #4A and #4B
10. Team Table Displays
11. Kid’s Activity Area
12. Industry Display Area
13. Sound System / Intercom
14. Competition Prize Display
15. Audience Seating and Award Presentation Area