COURSE OUTLINE

MSPT 130 – MARINE PROPULSION SYSTEMS

Prepared By: Christopher Mayville

CANINO SCHOOL OF ENGINEERING
POWERSPORTS
August 2016
A. TITLE: MARINE PROPULSION SYSTEMS

B. COURSE NUMBER: MSPT 130
   SHORT TITLE: Marine Prop. Systems

C. CREDIT HOURS: 2

D. WRITING INTENSIVE COURSE (OPTIONAL): N/A

E. COURSE LENGTH: 15 weeks

F. SEMESTER(S) OFFERED: SPRING

G. HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:
   1 - 50 minute lecture hours per week
   1 - 2 hour working lab

H. CATALOGUE DESCRIPTION: A study of the different types of propulsion systems relative to various types of aquatic craft, including jet and propeller will be studied. The theory and construction of propulsion systems will be discussed.

I. PRE-REQUISITES/CO-COURSES: NONE

J. GOALS (STUDENT LEARNING OUTCOMES):

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Institutional SLO</th>
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<td>2. Prof. Competence</td>
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<td>2. Prof. Competence</td>
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<td>c. Disassemble, inspect and reassemble marine propulsion systems</td>
<td>1. Crit. Thinking</td>
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<td>2. Prof. Competence</td>
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<td>d. Identify different propulsion systems specific to pleasure craft</td>
<td>1. Crit. Thinking</td>
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<td>2. Prof. Competence</td>
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K. TEXTS: Understanding the Outboard Motor, 3rd Edition
   Eugene W. Stagner, Prentice Hall

L. REFERENCES: CD Rom data, Shop manuals of manufacturers, Mitchell manuals, All data, various online references

M. EQUIPMENT: Standard motorsports laboratory equipment

N. GRADING METHOD: (P/F, A-F, etc.) A-F

O. MEASUREMENT CRITERIA/METHODS: Quizzes, hourly exams, homework, laboratory performance tests, class participation

P. DETAILED TOPICAL OUTLINE:
I. Introduction
   1. Class procedures and policies
   2. Opening discussion

II. General use and maintenance of outboard motors
   1. Installation
   2. Steering systems
   3. Operational checks

III. Storage of marine engines and drives
   1. Storage of engines with pre-mix
   2. Storage of engines with oil injection
   3. Storage of drive systems

IV. Drive types
   1. Outboard
   2. Inboard
   3. I/O
   4. Screws
   5. Jet drives

V. Mid-section and lower unit
   1. Exhaust housing construction
   2. Adaptors

VI. Operating principles of the lower unit
   1. Lower unit housing design
   2. The shift system
   3. Repairing and maintaining the lower unit

VII. Trim and tilt systems
   1. Power trim (Mercury)
   2. Integral power trim and tilt (OMC)
   3. Trim/tilt electrical systems (OMC)

VIII. Propeller performance
   1. Propeller thrust
   2. What the propeller does

IX. How propellers work
   1. Pitch and slip
   2. Blade rake
   3. Trim angle adjustment

X. Propeller performance problems
1 Cavitation
2 Ventilation
3 Cupping or propeller blades
4 Damaged propellers

XI. Propeller directional rotation
   1 Right hand screw
   2 Left hand screw

XII. Boat performance problems
   1 Trim angle
   2 Weight distribution
   3 Marine fouling
   4 Powering the boat

Q. LABORATORY OUTLINE:

MSPT 130 - MARINE PROPULSION SYSTEMS

I. Introduction
   1 Laboratory procedures and policies
   2 Basic laboratory introduction

II. Introduction to outboard motors
   1 Installation
   2 Steering systems
   3 Operational checks

III. Storage of Marine Engines and Drives
   1 Storage of engines
   2 Storage of drives

IV. Drive Types
   1 Basic service and maintenance
   2 Operating principles

V. Trim and Tilt Systems
   1 Integral trim systems
   2 Remote trim systems

VI. Propellers
   1 Types
   2 Maintenance
   3 Theory