

**VICTORIA MANAGEMENT SCHOOL**  
**MMMS 521 POLICY MODELLING**  
Trimester Two 2006  
**COURSE OUTLINE**

**CONTACT DETAILS**

**Course Coordinator/Lecturer:**

Dr Bob Cavana, *Reader in Decision Sciences*.  
Rutherford House 904, Email: [bob.cavana@vuw.ac.nz](mailto:bob.cavana@vuw.ac.nz) Tel: 463-5137

**Admin Assistant:**

Mrs Tricia Lapham.  
Rutherford House 919, Email: [tricia.lapham@vuw.ac.nz](mailto:tricia.lapham@vuw.ac.nz); Tel: 463-5381

**CLASS TIMES AND ROOM NUMBERS**

Lectures:	Thursday	1.40 – 3.30 pm	RLWY 315
Computer workshop:	Thursday	3.40 – 4.30 pm	RLWY 402

[Lecture classes will be from 1.40-4.30pm up to week 3, then from 1.40-3.30pm from week 4 onwards, followed by a computer workshop from 3.40-4.30pm]

**COURSE OBJECTIVES**

One of the objectives of the Master of Management Studies Programme is assist with the development of professional managers capable of fulfilling strategic roles within corporate and government enterprises. Integral to this capability is an understanding of how organisational and external factors interrelate to generate dynamic behaviour, and the impact of managerial strategic decision making on this behaviour.

This course will adopt a systems thinking and strategic modelling approach using the system dynamics methodology for managerial decision making. This ‘systems’ approach involves observing and analysing any complex organisation, system or issue in a comprehensive manner: seeking to understand its structure, the interconnections between its components, and how changes in any area will affect the whole system and its constituent parts over time. This course will involve conceptualizing private and/or public sector strategic issues within a systems thinking framework, then developing and analysing policies and strategies utilising the *ithink* or Vensim systems modelling simulation packages.

By the end of this course, you should be able to:

- understand the system dynamics approach to systems thinking and strategic analysis;
- apply systems thinking and systems modelling concepts to important managerial and strategic issues, including the supply chain;
- utilize a variety of diagrammatic modelling tools to assist in problem structuring and conceptualising policy and strategic issues;
- construct policy / strategy models using the *ithink* or Vensim systems modelling simulation package;
- critically evaluate and utilise dynamic models for policy analysis, strategy evaluation and scenario analysis; and
- develop a simplified management flight simulator for organisational learning and strategic analysis.

## COURSE CONTENT

WEEK (1)	LECTURE	TOPIC	READINGS (2)
1	13 Jul	Course overview Intro to systems thinking concepts	ST&M, Ch 1-2
2	20 Jul	Group model building	ST&M, Case 2
3	27 Jul	Causal loop modelling	ST&M, Ch 3
4	3 Aug	Intro to dynamic modelling	ST&M, Ch 3-4,
5	10 Aug	Supply chain modelling	ST&M, Case 4
6	17 Aug	Constructing policy models <i>[Systems thinking assignment due]</i>	ST&M, Ch 4
<b>MID-TRIMESTER BREAK (4)</b>			
7	7 Sep	Analysing policy models	ST&M, Ch 4
8	14 Sep	Technical aspects of simulation modelling	ST&M, Ch 4
9	21 Sep	Policy analysis & strategy development	ST&M, Case 5
10	28 Sep	Scenario planning & modelling	ST&M, Ch 5 Case 5
11	5 Oct	Management flight simulators Systems thinking in learning organisations	ST&M, Ch 6 & 7
12	12 Oct	<i>[Policy modelling presentations]</i> Course review	

Notes:

- (1) Please bring the textbook and CD-Rom to each class and computer workshop.
- (2) ST&M refers to the textbook *Systems Thinking and Modelling*, by KE Maani and RY Cavana. Additional readings each week will be distributed in class.

## EXPECTED WORKLOAD

One point typically requires about 10 hours of student work, including both scheduled contact time. Since this course is for 15 points, this requires the student should spend at least 150 hours of effort on this course, including attending lectures, tutorials, computer workshops, assignments, preparation for group presentations and evaluations.

## READINGS

KE Maani and RY Cavana (2000), *Systems Thinking and Modelling: Understanding Change and Complexity*, Pearson Education, Auckland.

RY Cavana (ed.) (2006), *Systems Thinking and Strategic Modelling: Selected Readings*, Victoria Management School, Victoria University of Wellington. (provided by VMS)

## LIBRARY MATERIALS

The library holds a couple of copies of the textbook and other relevant books on closed reserve loan. Also in the library are the following conference proceedings, which students might find useful for this course:

Cavana, R.Y., Vennix, J.A.M., Rouwette, E.A.J.A., Stevenson-Wright, M. and Candlish, J. (eds) 1999. *Systems Thinking for the Next Millennium. Proceedings of the 17<sup>th</sup> International Conference of the System Dynamics Society and the 5th Australian & New Zealand Systems Conference*. Held in Wellington, New Zealand, 20-23 July. System Dynamics Society, Albany, USA.

In addition the library contains a wide variety of management science and systems books and journals you may find relevant for this course. The international journals include:

- *European Journal of Operational Research* (EJOR)
- *Journal of the Operational Research Society* (JORS)
- *System Dynamics Review* (SDR)
- *Systems Research and Behavioural Sciences* (SRBS)

EJOR and JORS can be accessed directly through the Library's database of electronic journals. SDR and SRBS can also be accessed electronically through the library's database, by double clicking on 'Wiley InterScience' (full text e-journals) in the library's Alphabetical List of Electronic Resources & Databases. (the web address is: <http://www.interscience.wiley.com/>).

Annual conference proceedings since the 1997 International System Dynamics Conference are available on line from the System Dynamics Society web site:

[http://www.systemdynamics.org/society\\_activities.htm](http://www.systemdynamics.org/society_activities.htm)

## COMPUTER SOFTWARE

The computer package *iThink* will be used on the course from week 4 to week 12. This will be available in the computer laboratory in the Railway Building (RLWY 402). A run-time (save disabled) version of this computer software is available on a CD-Rom with the text book. Unfortunately models cannot be saved with that version of *iThink* but models available on the CD-Rom can be run, and small models can be constructed (but not saved). The computer package *iThink* is produced by iSee Systems Inc. Their web site is: <http://www.iseesystems.com/>

If students have private access to a home personal computer (PC), they are able to download a free copy of the Vensim PLE simulation modeling package (produced by Ventana Systems, Inc.) from the internet. The web site is: <http://www.vensim.com/freedownload.html>

### ASSESSMENT REQUIREMENTS

The course will be assessed as follows:

	<u>Max Marks</u>	<u>Due Date</u>
1. Systems thinking assignment	35%	<i>7 September</i>
2. Seminar Presentation	15%	<i>date selected by student</i>
3. Policy modelling presentation	15%	<i>in class 12 October</i>
4. Policy modelling report	35%	<i>by 5pm Wednesday 18 October</i>
<hr/>		
<b>Total</b>	<b>100%</b>	

### ASSIGNMENTS

Assignments should be type-written or prepared on a Word processor. They should be approximately 2,000 – 4,000 words plus appropriate diagrams, tables and appendices. The **assignments** are briefly described as follows. Further details will be provided during the course:

**1. Systems Thinking Case** **Due:** *7 September*

Students can select either (a) or (b) below:

- (a) A case related to public or private sector managerial issues will be provided. You will be required to undertake a ‘systems thinking’ study to analyse the issue(s). This will include identifying the relevant variables, developing a causal loop diagram, analysing the main feedback loops, preparing a behaviour over time chart for the main variables, identifying any systems archetypes and leverage points within the system, and recommending intervention strategies where appropriate. This assignment should be presented as a management report.
- (b) This assignment will involve constructing dynamic simulation models based on two of Peter Senge’s (1990) systems archetypes or Eric Wolsteholme’s (2003) generic systems archetypes. For each archetype you will describe a situation where it applies, prepare an appropriate causal loop diagram and behaviour over time chart, develop a set of *ithink* or Vensim simulation equations, simulate the model on the computer, present the appropriate graphical and numerical output, and discuss the dynamic behaviour and insights from the exercise. This assignment is to be written up as two separate cases.

**2. Seminar Presentation** **Due:** *date selected by student*

This will require a 20 minute PowerPoint presentation by each student based on an article or chapter from the readings or from other sources related to the course. An extra 10 minutes will be provided for questions. Assessment will be based on the presentation and the way questions

are handled. You will be required to hand in a paper and electronic copy of the PowerPoint slide presentation.

**3. Policy Modelling Presentation**                      **Due:**              *Class presentation 12 October*

**4. Policy Modelling Report**                              **Due:**              *18 October*

Initially you will be required to identify an issue(s) within an organisation that you are familiar with or can gain access to. The issue(s) must be suitable for dynamic modelling! You will then develop a causal loop diagram for this issue(s) and behaviour over time charts for the main variables. The next stage will involve developing a stock flow diagram for modelling using the *ithink* (or Vensim) computer simulation package. After you have developed the documented equations for your model you should run the base case of the model, and perform validation and sensitivity tests on the model. You will be expected to produce two policies or strategies with the model, showing improvements to system behaviour and then demonstrate their robustness against two contrasting scenarios. Based on this work, you will be required to reach some conclusions and recommendations. You will also develop a simplified management flight simulator and present your work orally in class on Thursday 12 October [20 minute presentation followed by 10 minutes questions and answers]. This should be written up as a management report, and submitted by 5pm Wednesday 18 October.

The policy modelling assignment can be undertaken in a group of up to 3 students. The presentation can be undertaken by one or more members of the group (in which case the presenters will receive equal marks), but the report must be prepared and submitted by each individual member of the group.

## REFERENCING

There are many different styles of referencing and the Faculty of Commerce & Administration at VUW has decided to make APA (American Psychological Association) referencing style the common standard across the Faculty. The Commerce and Central Libraries hold the APA Style Guide. You can also access the information from the online VUW library site (<http://www.vuw.ac.nz/library/resources/virtualref.shtml#style>).

## MANDATORY COURSE REQUIREMENTS

### Mandatory Course Requirements

- comprise:    i)        submission of **all** assignments **by the due time on the due dates**,
- ii)        obtaining **at least 40%** of the marks available to assignments, and
- iii)        attendance throughout **at least 9 out of 12** classes.

## COMMUNICATION OF ADDITIONAL INFORMATION

Announcements during the trimester will be advised by email or advertised on Blackboard.

## HANDING IN ASSIGNMENTS

Your assignments should be handed in either in class or put into the course **Assignment Box 23** on the Mezzanine floor, Rutherford House by 5pm on the due date. After that, **late** assignments are to be handed in at the Victoria Management School reception on Level 10, Rutherford House before 4.30pm, and the date handed in will be noted.

Students must prepare two copies of each hand-in and keep the second copy for their own reference. Students must also keep an electronic copy of their work archived in case the original assignment goes missing. Failure to do so will jeopardise any claim by you that your work was submitted in the rare cases where your work goes astray.

## **PENALTIES**

- (i) In fairness to other students, work submitted after any deadline will incur a penalty for lateness. The penalty is 2 of the marks available for an assignment submitted after the due time on the due date for each part day or day late. Saturdays, Sundays and public holidays will be included when counting the number of days late. Assignments received more than 7 days after the due date will not be accepted and the student will automatically fail the Mandatory Requirements.
- (ii) Course Outlines provide a signal to student of forthcoming workload, dates of submission etc, and thus student study plans should take account of course requirements across all courses. Consequently, workload issues related to other courses and employment will not be accepted as reason for dispensation from mandatory requirements or waiver of penalties. Extensions to submission deadlines for any assigned work will only be granted in exceptional circumstances.
- (iii) Students who are unable to comply with any of the mandatory requirements should make a written application for an extension to the due date for submission of assigned work or for waiver of a penalty, in advance, to the Course Coordinator, providing documentary evidence of the reasons of their circumstances.  
All such applications must be made before the deadline and be accompanied by documentary evidence, e.g. a medical certificate, or counsellor's report that indicates the degree of impairment, and for how long the student has been impaired. Please be sure to ask at the time of consultation for the degree of impairment to be stated in any certificate you provide to support your case.
- (iv) In the event of unusual or unforeseeable circumstances (e.g. serious illness, family bereavement), that precludes an application in advance, students should make contact with the Course Coordinator as soon as possible, and make application for waiver of a penalty as soon as practicable.
- (v) Word limits should be adhered to, especially so when they provide a guide to limiting the student's coverage of a topic. The penalty will be 5% of the grade for an assignment which is 10% over the word limit.

## **GRADING GUIDELINES**

The following broad indicative characterisations of grade will apply in grading assignments and the exam:

A+	excellent performance in all respects
A	excellent performance in almost all respects
A-	excellent performance in many respects
B+	very good, some aspects excellent
B, B-	good but not excellent performance
C+, C	work satisfactory overall but inadequate in some respects
D	poor performance overall, some aspects adequate
E	well below the required standard
K	failure to achieve mandatory course requirements and have achieved at least an average "C" over all the assessment.

## **Faculty of Commerce and Administration Offices**

### Railway West Wing (RWW) - FCA Student and Academic Services Office

The Faculty's Student and Academic Services Office is located on the ground and first floors of the Railway West Wing. The ground floor counter is the first point of contact for general enquiries and FCA forms. Student Administration Advisers are available to discuss course status and give further advice about FCA qualifications. To check for opening hours call the Student and Academic Services Office on (04) 463 5376.

### Easterfield (EA) - FCA/Education/Law Kelburn Office

The Kelburn Campus Office for the Faculties of Commerce and Administration, Education and Law is situated in the Easterfield Building - it includes the ground floor reception desk (EA005) and offices 125a to 131 (Level 1). The office is available for the following:

- Duty tutors for student contact and advice.
- Information concerning administrative and academic matters.
- Forms for FCA Student and Academic Services (e.g. application for academic transcripts, requests for degree audit, COP requests).
- Examinations-related information during the examination period.

To check for opening hours call the Student and Academic Services Office on (04) 463 5376.

## **General University Policies and Statutes**

Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, the Statute on Student Conduct and any statutes relating to the particular qualifications being studied; see the Victoria University Calendar available in hard copy or under 'About Victoria' on the VUW home page at [www.vuw.ac.nz](http://www.vuw.ac.nz).

## **Student and Staff Conduct**

The Statute on Student Conduct together with the Policy on Staff Conduct ensure that members of the University community are able to work, learn, study and participate in the academic and social aspects of the University's life in an atmosphere of safety and respect. The Statute on Student Conduct contains information on what conduct is prohibited and what steps are to be taken if there is a complaint. For information about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor or refer to the statute on the VUW policy website at [www.vuw.ac.nz/policy/studentconduct](http://www.vuw.ac.nz/policy/studentconduct). The Policy on Staff Conduct can be found on the VUW website at [www.vuw.ac.nz/policy/staffconduct](http://www.vuw.ac.nz/policy/staffconduct).

## **Academic Grievances**

If you have any academic problems with your course you should talk to the tutor or lecturer concerned; class representatives may be able to help you in this. If you are not satisfied with the result of that meeting, see the Head of School or the relevant Associate Dean; VUWSA Education Coordinators are available to assist in this process. If, after trying the above channels, you are still unsatisfied, formal grievance procedures can be invoked. These are set out in the Academic Grievances Policy which is published on the VUW website at [www.vuw.ac.nz/policy/academicgrievances](http://www.vuw.ac.nz/policy/academicgrievances).

## **Academic Integrity and Plagiarism**

Academic integrity is about honesty – put simply it means **no cheating**. All members of the University community are responsible for upholding academic integrity, which means staff and students are expected to behave honestly, fairly and with respect for others at all times.

Plagiarism is a form of cheating which undermines academic integrity. The University defines plagiarism as follows:

*The presentation of the work of another person or other persons as if it were one's own, whether intended or not. This includes published or unpublished work, material on the Internet and the work of other student or staff.*

It is still plagiarism even if you re-structure the material or present it in your own style or words.

*Note: It is however, perfectly acceptable to include the work of others as long as that is acknowledged by appropriate referencing.*

Plagiarism is prohibited at Victoria and is not worth the risk. Any enrolled student found guilty of plagiarism will be subject to disciplinary procedures under the Statute on Student Conduct and may be penalised severely. Consequences of being found guilty of plagiarism can include:

- an oral or written warning
- cancellation of your mark for an assessment or a fail grade for the course
- suspension from the course or the University.

Find out more about plagiarism, and how to avoid it, on the University's website at [www.vuw.ac.nz/home/studying/plagiarism.html](http://www.vuw.ac.nz/home/studying/plagiarism.html).

### **Students with Impairments**

The University has a policy of reasonable accommodation of the needs of students with disabilities. The policy aims to give students with disabilities the same opportunity as other students to demonstrate their abilities. If you have a disability, impairment or chronic medical condition (temporary, permanent or recurring) that may impact on your ability to participate, learn and/or achieve in lectures and tutorials or in meeting the course requirements, please contact the Course Coordinator as early in the course as possible. Alternatively you may wish to approach a Student Adviser from Disability Support Services (DSS) to discuss your individual needs and the available options and support on a confidential basis. DSS are located on Level 1, Robert Stout Building, telephone (04) 463 6070, email [disability@vuw.ac.nz](mailto:disability@vuw.ac.nz). The name of your School's Disability Liaison Person is in the relevant prospectus or can be obtained from the School Office or DSS.

### **Student Support**

Staff at Victoria want students to have positive learning experiences at the University. Each Faculty has a designated staff member who can either help you directly if your academic progress is causing you concern, or quickly put you in contact with someone who can. Assistance for specific groups is also available from the Kaiwawao Māori, Manaaki Pihipihinga or Victoria International.

In addition, the Student Services Group (email [student-services@vuw.ac.nz](mailto:student-services@vuw.ac.nz)) is available to provide a variety of support and services. Find out more at [www.vuw.ac.nz/st\\_services/](http://www.vuw.ac.nz/st_services/).

VUWSA employs Education Coordinators who deal with academic problems and provide support, advice and advocacy services, as well as organising class representatives and Faculty delegates. The Education Office (tel. 04 463 6983 or 04 463 6984, email [education@vuwsa.org.nz](mailto:education@vuwsa.org.nz)) is located on the ground floor, Student Union Building.



**Manaaki Pihipihinga - Maori and Pacific Mentoring Programme (Faculty of Commerce and Administration)**

This is a mentoring service for Maori and Pacific students studying at all levels. Weekly one hour sessions are held at the Kelburn and Pipitea Campuses in the Mentoring Rooms, 14 Kelburn Parade, and Room 210 and 211, Level 2, Railway West Wing. Sessions cover drafting and discussing assignments, essay writing, and any questions that may arise from tutorials and/or lectures. A computer suite networked to Cyber Commons is available for student use.

To register with Manaaki Pihipihinga, please contact one of the following:

Puawai Wereta  
Room 210, Level 2  
Railway West Wing  
Tel. (04) 463 8997

Email: [Puawai.Wereta@vuw.ac.nz](mailto:Puawai.Wereta@vuw.ac.nz)

Fa'afai Seiuli  
Room 109 B  
14 Kelburn Parade  
Tel. (04) 463 5842

Email: [Faafoi.Seiuli@vuw.ac.nz](mailto:Faafoi.Seiuli@vuw.ac.nz)