Course Syllabus

Department of Marine Science & Technology
Department Of Marine Engineering

COURSE TITLE

Applied Marine Electricity

COURSE NUMBER

MTE 1400C

PREREQUISITES

NONE

CREDIT HOURS

3.000 Credits

CONTACT HOURS

60 Lecture

CLASS MEETING TIMES

Mondays and Wednesdays 1400 to 1759
Room 212 New Marine Tech Building
08/25/2014 to 10/15/2014

CLASS METHOD

Traditional classroom course (class meets in person)
Traditional classroom course / Technical Enhancement

INSTRUCTOR

Capt. Nate Ferrara
Nathaniel.ferrara@fkcc.edu
Office #: (305) 296-9081 ext: 187
Office Location: M 310

COURSE DESCRIPTION

This course is a core requirement for both the Marine Propulsion Certificate and the Associates of Applied Science in Marine Engineering. Basic electrical theory for A/C & D/C circuits in marine systems. Application of electrical theory to the generating, starting and auxiliary circuits of the marine engine. Emphasis on theory of operation and repair of equipment in the field with special attention to marine problems in a salt-water environment.
**Course Objectives**

Upon completion of the course, the student will be able to:

1. Apply Ohm's Law to series circuit.
2. Apply Ohm's Law to parallel circuits.
3. Apply Ohm's Law to series-parallel circuits.
4. Perform continuity test.
5. Diagnose, repair or replace alternator.
6. Diagnose, repair or replace charging system regulator.
7. Service or replace battery cables and battery box.
8. Diagnose, repair or replace starter.
9. Diagnose and repair malfunctions in the cranking system.
10. Perform operational inspection of lighting system.
11. Measure voltage drops, current flow, resistance in a circuit or component with a multimeter.
12. Repair or replace switches to include ignition switches.
13. Repair or replace fuse block assembly.
14. Locate and repair shorts and open circuits in wiring.
15. Inspect or replace rectifier.
16. Replace diode assembly.
17. Remove, replace and repair electrical remote control assembly.

**Required Textbook**

Required Textbook: *Powerboater's Guide to Electrical Systems*
Publisher: International Marine/Ragged Mountain Press
Author: Ed Sherman

**Required Tools**

Multimeter (to be purchased after the start of class)
Wire Crimpers
Lighter
Measuring Tape

**Proposed Course Schedule**

Please note: The course schedule is subject to change to meet the needs of the course and its students. If you miss a class, it is YOUR responsibility to stay current.

<table>
<thead>
<tr>
<th>Date</th>
<th>Textbook Chapters--Topics</th>
<th>Assignments—Points</th>
</tr>
</thead>
</table>
| Day 1 | **Introduction:** Materials, Class Procedures, Safety, Required Equipment.  
**Reading:** Chapter 1 | Attendance (2 pts.)       |
| Day 2 | **Electrical Basics**                                           | Attendance (2 pts.)  
**Reading:** Chapter 2  
Complete Homework 1     | Homework (5 pts.)        |
| Day 3 | **Working with Wiring Diagrams**                                | Attendance (2 pts.)  
**Reading:** Chapter 3  
Complete Homework 2     | Homework (5 pts.)        |
<table>
<thead>
<tr>
<th>Day 4</th>
<th>Selecting and Using a Multimeter</th>
<th>Attendance (2 pts.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 5</td>
<td>Wire Chasing</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 4</td>
<td>Homework (5 pts.)</td>
</tr>
<tr>
<td></td>
<td>Complete Homework 3</td>
<td></td>
</tr>
<tr>
<td>Day 6</td>
<td>Wire and Circuit Protection</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 9</td>
<td></td>
</tr>
<tr>
<td>Day 7</td>
<td>Installing Your Own DC Accessories</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 5</td>
<td>Homework (5 pts.)</td>
</tr>
<tr>
<td></td>
<td>Complete Homework 4</td>
<td></td>
</tr>
<tr>
<td>Day 8</td>
<td>Batteries and Battery Systems</td>
<td>Midterm (10 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 6</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td>Day 9</td>
<td>Battery-Charging Systems</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 7</td>
<td>Homework (5 pts.)</td>
</tr>
<tr>
<td></td>
<td>Complete Homework 5</td>
<td></td>
</tr>
<tr>
<td>Day 10</td>
<td>Maintaining Marine Ignition Systems</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 8</td>
<td></td>
</tr>
<tr>
<td>Day 11</td>
<td>Tracing &amp; Repairing Starter-Motor Circuits</td>
<td>Attendance (2 pts.)</td>
</tr>
<tr>
<td></td>
<td>Reading: Chapter 10</td>
<td>Homework (5 pts.)</td>
</tr>
<tr>
<td></td>
<td>Complete Homework 6</td>
<td></td>
</tr>
</tbody>
</table>
### Student Evaluation and Course Policies

<table>
<thead>
<tr>
<th>Student Grade Determination</th>
<th>FKCC Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>30% Attendance &amp; Participation</td>
<td>90-100% A</td>
</tr>
<tr>
<td>35% Online Homework</td>
<td>80-89% B</td>
</tr>
<tr>
<td>10% Mid-Term</td>
<td>70-79% C</td>
</tr>
<tr>
<td>25% Final Exam</td>
<td>60-69% D</td>
</tr>
<tr>
<td>Below 60%</td>
<td></td>
</tr>
<tr>
<td>TOTAL 100 pts</td>
<td></td>
</tr>
</tbody>
</table>

**Exam Policy**

- All exams will be closed book/notes. The use of electronic devices is strictly prohibited during exams.
- Makeup exams *may be* offered to students with emergencies, but only if they can provide acceptable documentation of the emergency (e.g., hospital admit slip, etc.). The instructor reserves the right to change the format of any makeup exams (e.g., to essay questions).
- The final exam cannot be made up for any reason.
Reading Assignments and Homework

- To succeed in this course, you should do all assigned textbook readings and review class notes frequently.
- Homework is due within the first 10 minutes of the start of class on the due date. Students who must miss class on a due date can email the assignment by the start of class for full credit.
- Late homework is not accepted.

Communications: The online format of this class puts a premium on communications. The prime responsibility for timely communications rests with you - the student. This course will utilize the following methods:

EMAIL: The email utility within D2L should not be used for personal items that are not appropriate to share with the entire class. This e-mail uses the student's FKCC e-mail account.

What can the student expect from your instructor?
The instructor will log into D2L and check for messages at least once per day, including weekends and holidays. If the student has an urgent message for the instructor, do not post the same message both on a Discussion Forum and in an email. Doing both will waste the students time and will not result in the instructor getting the message any faster. If the instructor expects to be out of contact for more than a couple of days, they will inform the class via the Announcement section...

Important Note: If the instructor has not responded to a student email or voicemail message by the end of the day after the student left the message, the student should assume that the instructor did not receive it and leave another message.

Logging Off From D2L
In order to better serve our faculty and students, all D2L users should click the “Logout “link when completing online course work. By logging off instead of just closing the internet browser window, D2L server space is freed and system performance is optimized. In addition, logging off will more accurately record each student's time logged into the online course?

Class Participation
Class participation is a combination of discussions and in-lab assignments. The quality of work and amount of effort put into the labs will affect participation grades. The online discussion component is defined as posting a minimum number of substantial, separate, and distinct messages to the various Discussion Forums.
For the purposes of this class, a substantial online posting must:
1. Provide a good explanation of a concept or concepts related to the material discussed in the forum, or give a good example of how a concept can be applied, or provide an insightful response to a previous post.

2. Be factually correct. The post should help your classmates, and yourself, learn the material.

3. Have acceptable spelling and grammar. Although this is not a writing class, this is College. Students should get into the habit of writing complete sentences that are grammatically correct. Take advantage of the spell check feature in D2L.

4. Do your own work. Do not plagiarize from any source (internet, textbook, etc) as the body of your post. Study the concept, and then express it in the student’s own words. Make certain to cite and document references.

Other key points:
1. It is acceptable (and encouraged!) for more than one student to respond to the same message. The best way to be sure you understand a topic is to try to explain it to someone else.

2. Please use the discussion forums to ask all of the questions you have about the class material. The instructor wants students to ask a lot of questions.

4. Off-topic messages are not allowed on the D2L.

5. If the final average is on the borderline between two letter grades, active participation (posting several messages to each forum, on average) will work to the student’s advantage as the instructor decides which of the two letter grades the student has earned.

6. Messages must have content that contributes to the discussion.

7. Copying and pasting from any source, even if the student cites the source, is not acceptable. They should study the source document and paraphrase what they learned when typing a message.

Copyright Notice
The materials and content provided in this course is intended only for registered Florida Keys Community College students who have paid their tuition and fees to attend this course. Materials that are affected include, but are not limited to, text, still images, audio recordings, video recordings, simulations, animations, diagrams, charts, and graphs. Every effort has been made to insure these materials are not disseminated to anyone beyond those who have legally registered for this course. Download, revision, or distribution of course material with anyone other than registered classmates and the instructor is strictly prohibited.

Students are expected to familiarize themselves with FKCC Policies, which can be found in the current Student Handbook.