



Diploma in Information and Communications Technology with a specialism in Software Engineering

BM012-4-0	English for Academic Purposes (4 credits)
AAQS004-4-1	Numerical Skills (4 credits)
ABUS002-4-1	Managing Business (4 credits)
AICT003-4-1	Practical IT Skills (4 credits)
ABUS005-4-1	Professional Communications (4 credits)
BM013-4-0	Academic Research Skills (4 credits)
AICT002-4-1	Information Systems (4 credits)
AAQS005-4-1	Quantitative Methods (4 credits)
AICT001-4-1	Computer Technology (4 credits)
AINT001-4-1	Internet Applications (4 credits)
AICT001-4-2	Computer Systems Architecture (4 credits)
AAPP005-4-2	Problem Solving and Program Design Using C (4 credits)
AAPP001-4-2	Databases and Data Structures (4 credits)
AINT001-4-2	Multimedia Applications (4 credits)
ABUS014-4-2	Numerical Methods and Logic (4 credits)
AICT004-4-2	Operating Systems (4 credits)
AAPP007-4-2	Systems Analysis and Design (4 credits)
AAPP004-4-2	Java Programming (4 credits)
AAPP002-4-2	Introduction to Artificial Intelligence (4 credits)
AAPP003-4-2	Introduction to Software Engineering (4 credits)
AAPP008-4-2	Visual Basic.Net (4 credits)
AAPP006-4-2	Software Development Project (4 credits)

1.	Name of Course/Module: Computer Technology (AICT001-4-1)					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O	104
3.	Credit Value: 4					
4.	Prerequisite (if any):					
5.	<p>Objectives The objectives of this module is to:</p> <ul style="list-style-type: none"> • introduce the use of basic computer technology and terminology; • introduce the components of a computer system and their functions; • provide the understanding of the computer usage and concepts in today's workplace and society; • explain the functions of computer software that can effectively assist in problem solving; • provide an opportunity to use Web and the Internet and learn to search for material of interest on the Internet. 					
6.	<p>Synopsis: The aim of this module is to equip students with an understanding of computer systems from the hardware viewpoint. Students will be introduced to a number of aspects relating to the input-process-output concept. The technology for obtaining input from the user is examined with a discussion of computing components including the motherboard, bus and memory etc which enable the input to be processed and then output to the user using output devices or stored on a storage device. In addition the people involved in the IT industry are examined as well as the techniques that they may use for structured programming.</p>					
7.	Mode of Delivery: Lecture and Tutorial					
8.	<p>Assessment Methods and Types</p> <ul style="list-style-type: none"> • Group In-course assignment weighted at 50% • An Exam length 2 hours weighted at 50% 					
9.	<ul style="list-style-type: none"> • Main references supporting the course <p><u>Essential Reading</u></p> <ul style="list-style-type: none"> • Shelly, G.B., Cashman, T.J. and Vermaat, M.E., (2010) <u>Discovering Computers 2010: Living in Digital World, Complete</u>, Course Technology. <p><u>Additional Reading</u></p> <ul style="list-style-type: none"> • William, B.K., Sawyer, S.C. and Clifford, S.H., (2001), <u>Using Information Technology: A practical introduction to Computers & Communications</u>, 4th Edition, Irwin McGraw-Hill. (ISBN: 0072398752) • Capron, H.L and Johnson, J.A. (2004), <u>Computers: Tools for an Information Age</u>, 8th Edition, Prentice Hall (ISBN: 0131405640) 					
10.	Other additional information: None					

1.	Name of Course/Module: Information Systems (AICT002-4-1)					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O	104
3.	Credit Value: 4					
4.	Prerequisite (if any):					
5.	<p>Objectives</p> <p>The objectives of this module are to:</p> <ul style="list-style-type: none"> • introduce the components of information systems; • explain the use of information systems and their implications for individuals and society; • understand the fundamental concepts of data communication and computer networks; • provide an awareness on security issues affecting the use of computers and their impact on society; • understand the major aspects of multimedia systems; • explain simple techniques and processes used for problem solving in information systems. 					
6.	<p>Transferable Skills: The following employability skills are introduced (I), developed (D) and/or assessed (A):</p> <p>Problem solving (A), Self confidence (I&D), Self directed (D), Teamwork (I,D,A)</p>					
7.	<p>Synopsis:</p> <p>The aim of this module is to equip student with an understanding of the components of the information system. Student will be introduced to a number of aspects relating to the use of information system and their implication for individual and society. To understand the fundamental concepts of data communication and computer networks. Furthermore to provide and awareness on security issues affecting the use of computers and their impacts on society. Lastly to have understanding on the major aspects of multimedia systems and some simple technique and processes used for problem solving in information system.</p>					
8.	Mode of Delivery: Lecture and Tutorial					
9.	<p>Assessment Methods and Types</p> <p>Final examination 2 hours written examination 50%</p> <p>In course assessment</p> <ul style="list-style-type: none"> • One Group Assignment <ul style="list-style-type: none"> • Group component – 35% • Individual component –15% 					

10.	<ul style="list-style-type: none"> • Main references supporting the course <p><u>Essential Reading</u></p> <ul style="list-style-type: none"> • Shelly, G.B., Cashman, T.J. and Vermaat, M.E., 2010, <u>Discovering Computers 2010: Living in Digital World, Complete Course Technology</u>. <p><u>Additional Reading</u></p> <ul style="list-style-type: none"> • Rainer, K.R and Cegielski, C.G., 2010, <u>Introduction to Information System : Supporting and Transforming Business</u>, Wiley. • Valacich, J. and Schneider, C., 2009, <u>Information System Today: Managing the Digital World</u>, 4th , Edition, Prentice hall. • Kroenke, D.M., 2009, <u>Using MIS</u>, 3rd , Edition, Pearson. • William, B.K, Sawyer, S.C. and Clifford, S.H., 1997, <u>Using Information Technology: A Practical Introduction to Computers & Communications</u>, 2nd , Edition, Irwin McGraw-Hill. <p><u>Other Essential Learning Resources</u></p> <ol style="list-style-type: none"> 1. Library 2. Students are required to utilise and include resources available in the library as part of their research material 3. Class notes
11.	Other additional information: None

1.	Name of Course/Module: Practical IT Skills (AICT003-4-1)				
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P 28	O 104
3.	Credit Value: 4.0				
4.	Prerequisite (if any): NONE				
5.	<p>Objectives The objectives of this module is to:</p> <ol style="list-style-type: none"> 1. Assist students on developing practical skills in using productivity application packages through 'hands on' experience. 2. Provide students with the opportunity to appreciate the different types of application software as well as use them effectively to meet the needs of a variety of situations. 3. Provide students the knowledge and skills not only to the completion of all other modules on the program, but also to their success in the working environment. 				
6.	<p>Transferable Skills: The following employability skills are introduced (I), developed (D) and/or assessed (A): Independent learning (I & D), Self management (I & D), Practical skills (I, D & A), Problem solving and critical thinking (I, D & A), Responsibilities (I & D), Communication (I, D & A)</p>				
7.	<p>Synopsis: This module provides guidance on how to use the application packages, and provides opportunities for students to practice using the skills acquired.</p>				
8.	Mode of Delivery: Lecture and Lab				
9.	<p>Assessment Methods and Types</p> <ul style="list-style-type: none"> • Individual in-course assignment weighted at 100% <ul style="list-style-type: none"> ○ MS Word 25% ○ MS Excel 25% ○ MS Access 25% ○ MS PowerPoint 25% ○ 				
10.	<ul style="list-style-type: none"> • Main references supporting the course <p>Essential Reading</p> <ul style="list-style-type: none"> • Microsoft Office 2010: Introductory, Shelly Cashman Vermaat, 2011, Course Technology, USA, ISBN: 1439078386. • Microsoft Office 2010: Advanced, Shelly Cashman Vermaat, 2011, Course Technology, USA, ISBN: 0538747064. 				
11.	Other additional information: None				

1.	Name of Course/Module: Internet Applications (AINT001-4-1)					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 14	P 14	O	104
3.	Credit Value: 4					
4.	Prerequisite (if any):					
5.	<p>Objectives</p> <p>The objectives of this module is to:</p> <ul style="list-style-type: none"> • develop an awareness of internet-enabling technologies in the area of internet applications; • expose the students to the internet and client server architecture; • establish guidelines for effective internet publishing; • familiarize students with internet publishing and authoring tools. • expose students to E-commerce concept and applications • expose students to internet security, legal and social issues • understand mobile applications using internet technology <p>Within this module, the students will be able to develop their:</p> <ul style="list-style-type: none"> • intellectual skills • communication skills • problem solving skills • personal skills for lifelong learning • innovative and creative thinking for development using the web development tools 					
6.	<p>Transferable Skills: The following employability skills are introduced (I), developed (D) and/or assessed (A):</p> <p>Problem solving (A), Self confidence (I&D), Self directed (D), Teamwork (I,D,A)</p>					
7.	<p>Synopsis: An introduction to fundamental technologies used to assemble an internet application, their uses, potential problems and a prelude into the future of internet application.</p>					
8.	Mode of Delivery: Lecture and Tutorial					
9.	<p>Assessment Methods and Types</p> <p>1. In-course Assessments: Total 50%</p> <ul style="list-style-type: none"> • Individual In-course – 15% • Group In-course – 35% <p>2. Examination – 2 Hours: 50%</p>					

10.	<ul style="list-style-type: none"> • Main references supporting the course <p>Essential Reading</p> <ul style="list-style-type: none"> • Deitel, H. M., Deitel, P. J. and Goldberg A.B, (2004) <u>Internet and World Wide Web: How to Program</u>. 3rd Edition. Prentice Hall. (ISBN 0131450913) <p>Additional Reading</p> <p>Online Materials / Tutorials:</p> <ul style="list-style-type: none"> • www.webmonkey.com • www.webmonster.com • www.devguru.com • www.useit.com <p>Other Essential Learning Resources</p> <ul style="list-style-type: none"> • Laboratory Facilities with web development tools • Syndicate Rooms for Group discussions
11.	Other additional information: None

1.	Name of Course/Module: English for Academic Purposes (BM012-4-0)					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O 104	160 hours
3.	Credit Value:4 credit hours					
4.	Prerequisite (if any):					
5.	Objectives: The aim of this module is to equip students with the English language skills required to cope with academic demands of foundation level study					
6.	Transferable Skills/ Employability Skills introduced (I), developed (D) and/or assessed (A): Language proficiency & Language Skills (I, D, A); Communication skills (I, D, A); Teamwork (I, D); Self & cultural awareness (I, D); Reflection (I, D); Enquiry (I, D); Language Learning (D, A)					
7.	Synopsis: This module is designed to improve student's grasp of the English language for academic purposes at degree level. Student develop their listening, speaking reading & writing skills that are essential for oral and written presentations of ideas and concepts as well as other language skills which are essential for lifelong learning.					
8.	Mode of Delivery: Lecture, Tutorial, Class activities e.g. debates, presentations, writing					
9.	Assessment Methods and Types: 100% Individual Incourse consisting of: - Listening 25% (Listening Test) Week 7 - Speaking 25% (Individual Speech or Debate or Drama) Week 9-10 - Reading 25% (Reading & Comprehension, Info Transfer, Language Usage) Week 12 - Writing 25% (Narrative, Descriptive, Argumentative Essay) Week 14					
10.	Main references supporting the course <u>Essential Reading</u> Curnick, L. & Philpot, S., 2007, <i>Academic Skills: Reading, Writing, and Study Skills</i> , New Headway, Level 3; Student's Book, Oxford University Press, Oxford. <u>Further Reading</u> Azar,B.S. (1998) Understanding and Using English Grammar. 3rd Edition. Pearson. (ISBN 013958661X) Chan, S.H. (2000) Excel in MUET. 2nd Edition. Fajar Bakti. (ISBN 967655927X) Richards, C. et al (2003) <i>A Strategic Approach to MUET</i> ,Longman, Malaysia.					
11.	Other additional information: Current News in local Newspapers. Online Open-source language material (BBC.co.uk, VOAnews.com etc.)					

1.	Name of Course/Module: Academic Research Skills BM013-4-0					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O 104	160 hours
3.	Credit Value: 4					
4.	Prerequisite (if any): NONE					
5.	<p>Objectives The objectives of this module are to :</p> <p>1- develop students' research skills in preparation for tertiary level work 2- develop appropriate skills and techniques for tertiary level assessment 3- provide students with the research skills and knowledge required for tertiary studies</p>					
6.	Transferable Skills/ Employability Skills are introduced (I), developed (D) and/or assessed (A): Research and Writing Skills (I, D, A); Ethical behaviour in research (I, D); Reflection and Critical Thinking (I, D); Autonomous Learning(I & D); Self management (I & D); Inquiry (I, D); Independent work (research) & Skills' development (I, D)					
7.	Synopsis: In the academic realm, this module will be the platform to guide students on how to do assignments in foundation and degree programmes and generally understand the fundamental aspects in completing an academic research. In terms of transferable skills, the students will be able to review the academic literature, summarise key points, understand and initiate analysis of academic issues, conduct secondary and primary research and overall, be aware of ethical issues pertinent to conducting academic research.					
8.	Mode of Delivery: Lecture and Tutorial					
9.	<p>Assessment Methods and Types In-course assignment (ICA)</p> <ul style="list-style-type: none"> • Individual assignment weighted at 20% • Group assignment weighted at 40% • Participation in tutorials weighted at 10% <p>An Exam length 2 hours weighted at 30%</p>					
10.	<ul style="list-style-type: none"> • Main references supporting the course <p><u>Essential Reading</u> Creswell, J.W. et. al. (Eds), 2011. First steps in research. Van Schaik Publishers</p> <p><u>Further Reading</u> Richardson, S. et. al., 2005. How to research: a guide for undergraduate & graduate students. Thomson Learning ISBN: 981-254-137-3</p>					

1.	Name of Course/Module: Managing Business (ABUS002-4-1)													
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning									
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O	104								
3.	Credit Value: 4													
4.	Prerequisite (if any):													
5.	<p>Objectives The objectives of this module is to:</p> <ul style="list-style-type: none"> • introduce the use of basic computer technology and terminology; • Develop basic knowledge and understanding of the diversity of the scope of management in organization. • Develop basic knowledge of understanding the environment and the impact of the environment onto the business and management. • Develop the understanding of the core areas in management including the recruitment and development of employees within the organization. • Provide students with skills to apply the subject's models and framework in order to suggest solutions to simple management problems. 													
6.	<p>Transferable Skills: The following employability skills are introduced (I), developed (D) and/or assessed (A):</p> <p>Knowledge & Understanding Skills (I,D & A), Application (I, D &A), Analysis Skill (I ,D & A), Communication (I, D & A), Problem Solving Skills (I, D & A)</p>													
7.	<p>Synopsis: This module introduces the student to the four main functional areas of business: Marketing, Human Resource Management, Accounting and Operations Management.</p>													
8.	Mode of Delivery: Lecture and Tutorial													
9.	<p>Assessment Methods and Types</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">In-course Assessments: Total</td> <td style="width: 30%; text-align: right;">50%</td> </tr> <tr> <td>- Individual Assignment - 30%</td> <td></td> </tr> <tr> <td>- One class Test - 20%</td> <td></td> </tr> <tr> <td>Examination – 2 Hours:</td> <td style="text-align: right;">50%</td> </tr> </table>						In-course Assessments: Total	50%	- Individual Assignment - 30%		- One class Test - 20%		Examination – 2 Hours:	50%
In-course Assessments: Total	50%													
- Individual Assignment - 30%														
- One class Test - 20%														
Examination – 2 Hours:	50%													

10.	<p><u>Essential Reading</u></p> <ul style="list-style-type: none"> • Kathryn K. Bartol and David C. Martin, (1994), <u>Management</u>; 2nd Edition, McGraw-Hill. (ISBN: 0070050783) • Stephen P. Robbins and Mary Coulter, (2000), <u>Management</u>; 6th Ed., Prentice-Hall. (ISBN: 013011782X) • Bateman Snell, (1995), <u>Management</u>; 3rd Edition, McGraw-Hill. (ISBN: 0256197172) <p><u>Additional Reading</u></p> <ul style="list-style-type: none"> • Jones G.R., George J.M., Hill C.W.L., (2007), <u>Contemporary Management</u>; 5th Ed. McGraw-Hill (ISBN: 0073530220) • Davis, D, (1997), <u>The Art of Managing Finance</u>; Third Edition; McGraw-Hill. (ISBN: 0077091787) • Drucker P. (2009). <u>Innovation and Entrepreneurship</u>. HarperCollins. (ISBN: 0061809799) <p><u>Other Essential Learning Resources</u></p> <p>CDs/online resources with case studies in appropriate areas</p>
11.	Other additional information: None

1.	Name of Course/Module: Numerical Skills (ABUS003-4-1)					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O	104
3.	Credit Value: 4					
4.	Prerequisite (if any):					
5.	<p>Objectives</p> <p>The objectives of this module is to:</p> <ol style="list-style-type: none"> 1. help students to develop an interest in mathematics, and acquire a positive attitude towards its use and power. 2. provide the fundamental underpinning mathematical pre-requisites needed by subsequent modules. 3. enhance the students' confidence in dealing with numbers, which is a basic key skill requirement for students in any discipline. 					
6.	<p>Transferable Skills:</p> <p>The following employability skills are introduced (I), developed (D) and/or assessed (A):</p> <ul style="list-style-type: none"> • Time Management(I,D) • Problem solving(I,D,A) • Knowledge & Understanding (I) • Application (I,D,A) • Quantitative Skills (I,D, A) • Analytical Skills (I,D, A) 					
7.	<p>Synopsis: This module introduces the study skills of Mathematics and provides a refresher course in basic mathematics. It develops mathematical abilities and skills, which can then apply in a variety of environments. There is a firm foundation in algebra, trigonometry and introductory calculus, which are essential for study at a higher level.</p>					
8.	Mode of Delivery: Lecture and Tutorial					
9.	<p>Assessment Methods and Types</p> <p>In course Assessments - 50% comprising:</p> <ul style="list-style-type: none"> • Test - 25% • Assignment - 25% <p>Final Examination</p> <ul style="list-style-type: none"> • 2 hours written examination - 50% 					

10.	<p><u>Essential Reading</u></p> <ul style="list-style-type: none"> • Croft, A. and Davison R. (2003) <u>Foundation Maths</u>. 4th Edition. Pearson. (ISBN 9780130454263) <p><u>Additional Reading</u></p> <ul style="list-style-type: none"> • Curwin, J. and Slater R. (1999) <u>Improve Your Maths</u>. International Thompson Publishing. (ISBN 1861522516) • Spiegel, M.R. et. al. (1997) <u>Schaum's Outline of College Algebra</u>. McGraw-Hill. (ISBN 0070602662) • Haeussler E. F. (1996) <u>Introductory Mathematical Analysis</u>. 8th Edition. Prentice Hall. (ISBN 0132345439) • Bancroft, G. and O'Sullivan G. <u>Foundations in Quantitative Business Techniques</u>. McGraw Hill. (ISBN 0077094689) • Lial, M. & Hornsby, J. (2000) <u>Intermediate Algebra</u>. 8th Edition. Longman (ISBN 0321036468) • Selby, P.H. et al. (1991) <u>Practical Algebra: A Self Teaching Guide</u>. John Wiley. (ISBN 471530123) <p><u>Other Essential Learning Resources</u></p> <ul style="list-style-type: none"> • Scientific Calculator
11.	Other additional information: None

1.	Name of Course/Module: Professional Communications (ABUS005-4-1)																									
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning																					
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P 0	O 104																					
3.	Credit Value: 4																									
4.	Prerequisite (if any): NONE																									
5.	Objectives <ul style="list-style-type: none"> Provide students with the fundamentals of how communication is used in an organisational setting; Enable students to do research and write business correspondence; Enable students to participate in a meeting and apply specific strategies to problem-solving and decision-making tasks in a team setting; Enable students to prepare oral presentations and handle interviews. 																									
6.	Transferable Skills: The following employability skills are introduced (I), developed (D) and/or assessed (A): Team working (I & D), Client Focus (I & D), Learning (I & D), Self management (I & D)																									
7.	Synopsis: <ul style="list-style-type: none"> This module aims to provide students with the fundamentals of how communication is used in an organisational setting to enable students to do academic research, write business correspondence, participate in a meeting and apply specific strategies to problem solving and decision-making, prepare oral presentations and handle interviews. This module is a follow up of fundamental communication skills covered in the Practical English Module, namely, speaking, listening, reading and writing. All skills learnt will enable the student to effectively handle academic writing, oral presentations, meetings and group dynamics. 																									
8.	Mode of Delivery: Lecture & Tutorial																									
9.	Assessment Methods and Types <table> <tr> <td>In-course Assessments:</td> <td>Total</td> <td>50%</td> </tr> <tr> <td>Writing skills</td> <td>10%</td> <td></td> </tr> <tr> <td>Analytical skills</td> <td>10%</td> <td></td> </tr> <tr> <td>Academic Research</td> <td>10%</td> <td></td> </tr> <tr> <td>Problem Solving</td> <td>10%</td> <td></td> </tr> <tr> <td>Time management skills</td> <td>10%</td> <td></td> </tr> <tr> <td>Examination – 2 Hours:</td> <td></td> <td>50%</td> </tr> </table>					In-course Assessments:	Total	50%	Writing skills	10%		Analytical skills	10%		Academic Research	10%		Problem Solving	10%		Time management skills	10%		Examination – 2 Hours:		50%
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Writing skills	10%																									
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Academic Research	10%																									
Problem Solving	10%																									
Time management skills	10%																									
Examination – 2 Hours:		50%																								
10.	<ul style="list-style-type: none"> Main references supporting the course <p><u>Essential Reading</u> Taylor, S. (2000) Essential Business Communication Skills. Longman (ISBN: 0582432022) <u>Further Reading</u> Locke, K, Kienzler, D. (2008) Business and Administrative Communication. McGraw-Hill (ISBN: 0071283110)</p>																									
11.	Other additional information: Library –Students are required to utilize and include resources available in the library as part of their research materials CD Titles that cover interpersonal skills																									

1.	Name of Course/Module: Quantitative Methods (ABUS006-4-1)					
2.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 28	T 28	P	O	104
3.	Credit Value: 4					
4.	Prerequisite (if any):					
5.	The objectives of this module is to: <ol style="list-style-type: none"> allow the students to develop their basic numerical skills, which can then apply in a variety of environments e.g. business and computing. provide the fundamental underpinning mathematical pre-requisites needed by subsequent modules in the higher levels for any disciplines. 					
6.	Transferable Skills: The following employability skills are introduced (I), developed (D) and/or assessed (A): <ul style="list-style-type: none"> Problem solving (I,D,A), Knowledge and understanding(I) Application of numbers(I,D,A) Analytical skills(I,D) IT skills(I,D) 					
7.	Synopsis: This module aims to allow students to develop their basic quantitative skills, which can then apply in a variety of environment, e.g. business and computing. Numeracy is a basic requirement for solving maths problems and the application of maths concepts. In particular, the use of optimisation techniques by management. It also provides the fundamental underpinning mathematical pre-requisites needed by subsequent modules in the higher levels for any disciplines.					
8.	Mode of Delivery: Lecture and Tutorial					
9.	Assessment Methods and Types In course Assessments - 50% comprising: <ul style="list-style-type: none"> Test - 25% Assignment - 25% Final Examination <ul style="list-style-type: none"> 2 hours written examination - 50% 					
10.	<u>Essential Reading</u> <ul style="list-style-type: none"> Francis, A. (2004) <u>Business Mathematics & Statistics</u>. 6th Edition, Intl. Thomson Business Press. (ISBN 1844801284) <u>Additional Reading</u> <ul style="list-style-type: none"> Waters, D. (2001) <u>Essentials of Quantitative Methods</u>. Addison Wesley. (ISBN 0201331373) Lucey, T. (2002) <u>Quantitative Techniques</u>. 6th Edition. Continuum. (ISBN 082645854) Brian, C. J. et al (1996) <u>Quantitative Methods in Business</u>. Prentice Hall. (ISBN 0724810390) <u>Other Essential Learning Resources</u> <ul style="list-style-type: none"> Scientific Calculator Spreadsheet Package e.g. Excel 					
11.	Other additional information: None					

MODULE TITLE AND CODE	Computer Systems Architecture – AICT001-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	None
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- provide an understanding of the fundamental concepts and principles of computer architecture in the context of the von Neumann model;
- to create an awareness of the main issues and techniques relevant to the design of a computer system;
- develop an understanding of the functional and operational characteristics of the central processing unit, memory and input/output systems;
- ensure that students get hands-on skill in assembly language programming.

Learning Strategy

The learning strategy for this module is to:

- provide lecture guidance to students;
- provide lab opportunities to practice assembly language skills;
- support the collaborative efforts of students;
- enable students to demonstrate proficiency in the learning outcomes of the module.

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
<ul style="list-style-type: none"> • Demonstrate an acceptable level of proficiency in ICT through the ability to : <ul style="list-style-type: none"> ○ Explain the fundamental principles upon which the operation of modern computers is based. ○ Describe and explain the structure and organization of computer systems, including the role and operation of each of the component modules. ○ Explain the fundamental concepts and issues involved in the control of peripherals, including interrupt-handling. ○ Demonstrate an understanding of the main issues and techniques relevant to the design of a computer system. ○ design, apply and demonstrate assembly language programming skills; • Demonstrate an acceptable level of interpersonal skills through the ability to : <ul style="list-style-type: none"> ○ work in a team ○ produce the documentation assigned in a professional and timely manner ○ present the research findings and able to answer questions during the presentation 	<ul style="list-style-type: none"> • Final examination (essay and MCQ format) and a group assignment • A group assignment

Indicative Content

Introduction

- Historical Overview

- Overview of stored program (von Neumann) computer organisation
- Data Representation.
- The LMC Model

Inside the CPU

- The CPU Datapath
- The Processor Cycle
- Register Transfer Language for instruction fetch and execute cycles
- The Instruction Set Architecture; RISC vs. CISC
- Addressing Modes

Memory Architecture

- The Memory Hierarchy
- Caches
- SRAM, DRAM, ROM characteristics

I/O and Peripheral Control

- Buses
- Programmed I/O
- Interrupts
- Direct Memory Access

Advanced Architecture

- Pipelined processor designs (superscalar, VLIW, EPIC)
- Emerging Computing Architectures (Pervasive and Grids)

Assessment Methods and Weighting

Final examination	50%
• 2 hours written examination	
In course assessment	50%
• One Group Assignment <ul style="list-style-type: none"> ◦ Group component – 35% ◦ Individual component – 15% 	

Total Marks 100%

Essential Reading

Englander, I., (2003), The Architecture of Computer Hardware and System Software, 3rd Edition, John Wiley. (ISBN 0-471-07325-3)

Additional Reading

1. Hennessy, J. L., & Patterson, D. A., (2003), Computer Architecture: A Quantitative Approach, 3rd Edition, Morgan Kaufmann.
2. Stallings, William, (2006), Computer Organization and Architecture, 7th Edition, Prentice Hall.
3. Tanenbaum, A.S., (2006), Structured Computer Organisation, 5th Edition, Prentice Hall.

Other Essential Learning Resources

1. Library - students are required to utilise and include resources available in the library as part of their research material
2. Class notes
3. Standard Intel PCs and assembler software e.g. TASM

MODULE TITLE AND CODE	Problem Solving & Program Design using C – AAPP005-4-2 (Version 2-Dec 2010)
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	None
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- enable students to define a problem and produce an algorithm design with the help of tools such as flowcharts and pseudo-codes. Emphasis must be on a structured approach by constructing a modular design with a top-down development;
- provide practical ability in a language which has the versatility of being used as both a systems programming and an applications language;
- introduce the use and implementation of basic data structures.

Learning Strategy

The learning strategy for this module is to:

- provide lectures, covering topics and concepts listed in the indicative contents below;
- provide tutorials in which students will need to practice design and coding taught in the lectures. This would also entail group discussions amongst students and provide them with skills and confidence in working on the assignment for this module;
- provide practical sessions which will provide the students the opportunity to implement programming solutions, often discussed and developed in the lectures and tutorials, with the aim of developing their practical programming skills.

Note: Tutorials and practical sessions have elements of both supervised and independent learning.

Learning Outcomes

On completion of this module, the students will be able to:	Which will be demonstrated by:
<ul style="list-style-type: none"> • develop and apply their knowledge of design principles to a range of problem solutions; • design, implement and test efficient algorithms in C; • design and apply appropriate testing strategy to the application, developing a sound understanding of the necessity of formal test procedures; • apply the concept of a procedural programming paradigm; • self manage and work in a team 	<ul style="list-style-type: none"> • designing pseudo-codes/flowcharts to reflect sequence, decision-making and iteration, during the lecture and tutorial sessions; • converting design into C code during tutorials and executing the same during practical sessions in the lab; • class tests and exam which will reflect the level of understanding and depth of knowledge in the subject; • assignment which will be completed over a period of time and then presented in the lab, to ensure students full understanding of the problem and its solution and therefore minimizing plagiarism.

Indicative Content

This module aims to develop the students' understanding and practical ability in a procedure-oriented language, which provides opportunity to develop structured programs based on efficient algorithmic design.

The main topics that will be covered are:

Problem solving and program design

- Problem analysis
- Algorithm tools
- Problem definition and algorithm design
- Top-down structured development
- Sequence, Decision making and Iteration

C Programming

- C language concepts
- Conditional Constructs
- Iterative Constructs
- Operators
- Arrays – single and 2 dimensional
- Functions
- String manipulation functions
- Pointer expressions and Pointer arithmetic
- Calling Functions by Reference

Assessment Methods and Weighting

In-course assessments - 50% comprising:

• Class Test	-20%
• Group Assignment	-30%
Final Exam	- 50%

Essential Reading

- Deitel, P. and Deitel, H., 2009, C: How to Program, 6th ed, Prentice Hall.

Additional Readings

- Ritchie, D and Kernighan B, 2010, C Programming Language, Book LCC.
- Kochan, S., 2004, Programming in C 3rd ed, Sams.
- Perry, G., 1999, C by Example, Revised and Updated ed, Que.
- Gottfried, B., 1996, Schaum's Outline of Programming with C, 2nd ed, McGraw-Hill.

Other Essential Learning Resources

Visual C++ Language Compiler

MODULE TITLE AND CODE	Databases and Data Structures – AAPP001-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	Problem Solving & Program Design using C or equivalent.
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- provide understanding of the central role, concepts and principles of data structures in information processing discipline;
- provide a comprehensive knowledge of data structures and skills required as a foundation to build complex information processing systems using data management technologies;
- introduce the concept of databases by using a popular database language.

Learning Strategy

The learning strategy for this module is to:

- provide lectures, covering topics and concepts listed in the indicative contents below;
- provide tutorials in which students will need to design data structures and query databases. This would also entail group discussions amongst students and provide them with skills and confidence in working on the assignment for this module;
- provide practical sessions which will give students the opportunity to create and store data structures and to maintain an efficient database system.

Note: Tutorials and practical sessions have elements of both supervised and independent learning.

Learning Outcomes

On completion of this module, the student will be able to:	Which will be demonstrated by:
<ul style="list-style-type: none"> • appreciate the use and application of data structures • demonstrate the use of algorithms in the manipulation of data structures • analyze a given problem and choose the relevant data structure to solve it • appreciate the need to understand entity relationships and design efficient tables within a database • create and manipulate relational tables, indexes and data using an appropriate database language • self manage and work in a team 	<ul style="list-style-type: none"> • using a programming language to implement the algorithm designed during tutorial sessions • class tests and exam which would reflect the level of understanding and depth of knowledge in the subject • tutorials involving the design of databases using ER modeling and normalization techniques • assignment which would be completed over a period of time and then presented in the lab, to ensure students' full understanding of the problem and its solution and therefore minimizing plagiarism.

Indicative Content

The main topics that will be covered are:

- concepts and principles of data structures;
- stacks and queues;
- limitations and application of data structures;
- use of arrays to implement stacks and queues;

- dynamic memory allocation;
 - implementation of a single linked list;
 - concepts of double, circular and doubly circular linked list;
 - concepts and principles of databases;
 - design techniques of databases using ERD and Normalization (at an elementary level)
 - Application of a DBMS using a database query language.
-

Assessment Methods and Weighting

In-course assessments - 50% comprising:

- Class Test - 20%
- Group assignment - 30%

Final Exam - 50%

Essential Reading

- Langsam, Y. et al. Data Structures using C and C++. 2nd Edition, Prentice Hall. (ISBN 0135293227)
- Date, C. J. (1999) Introduction To Database Systems, Ad Wes Long Hi Ed, (ISBN 0201684195)

Additional Reading

- Warrender, R L, (2003), Databases, Lexden Publishing Limited Learning Matters Ltd, ISBN: 1903337089
 - Johnsonbaugh, Richard, Schaefer, Marcus, (2004), Algorithms and Data Structures, Pearson Higher Education Prentice Hall, (ISBN: 0023606924)
 - Nyhoff, Larry, Adts, Data Structures and Problem Solving with C Data Structures, Pearson Higher Education Prentice Hall
 - Tenenbaum A et. al., (1990), Data Structures Using C, Prentice Hall, ISBN: 013-199746-7
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Other Essential Learning Resources

- Any C Language Compiler
 - Suitable SQL compliant DBMS (e.g. MS SQL Server, MYSQL)
-

MODULE TITLE AND CODE	Multimedia Applications – AINT001-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	None
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of the module are to:

- Introduces the contributory fields necessary for informed, thoughtful design and development of multimedia systems
- Establish guidelines for the effective use of multimedia;
- Develop the student design skills in the area of multimedia;
- Encourage student to incorporate multimedia into many aspects of their thinking;
- Familiarise the student with the use of multimedia tools;
- Develop the students' practical ability to implement and document multimedia software;
- Introduce student to the current technical issues in the area of multimedia.

Learning Strategy

The learning strategy for this module is to:

The learning strategy for this module is:

- Provide lectures to understand the theoretical elements of multimedia applications;
- Provide tutorial opportunities to encourage innovative, creative and analytical thinking development;
- Provide practical session to practice the required skills;
- Provide support to students in the development of Assignment 1 and the Project to demonstrate proficiency in the learning outcomes of the module.

Other essential strategy includes reading relevant literature, critical thinking, discussion / consultation with peers and tutors, development and appraisal of multimedia project. The student is taught how to explore multimedia issues at the same time as learning and applying skills. Within this module the students will be introduced to and / or be able to develop:

- Intellectual skills
- Communication
- Problem solving
- Personal skills for lifelong learning
- Innovation and creative operation using the tools of multimedia

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
<ul style="list-style-type: none"> • Describe and use technical knowledge in a practical multimedia environment; • Describe and apply guidelines for a multimedia design; • Recognise and distinguish the difference between effective and ineffective use of multimedia; • Develop multimedia presentation relating to a specific topic using the multimedia authoring tools; • Report on current uses of multimedia in the commercial sectors. 	<ul style="list-style-type: none"> • An individual assignment in which the students will have to use elements of design and good design principles in developing a multimedia user interface; • A group project to develop a multimedia application using the latest multimedia authoring tools software; • An examination on the underlying concepts and technical theory on multimedia production.

Indicative Content

This module provides students with the fundamental knowledge and skills necessary to create and document an interactive multimedia application. The students will develop an overall design plan for the multimedia application document that will help identify target audiences, as well as define goals for putting information on the multimedia application, apply design rules and guidelines, and learn about tools or resources that may be needed to continue developing the multimedia application.

1. Introduction to Multimedia

- Overview of multimedia objects.
- Examples of current multimedia titles and applications.

2. Design Theory and Principles:

- Classic Graphic Design Theory
- User Interface Design based on HCI design principles
 - Aesthetic backgrounds
 - Presentation style

3. Elements of Multimedia

- Introduction to Digitisation:
 - Sampling and Quantisation
 - Technical limitations and formats.
- Exploration of multimedia elements (type, graphic, animation, sound and video).
 - Typography and Fonts: Exploration of Type styles, modes and formats, classification of fonts (Sans serif, serif etc.), effective use of text.
 - Graphic: Types of graphic (vector and bitmap), advantages and disadvantages of using vector and bitmap graphics, sources of graphics, various graphic file format, file size calculation
 - Sound: Types of sound (wav and midi), Digitising setting (Sampling and Quantisation), file compression technology and concepts, file format, file size calculation
 - Animation: Definition, Types of animation (transition, path, cell animation etc.), file format, file size calculation, demonstration of 2D, 3D concepts
 - Video: Definition, Differences between Video and Animation, Technical Limitations, file format, file size calculation, factors affecting video quality.

4. Multimedia Production Planning and Design

- Multimedia Process
- Multimedia project management (Budgeting, Legal issues considerations etc.)
- Media Integration
- Definition, Types and classification of Authoring tools.
- Application Structure Design: Layout and flow
- Technical considerations and troubleshooting.
- Multimedia Project Documentation: Storyboarding.

Assessment Methods and Weighting

In-course Assessments: Total	50%
Proposal (Individual) (15%)	
Multimedia System Development (Individual) (35%)	
Examination – 2 Hours:	50%

Essential Reading

- Ann E. Barron, Kathy Ivers, (2005). Multimedia Projects in Education: Designing, Producing and Assessing. 3rd Edition, Libraries Unlimited. (ISBN: 1591582490)
- Chapman, N., (2004). Digital Multimedia, 2nd Edition, John Wiley & Sons, England. (ISBN: 0470858907)
- Vaughan, T. (2003), Multimedia: Making It Work, Sixth Edition, Osborne (ISBN: 0072230002)

Additional Reading

- McGloughlin, S. (2001) Multimedia Concepts and Practice, Prentice Hall, New Jersey (ISBN: 0130188301)

Other Essential Learning Resources

- Group / Syndicate rooms
- Multimedia authoring tool (e.g. Macromedia Autoware/Director)
- Multimedia tools (e.g. Photoshop, 3D studio Max)

1.	Name of Course/Module: Numerical Methods and Logic					
2.	Course Code: ABUS014-4-2 (Version 2)					
3.	Name(s) of academic staff: Saw Looi Beng					
4.	Rationale for the inclusion of the course/module in the programme: Refer to Programme Specification					
5.	Semester and Year offered: Refer to Programme Specification					
6.	Total Student Learning Time (SLT)	Face to Face			Total Guided and Independent Learning	
	L = Lecture T = Tutorial P = Practical O= Others	L 14	T 14	P	O	104
7.	Credit Value: 3.5					
8.	Prerequisite (if any): Numerical Skills & Quantitative Methods or equivalent					
9.	<p>Objectives</p> <ol style="list-style-type: none"> Contribute to the achievement of the Learning Outcomes specified for the student's award at Diploma Part 2. Provide an introduction the study of Mathematics. Meet the prerequisite requirements of modules at degree level 2 of study. Introduce and begin to develop lifelong learning skills of independent learning and study in relation to mathematics. Introduce students to the knowledge, skills and techniques relevant to the study of mathematics. Enable students to develop their ability to: <ul style="list-style-type: none"> Analyse Solve problems Use quantitative skills Communicate 					
10.	<p>Transferable Skills:</p> <p>The following employability skills are introduced (I), developed (D) and/or assessed (A):</p> <ul style="list-style-type: none"> Time Management(I,D) Problem solving(I,D,A) Knowledge & Understanding (I) Application (I,D,A) Quantitative Skills (I,D, A) Analytical Skills (I,D, A) 					
11.	<p>Teaching-learning and assessment strategy:</p> <p>The delivery method will be 2 hours lecture & 2 hours tutorial.</p>					
12.	<p>Synopsis:</p> <p>This module will introduce the students regarding the basic mathematical concepts that needed for their further study in degree.</p>					
13.	<p>Mode of Delivery:</p> <p>Lecture and Tutorial</p>					

14.	<p>Assessment Methods and Types</p> <p>Exam - 50% (All LOs) In course Assessments - 50% comprising: Test 25% (LO1, LO2, LO4, LO5, LO6) Assignment 25% (LO1, LO2, LO3, LO4, LO5, LO6, LO7) Duration for test is 2 hours. Duration for exam is 2 hours.</p>
15.	<p><u>Essential Reading</u></p> <ul style="list-style-type: none"> • Rosen, K.H. (2011) Discrete Mathematics and Its Applications, 7th Edition. McGraw Hill.(ISBN 978-0073383095) • Lipschutz, S. (1987) Essential Computer Mathematics, McGraw-Hill. (ISBN 0070379904) <p><u>Additional Reading</u></p> <ul style="list-style-type: none"> • Stanoyevitch, A.(2011) Discrete Structures With Contemporary Applications, CRC Press. (ISBN 9781439817681) • Epp, S.H. (2010) Discrete Mathematics and Applications, 4th Edition. Brooks Cole.(ISBN 9780495391326) <p><u>Other Essential Learning Resources</u></p> <ul style="list-style-type: none"> • Scientific Calculator
16.	<p>Other additional information: None</p>

MODULE TITLE AND CODE	Operating Systems – AICT004-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	None
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- provide an insight into the concepts of an Operating Systems;
- provide an understanding about the features and capabilities of modern operating systems;
- provide an insight into the functioning of different operating system tasks including troubleshooting;
- understand how to assess the efficiency and flexibility of various algorithms adopted to do these tasks;
- explain the features of operating systems that support the execution of application programs and how the modules of operating systems are synchronized to execute given jobs;
- facilitate a comparative study of system components like user interface, process scheduling, memory management and the network functions of various operating systems, in order to enable the students ability to choose an operating system to suit the environment and application needs;
- provide an understanding of basic commands, editors and shell programs in the UNIX operating system

Learning Strategy

The learning strategy for this module is to:

- provide lecture guidance for the theoretical framework of operating systems;
- provide power point slides for each topic and facilitate student's reference;
- involve students in question & answer sessions after each lecture;
- provide activities designed to consolidate student learning. These may be individual or in group carried out at college (in labs, syndicate rooms, forum site, etc.) or at home;
- provide topics/questions (placed online) for further research on a periodic basis to cultivate students reading skills and participation;
- provide the UNIX operating system to conduct Lab sessions

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
<ul style="list-style-type: none"> • Demonstrate an acceptable level of learning through the ability to: <ul style="list-style-type: none"> ○ state the primary purpose of an operating system and its goals ○ express the systematic workflow and the strategies employed by the various types of operating systems. ○ review network operating systems concepts • Demonstrate an acceptable level of reflection through the ability to: <ul style="list-style-type: none"> ○ discuss CPU scheduling mechanisms and memory management techniques ○ use methods and calculations to express the knowledge in differentiating various CPU 	<p>Which will be demonstrated by:</p> <ul style="list-style-type: none"> • Final examination • Group assignment <ul style="list-style-type: none"> • Final examination • Group assignment <ul style="list-style-type: none"> • Final examination

<ul style="list-style-type: none"> ○ scheduling algorithms ○ discuss input-output and disk scheduling mechanisms ○ analyze file management concepts ● Demonstrate an acceptable level of creativity and problem solving skill through the ability to: <ul style="list-style-type: none"> ○ execute commands using editors and writing shell scripts ○ compare and contrast advanced operating systems features 	<ul style="list-style-type: none"> ● Group assignment
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Indicative Content

1. Operating System Concepts

- Basic functions of Operating System
- Classifications of Operating system
- Single user system & Multitasking system
- Kernels and Microkernels
- Types of Interfaces

2. Process control management

- Process and thread concepts
- Concurrency and parallelism
- Preemptive and non preemptive scheduling
- Process scheduling algorithms
- Deadlocks
- Deadlock detection algorithms
- Critical sessions
- Mutual exclusion

3. Memory management

- Function of memory
- Logical and Physical memory
- Types of memory
- Memory partitioning
- Fragmentation
- Virtual memory
- Paging and segmentation
- Working set
- Locality of references

4. Input-Output and Disk Scheduling Algorithms

- Disk scheduling concepts and aims
- Disk scheduling algorithms

5. File system Management

- The Logical and Physical view of files
- Role of file management system
- File Allocation Methods
- Free space management
- Requirements of security

6. UNIX

- Introduction to Unix
- Major components of Unix
- UNIX file system
- Editors
- Shell Programming

7. Network Operating systems

- Introduction to Networks
- The Peer to Peer network system
- Client-server based networks
- Network services
- File serving and file sharing
- Printer sharing
- Network accounting and auditing
- Local Area Network applications and communications

8. Advanced Operating systems

- Security features and functions employed in operating systems
- Trends in networked operating systems
- Embedded operating systems

Assessment Methods and Weighting

Final examination	50%
• 2 hours written examination	
In course assessment	50%
• One Group Assignment	
◦ Group component	– 35%
◦ Individual component	– 15%

Essential Reading

1. Englander, I., (2003), The Architecture of Computer Hardware and System Software, 3rd Edition, John Wiley. (ISBN 0-471-07325-3)
2. Silberschatz, G. & Galvin, P., (2002), Operating System Concepts, 6th Edition. Addison Wesley (ISBN 0201504804)
3. Aho, A.V, Kernighan, B.W and Weinberger, P.J, (1998), The AWK Programming Language, Prentice Hall.
4. Stallings, W,(2000), Operating Systems Internal and Design Principles, 5th Edition, Pearson Education International.

Additional Reading

1. Andersen, P.K. ,(2002), Just Enough UNIX, McGraw-Hill
2. Deitel H.M., Deitel P.J. & Choffnes D.R., (2004), Operating Systems, 3rd Edition, Pearson Education, Inc, ISBN 0-13-12469608)
3. Tanenbaum, A.S. ,(2001), Modern Operating Systems, 2nd Edition, Prentice Hall (ISBN 0136301959)
4. Tanenbaum, A.S. & Woodhull, A.S , (2006), Operating Systems: Design and Implementation, 3rd Edition, Prentice Hall
5. Morris, M.M, (1993), Computer Systems Architecture, 3rd Edition, Prentice Hall

Other Essential Learning Resources

1. Class notes and handouts.
2. UNIX/Linux Lab
 - PCs installed with remote login software able to connect to the HP-UNIX server and the SuSe and Redhat Servers.

MODULE TITLE AND CODE	Systems Analysis and Design – AAPP007-4-2 (Version 2-Dec 2010)
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	Nil
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- to provide knowledge of the basic techniques of systems analysis and design;
- to explain the roles and responsibilities of systems analyst and project manager within each phase of the system development lifecycle (SDLC);
- to introduce the various stages and activities involved in developing a system through SDLC and other methodologies;
- to provide students with relevant skills on the application of tools and techniques in planning and gathering information;
- to provide the knowledge of how an input , output and interface design will determine whether the system will be accepted by the user or not;
- to instill the importance of teamwork and good management skills.

Learning Strategy

The learning strategy for this module is to:

- conduct discussion in class based on case studies;
- have lab sessions for Microsoft Project Management package;
- have work groups to present projects which encompass the entire learning outcome;
- have lecturers to impart information and to provide demonstrations.

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
<ul style="list-style-type: none"> • define a system and identify the types of information systems; • identify the roles of systems analyst and project managers in a system's development • define SDLC and discuss each of its phases • identify the types of feasibility studies and explain the importance of each type; • state the various fact finding techniques and elaborate each technique; • explain the types of modeling tools and roles they play in developing systems; • state the purpose of data flow diagram and describe the steps necessary to prepare a DFD • create data dictionaries based on a DFD • discuss the methods of input and output design and state the objectives of each design; • work as a team and present their work with good show of presentation skill 	<p>a series of questions asked at the end and beginning of each class and a test</p> <p>discussion during class on a given case study</p> <p>a series of exercises given during class and for homework;</p> <p>a series of questions and examples;</p>

Indicative Content

- 1) Introduction to SAD
 - 2) Project Management
 - 3) Overview of Systems Development Life Cycle (SDLC)
 - 4) Preliminary Investigation
 - 5) Feasibility Study
 - 6) Investigation
 - 7) Data Flow Diagrams
 - 8) Data Dictionary
 - 9) Process Specification
 - 10) Output Design
 - 11) Input Design
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Assessment Methods and Weighting**In-course Assessments:**

• Group Work	35%
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• Independent Assignment related to Group Work	15%
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Total	50%
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Examination – 2 Hours:	50%
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Essential Reading

Shelly, G.B., Cashman, T. J. & Rosenblatt, H. J. (2010) Systems Analysis and Design, 8th Edition, Course Technology.

Additional Reading

Hoffer, J. A., George, J. F. & Valacich, J. S. (2005) Modern Systems Analysis and Design, 4th Edition Addison Wesley.

- Kendall & Kendall (2002) Systems Analysis and Design, 5th Edition. Prentice Hall.

Other Essential Learning Resources

Microsoft Project Management software package

- Ms Office – Word, Excel, Access, Powerpoint
 - Ms Visio
-

MODULE TITLE AND CODE	Java Programming – AAPP004-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	Problem Solving and Program Design using C
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- teach the Java programming language;
- develop the use of the Java API and the various class libraries;
- explain OOP concepts and how Java implements it;
- teach students to build moderate to advanced applications and applets in Java

Learning Strategy

The learning strategy for this module is to:

- deliver course content through lectures and program demonstrations in classroom;
- conduct interactive sessions, both individual and in groups for students to demonstrate programs and designs;
- use lab sessions to test out sample programs and develop other assignments;
- hold tutorial sessions;
- hold individual and group consultations.

Learning Outcomes

1. Design and implement algorithms using the Java programming language	1. The ability of students to write programs efficiently and correctly;
2. Reference the Java API and class libraries and use appropriate classes and methods in their applications and applets	2. The ability of students to write applet and GUI programs and these programs being executed correctly on computers. This requires the appropriate implementation of class libraries and Java API.
3. Produce sound OOP applications and applets by utilizing the strengths of the Java programming language	
4. Produce moderate to advanced applications and applets in Java	

Indicative Content

1. Java Fundamentals
2. Structured Programming Control Structures in Java
3. Object-Oriented Programming
4. Interfaces and Packages
5. Exceptions
6. The Java API and Class Libraries
7. Input and Output
8. The Abstract Window Toolkit
9. Event Handling Fundamentals
10. Arrays

Assessment Methods and Weighting

In-course Assessments: Total	50%
(Assignment	30%)
(Class test	20%)
Examination – 2 Hours:	50%

Essential Reading

- Deitel, H.M. & Deitel, P.J. (2001) Java : How to Program, Prentice Hall.
(ISBN 0130341517)

Additional Reading

- Horton, I. (2000) Java 2 : Beginning JDK 1.3, Wrox. (ISBN 1861003668)
- Arnold, K. et. Al. (1998) Java Programming Language, (3rd Ed.), Addison Wesley.
(ISBN 0201704331)
- Horstmann, C.S. and Cornell, G. (1999) Core Java, (2nd Edition), Sun Microsystems
(ISBN 0130819336)
- Farrell, J. (2002) Java Programming, (2nd edition), Course Technology
(ISBN 0619016590)
- Kornell, G. (1997) Core Java, (2nd edition), Prentice Hall by SwiSoft Press.

Other Essential Learning Resources

Getting started (this is sufficient for most student purposes)

<http://developer.java.sun.com/developer/onlineTraining/new2java/>

Downloading the Java compiler

<http://java.sun.com/j2se/1.4/>

The Java API

<http://java.sun.com/j2se/1.4/docs/api/index.html>

Other useful sites

www.java.sun.com

www.javaboutique.internet.com

www.webmonkey.com

www.javaworld.com

www.javareport.com

MODULE TITLE AND CODE	Visual Basic.Net – AAPP008-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	Knowledge of Programming
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- introduce and familiarize students with the basic features of Visual Basic.Net.
- introduce the software development lifecycle
- disseminate the techniques and concepts of graphical user interface programming.
- illustrate advanced GUI concepts as well as apply file processing concepts.
- introduce techniques to design event-driven systems.
- introduce advanced features of an event-driven systems.
- demonstrate databases programming concepts using Visual Basic.Net
- use software testing techniques.

Learning Strategy

The learning strategy for this module is to:

Normally one hour lecture, two one hour practical sessions.

- Provide students with a broad overview of the indicative content and demonstrations of good practice in a variety of topics.
- teach through lectures and demonstrations of sample Visual Basic.Net programs. Class exercises will be given at each lecture for students to test what they had learned during a session.
- use lab sessions to allow students to attempt a number of small exercises to allow them to apply the various features of VB.
- conduct in course assessment based on assignments, projects and one practical test conducted in the lab.
- promote independent learning by students on projects assigned to them.
- Learning support material will be provided using a web site such as the AOCC as Blackboard.

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
<ul style="list-style-type: none"> • Utilize basic and advanced VB.Net commands to construct sample VB.Net programs; • Apply basic and advanced GUI programming; • Be familiar with events driven programming techniques; • Write complete programs that uses several basic and advanced features of VB.Net to develop a database program 	<ul style="list-style-type: none"> • Showing sample programs in class either or through using the Visual Basic.Net compiler; • Assigning students assignments and projects to work on. Demonstrate GUI techniques in the lab; • Demonstrating sample programs in class and class exercises; • Requiring students to use advanced Visual Basic.Net techniques and to do databases programming.

Indicative Content

Software development principles and practice using the programming language Visual Basic.net:

1. Introduction to a software development system e.g. Visual Basic.net
2. Development of graphical user interfaces for programs

3. The use of control structures to determine the way in which a program will run.
 4. Introduction to reliability, robustness, testing and documentation
 5. The software development lifecycle.
 6. Use of suitable techniques for the design of event-driven systems.
 7. Use of the advanced features of an event driven language.
 8. Interfacing to standard drivers for database access and retrieval.
 9. Software testing techniques.
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Assessment Methods and Weighting

In-course Assessments: Total	50%
Test 1	25%
Assignment	25%
Examination – 2 Hours:	50%

Essential Reading

Referring to Texts

David Schneider, 2003, Introduction to Programming using Visual Basic.Net, Prentice-Hall, ISBN: 0131785869

Harvey M. Deitel, P.J. Deitel, T.R. Nieto, 2003, Visual Basic.Net How To Program, Prentice-Hall

Roger S. Pressman, June 2004, Software Engineering - A Practitioner's Approach, McGraw Hill, ISBN: 0071238409

Visual Studio.Net online Help files

Additional Reading

Beginning Web Programming using VB.Net and Visual Studio.Net, Daniel Cazzulino, Wrox 2002

Harvey M. Deitel, P.J. Deitel, T.R. Nieto, 2003, Simply Visual Basic.Net: An Application-Driven Tutorial Approach, Prentice-Hall

Other Essential Learning Resources

Microsoft Visual Studio.Net

Microsoft.Net Enterprise Servers

Microsoft.Net Framework

Microsoft Windows

Online resources:

<http://www.alvbcodes.com/>

<http://abstractvb.com/code.asp?F=1>

MODULE TITLE AND CODE	Introduction to Artificial Intelligence – AAPP002-4-2 (Version 2-Dec 2010)
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	None
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to

- present the basic representation and reasoning paradigms used in AI
- introduce essential characteristics of "an AI problem"
- present an opportunity to investigate practical applications such as Natural Language processing and Robotics, and at their limitations
- provide practical experience of building knowledge based systems
- provide an understanding of knowledge representation, logic, reasoning with uncertainty and planning.

Learning Strategy

The learning strategy for this module is to:

- scheduled lab session to enable student to apply practical skills covered in the module
- tutorial opportunities to practice the required skill
- support to students in development of their assignment to demonstrate proficiency in the learning outcomes of the module

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
• Read and write (at least simple versions of) the major knowledge representation formalisms	assessed in the assignment and by examination
• Explain, compare, and use the major search and planning techniques	assessed by examination
• Understand the basic idea of uncertainty, and be able to perform qualitative and quantitative uncertainty calculations using simple Bayesian algorithms and belief networks	assessed by examination
• Design of Knowledge Based Systems (KBSSs) and Expert Systems using production rules	assessed in the assignment and by examination
• Implement a simple forward chaining KBS in JESS	assessed in the assignment.
• Discuss limitations of AI, which problems are still hard, and why	assessed by examination
• Discuss principals in ethical and social issues in AI research and development	assessed by examination

Indicative Content

- Introduction to Artificial Intelligence
- Introduction to the Lab
- Production Rule Systems
- Knowledge Representation and Acquisition
- Semantic networks
- Expert Systems Development
- Frames
- Logic
- Reasoning with uncertainty (Bayes' Rule, Belief nets)
- Search
- Planning
- Non-standard logics
- Sub-symbolic AI
- Applications/ Conclusion / Revision

Assessment Methods and Weighting

In-course Assessments: Total	50%
- Group Assignment	40%
- In Class Presentation	10%

Examination – 2 Hours:	50%
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Essential Reading

- Stuart Russell and Peter Norvig,(2009). *Artificial Intelligence : A Modern Approach* : Prentice Hall, 2nd Edition,
(ISBN: 978-0136042594)
- Alison Caswey.(1997). *The Essence of Artificial Intelligence* : Prentice Hall; 1st edition
(ISBN: 978-0135717790)
- Henry Brighton (2003) *Introducing Artificial Intelligence*: Totem Books
(ISBN: 978-1840468410)

Additional Reading

- Robert Callan (2005) , Introduction Artificial Intelligence.
(ISBN : 978-8120328648)
- Elaine Rich, Kevin Knight -2nd edition () Artificial Intelligence
(ISBN : 9780070087705)
- Michael Negnevitsky -2nd edition , A guide to Intelligent Systems
- V S Janakiraman, K.Sarukesi, P Gopalakrishnan . Foundations of Artificial Intelligence and Expert Systems

Software:

KnowledgeWright®
PROLOG
Verbot
Expertise2Go

MODULE TITLE AND CODE	Introduction To Software Engineering – AAPP003-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	None
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

Aims of this module are to

- Introduce the basic principles of software engineering
- Introduce the various phases of development life cycle
- Introduce the concepts software project management
- Provide an understanding of various techniques used to design software systems.
- Introduce the concepts of software verification and validation.

Learning Strategy

The learning strategy for this module is to:

- Explain the principles of Software Engineering by lecture.
- Explain the understanding of various stages/phases of software development Life Cycle.
- Enable the students to understand the fundamental concepts of Software Engineering and its practices.
- Provide an awareness of Software Project Management by lecture as well as tutorial.
- Enable students to understand the major aspects of Software design.
- Explain the simple techniques and process used for verification and Validation Process of Software Systems.

Learning Outcomes

On completion of this module, the student will be able to :	Which will be demonstrated by:
<ul style="list-style-type: none"> • Explain the basic principles of Software Engineering including Requirement Analysis, System Design, Testing and Implementation. • Identify the various phases of Software Development life Cycle • Explain the basic concepts of Software Project Management. • Outline the objectives related to Software Design and its principles/guidelines. • Identify various techniques involved in verification and validation inline with Software Systems. 	<ul style="list-style-type: none"> • An individual research project in which student will have to analyse ,understand the usage and implementation of Software Engineering Principles using case studies provided by lecturer • Class test (objective question) on the understanding of Software Engineering Stages. • Class test (subjective question) on the understanding of Software Engineering Stages. • Class test (subjective question) on the understanding of Software Engineering Stages. • Class test (subjective and Objective questions) on the understanding of Verification and Validation techniques

Indicative Content

Software Engineering Fundamentals

Layered technology, Generic view of Software Engineering, process, methods and tools, Software Characteristics

Principles of Software Engineering

Analysis, Design and Testing Concepts and principles, Object Oriented Concepts and principles.

Software Development Life Cycle

Analysis, Design, Testing, Implementation of software systems.

Requirement Analysis

Requirement verification, Requirement specification.

Project management

Management spectrum, Product and Process management.

Software Design

Design Process, Modular design, Design model, Design documentation

Verification and Validation

Software Testing fundamentals, Test Case Design, Types of Testing Techniques

Assessment Methods and Weighting

In-course Assessments: Total	50%
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- One Project Research (Individual) - 20%
- One Class Test - 30%

Examination – 2 Hours:	50%
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Essential Reading

Roger S Pressman, 2005, Software Engineering: A Practitioner's Approach, 6th Edition, McGraw-Hill

Additional Reading

Hughes B and Cotterell M, 2005, Software Project Management, 4th Edition, McGraw-Hill

Peters and Pedrylz, 2000, Software Engineering: An Engineering Approach, Wiley & Sons

Other Essential Learning Resources

No special hardware specification required.

Software: Microsoft Office especially Ms Project.

MODULE TITLE AND CODE	Software Development Project – AAPP006-4-2
Credit and level:	4 Credits, Diploma Part 2
Prerequisites:	Problem Solving and Program Design using C
LEARNING TIME	
Class contact:	56 hours
Minimum independent study:	84 hours
Total learning time:	140 hours

Aims

The aims of this module are to:

- Provide students with practical experience in designing, developing, testing and implementing a commercial application;
- Provide the common criteria and the skills needed to evaluate the relative merits of different designs;
- Provide the skills and opportunity to develop competency in project management and teamwork within a set time-frame;
- Provide appropriate techniques, and help develop appropriate skills in presenting student projects

Learning Strategy

The learning strategy for this module is to:

- Organize interactive sessions, both individually and in groups for students to present or demonstrate their programs and designs;
- Organize the students into groups of 3/4 based on the criteria that allow complementary skills within each group;
- Conduct meetings with student group leaders to review the progress of the project

Learning Outcomes

1. Apply appropriate design methodologies in completing a given project	1. The documentation of the methodology and its selection criteria in the Partial Documentation. This will need to be further demonstrated during the question and answer session at the time of the design presentation;
2. Produce complete program documentation based on industry standards	2. The attendance and participation in regular meetings held from the commencement of the project right up to the submission of the Final Documentation. Minutes of meetings capture the proceedings of meetings;
3. Deliver an oral presentation of the project design, including the use of various presentation aids, as necessary	3. Delivery of the design presentation and the ability to answer questions raised by the project lecturer at that time.

Indicative Content

This is essentially an independent piece of student work done in a group setting. The project is designed to provide students with practical experience in analysis, coordination, implementation and presentation. During the course of the project, the student would:

- Analyze a given specification
- Design and implement the requirements in the specification
- Develop a modular system
- Validate a system
- Debug a system using aids

- Maintain existing systems
 - Document the system by the components as well as the whole system
 - Make oral and online presentations on the project
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Assessment Methods and Weighting

Design documentation	10%
Design presentation	25%
Program presentation	50%
Final documentation	15%

Essential Reading

Leslie Ann Robertson, 2003, Simple Program Design, 2nd Ed., Boyd and Fraser

Additional Reading

- Carol Britton and Jill Doake, 2003, Software System Development, 3rd Ed., McGraw Hill Education
- D Sargent, An Introduction to Program Design, 1991, McGraw Hill International Edition
- Richard Barker, CASE METHOD, Entity Relationship Modelling, 1990, Addison Wesley Publishing Company
- Whitten et al., Systems Analysis and Design, 4th Ed., 1997, IRWIN

Other Essential Learning Resources

Text editor

Any suitable editor (E.g. Notepad)

Programming language tools and reference sites.

<http://java.sun.com/j2se/1.4>

<http://java.sun.com/j2se/1.4/docs/api/index.html>

Any C compiler such as VC++ or Borland C++.
