2015 Sea Perch Design Notebook **Notebooks due 5:00 p.m. Monday April 6, 2015!**

Notebook Section	Maximum Points	Notes
I. Front Matter		
A. Cover Page	4	The title page should have the tream and school name and some art work. The title page should contain all of the required information.
B. Title Page, including:		
Team Name		
School, School District		
Advisor Name and Contact Information		
C. Table of Contents included (and all pages		
D. List of Figures & tables		
E. List of References		References should be cited throughout the document and listed numerically at the front.
II. Naval Engineering Research		
Note: Sections II. through V. should be no more than a total of 20 pages. This constitutes the bulk of the Notebook score.		
A. Naval engineering principles that the team researched and used in the building of the SeaPerch.	10	This is important for the teams to demonstrate that they have researched, and understand, basic engineering concepts and have applied those concepts to their design.
B. Description of the learning modules completed showing results and how they are applicable to the Sea Perch Design.		Describe the learning modules that the team completed and how the results were used in the SeaPerch design. These have to be completed each year even if your team did them in previous years. One suggestion is to use experienced team members to guide new team members through the modules.
Buoyancy	5	
Electricity	5	
Vectors	5	
Motors	5	
III. Design, Engineering, and Manufacturing Process		
A. **Design & Manufacture**		
1. Description of the process used to refine the design and manufacture the final product.	29	The Design & Manufacture section is a key part of the notebook. It is important to demonstrate that a scientific process was used in the design and manufacture of the team's SeaPerch.
2. Discussion on what design modifications were considered to enhance ROV performance and why they were or were not incorporated.		Discussion on modifications considered to enhance ROV performance and why they were or were not incorporated. **NOTE:** they do not have to have implemented any design modifications, just considered them.
3. Discussion on the manufacturing issues relative to their final design.		**NEW THIS YEAR:** Discussion on "manufacturing". This will cover their build experience and also discussions about "manufacturability" for final design (since this is a "contract" proposal for a multiple unit delivery to the Navy).
B. **Experimentation**		
1. Description of any experiments completed to test theories, validate performance, etc…	8	This section should include pool testing, validation of ballast, etc… **NOTE:** This is not the same as the learning modules. This covers activities that you did to validate the performance of your design.
IV. Naval Scenario for Sea Perch		
A. Detailed discussion related to how the Sea Perch could be implemented in a practical scenario or task. Highlight how their	8	Teams are encouraged to be creative in envisioning how their SeaPerch could be used by the Navy in a real world problem or other situation.
V. Teamwork		
A. Team participant list.	16	
B. List indicating how the responsibilities were split up among team members.		The team should provide details about they worked together and used teamwork to complete the task.
C. Provide concrete examples of how team members worked together and helped each		
D. Detailed discussion of the challenges the team faced and the steps they took to overcome the challenges.		The team should provide details about challenges they faced, how they overcame them.
E. Listing of the biggest lesson learned by the team, including the biggest factors for the success of the team.		Provide an explanation of the things that contributed to their team's success.
VI. Bill of Material		
A. List of all material used	5	All teams should provide a detailed list of what parts and quantities were used in building their SeaPerch. If items in addition to the basic kit were used they should be listed in the Bill of Materials with the cost. The applicable receipt(s) should also be attached (in no extras purchased, specifically state that. The best list would be like a tech manual parts breakdown that includes a diagram showing the parts.
B. Included receipts for purchased materials.		NOTE - New for 2015 - Guidelines for use of a 3D printer: 1. 3D printed parts (vs. replacement or modified) are only permissible for object manipulation or recovery. 2. Part must be used to make physical contact with the mission object. 3. Shall provide technical advantage or innovation. 4. Rationale for use of the 3D printer should be documented in the design notebook and presentation. 5. Value of 3D part is based upon the value of part it replaces. 6. Value of 3D printed parts shall not exceed $10. 7. Included in $20 design improvement budget limit.
Total	**100**	**Points**

The Engineering notebook is due by 5:00 p.m. Monday April 6th. Submit notebooks to seaperch@coe.drexel.edu .
Notebooks should be submitted in either Microsoft WORD or Adobe Acrobat format.
The file size should be under 3 MB in size.
Notebooks received after 5:00 p.m. Friday April 3rd or larger than 3 MB will NOT be reviewed or scored - no exceptions!