### OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.

Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor.

<table>
<thead>
<tr>
<th>COURSE NAME/NUMBER</th>
<th>FACULTY/DEPARTMENT</th>
<th>UCFV CREDITS</th>
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<tr>
<td>PHYS 325</td>
<td>Science/Physics</td>
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**COURSE DESCRIPTIVE TITLE**

**CALENDAR DESCRIPTION:**

Fluid mechanics is an important and yet often under-appreciated and neglected aspect of physics; yet an understanding of how fluids behave is important in a diversity of subjects from Astrophysics (stars and planetary bodies) to Microbiology (fluid flow into and out of cells). This course will introduce students to the subject of fluid mechanics from the basic principles of Archimedes and Bernoulli, to the more complex aspects of vortices and streamlines. An emphasis will be placed on the vector description of fluid behaviour, which will necessitate a brief introduction to Cartesian tensors.

**PREREQUISITES:** PHYS 221

**COREQUISITES:**

PRE or COREQUISITES: PHYS 222 or MATH 312 (PHYS 231 suggested)

**SYNONYMOUS COURSE(S):**

(a) Replaces:

(b) Cross-listed with:

(c) Cannot take: _______ for further credit.

**TOTAL HOURS PER TERM:** 75

**STRUCTURE OF HOURS:**

- Lectures: 75 Hrs
- Seminar: _______ Hrs
- Laboratory: _______ Hrs
- Field experience: _______ Hrs
- Student directed learning: _______ Hrs
- Other (specify): _______ Hrs

**TRAINING DAY-BASED INSTRUCTION:**

Length of course: _______ Hours per day: _______

**OTHER:**

- Maximum enrolment: 24
- Expected frequency of course offerings: Every 2 – 3 years
  (every semester, annually, every other year, etc.)

**WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)**

- Yes [ ]  No [ ]

**WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)**

- Yes [ ]  No [ ]

**TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:**

- Yes [ ]  No [ ]
LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:
Demonstrate proficiency in analyzing problems involving fluid statics (Archimedes principle, gauge and absolute pressure)
Demonstrate a basic understanding of the dynamics of vortices, and apply this knowledge to simple situations involving moving fluids
Describe and explain the basic principles behind simple fluid flow (Bernoulli)
Identify the conservation laws at work during the flow of simple fluids
Explain the major differences between viscous and non-viscous flow

METHODS:

(Guest lecturers, presentations, online instruction, field trips, etc.)

This course will be taught using lectures, demonstrations and accompanying software. Problems will be assigned and marked on regular basis.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☑ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]


STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments 30%
Midterm Examinations 20%
Final Examinations 40%
Project/Presentation 10%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

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<tr>
<th>Week</th>
<th>Topic</th>
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<td>1</td>
<td>Introduction</td>
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<td>2</td>
<td>Fundamental Concepts</td>
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<td>3-4</td>
<td>Fluid Statics</td>
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<td>5-6</td>
<td>Cartesian Tensors and Vector Calculus Review</td>
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<td>7-8</td>
<td>Fluid Kinematics</td>
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<td>Conservation Laws</td>
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<td>12-13</td>
<td>Laminar Flow</td>
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