

**SCHOOL of Mathematics, Statistics and Operations Research
SCHOOL of Geography, Environment and Earth Sciences**

**MATH 321: *Applied Mathematics I*
MATH 322: *Applied Mathematics II*
MATH 323: *Mathematics for Earth Sciences***

Course Information 2013, T2 version

All courses are offered in both Trimester 1 & 2
Lectured modules are offered in one trimester only.
Reading modules may be done in either trimester.

Course Coordinator

Mark McGuinness (SMSOR, CO323, ph 463-5059, Mark.McGuinness@vuw.ac.nz)

Lecturers

Euan Smith (SGEES, CO517, ph 463-6422, euan.smith@vuw.ac.nz)

Matt Visser (SMSOR, CO321, ph 463-5115, visser@mcs.vuw.ac.nz)

Martha Savage (SGEES, CO522, ph 463-5961, martha.savage@vuw.ac.nz)

Jim McGregor (SGEES, CO523, ph 463-5278, jim.mcgregor@vuw.ac.nz)

Learning Objectives

To develop interest, understanding and further mathematical knowledge in various advanced areas of applied mathematics and earth sciences.

Course Format

A number of topics are offered, either as lecture modules (L), reading modules (R), project modules (P), or combinations. Each of these is equivalent to a 12-lecture block spread over six weeks. *TWO* modules are to be chosen for *ONE* course, subject to certain minimal constraints noted below. Note that it is possible to do MATH 321, 322 and 323 simultaneously by doing a total of six modules; also, a student with a particular interest not covered by the listed options can propose a suitable R or P module with a willing lecturer. You may attempt more than two modules for one course, and then we would choose the best two module marks to decide your grade. You can do a module without being enrolled in any course; we will then keep a record of your module mark to be used when you want to complete a course by doing the second module.

Note that some modules are only offered in Trimester 1, some only in Trimester 2, others can be done in either Trimester. However, MATH 32* courses may be taken in Trimester 1 or in Trimester 2. You can do a module before you enrol in a course; we will then just hold over that module result until you complete with a second module, and register for a course. But you must *complete* a course in the Trimester and year you enrol for. For example, to do the combination of Cartesian tensors and Fluid flow, you would do the fluids now in Trimester 2, but not register until Trimester 1 next year when you could do Tensors. **If you are already registered for Trimester 2, but want to do a Trimester 1 module as part of the SAME course, you should immediately withdraw from the course, then enrol in it for Trimester 1 next year.**

Lectures: The times for lectured modules in Trimester Two are **Tue, Weds 12:00-12:50pm, Thurs 4:10-5:00pm, and Fri 3:10-4:00pm, in CO118.**

Class meeting: Tues 16 July, 12:00 noon in CO118. Discuss modules and timing.

Lectures start 17 July for Swing High. The Fluids lectures will start immediately after the mid-Trimester break, on Tues 10 September. Lectures for Trimester Two end on 18 October.

Modules

1. (L) *Cartesian tensors and introduction to applications* (~~Euan Smith, Trim 1~~)
2. (L) *Differential equations in geophysics* (~~Euan Smith, Trim 1~~)
3. (R) *Fractals* (Mark McGuinness, any time in Trim 1 or 2)
4. (R) *Special relativity* (Matt Visser, any time in Trim 1 or 2)
5. (R) *Quantum Physics* (Matt Visser, any time in Trim 1 or 2)
6. (R) *Lagrangian and Hamiltonian mechanics* (Matt Visser, any time in Trim 1 or 2)
7. (L & P) *Fluid flow in earth systems* (Martha Savage, Trim 2, second half)
8. (R) *Meteorology* (Jim McGregor, Trim 1 or 2)
9. (L & P) *Swing High – Study Group* (Mark McGuinness, Trim 2, second half)

For each Module, the lecturer will issue a specific outline of their module and arrangements for tutorials or consultation, either at the first meeting of the class or when the module begins.

Prerequisite

Mod 1 is a prerequisite for Mods 2, 7.

Choice of Modules

For each of MATH 321 and 322, you must do two modules, and any combination of two modules is permitted. A module may only be used towards one course.

For MATH 323, Module 1 and *one* of Modules 2, 7, or 8 are required.

The Course Coordinator will seek to confirm the personal programme of study with each student later. A preliminary indication is asked for at the first meeting of the class.

Assessment

L modules are examined with internal tests and/or assessment assignments, R modules are examined with assessment assignments, and P modules have a project that is marked. The final mark for the course that determines the grade is the average of the two percentage marks obtained. If you do extra modules, we will count the best combination of two, for each course you take. Each course consists of two non-overlapping modules. There are no exams during the Vic exam periods for the modules in these courses.

Mandatory Course Requirements

To be eligible to pass a course, you must obtain at least 40% in each of 2 modules (per course); and your average grade will have to be over 50%. It is each student's responsibility to make contact with the appropriate lecturer and to ensure that all necessary work is completed on time. One module can only count towards one course. Workload is intended to be five hours a week per module on average over 12 weeks, for a total of 60 hours per module and 120 hours per course.

MATH 446 students must do extra work, 20% of the total grade, to be arranged with a lecturer and notified to the Course Coordinator.

Noticeboard

Notices and results will be posted on the MATH Courses noticeboard opposite the School Office in CO 358. A course website is set up at http://msor.victoria.ac.nz/Courses/MATH321_2013T2/, which most modules will use. A course forum is operating, linked to from that course website, for you to ask questions online.

Penalties

At the discretion of the person in charge of a specific module, staff can simply refuse to grade any work that is handed in after the specified hand-in date.

Withdrawal dates – information on withdrawing from a course may be found at: <http://www.victoria.ac.nz/home/admisenrol/payments/withdrawalsrefunds.aspx>

UNIVERSITY POLICIES ON PLAGIARISM, CONDUCT, GRIEVANCES, DISABILITIES AND STUDENT SUPPORT

Students should familiarize themselves with the University's policies on these and other matters. For details, see the webpage

<http://msor.victoria.ac.nz/Main/StudentInformation - Policies>

Communication of additional information

Any additional or updated information will be placed on the course website as soon as practicable.

See http://msor.victoria.ac.nz/Courses/MATH321_2013T1/

General University policies and statutes

Find key dates, explanations of grades and other useful information at www.victoria.ac.nz/home/study.

Find out about academic progress and restricted enrolment at <http://www.victoria.ac.nz/home/study/academic-progress> .

The University's statutes and policies are available at <http://www.victoria.ac.nz/home/about/policy> , except qualification statutes, which are available via the Calendar webpage at <http://www.victoria.ac.nz/home/study/calendar> (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at http://www.victoria.ac.nz/home/about_victoria/avcacademic/default.aspx

MATH 321/2/3 Module Choices

2013

NAME:

E-MAIL ADDRESS:

MOBILE:

CHOICE OF MODULES:

Please tick the modules you are interested in doing for your course/s;

HAND IN TO CO323, or email me Mark.McGuinness@vuw.ac.nz

Put a total of two ticks per course if you have already decided. Question marks are OK too.

Put a total of three ticks per course if you are undecided, with one to be dropped later.

MODULE	MATH 321	MATH 322	MATH 323
1. (L) Tensors Trim 1 only	Compulsory if doing 2 or 7	Compulsory if doing 2 or 7	Compulsory
2. (L) D.E.s Trim 1 only			Compulsory if not doing 7 or 8
3. (R) Fractals any Trim			
4. (R) Special Relativity any Trim			
5. (R) Quantum Mechs any Trim			
6. (R) Lagrangian & Hamiltonian Mechs any Trim			
7. (L&P) Fluids Trim 2 only			Compulsory if not doing 2 or 8
8. (R) Meteorology any Trim			Compulsory if not doing 2 or 7
9. (L&P) Swing High Trim 2 only			