SUBJECT:Professional Engineer Review Course (PERC) by Distance-Learning for Naval Architecture and Marine Engineering (NAME)

In an effort to support those naval architects and marine engineers who are preparing to take the April, 2002 Professional Engineer Examination in Naval Architecture and Marine Engineering, the Society is in process of developing a Distance Learning course that provides a review of the 25 Subject Areas included in the NAME Examination Specification. The Subject Area subject matter has been structured into ten (10) Subject Groups. The course in currently planned to be given during the eleven week period of January 7, 2002 through March 24, 2002. This leaves another four (4) weeks for the students to complete their preparations.

As a member of the SNAME Education Committee, Jose Femenia has taken on the task of developing the PERC initiative and Walter Maclean and Dave Chapman, as Chairman and Vice Chairman of the P.E. Licensure Committee, are assisting in organizing and overseeing the development. In appreciation for the efforts of the course instructors, SNAME is extending an Honorarium to each instructor in the amount of $500.

As it seems to be developing, it looks like the course will develop about as in the following:

1. There will be up to ten (10) instructors. The current thought is that each week (for ten weeks) there would be a new presentation started. The schedule for the presentations is not yet fixed, so it is possible to arrange the start of any one instructor's presentation to accommodate particular needs.

2. At the start of each of the ten Subject Group presentations, the instructor first presents the subject matter, including an estimated 25-30 pages of lecture notes with related references and ten (10) problems that will need to be posted on the site with the notes. This assumes each week's work will be about equivalent to three hours in class as might be experienced in a face-to-face PERC. The instructor should prepare fifteen (15) problems for review as to appropriateness and format by Walt Maclean and Dave Chapman from which ten (10) would be selected for inclusion in the presentation. For estimating purposes lets say the first presentation will need to be set up for a start on Monday, January 7th. This suggests that the presentation materials should be available for review and loading on the web site by about the Thanksgiving Day holiday.

2. Following a few days later, say by Monday of the following week, problem solutions for the ten problems will be posted; it is estimated that each solution would be on a single page and thus there would be about ten pages of solution notes and supporting references. The student would then have two or three days in which to review their work and the problem solutions to check their understanding and generate any of their unanswered questions that might need to be addressed during the online session for that subject group.

3. The following Wednesday, the instructor will host a three-hour on-line question/answer session, using a pen tablet, frequently referred to as a whiteboard. The thought is that the session would go from 8:00 - 11:00 P.M. EST, as 8:00 P.M. EST is 5:00 P.M. PST on the West Coast.

The pen tablets would be provided by SNAME for use in the course. Training assistance in learning how to install and use them would be provided by a SNAME contractor. The logistics problems we need to address in getting the boards and instructions for their use to the instructors are still not fully defined.

We would like to archive the question/answer sessions for future reference by the students. We still need to determine how this access to the archived sessions will be made available, and in what format.

As the students, during the later period of the course, may wish to refer back to earlier presentations, it is planned that once the instructor's presentation is posted it will remain available for reference throughout the rest of the course period.

There is a question as to the computer resources required to put-on the course from both the instructor and student's end of the communication. I understand that the pen tablet comes with either a USB or a Serial connection, and so it is necessary to know what the instructor's computer equipment accommodation is in order to procure pen tablets with the correct connections.

In the following are presented the examination specification and the suggested subject groups. As these groups are not yet fixed in concrete, suggestions for modification of them is still in order.

NAVAL ARCHITECTURE-MARINE ENGINEERING EXAMINATION SUBJECT AREAS:

EXAMINATION SPECIFICATION	Approximate percentage of the examination
1. MECHANICS Rigid body mechanics; statics; equilibrium; deformable body mechanics	7
2. LOADS Axial, flexural, torsional; fluid statics and dynamics; pressure induced; fatigue; thermal; bearings; cargo; seaway	8
3. WELDS/CONNECTIONS Connections and fasteners	4
4. STRUCTURAL MEMBERS Frames; plates; stiffened elements; hull girder	7
5. VIBRATIONS Solid element and fluid vibrations	3

6. HYDROSTATICS	6
Hydrostatics of floating devices	
7. HYDRODYNAMICS	5
Hydrodynamic resistance and propulsion	
8. TRANSPORT PROCESSES	6
Conservation of mass and energy; heat transfer; energy conversion devices	
9. FLUID FLOW	6
Control devices and valves; pipe flow and resistance; hydraulics	
10. HVAC/REFRIGERATION	4
Refrigeration systems and devices; HVAC systems and devices	
11. COMBUSTION	3
Combustion of gaseous, liquid and solid fuels	
12. ELECTRICAL LOADS	3
Analysis of electrical load	
13. ELECTRICAL DISTRIBUTION	3
Design of distribution and power circuits	
14. ELECTRICAL ENERGY CONVERSION	3
Electrical energy conversion devices such as motors, generators and transformers	
15. EMERGENCY ELECTRICAL SYSTEMS	1
Emergency generators, batteries and systems	
16. CAE	2
2-d & 3-d manual sketching; 2-d & 3-d CAD; CAE; finite element techniques	
17. SHIP BUILDING/REPAIR	4
Shipbuilding and repair processes; weight controls; launching and dry-docking; trials and delivery and quality assurance	
18. ECONOMICS	5
Engineering and ship economics	
19. OUTFITTING DESIGN	5
Hull closure devices; deck equipment; outfitting equipment	
20. MATERIALS	3
Ferrous and non-ferrous metals; plastics and composite materials	
21. CORROSION	2
Galvanic cells; general wastage; pitting; crevice and stress corrosion	
22. POLLUTION PREVENTION	4
Air, liquid and solid pollution and methods of preventing	
23. REGULATIONS	2
USCG, EPA, ABS, SOLAS, IMO	
24. HUMAN FACTORS	2
OSHA, USCG, ABS, SOLAS, IMO, STWC	
25. WIND AND WAVES	2
Dynamic forces and motions caused by wind and waves	
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	Total 100%

PERC SUBJECT GROUPS

I FUNDAMENTALS - 10%
- 1. MECHANICS - 7%
- 5. VIBRATIONS - 3%

II LOADINGS - 12%
- 2. LOADS - 8%
- 16. CAE - 2%
- 25. WIND AND WAVES - 2%

III STRUCTURAL - 11%
- 3. WELDS/CONNECTIONS - 4%
- 4. STRUCTURAL MEMBERS -7%

IV SHIP BUILDING - 11%
- 17. SHIP BUILDING/REPAIR - 4%
- 20. MATERIALS - 3%
- 21. CORROSION - 2%
- 23. REGULATIONS - 2%

V ELECTRICAL - 10%
- 12. ELECTRICAL LOADS - 3%
- 13. ELECTRICAL DISTRIBUTION - 3%
- 14. ELECTRICAL ENERGY CONVERSION - 3%
- 15. EMERGENCY ELECTRICAL SYSTEMS - 1%

VI TRANSPORT PROCESSES & FLUID FLOW - 12%
- 8. TRANSPORT PROCESSES - 6%
- 9. FLUID FLOW - 6%

VII HVAC/REFRIGERATION & COMBUSTION - 11%
- 10. HVAC/REFRIGERATION - 4%
- 11. COMBUSTION - 3%
- 22. POLLUTION PREVENTION - 4%

VIII HYDROSTATICS / HYDRODYNAMICS - 11%
- 6. HYDROSTATICS - 6%
- 7. HYDRODYNAMICS - 5%

IX APPLICATIONS - 12%
- 18. ECONOMICS - 5%
- 19. OUTFITTING DESIGN - 5%
- 24. HUMAN FACTORS - 2%

X SMALL CRAFT/YACHT DESIGN - 10% Distributed in various Subject Areas
SUBJECTS TO BE DEFINED BY INSTRUCTOR

The total weighting adds to 110%, including the 10% provided for a small craft segment of the PERC.