

**VICTORIA MANAGEMENT SCHOOL**  
**MGMT 315      SYSTEMS THINKING & 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

Dr Brian McGarrie, *Senior Lecturer in Operations Management*  
Rutherford House 919, Email: [brian.mcgarrie@vuw.ac.nz](mailto:brian.mcgarrie@vuw.ac.nz) Tel: 463-6967

**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:	Tuesday	11.30 – 12.20	GB-LT4
Lectures:	Wednesday	10.30 – 12.20	GB-LT4

A one hour tutorial each Tuesday (12.40-3.30pm) from week 2 to week 4. [tutorial room tba]

A one hour computer workshop each Tuesday (12.40-3.30pm) from week 5 to week 11.  
[Computer laboratories will be held in the Railway Building, room RLWY 402.]

**FINAL EXAMINATION:**            during the period of 16 October – 12 November 2006

**COURSE OBJECTIVES**

This course has two main objectives: (1) an introduction to the rapidly growing field of supply chain management, with an emphasis towards supply chain modelling; and (2) providing an overview of the systems thinking and modelling approach using the system dynamics methodology for managerial decision making. This ‘systems’ approach involves observing and analysing any complex organisation, system [including supply chains] 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. A key feature of the system dynamics method is the explicit recognition of the underlying feedback loop structure that is inherent in any dynamic system.

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

- Understand the scope of supply chain management, and be able to map and model simplified supply chains;
- Understand the system dynamics approach to systems thinking and strategic analysis;
- Construct policy / strategy models using the *iThink* and/or *Vensim* simulation modeling packages;
- Critically evaluate & utilise dynamic models for policy analysis, strategy evaluation and scenario analysis; and
- Develop simplified management flight simulators for organisational learning.

### COURSE CONTENT

WEEK (1)	LECTURE	TOPIC	LECTURER (2)	READINGS (3)
1	11 & 12 Jul	Course overview Intro to supply chain management	BMcG	On blackboard
2	18 & 19 Jul	Relationship management in supply chains	BMcG	On blackboard
3	25 & 26 Jul	Supply chain mapping	BMcG	On blackboard
4	1 & 2 Aug	Systems thinking concepts Group model building	BC	ST&M, Ch 1-3, Case 3
5	8 & 9 Aug	Supply chain modelling	BC	ST&M, Case 4
6	15 & 16 Aug	Constructing dynamic models <i>[Supply chain assignment due]</i>	BC	ST&M, Ch 4
<b>MID-TRIMESTER BREAK (4)</b>				
7	5 & 6 Sep	Analysing dynamic models	BC	ST&M, Ch 4
8	12 & 13 Sep	Technical aspects of simulation modelling	BC	ST&M, Ch 4
9	19 & 20 Sep	Policy analysis & strategy development <i>[Dynamic modelling assignment due]</i>	BC	ST&M, Case 5
10	26 & 27 Sep	Scenario planning & modelling	BC	ST&M, Ch 5 Case 5
11	3 & 4 Oct	Management flight simulators Systems thinking in learning organisations	BC	ST&M, Ch 6 & 7
12	10 & 11 Oct	<i>[Group systems modelling presentations]</i> Course review	BC/ BMcG	

#### Notes:

- (1) Please bring the textbook & CD-Rom to each class and computer workshop from week 4 to week 11.
- (2) BMcG = Brian McGarrie; BC = Bob Cavana
- (3) ST&M refers to the textbook *Systems Thinking and Modelling*, by KE Maani and RY Cavana. Additional readings each week will be available on blackboard or 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 24 points, this requires the student should spend at least 240 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.

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

Brian McGarrie (2006). Selected readings in supply chain management (available on Blackboard).

### **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. Supply chain assignment	20%	<i>due 17 August</i>
2. Dynamic modelling assignment	25%	<i>due 20 September</i>
3. Group systems modelling presentation	15%	<i>due 10 &amp; 11 October</i>
4. Final Examination	40%	<i>Exam Period</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 – 3,000 words plus appropriate diagrams, tables and appendices. The **assignments** are briefly described as follows. Further details will be provided during the course:

### **1. Supply chain assignment**

**Due: 17 August**

Case study: **Dell vs. Gateway**

Prepare a report that presents an analysis of the case study that addresses the following questions:

- 1) From a Supply Chain Management perspective, critically compare the Dell approach to that of Gateway.
- 2) Provide a comparison of their future Supply Chain Management opportunities and challenges.

Word Limit: **2000**

### **2. Dynamic modelling assignment**

**Due: 20 September**

This assignment will involve constructing dynamic simulation models based on Peter Senge's systems archetypes. This should be written up as a management report.

### **3. Group Systems Modelling Presentation**

**Due: Tues, 10 or Wed, 11 October**

This will involve working in a small group of 2 to 4 students. This assignment will involve developing or critically evaluating an existing system dynamics simulation model and presenting the results as in class on Tuesday 10 or Wednesday 11 October [a 20 minute presentation followed by 10 minutes of questions and answers].

Note, all members of the group are expected to contribute to the group oral presentation. Paper and electronic versions of the group presentations should be submitted on the due date to the course coordinator. On the first page, the members of the group should be identified and a statement made that either all members have on balance contributed equally, or the relative contributions of the members stated. All members of the group will receive the same mark unless their contributions are unequal, in which case the lecturer will make an equitable adjustment.

If it becomes clear that the group dynamics will preclude the group from submitting an effective group presentation, group members should discuss the matter immediately with the lecturer. If necessary to ensure that no student is unfairly disadvantaged, the lecturer will permit some or all members of the group to submit an individual presentation of a defined subset of the project.

#### **4. Final Examination**

This will be a 3 hour closed book examination covering all aspects of the course. Further details will be provided later in the course.

#### **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,
- iii)       attendance throughout **at least 8 out of 10** tutorial or computer workshops, and
- iv)       obtaining **at least 40%** of the marks available to the examination.

**Overall Pass Mark** - for the course will be 50% of the total marks available, ie 50 marks.

#### **COMMUNICATION OF ADDITIONAL INFORMATION**

Announcements during the trimester will be 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)