EG21006 Fluid Mechanics

Academic year 2016/17

Semester 1

Module instructors:

Dr. Masoud Hayatdavoodi (mhayatdavoodi@dundee.ac.uk)
Professor Ping Dong (p.dong@dundee.ac.uk)

MODULE GUIDE

Module Arrangements

1. *Aims of the module*

   - To develop knowledge of and proficiency in the mechanics of fluids, hydrostatics, conservation of mass, momentum and energy, pipe flow and open channel flow.
   - To enhance the skills of critical analysis and independent mathematical reasoning.
   - To demonstrate the properties of turbulent pipe flow in a laboratory setting and show the use of Excel software in processing raw experimental data into derived quantities.

2. *Classes*

   - Monday, 10-11 am: Lecture (weeks 1-12)
     Fulton F20
     Dr. Masoud Hayatdavoodi
   - Friday, 12-1 pm: Lecture (weeks 1-12)
     Fulton F20
     Dr. Masoud Hayatdavoodi
   - Friday, 2-3 pm: Tutorial (weeks 4, 6, 8 & 10)
     Fulton F20
     Dr. Masoud Hayatdavoodi

   - Thursday, 10 am - 1 pm: Laboratory session (weeks 8-11)
     Fulton F13
     Professor Ping Dong
     Please note that you will only attend ONE 45-minute session during this period. Dates/times will be notified in week 7.

Module Resources

1. *Lectures & classes*
   The primary source of help and support for the module will be the regular lectures and classes that are scheduled during the semester.
   Students are highly recommended to attend all lectures and classes.

2. *My Dundee*
   All lecture slides, problem sheets and solutions will be made available on My Dundee. Problem sheets will be available at least 7 days before the relevant tutorial; lecture notes and tutorial solutions will appear after the event.
   All required material should be downloaded from My Dundee and stored locally; access to the module will not be extended beyond the current academic year.

3. *Recommended textbook*
   The recommended textbooks for this module are listed below. Any edition of these books would be appropriate.

   - White, F. M. (2015). Fluid Mechanics, McGraw-Hill Education; 8 edition, 864 p., ISBN: 978-0073398273.
   - Douglas, John F., Gasoriek, Janusz M., Swaffield. John A. and Jack, Lynne B. (2011). Fluid Mechanics, Prentice Hall; 6 edition, 1012 p., ISBN: 978-0273717720.
   - Munson, Bruce R., Rothmayer, Alric P., Okiishi, Theodore H. and Huebsch, Wade W. (2012). Fundamentals of Fluid Mechanics, Wiley; 7 edition, 792 p., ISBN: 978-1118116135.
   - Kundu, Pijush K., Cohen, Ira M., Dowling, David R. (2015). Fluid Mechanics, Academic Press; 6 edition, 928 p., ISBN: 978-0124059351.

4. *Additional resource*
   The following may be of use during the module:

   - http://web.mit.edu/hml/ncfmf.html
   - http://www.efluids.com
   - http://ocw.mit.edu
   - http://www.annualreviews.org/journal/fluid

5. *Approved calculators*
   Only calculators that have been approved for use can be taken into University exams for this module. The list of approved calculators may be found on the School of Science & Engineering pages on My Dundee.

Module Assessment

Your progress and performance in the module will be assessed by means of **two different** assessment components as described below. The relative weighting towards the overall mark is shown in brackets in each case.

A minimum overall mark of **40%** is required to pass the module.

All assessment elements must be carried out individually and not in collaboration with any other person or persons.

1. *Coursework* (40%)

   There will be 4 online tests during the course of the semester. Each of these will take the form of a question sheet that is to be downloaded from My Dundee and answered in your own time on paper. An associated test will be available on My Dundee to assess your solutions. Test availability will be announced in class and by email; each test will remain available for 7 days after being announced. The 4 tests contribute 50% of the coursework mark.

   There will also be an assignment in conjunction with the laboratory session that takes places during weeks 8-10. The lab assignment contributes the other 50% of the coursework mark.

   The minimum pass mark for the combined coursework is 30%.

2. *Degree exam* (60%)

   A two-hour degree exam will take place during weeks 13/14 to assess your knowledge of and proficiency in the material covered during the semester. The exam format will be 4 questions of which you select 3.

   The minimum pass mark for the degree exam is 30%.