

Date: 23 March 2006

Updated Degree requirement for the Bachelor of Computing in Communications and Media

(A) Changes affecting Students matriculated on AY2005-6 or after:

Overview

The four-year **Bachelor of Computing in Communications and Media** aims to train students in the technological underpinnings of interactive and digital media technologies as well as the skills of media design and content creation tempered with an understanding of the social sciences. Therefore, the programme has been designed to facilitate the integration of all these aspects. Since this programme involves aspects of computing and the arts and social sciences, it can be viewed from two perspectives:

TECHNOLOGY PERSPECTIVE:

- Foundations of IT: This refers to the basics of computing required to understand, design, and extend media systems.
- Information encoding, customization, and repurposing: Information encoding, such as XML, is required for information to be mass communicated on the Internet and world-wide web (WWW). Customisation refers to the personalisation of information to individuals and groups which the technology allows, and repurposing refers to the customisation of information to heterogeneous networks (wired and wireless) as well as the plethora of end devices (static and mobile, with varying display plus communication capabilities).
- Text, multimedia information analysis and processing: These refer to the technological basis of various interactive digital media (text, image, graphics, audio and video) and the various types of processing, such as data-rate transformation, summarisation, etc.
- Entertainment technology: This refers to technologies required to develop interactive games and virtual reality systems.

CONTENT AND USER PERSPECTIVE:

- Foundation (sociology): This refers to the social science foundation required to contextualise the use of media for communication by individuals and groups in human society.
- Human-computer interaction: This refers to the human-centred design of intuitive and flexible interfaces for people to communicate via end devices on Internet fringes.
- Writing and media design for mass communication: This refers to the required arts background, which enables the creative use of digital media for the purpose of expression and communication. The media considered include hypertext, audio, image/graphics, and video.
- Mass communication on the Internet: This refers to the theoretical and empirical principles of mass communications on the WWW.

Degree Requirements

The Communications and Media programme degree requirement is at least 160 modular credits. Modules are classified as follows (note that every module can only be counted towards satisfying exactly one requirement):

(i) ***PROGRAMME REQUIREMENTS (Total of 111 Modular Credits)***

Common Essentials

CS1101 or CS1101S	Programming Methodology
CS1102 or CS1102S	Data Structures and Algorithms
CS1104	Computer Organisation
CS2102	Database Systems
CS2105	Introduction to Computer Network

Programme Essentials

Computing Related

CS1231	Discrete Structures
CS2103	Software Engineering
CS3240	Human-Computer Interaction
CS3241	Computer Graphics
CS3248	Design of Interactive Media

Either

CS3342 Interactive Media Development Project

or

CS4343 Game Development Project

Either

CS4101 Honours project

or

complete 12 MC from the two CM Programme Elective Groups¹

Communications and Media Related

NM2101	Theories of Communications and New Media
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Take at least 28 MCs from the two CM Programme Elective Groups, with at least 16 MCs from level-4000 or above.

Programme Elective Groups

a. Interactive Media Technology Group

CS2106	Operating Systems
CS3103	Computer Networks
CS3103L	Computer Networks Laboratory
CS3242/S	Hypermedia Technologies
CS3243	Foundations of Artificial Intelligence

¹ These 12 MCs must be modules taken at level-4000 or above from the two CM Programme Elective Groups.

CS3248	Design of Interactive Media
CS3342	Interactive Media Development Project
CS4213	Game Development
CS4240	Virtual Reality and 3D Interaction
CS4241	Multimedia Information Systems
CS4243	Computer Vision and Pattern Recognition
CS4246	Text Processing on the Web
CS4247	Image Synthesis and Computer Animation
CS4248	Natural Language Processing
CS4343	Game Development Project
CS4344	Networked and Mobile Gaming

Other relevant modules approved by the Department of Computer Science

b. Content Creation and Mass Communications Group

NM2204	Economics of Information and Communication
NM2208	Principles of Visual Communication
NM2218	Critical Introduction to Gaming
NM3201	Media and Globalisation
NM3208	Designing Content for New Media
NM3218	Knowledge Management: Approaches & Critique
NM3216	Gaming Culture I
SC3213	Ethnography Analysis of Visual Media
NM4201	Culture Industries
NM4202	Transnational Information Producers
NM4204	Ethics in the Information Age
NM4205	Digital Media Project Management
NM4206	Media and Communications Regulation
NM5203	Infocom Technology Policy
NM5204	Computer-Mediated Environments
CS4245	Multimedia E-Learning Environments
CS4249	Design of Advanced User Interfaces

Other relevant modules approved by the Department of Computer Science

Science Related

MA1505	Mathematics I
MA1101R	Linear Algebra
ST2131	Probability

Science module².

(ii) ***UNIVERSITY LEVEL REQUIREMENTS***

(iii) ***UNRESTRICTED ELECTIVES***

² A Science module can be LSM1302 (Genes and Society), LSM1304 (Microbes, Environment and Man), PC1143 (Physics III), PC1144 (Physics IV), PC1221 (Fundamentals of Physics I), PC1222 (Fundamentals of Physics II), PC1432 (Physics IIE) or courses approved by the Department of Computer Science.

University Scholars Programme (Communications and Media)

Students in the University Scholars Programme who choose the Bachelor of Computing (Communications and Media) major will follow the Communications and Media curriculum, but with the following variations:

1. They will not be required to take the following:
 - (a) The University Level Requirements (28 MCs)
 - (b) One Science Module (4 MCs)(These are replaced by appropriate First-Tier Scholars Modules.)
2. They will take UROP modules CS3208 and CS3209 in place of CS3342 or CS4343. CS3208 and CS3209 are independent study modules (ISMs) and will be counted as two of the four Advanced Scholars Modules [8 MCs].
3. They will take modules from CM Programme Elective Groups to fulfil 106 MC (instead of 110 MC) of the major programme requirement.

Summary of degree requirement for Bachelor of Computing in Communications and Media³

Modules	MC	Subtotals
UNIVERSITY LEVEL REQUIREMENTS		28
PROGRAMME REQUIREMENTS		110
<i>Common Essentials</i>		
CS1101/S Programming Methodology	5	
CS1102/S Data Structures and Algorithms	5	
CS1104 Computer Organisation	4	
CS2102 Database Systems	4	
CS2105 Computer Networks I	4	
<i>Major Requirements</i>		
<i>Computing Related</i>		
CS1231 Discrete Structures	4	
CS2103 Software Engineering	4	
CS3240 Human-Computer Interaction	4	
CS3241 Computer Graphics	4	
CS3248 Design of Interactive Media	4	
Either: CS3342 Interactive Media Development Project Or CS4343 Game Development Project	8	
Either: CS4101 Honours Project Or complete 12 MC from the two CM Programme Elective Groups	12	
<i>Communications and Media Related</i>		
NM2101 Theories of Communications and New Media	4	
<i>Modules from CM Programme Elective Groups</i>	28	
<i>Science Related</i>		
MA1505 Mathematics I	4	
MA1101R Linear Algebra I	4	
ST2131 Probability	4	
Science Module ⁴	4	
UNRESTRICTED ELECTIVES		22
Grand Total		160

³ There should not be any double-counting of a module's MC towards different parts of the programme.

⁴ A Science module can be LSM1302 (Genes and Society), LSM1304 (Microbes, Environment and Man), PC1143 (Physics III), PC1144 (Physics IV), PC1221 (Fundamentals of Physics I), PC1222 (Fundamentals of Physics II), PC1432 (Physics IIE) or courses approved by the Department of Computer Science.

(B) Description of New Modules:

CS3342 Interactive Media Development Project

Modular Credits: 8

Workload: 0-1-3-12-4

Prerequisites: SoC Students: CS3248 and CS2103 and preferably has completed NM2217; For CNM students: NM2217

Preclusion: None

Cross-listing: Nil

Description: This aim of this module is to allow students to apply design and programming principles for media development and management. Student teams will implement an interactive media project for web and CD delivery, spanning 2D and 3D content development – including modelling, animation, lighting, rendering, etc, scripting for interactive control and web programming. Popular software environments and packages are available to students for project implementation. Student selection will be enforced to ensure a balance of students' ability in completing projects.

CS4343 Game Development Project

Modular Credits: 8

Workload: 0-1-3-12-4

Prerequisites: SoC students: CS4213 and CS2103 and preferably have completed NM3216. For CNM students: NM3216

Preclusion: None

Cross-listing: Nil

Description: This module allows student teams to apply game design principles and algorithms to create a complete 3D game for PCs. Art and technical aspects will be judged independently. Fundamentals of level & character design, storyboarding, character and level modeling, animation, texturing and lighting will be assessed for the arts component. Real time algorithms and data structures from behavioral and perception models, navigation, collision detection, animation and rendering will be assessed for the technical component. Student selection will be enforced to ensure balance of students' ability to create games.

CS4344 Networked and Mobile Gaming

Modular Credits: 4

Workload: 2-1-2-0-5

Prerequisites: CS2106 and CS3103

Preclusion: None

Cross-listing: Nil

Description: This module aims at providing students a deep understanding of various technical issues pertaining to the development of networked games and mobile games. Students will be exposed to concepts from distributed systems, operating systems, security and cryptography, networking and embedded systems. In particular, issues such as game server architectures (mirrored, centralized, peer-to-peer etc.), consistency management (bucket synchronization, dead reckoning etc.), interest management, scalability to large number of clients (C10K problem), cheat prevention and detection, power management, will be discussed.

(C) Changes affecting Students matriculated in AY2004-5 or earlier:

With effect from AY2006-7, CS3224 (Architecture of Internet) will no longer be offered. Students matriculated in AY2004/2005 or earlier are permitted to replace the requirement for CS3224 (Architecture of Internet) by any one module taken from the Media and Internet Technology Group.