

# Prescriptions and Schedule of Papers for 2007

## Mode of Delivery

*	= Not available in 2007
B1, B2, B3	= Available as a block course
E, E1, E2	= Available extramurally
F1	= Face to face teaching
I, I1, I2, I3, I4, I5, I6, I7, I8, I9, I10, I11, I12, I13, I14, I15, I16, I17, I18, I19, I20, I21, I22, I23, I24, I25, I26, I27, I28, I29, I30, I31, I32, I33, I34, I35, I36, I37, I38, I39, I40, I41, I42, I43, I44, I45, I46, I47	= Available internally

## Semesters

S1	Semester One
S2	Semester Two
S3	Summer School
S12	Double Semester

## Locations

AG	Auckland Geographic Area
AL	Massey Albany
CG	Christchurch Geographic Area
CH	Christchurch
EM	Employers and Manufacturers Assc
HK	Hokowhitu Campus
HW	Hawkes Bay
MA	Military Stds Inst. Auckland
NT	Email/Internet
PG	Papua New Guinea Geographic Area
PN	Massey Palmerston North
RU	Ruawharo Campus
SP	Singapore Aviation Academy
TH	Thailand Aviation Academy
TN	Tonga Geographic Area
WG	Wellington Geographic Area
WL	Massey Wellington

Paper No./Title	Credits	Sem	Mode	Loc
<b>Computer Science</b>				
<b>159.101</b>	15 credits	S1	E	PN
<b>Programming Fundamentals</b>		S1	I	AL
This introductory course teaches the fundamental concepts of using and programming computers through practical experience and problem-solving in a high-level language.				
		S1	I	PN
		S1	I	WL
		S2	I	AL
		S2	I	PN
<b>159.101</b>	15 credits	S1	E	PN
<b>Programming Fundamentals</b>		S1	I	AL
This introductory course teaches the fundamental concepts of using and programming computers through practical experience and problem-solving in a high-level language.				
		S1	I	PN
		S1	I	WL
		S2	I	AL
		S2	I	PN
<b>159.102</b>	15 credits	S2	E	PN
<b>Computer Science Fundamentals</b>		S2	I	AL
An introduction to computer science: the discipline, computer systems, the theory of problem-solving and computer applications. Practical laboratory work is an important part of this paper.				
		S2	I	PN
		S2	I	WL
<b>159.201</b>	15 credits	S1	E	PN
<b>Algorithms and Data Structures</b>		S1	I	AL
Structured types. Array, list, tree and graph algorithms. Hash tables. Dynamic data structures. Abstract data types. Laboratory work is an important part of this course.				
		S1	I	PN
		S1	I	WL
		S2	I	AL
		S2	I	AL
<b>159.202</b>	15 credits	S1	I	AL
<b>Declarative Programming</b>		S2	E	PN
Basic functional programming: functions, pattern matching, types, recursion, list processing. Basic logic programming: clauses, recursion, structures, arithmetic, list processing. Programming language concepts. Programming paradigms and language selection.				
		S2	I	AL
		S2	I	PN
		S2	I	WL
<b>159.233</b>	15 credits	S1	I	AL
<b>Computer Architecture</b>				
Digital logic. Architecture. Processor organisation, analysis and design. Assembler programming.				
<b>159.234</b>	15 credits	S1	I	AL
<b>Object-Oriented Programming</b>	S2	I	AL	
Introduction to Object-Oriented programming: classes, objects, templates, inheritance, polymorphism, iterators, object libraries.				

Paper No./Title	Credits	Sem	Mode	Loc
<b>159.235</b>	15 credits	S2	I	AL
<b>Graphical Programming</b>				
Programming graphical-user-interfaces using an event-driven model. Drawing and transformation of graphical objects. Font design. Programming in 3D. Animation techniques.				
<b>159.253</b>	15 credits	S1	E	PN
<b>Computer Systems</b>		S1	I	PN
Digital logic, architecture, assembler, processor organisation, data communication and networks.				
		S1	I	WL
<b>159.254</b>	15 credits	S2	I	PN
<b>Software Engineering A</b>		S2	I	WL
Modelling methods, techniques and tools to support the specification and design of large software systems.				
<b>159.302</b>	15 credits	S1	I	AL
<b>Artificial Intelligence</b>		S2	E	PN
AI programming. State space representation and search. Heuristics. Planning. Game playing. Knowledge representation. Knowledge-based systems. Natural language processing. Machine learning. Reasoning under uncertainty. Philosophical issues.				
		S2	I	AL
		S2	I	PN
		S2	I	WL
<b>159.331</b>	15 credits	S1	I	AL
<b>Algorithms and Languages</b>				
Comparative programming languages. Programming and algorithm design using different paradigms. Algorithm analysis. Algorithm complexity.				
<b>159.333</b>	15 credits	S1	I	AL
<b>Project Implementation</b>		S2	I	AL
Either: Implementation of a project that has been designed in a 300-level Information Systems course or a small Computer Science project.				
<b>159.334</b>	15 credits	S1	I	AL
<b>Computer Networks</b>		S2	I	AL
A layered approach to data communications and the Internet protocols.				
<b>159.335</b>	15 credits	S1	I	AL
<b>Concurrent Programming and Operating Systems</b>		S2	I	AL
Task parallelism: processes, synchronisation methods. Operating systems, structures and techniques. Brief introduction to data-parallel and distributed computing.				

Paper No./Title	Credits	Sem	Mode	Loc
<b>159.339</b> <b>Internet Programming</b> Advanced concepts of programming computers across the Internet: scripting, HTML, client and server-side programs, distributed objects, distributed object frameworks, security.	15 credits	S2	I	AL
<b>159.351</b> <b>Software Engineering B</b> Application of software engineering methods to the development of large software systems. Social and professional issues.	15 credits	S1 S1	I I	PN WL
<b>159.353</b> <b>Human-Computer Interaction</b> Interaction styles. Designing for usability. Prototyping the user interface. Interface evaluation. Current issues in HCI.	15 credits S1	S1 I	E PN	PN
<b>159.354</b> <b>Architecture and Networks</b> Structures and techniques used in computer architecture. Processor analysis and design. Multi processors. The layered approach to data communications. Introduction to networking protocols including TCP/IP and the World Wide Web. Laboratory work is an important part of this course.	15 credits	S1 S2	I I	WL PN
<b>159.355</b> <b>Concurrent Systems</b> This course builds on concurrency theory giving practical experience in all aspects of concurrent programming, including issues of synchronisation. Operating systems, structures and techniques are presented as examples of complex, concurrent programs.	15 credits	S1	I	PN
<b>159.356</b> <b>Software Engineering C</b> Management of the software engineering process. A group project will form a significant component of this paper.	15 credits	S2 S2	I I	PN WL
<b>159.357</b> <b>Formal Methods</b> Formal methods for specification, verification and development of software.	15 credits	S2	I	PN
<b>159.359</b> <b>Web Technologies</b> Infrastructure: network server hardware technologies, router and firewalls, web server infrastructure and configuration, distributed web servers. Software: Internet applications, web development tools, scripting languages, web client domain object models, security, architectural design for the web and XML.	15 credits	S1	I	PN
<b>159.391</b> <b>Special Topic</b>	15 credits	S1 S1 S2 S2	I I I I	AL PN AL PN
<b>159.392</b> <b>Special Topic</b>	15 credits	S1 S1 S2 S2	I I I I	AL PN AL PN
<b>159.402</b> <b>Programming Languages</b> Topics in programming languages.	15 credits	S1	I	PN
<b>159.403</b> <b>Advanced Computer Systems</b> Advanced topics in computer systems, including concurrency, specification and advanced technologies.	15 credits	S2	I	PN

Paper No./Title	Credits	Sem	Mode	Loc
<b>159.404</b> <b>Systems Programming</b> Selected projects including some or all of the following topics: Internet technology, language translation, scripting languages, distributed systems, security and encryption.	15 credits	S1	I	PN
<b>159.407</b> <b>Object-Oriented Software Engineering</b> A study of the concepts, principles, techniques and development methodologies related to Object-Oriented Technology and its applications. UML. Design Patterns and Frameworks. Components Software Engineering. Practical projects using an object-oriented language.	15 credits	S1	I	PN
<b>159.410</b> <b>User Interface Design</b> Practical techniques, models and tools to support the analysis and design of user interfaces.	15 credits	S2	I	PN
<b>159.420</b> <b>Computer Systems Engineering Project</b> A supervised project on some aspect of the application of computing involving an industrial commercial or research problem, requiring the synthesis of material from a range of taught courses.	30 credits S12 S12	S12 S12	I I	AL PN
<b>159.433</b> <b>Computer Graphics</b> Topics in application programming and debugging, user interfaces and computer graphics.	15 credits	*	*	*
<b>159.436</b> <b>Concurrency</b> Topics in advanced concurrent programming.	15 credits	*	*	*
<b>159.437</b> <b>Formal Methods Topics in Computer Science.</b>	15 credits	S1	I	AL
<b>159.469</b> <b>Software Engineering Project</b> A supervised project involving the development of software relating to an industrial or research problem, requiring the synthesis of material from a range of taught courses.	30 credits S12	S12 I	I PN	AL
<b>159.701</b> <b>Advanced Algorithms</b> The issues of appropriate choice, analysis and implementation of algorithms are considered using examples from important areas of Computer Science such as encryption, data compression, simulation and Artificial Intelligence. Considerations such as transparency, efficiency, complexity, parallelism and correctness are examined.	15 credits	*	*	*
<b>159.702</b> <b>Programming Languages</b> <b>Topics in programming languages.</b>	15 credits	S1	I	PN
<b>159.703</b> <b>Advanced Computer Systems</b> Advanced topics in computer systems, including concurrency, interconnection networks and technology drivers.	15 credits	S2	I	PN
<b>159.704</b> <b>Systems Programming</b> Selected projects including some or all of the following topics: Internet technology, language translation, scripting languages, distributed systems, security and encryption.	15 credits	S1	I	PN
<b>159.707</b> <b>Object-Oriented Software Engineering</b> A study of the concepts, principles, techniques and development methodologies related to Object-Oriented Technology and its applications. UML. Design Patterns and Frameworks. Components Software Engineering. Practical projects using an object-oriented language.	15 credits	S1	I	PN

Paper No./Title	Credits	Sem	Mode	Loc
<b>159.708</b> <b>Issues in Human-Computer Interaction</b> An examination of topical issues in human-computer interaction.	15 credits	*	*	*
<b>159.709</b> <b>Computer Graphics</b> Graphics devices. Interactive graphics systems. Drawing algorithms. Lines and polygons. Curves and surfaces. Representation of 3-D objects. Perspective. Techniques for visual realism. The course will include practical programming work.	15 credits	*	*	*
<b>159.710</b> <b>User Interface Design</b> Practical techniques, models and tools to support the analysis and design of user interfaces.	15 credits	S2	I	PN
<b>159.711</b> <b>Visual Languages</b> Definitions and examples of visual languages. Languages for building visual interfaces: output models; visual object hierarchies. Languages with visual input: special and general purpose languages; syntax directed editing; pictorial representation of data structure manipulations. Languages for manipulating visual information: image analysis languages. Evaluation of visual languages.	15 credits	*	*	*
<b>159.730</b> <b>Computer Science Project</b>	30 credits	*	*	*
<b>159.731</b> <b>Studies in Graphics and Computer Vision</b> Selected advanced topics including: Graphical systems; 3D graphics; rendering techniques; animation; virtual reality; machine vision; visualisation; pattern recognition.	15 credits	S1 S2	I I	AL AL
<b>159.732</b> <b>Studies in Computer Programming</b> Selected advanced topics including: programming paradigms; procedure; functional; declarative; object-oriented; compiler techniques.	15 credits	S1 S2	I I	AL AL
<b>159.733</b> <b>Studies in the Practice of Computing</b> Selected advanced topics including: Software engineering; programming techniques; language design; user interfaces; computer security; information warfare; cryptography.	15 credits	S1 S2	I I	AL AL
<b>159.734</b> <b>Studies in Machine Learning</b> Selected advanced topics including: Neural networks; AI; machine learning; robotics; genetic algorithms.	15 credits	S1 S2	I I	AL AL
<b>159.735</b> <b>Studies in Parallel and Distributed Systems</b> Selected advanced topics including: Parallel computing; network security; client-server computing; compression; web applications; wireless and mobile computing.	15 credits	S1 S2	I I	AL AL
<b>159.736</b> <b>Studies in Operating Systems and Architecture</b> Selected advanced topics including: Concurrency; scheduling; API programming; real-time and embedded systems; fault tolerance; computer architecture; HDLs.	15 credits	S1 S2	I I	AL AL
<b>159.737</b> <b>Studies in the Theory of Computing</b> Selected advanced topics from algorithms and complexity theory, including: fundamental algorithms; formal methods; computability; complexity; automata; cryptographic geometric or parallel algorithms.	15 credits	S1 S2	I I	AL AL
<b>159.738</b> <b>Special Topic</b>	15 credits	S1 S2	I I	AL AL

Paper No./Title	Credits	Sem	Mode	Loc
<b>159.739</b> <b>Special Topic</b>	15 credits	S1 S2	I I	AL AL
<b>159.740</b> <b>Studies in Intelligent Systems</b> Selected advanced topics including: knowledge-based systems; AI; agents; natural language processing; search and constraint satisfaction.	15 credits	S1 S2	I I	AL AL
<b>159.741</b> <b>Intelligent Robotics</b> Topics in the application of Artificial Intelligence techniques to robotics and mechatronic systems. Including mobile robot case studies, robot programming, real time interfacing and intelligent control.	15 credits	*	*	*
<b>159.742</b> <b>Solid Modelling</b> 'Geometric reasoning'. Representation and manipulation of geometric objects.	15 credits	*	*	*
<b>159.743</b> <b>Formal Methods Topics in Formal Methods.</b>	15 credits	*	*	*
<b>159.771</b> <b>Special Topic</b>	15 credits	S1 S2	I I	PN PN
<b>159.772</b> <b>Special Topic</b>	15 credits	S1 S2	I I	PN PN
<b>159.773</b> <b>Special Topic</b>	15 credits	S1 S2	I I	PN PN
<b>159.774</b> <b>Special Topic</b>	30 credits	S12	I	PN
<b>159.776</b> <b>Special Topic</b>	15 credits	S1 S2	I I	PN PN
<b>159.793</b> <b>Project</b>	30 credits	S12	I	AL
<b>159.794</b> <b>Project</b>	15 credits	S1	I	AL
<b>159.795</b> <b>Project</b>	15 credits	S2	I	AL
<b>159.799</b> <b>Research Report</b>	30 credits	S12	I	PN
<b>159.800</b> <b>MPhil – Computer Science</b>	120 credits	S12 S12	I I	AL PN
<b>159.897</b> <b>Thesis (Year 1)</b>	60 credits	S1 S1 S12 S12	I I I I	AL PN AL PN
<b>159.898</b> <b>Thesis (Year 2)</b>	60 credits	S1 S1 S12 S12	I I I I	AL PN AL PN
<b>159.899</b> <b>Thesis</b>	120 credits	S12 S12	I I	AL PN
<b>159.900</b> <b>PhD Computer Science</b>	120 credits	S12 S12	I I	AL PN