STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(NATIONAL OCCUPATIONAL SKILL STANDARD)

STANDARD PRACTICE & STANDARD CONTENT
FOR

MULTIMEDIA PROGRAMMING
LEVEL 4

JPK

Jabatan Pembangunan Kemahiran
Kementerian Sumber Manusia, Malaysia

STANDARD PRACTICE

STANDARD CONTENT

STANDARD PRACTICE

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR;

MULTIMEDIA PROGRAMMING
LEVEL 4

1. INTRODUCTION

Tracing the starting point of ICT development in Malaysia will bring us to the year 1996 where National IT Agenda (NITA) was established to set a framework on how our country can seize the opportunity to become an information and knowledge-based society by 2020. This agenda stresses on three key elements as spine namely people, info structure and applications. In line with the establishment of NITA, the National IT Council (NITC) was launched to fulfil NITA's goals. Strategic Thrusts Agenda became their brainchild to effectively facilitate the migration of Malaysians and institutions into the emerging network global environment and they continue to expand their contributions to ICT since. Year 1998 witnessed another significant event as major changes were done to the enactment of the Communication and Multimedia Act 1998 (CMA) to support ten national policy objectives for the communication industry which aims to establish Malaysia as a hub for communication and multimedia information and content services.

Going further, our government has since played an active role to boost this industry as they developed Multimedia Super Corridor (MSC Malaysia) which is concentrated in the newly developed city, Cyberjaya, which has succeeded in attracting international ICT companies to invest locally while contributing to the development of new ICT ideas in the form of technology transfer, technology sharing and expertise. Optimising the true potential of MSC lies on the supervision of MDeC (Multimedia Development Corporation) that was established to facilitate the development and promotion of MSC. In line with these actions, our government has decided to harness ICT as a new source of growth and sustain our excellence as global multimedia hub destination in the Tenth Malaysia Plan. Main players in the ICT industry have also contributed to this industry when PIKOM, acronym for Association of the Computer and Multimedia Industry was founded with the objective to foster the ICT industry in our country. Among their members are suppliers of equipment in computing and telecommunication, software developers and suppliers and network operators.

The boosting of ICT industry has webbed new job profiles with unlimited ICT jobs that guarantees a well paid job and promises rapid job-insertion and personal challenge. The job areas from this line marching from animation, audio, video, interactive media, ICT computer system, ICT network system, multimedia programming, web based/WAP programming, server programming, desktop programming to database programming. The industry observes that one of the critical job areas is Multimedia Programming that involves multimedia-based programming language and scripting. This job area could generate a generous

income with the opportunity to expand the career as 2D/3D animator, application and games developer, IT consultant, web developer and other numerous job positions. In addition, one can freely choose whether to work independently at home or become full time staff.

Previously there were only three sub sectors clustered under Information and Communication Technology (ICT) industry. Jabatan Pembangunan Kemahiran (JPK) has carried its responsibility by conducting Occupational Analysis whereas the project has successfully identified three more sub sectors which suggests Digital Creative, Data Management, ICT Security, ICT System, System Interpretation and Application System Development staying under the same umbrella. Discovering more sub sectors under ICT create 53 job titles in line with industry growth.

According to the Occupational Analysis findings carried out by JPK, multimedia programming is under the subsector of Application System Development. It is the “brain” of the digital creative sub-sector as the multimedia programming plays an important role to program, integrate and make the multimedia elements alive as a product. The industry observes multimedia programming is a critical job area to support creative media industry’s need.

Consequently, the development of this Multimedia Programming NOSS is essential in developing skilled workers in this area. Figure 1.1 is the Occupational Framework Matrix for Application System Development Sub-sector which shows the position of Multimedia Programming Job Area within the Application System Development sub sector.

2. OCCUPATIONAL STRUCTURE

SECTOR	INFORMATION AND COMMUNICATIONS TECHNOLOGY				
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**				
LEVEL / AREA	**MULTIMEDIA PROGRAMMING**	**WEB BASED / WAP PROGRAMMING**	**SERVER PROGRAMMING**	**DESKTOP PROGRAMMING**	**DATABASE PROGRAMMING**
Level 8	APPLICATION SYSTEM DEVELOPMENT PRINCIPAL SPECIALIST				
Level 7	APPLICATION SYSTEM DEVELOPMENT SPECIALIST				
Level 6	SYSTEM ANALYST				DATABASE ADMINISTRATOR (APPLICATION SYSTEM DEVELOPMENT)
Level 5	MULTIMEDIA ANALYST PROGRAMMER	WEB BASED/WAP ANALYST PROGRAMMER	SERVER ANALYST PROGRAMMER	DESKTOP ANALYST PROGRAMMER	DATABASE SENIOR PROGRAMMER
Level 4	MULTIMEDIA PROGRAMMER	WEB BASED/WAP PROGRAMMER	SERVER PROGRAMMER	DESKTOP PROGRAMMER	DATABASE PROGRAMMER
Level 3	IT-010-3: APPLICATION DEVELOPMENT – LEAD PROGRAMMER				
Level 2	IT-010-2: APPLICATION DEVELOPMENT PROGRAMMER				
Level 1	*- No Level -*				

Figure 1.1: Occupational Framework Matrix for Application System Development sub sector in Malaysia (2008)

3. DEFINITION OF COMPETENCY LEVEL

The NOSS is developed for various occupational areas. Candidates for certification must be assessed and trained at certain levels to substantiate competencies. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

Malaysia Skills Certificate Level 1: (Operation and Production Level)	Competent in performing a range of varied work activities, most of which are routine and predictable
Malaysia Skills Certificate Level 2: (Operation and Production Level)	Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy.
Malaysia Skills Certificate Level 3: (Supervisory Level)	Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy, and control or guidance of others in often required.
Malaysia Skills Diploma Level 4: (Executive Level)	Competent in performing a broad range of complex technical or professional work activities, performed in a variety of contexts, and with substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present.
Malaysia Skills Advanced Diploma Level 5: (Managerial Level)	Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation.

4. MALAYSIAN SKILL CERTIFICATION

Candidates must come from a computing background, and the role demands a combination of creative and technical skills.

The pre-requisite to pursue this course include:

i. Completed Lead Programmer Level 3 (IT-010-3), and
ii. A minimum of one year working experience in IT industry

Certification will be awarded to the candidate after being validated as competent in multimedia programming. The candidate shall be awarded with Diploma Kemahiran Malaysia (Malaysia Skills Diploma) in Multimedia Programming Level 4.

5. JOB COMPETENCIES

A Multimedia Programmer is competent in performing:

i. Multimedia Product Visualisation;
ii. Multimedia Product Authoring and Integration;
iii. Multimedia Product Testing;
iv. Multimedia Product Quality Assurance
v. Multimedia Product Refinement;
vi. Multimedia Product Finalisation;
vii. Multimedia Product Support Services;
viii. Multimedia Instructional Design

6. WORKING CONDITIONS

Generally, a Multimedia Programmer works according to project schedule and responsible to meet project deadlines. He/she can opt to work in the office as full time staff or choose to work as independent freelances. Those working as freelances can work from home if they have suitable equipment that involved technological devices. They may be required to work beyond typical hours in order to meet project deadlines and client requirements.

In addition, he/she has to be able to;

- work with the designer and other creative specialists to understand the design concept and provide advice on how it can be implemented technically within constraints;
- sort out operational logic and business rules necessary for the feature to be reproduced correctly according to the designer's specification;

- write efficient computer code or script to make the various features work, ensuring that sounds, graphics, animations and timings function as intended and make good use of processing and data storage capacity;
- create and link databases to the user interface so that information can be retrieved, stored and processed interactively via the application;
- write HTML or similar input and use authoring packages where appropriate to create content and effects;
- run tests of the application to identify bugs that need to be dealt with; solve problems by re-writing the code or adding new code that works around the problem;
- provide technical support to an application once it is running and make further adaptations, patches or rewrites to the code;
- research and keep abreast of emerging technologies in order to be able to deliver the most up-to-date solutions, including learning new programming languages or technologies.

7. EMPLOYMENT PROSPECTS

The Multimedia Programming Level 4 certificate holder has a high employment prospect locally and internationally as Malaysia has become ICT and creative media hub destination. Thus, it requires skilled workers in this field to be employed by local or international companies that involve in ICT industry.

The Economic Transformation Program has strengthened 10 EPPs (Entry Point Projects) to deliver RM16.6 billion incremental GNI by 2020. The first EPPs is to nurture Malaysia's creative content industry in services, distribution and broadcasting sectors which aim to transform Malaysia into a regional hub for digital content. Meanwhile, the fourth EPPs is to establish E-Learning for students and professional training in a bid to establish a common knowledge platform for students and training into the same platform. With regard to these two themes under EPPs, they promise job opportunities in abundance for those who are interested in multimedia programming

Other related occupations with respect to employment opportunities are:

- Web Developer
- Programmer
- 2D/3D Animator
- Applications Developer
- Games Developer
- Graphic Designer
- IT Consultant
- Multimedia Specialist
- Trainer

Other related industries with respect to employment opportunities are:

- Advertising and marketing
- Broadcasting
- Telecommunication (particularly mobile phone suppliers and networks)
- Publishing and media
- Education/training
- Production house

8. SOURCES OF ADDITIONAL INFORMATION

- **Ministry of Science, Technology and Innovation**
  Aras 1-7, Blok C4 dan C5
  Pusat Pentadbiran Kerajaan Persekutuan
  62662 Putrajaya, Wilayah Persekutuan
  Telephone: +603-88858000, Fax: +603-8889070
  Email: info@mosti.gov.my
  www.mosti.gov.my

- **Multimedia Development Corporation (MDeC)**
  MSC Malaysia Headquaters
  Persiaran APEC, 63000, Cyberjaya
  Selangor Darul Ehsan
  Telephone**:** 1-800-88-8338, Fax**:** +603-83153115
  www.mdec.my

- **National IT Council (NITC) Secretariat**
  c/o The Ministry Of Science, Technology and Innovation (MOSTI)
  Aras 1-7, Blok C4 dan C 5
  Pusat Pentadbiran Kerajaan Persekutuan
  62662 Putrajaya, Wilayah Persekutuan
  Telephone: +603-88858000
  www.mosti.gov.my

- **Suruhanjaya Komunikasi dan Multimedia Malaysia**
  Off Persiaran Multimedia
  63000 Cyberjaya, Selangor Darul Ehsan
  Telephone: +603-86888000, Fax: +603-86881000
  www.skmm.gov.my

- **Persatuan Industri Komputer dan Multimedia Malaysia (PIKOM)**
  The National ICT Association of Malaysia
  1106 & 1107, Block B, Phileo Damansara II
  No. 15, Jalan 16/11, 46350 Petaling Jaya
  Selangor Darul Ehsan, Malaysia
  Telephone**:** +603-7955 2922, Fax**:** +603-7955 2933
  www.pikom.org.my

- **PEMANDU (Performance Management and Delivery Unit)**
  Jabatan Perdana Menteri
  Aras 3, Blok Timur, Bangunan Perdana Putra
  Pusat Pentadbiran Kerajaan Persekutuan
  62502 Putrajaya, Wilayah Persekutuan
  Telephone: +603-88727237, Fax: +603-88887107
  www.pemandu.gov.my

9. APPROVAL DATE

The National Skills Development Board (MPKK), Ministry of Human Resources has agreed and endorsed this Standard on 20th December 2011

10. ACKNOWLEDGEMENT

The Director General of DSD would like to extend his gratitude to the organisations and individuals who have been involved in developing this standard.

11. COMMITTEE MEMBERS FOR JOB ANALYSIS SESSION

MULTIMEDIA PROGRAMMING - LEVEL 4

PANEL		
1.	MR. AZHA BIN HASAN	**ISKILLS SDN. BHD.** MULTIMEDIA PROGRAMMER
2.	MRS. AZLINA BINTI MAT ALI	**MULTI MEDIA SYNERGY CORP. SDN.BHD.** EXECUTIVE MULTIMEDIA PROGRAMMER
3.	MR. HAIRUL ANUAR BIN KONCHONG	**MVSB SDN.BHD** APPLICATION DEVELOPMENT
4.	MR. HUZAINI BIN SAARI	**KOLEJ KEMAHIRAN TINGGI MARA REMBAU, NEGERI SEMBILAN** DIGITAL MEDIA LECTURER
5.	MR. KHAIRUL ABIDIN BIN NORDIN	**NADIAYU SDN. BHD.** MULTIMEDIA PROGRAMMER
6.	MR. MOHD RASHDAN IBRAHIM ASTAR	**ENERSHIA SDN. BHD.** FLASH PROGRAMMER/ SCRIPWRITTER
7.	MRS. ROSNITA BT A RAHAMAN	**UNISEL, BESTARI JAYA, SELANGOR** MULTIMEDIA LECTURER
8.	MR. MOHAMAD FAISAL KAMARUDDIN	**AL-MADINAH INTERNATIONAL UNIVERSITY** MULTIMEDIA PROGRAMMER
9.	MR. MOHD FAIRUZ BIN HASNUL	**DIGICERT SDN BHD** MULTIMEDIA PROGRAMMER
FACILITATOR		
10.	MR. ISVARAN P. RAMASAMY	MALAYSIAN ACADEMY OF CREATIVE TECHNOLOGY SDN.BHD.
CO-FACILITATOR		
11.	MRS. JAIYAH SHAHBUDIN	MALAYSIAN ACADEMY OF CREATIVE TECHNOLOGY SDN.BHD.

12. COMMITTEE MEMBERS FOR UNIT OF COMPETENCY PROFILE SESSION

MULTIMEDIA PROGRAMMING - LEVEL 4

PANEL		
1.	MR. AZHA BIN HASAN	**iSKILLS SDN. BHD.** MULTIMEDIA PROGRAMMER
2.	MRS. AZLINA BINTI MAT ALI	**MULTI MEDIA SYNERGY CORP. SDN.BHD.** EXECUTIVE MULTIMEDIA PROGRAMMER
3.	MR. HAIRUL ANUAR BIN KONCHONG	**MVSB SDN.BHD** APPLICATION DEVELOPMENT
4.	MR. HUZAINI BIN SAARI	**KOLEJ KEMAHIRAN TINGGI MARA REMBAU, NEGERI SEMBILAN** PENSYARAH DIGITAL MEDIA
5.	MR. KHAIRUL ABIDIN BIN NORDIN	**NADIAYU SDN. BHD.** MULTIMEDIA PROGRAMMER
6.	MR. MOHD RASHDAN IBRAHIM ASTAR	**ENERSHIA SDN. BHD.** FLASH PROGRAMMER/ SCRIPWRITTER
7.	MRS. ROSNITA BT A RAHAMAN	**UNISEL, BESTARI JAYA, SELANGOR** MULTIMEDIA LECTURER
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CO-FACILITATOR		
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13. COMMITTEE MEMBERS FOR UNIT OF CURRICULUM OF COMPETENCY UNIT DEVELOPMENT

MULTIMEDIA PROGRAMMING **LEVEL 4**

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CO-FACILITATOR		
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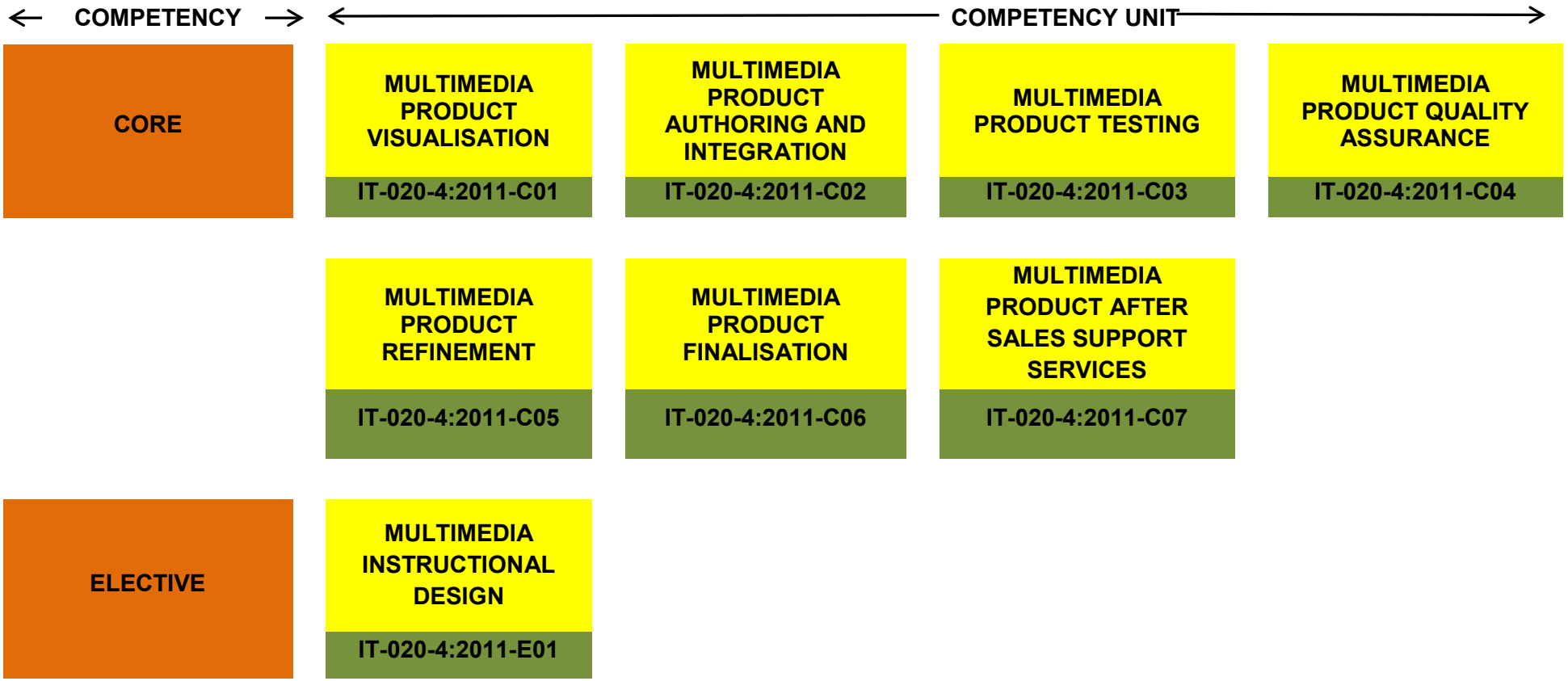
JOB PROFILE CHART (JPC)

SECTOR	INFORMATION AND COMMUNICATIONS TECHNOLOGY		
SUB SECTOR	APPLICATION SYSTEM DEVELOPMENT		
JOB AREA	MULTIMEDIA PROGRAMMING		
NOSS TITLE	MULTIMEDIA PROGRAMMING		
JOB LEVEL	FOUR (4)	NOSS CODE	IT-120-4:2011



COMPETENCY PROFILE (CP)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**		
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**		
JOB AREA	**MULTIMEDIA PROGRAMMING**		
NOSS TITLE	**MULTIMEDIA PROGRAMMING**		
LEVEL	**FOUR (4)**	**NOSS CODE**	**IT-120-4:2011**

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. Multimedia Product visualisation		Multimedia product visualisation is a cognitive activity to visualise the multimedia product using storyboard so that coding structure can be developed. The personnel who are competent in multimedia product visualisation will able to analyse storyboard, perform logic flow structure, evaluate storyboard visualisation outcome and produce product.	1. Analyse storyboard	1.1 Storyboard content defined 1.2 User Interface Design determined
			2. Perform logic flow structure	2.1 User interface features determined 2.2 Navigation flow arranged 2.3 Product visualisation guideline produced
			3. Evaluate storyboard visualisation outcome	3.1 Technical aspect related to the storyboard determined 3.2 Storyboard analysis outcome confirmed

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Produce product visualisation outcome report	4.1 Product visualisation outcome report prepared 4.2 Product visualisation outcome report presented to the management
2. Multimedia Product Authoring and Integration		Multimedia product authoring and integration is a vital process which demands a vast knowledge of multimedia scripting and programming. During authoring and integration stage, all multimedia elements such as graphics, video, audio, etc are arranged according to storyboard. The personnel who are competent in multimedia authoring and integration shall be able to Identify multimedia programming language and tools, Plan multimedia elements authoring and integration activities, Develop multimedia elements integration and scripting, Optimise multimedia elements, Integrate multimedia application and Debug multimedia application	1. Identify multimedia programming language and tools	1.1 Product specification interpreted 1.2 Multimedia programming language and tools determined
			2. Plan multimedia elements authoring and integration activities	2.1 Work process based on storyboard workflow prioritised 2.2 Multimedia element authoring and integration work schedule prepared
			3. Develop multimedia elements integration and scripting	3.1 Multimedia product prototype developed 3.2 Coding flowchart prepared 3.3 Multimedia elements integrated
			4. Optimise multimedia elements	4.1 Multimedia elements evaluated 4.2 Multimedia elements optimisation executed
			5. Integrate multimedia application	5.1 UID among team members complied

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			6. Debug multimedia application	6.1 Resolve multimedia application errors 6.2 Store multimedia application
			7. Produce multimedia authoring and integration report	7.1 Multimedia authoring and integration report prepared 7.2 Multimedia authoring and integration report presented to team members/ management
3. Multimedia Product Testing		Multimedia product testing is a stage to test product content functionality, reliability, compatibility, usability and accessibility. This stage requires a high understanding of actual product specification. The personnel who are competent in multimedia product testing shall be Analyse multimedia product specification, Perform multimedia product tests and Report multimedia product testing result	1. Analyse multimedia product specification	1.1 Multimedia product specification interpreted 1.2 Multimedia product type interpreted
			2. Perform multimedia product tests	2.1 Multimedia product functionality test, reliability test, usability test, compatibility test and accessibility test carried out 2.2 Programming defect rectified

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			3. Report multimedia product testing result	3.1 Multimedia product testing report produced 3.2 Multimedia product testing report presented to the management /team members
4. Multimedia Product Quality Assurance		Quality assurance is a guarantee of quality excellence during and after the production of multimedia product to ensure client's requirement met. Quality assurance is a guarantee of quality excellence during and after the production of products to ensure client's requirement met. Multimedia product quality assurance management competency unit involve unit quality test carried out by the programmer. The personnel who are competent in multimedia product quality assurance shall be able to Identify multimedia product quality requirements, Plan multimedia product quality assessment activities, Perform unit quality test (usability and functionality) and Produce quality acceptance report.	1. Identify multimedia product quality requirements	1.1 Multimedia product specification determined 1.2 Multimedia product contents quality determined
			2. Plan multimedia product quality assessment activities	2.1 Multimedia product quality assurance scope determined 2.2 multimedia product quality assessment activities schedule produced
			3. Perform unit quality test (usability and functionality)	3.1 Multimedia product defect identified 3.2 Multimedia unit quality evaluated 3.3 Multimedia product functionality, usability, compatibility, security and integration

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Produce quality acceptance report	4.1 Quality acceptance report prepared 4.2 Product quality acceptance report presented to the management/ team members
5. Multimedia Product Refinement		Multimedia product refinement is an amendment stage after the reviewing of final product according to client's requirement. Multimedia product refinement is carried out after the analysis of quality assurance report and review report. The personnel who are competent in multimedia product refinement shall be able to Analyse multimedia product quality assurance report and Client review report, Perform multimedia product amendment according to Quality Assurance Report and Client Review Report, Optimise multimedia elements and Report multimedia product refinement.	1. Analyse multimedia product quality assurance report and client review report	1.1 Product functionality issues, usability issues and content issues identified 1.2 Client's change request interpreted
			2. Perform multimedia product amendment according to quality assurance report and client review report	2.1 Multimedia product qualiity issues rectified 2.2 Client's change request carried out
			3. Optimise multimedia elements	3.1 Multimedia product quality enhanced 3.2 Multimedia product ready for finalisation stage

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Report multimedia product refinement	4.1 Determine issues to be highlighted related to product refinement 4.2 Prepare multimedia product refinement report and presented to the management/ team members
6. Multimedia Product Finalisation		Multimedia product finalisation stage is the transition from final product to become end product, ready for seal and deliver to the client. The personnel who are competent in multimedia product finalisation shall be able to Analyse multimedia finished product criteria, Produce multimedia finished products, Present multimedia finished product to client and Produce multimedia product finalisation report	1. Analyse multimedia finished product criteria	1.1 Multimedia finished product criteria determined 1.2 Project terms and conditions interpreted
			2. Produce multimedia finished products	2.1 Multimedia product User manual and administrator developed 2.2 Multimedia finished product packaging carried out
			3. Present multimedia finished product to client	3.1 Multimedia finished product presentation conducted to the client 3.2 Client's acceptance recorded

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Produce multimedia product finalisation report	4.1 Multimedia product finalisation report prepared. 4.2 Multimedia product finalisation report presented to the management
7. Multimedia Product After Sales Support Services		Multimedia product after sales support services demands active participation from programmers to serve client. The personnel should equip himself/herself with latest product version update so that he/she shall be able to Analyse client's after sales support services needs, Plan scope of multimedia product after sales support services, Perform multimedia product after sales support services and Report multimedia product after sales support service status	1. Analyse client's after sales support services needs	1.1 Client's after sales support services needs identified 1.2 Multimedia project agreement terms and conditions interpreted
			2. Plan scope of multimedia product after sales support services	2.1 After sales support services resources determined 2.2 After sales support service schedule prepared 2.3 Multimedia product after sales support service terms and conditions established
			3. Perform multimedia product after sales support services	3.1 Multimedia product after sales support services executed according clients' needs 3.2 Allocate company's resources 3.3 Assess clients' feedbacks 3.4 Handle clients' complaints

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Report multimedia product after sales support service status	4.1 Multimedia product after sales support services status report produced 4.2 Present after sales support services status to the manage

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
8. Multimedia Instructional Design		This competency unit describes the skill, knowledge and attitude requirements in multimedia instructional design are to follow the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities and try out and evaluation of all instruction and learner activities.	1. Analyse project requirements	1.1 Project requirements such as the delivery platform, technology requirement and delivery date are identified in accordance with user requirement specification document (for example: tender document, proposal etc.). 1.2 Tools and materials are identified in accordance with project requirements. 1.3 Existing materials are reviewed to ensure pre-existing content can be recycled to meet the performance needs.

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
		The person who is competent in multimedia production management shall be able to Analyse project requirements, Produce instructional design, Establish content development team, Monitor instructional design production progress, Assess instructional design production progress and Record instructional design production report	2. Produce instructional design	2.1 Targeted end-user is identified in accordance with user requirement specification. 2.2 Learning activities are created in accordance with learning environment.
			3. Establish content development team	3.1 Subject Matter Expert (SME) is determined in accordance with the subject matter field/area. 3.2 Team members (such as storyboard artist, illustrator, editor etc) are identified in accordance with job-scope requirement. 3.3 Tasks (storyboard development) are delegated to assigned team members.
			4. Monitor instructional design production progress	4.1 Storyboard development is monitored in accordance to determined process timeline. 4.2 Instruction design is validated to ensure the learning

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				platform reach the required standards. 4.3 Storyboard is reviewed in accordance with approved instructional design specification.
			5. Assess instructional design production progress	5.1 Storyboard is presented for client approval and endorsement. 5.2 Approved storyboard is handed over to multimedia development team for production.
			6. Record instructional design production report	6.1 Team members' performance is reviewed in accordance with specified task and determined project timeline. 6.2 Managers and client's remarks and comments are recorded. 6.3 Project issues from the team members are noted.

CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT VISUALISATION**						
COMPETENCY UNIT DESCRIPTOR	Multimedia product visualisation is a cognitive activity to visualise the multimedia product using storyboard so that coding structure can be developed. The personnel who are competent in multimedia product visualisation will able to analyse storyboard, perform logic flow structure, evaluate storyboard visualisation outcome and produce product.						
COMPETENCY UNIT ID	**IT-020-4:2011-C01**	**LEVEL**	4	**TRAINING DURATION**	160 Hours	**CREDIT HOURS**	16

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse storyboard	1.1. Concept of storyboard such as • Definition • Purpose • Target Audience 1.2. Type of storyboard • Pictorial • Text 1.3. Storyboard format, such as: • Layout • Convention (abbreviation, symbol) 1.4. Timeline User interface design (UID) • Graphic • Colour concept • Web Safe colour palette			10 hours	Lecture	1.1. Storyboard concept defined 1.2. Type of storyboard identified 1.3. Storyboard format determined 1.4. User Interface Design determined 1.5. Icon and navigation determined

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	1.5. Icon and navigation, such as: • Pagination • Sequence link • Sitemap • Breadcrumbs 1.6. Current Industry regulation & guideline: • Film Censorship Act (Act 620) • Communication and Multimedia Act (Act 588) • Malaysian communications and multimedia content code 1.7. Current copyright and Intellectual property guideline					

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		1.1. Define storyboard concept 1.2. Identify type of storyboard 1.3. Determine storyboard format 1.4. Determine User Interface Design 1.5. Determine icon and navigation		25 hours	Demonstration, Observation & Practical (computer lab) & case study	
			Attitude: i. Meticulous in analysing storyboard ii. Precise in determining storyboard format iii. Adhere to current Industry regulation and guidelines iv. Adhere to intellectual property guideline *Environment:* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Perform logic flow structure	2.1 Storyboard arrangement such as • Text • Video • Audio • Animation 2.2 User Interface Design (UID) features 2.3 Navigation flow 2.4 Type of multimedia programming tools such as • Flash • Director • Flex • Silverlight 2.5 Programming methods • Object oriented • Structured 2.6 Coding structure guideline of the company			10 hours	Lecture	2.1 Storyboard arrangement determined 2.2 User Interface Design features determined 2.3 Navigation flow arranged 2.4 Multimedia programming tools to create coding structure applied 2.5 Programming methods to be used determined 2.6 Product visualization guideline prepared

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		2.1 Determine storyboard arrangement 2.2 Determine User Interface Design features 2.3 Arrange navigation flow 2.4 Apply multimedia programming tools to create coding structure 2.5 Determine programming methods to be used 2.6 Prepare product visualization guideline		35 hours	Demonstration, Observation & Practical (computer lab) & case study	
			Attitude: i. Precise in determining multimedia programming tools to create coding structure ii. Adhere to coding structure guideline *Environment:* ii. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Evaluate storyboard visualisation outcome	3.1. Visual Design 3.2. Technical design consideration such as: • Timing • Sound Breakdown • Script Breakdown • Bandwidth speed 3.3. Resources consideration: • Man power • Tools • Budget • Licensing issues 3.4. Communications and multimedia (licensing) Regulations 2000 3.5. Storyboard visualisation checklist			15 hours	Lecture	3.1 Contents and visual design for the storyboard verified 3.2 Technical aspects related to the storyboard determined 3.3 Solution on product visualisation recommended 3.4 Product visualisation outcome sign-off acquired
		3.1 Verify contents and visual design for the storyboard 3.2 Determine technical aspect related to the storyboard 3.3 Recommend solution on product visualisation 3.4 Acquire product visualisation outcome sign-off from superior		40 hours	Demonstration, Observation & Practical (computer lab) & case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Precise in verifying contents and visual design for the storyboard. ii. Prudent in determining technical aspect related to the storyboard iii. Teamwork spirit in evaluating storyboard visualisation outcome iv. Adhere to copy Right and Intellectual Property guideline *Environment:* iii. Adhere to ergonomic requirements			
4 Produce product visualisation outcome report	4.1 Purpose of producing product visualisation outcome report. 4.2 Procedure of producing product visualisation outcome report. 4.3 Issues related product visualisation outcome, such as • Technical consideration • Visual design 4.4 Report format. 4.5 Writing skill 4.6 Presentation skills 4.7 Negotiation skill 4.8 Social etiquette			10 hours	Lecture	4.1 Report format determined. 4.2 Issues to be highlighted determined 4.3 Product visualisation outcome report generated. 4.4 Visualisation outcome report. Presented to the team members 4.5 Feedbacks from team members analysed 4.6 Solution

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		4.1 Determine report format 4.2 Determine issues to be highlighted 4.3 Generate product visualisation outcome report. 4.4 Present visualisation outcome report to the team members. 4.5 Analyse feedbacks from team members 4.6 Present solution to the management.		15 hours	Case study	presented to the management
			Attitude: i. Accuracy in writing the report ii. Precise in highlighting the issue in the report iii. Adhere to the company confidentiality policy *Environment:* i. Adhere to ergonomic requirements			

Employability Skills

Core Abilities	Social Skills
04.09 Prepare project/work plans 04.10 Utilize science and technology to achieve goals 05.03 Allocate and record usage of financial and physical resources 05.04 Delegate responsibilities and/or authority	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Computer	1:1
2. Projector	1:25
3. Authoring tools	1:1
4. Computer Operating system	1:1

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2. Jon Duckett, WROX (2010) Beginning HTML, XHTML, CSS and Java Script , ISBN: 978-0-470-54070-1
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5. Rajaraman, A. (2009) Computer Graphics with Multimedia, Narosa Publishing House Pvt. Ltd, ISBN-13: 9788173194771 / 978-81-7319-477-1
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CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT AUTHORING AND INTEGRATION**						
COMPETENCY UNIT DESCRIPTOR	Multimedia product authoring and integration is a vital process which demands a vast knowledge of multimedia scripting and programming. During authoring and integration stage, all multimedia elements such as graphics, video, audio, etc are arranged according to storyboard. The personnel who are competent in multimedia authoring and integration shall be able to Identify multimedia programming language and tools, Plan multimedia elements authoring and integration activities, Develop multimedia elements integration and scripting, Optimise multimedia elements, Integrate multimedia application and Debug multimedia application						
COMPETENCY UNIT ID	**IT-020-4:2011-C02**	**Level**	4	**Training Duration**	210 Hours	**Credit Hours**	21

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify multimedia programming language and tools	1.1 Types of multimedia finished product, such as: • CD / DVD • Mobile-based • Web-based 1.2 Types of programming languages • Java • Java script • C++ /C#.net • VB.net • ASP.net • AJAX • JQuery Framework • CSS • Action Script 2.0/3.0			10	Lecture	1.1 Multimedia product specification interpreted 1.2 Current technology in programming languages and multimedia tools studied. 1.3 Market trend in multimedia product and programming languages analysed 1.4 Company resources determined 1.5 Application structure and character

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	1.3 Types of mark up language such as • XML - PHP • HTML • XHTML 1.4 Types of multimedia tools • Flash • Flex • Dreamweaver • Silverlight authoring tools 1.5 Company resources, such as • Budget • Equipment • Manpower • Licensing issues					determined using Programming languages Mark up language determined 1.6 Multimedia tools to be used determined
		1.1 Interpret multimedia product specification 1.2 Study current technology in programming languages and multimedia tools. 1.3 Analyse market trend in multimedia product and programming languages 1.4 Determine company resources 1.5 Determine application structure and character using programming language 1.6 Determine multimedia tools to be used		15	Demonstration & Practical (computer lab), Case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Prudent in interpreting multimedia product specification ii. Cost conscious in determine company resources *Environment* i. Adhere to ergonomic requirements			
2. Plan multimedia elements authoring and integration activities	2.1 Multimedia product requirement guideline 2.2 Types of multimedia elements such as: • Text • Graphics • Audio • Video • Animation 2.3 Multimedia element authoring and integration Work Schedule			6	Lecture	2.1 Multimedia elements determined 2.2 Work process based on storyboard workflow prioritised 2.3 Multimedia element authoring and integration work schedule prepared 2.4 Multimedia product requirement guideline adhered
		2.1 Determine multimedia elements 2.2 Prioritise work process based on storyboard workflow 2.3 Prepare multimedia element authoring and integration work schedule		14	Demonstration & Practical (computer lab), Case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Precise in determining multimedia elements ii. Prudent in prioritising work process based on storyboard workflow iii. Meticulous in preparing multimedia element authoring and integration work schedule iv. Adhere to multimedia product requirement guideline v. Fulfil client's expectation and budget			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3 Develop Multimedia elements integration and scripting	3.1 Software programming component such as • Timeline • Library • Tools panel • User Interface components • Properties panel • Stage 3.2 Multimedia elements integration 3.3 Prototype development 3.4 Scripting development: steps, such as: • Flowchart • Generate coding structure • Compile programme • "Execute" coding 3.5 Coding Structure guideline			14	Lecture	3.1 Multimedia product prototype developed 3.2 Multimedia elements using software components integrated 3.3 Programming software determined component to create coding 3.4 Coding flowchart prepared 3.5 Coding structure generated 3.6 Programme complied according to scripting development steps 3.7 Scripting to "execute" the coding finalised 3.8 Coding Structure

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		3.1 Develop multimedia product prototype 3.2 Integrate multimedia elements using software components 3.3 Determine programming software component to create coding 3.4 Prepare coding flowchart 3.5 Produce coding structure 3.6 Compile programme according to scripting development steps 3.7 Finalise the scripting to "execute" the coding 3.8 Follow coding Structure guideline		40	Demonstration & Practical (computer lab), Case study	guideline followed
			Attitude: i. Precise in developing prototype ii. Accurate in Integrating multimedia elements using software components iii. Meticulous in preparing coding flowchart iv. Adhere to coding Structure guideline *Environment* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4 Optimise multimedia elements	4.1 Concept of multimedia elements optimisation such as • Usability • Functionality • Accessibility • Compatibility 4.2 Multimedia element content evaluation, such as: • Text • Graphic • Animation • Video • Audio 4.3. Optimisation checklist			10	Lecture	4.1 Multimedia elements to be optimise determined 4.2 Multimedia elements usability assessed 4.3 Multimedia elements functionality assessed 4.4 Multimedia elements accessibility assessed 4.5 Multimedia elements compatibility assessed 4.6 Multimedia content assessed 4.7 Optimisation assessment result recorded
		4.1 Determine multimedia elements to be optimised as per checklist 4.2 Assess multimedia elements usability 4.3 Assess multimedia elements functionality 4.4 Assess multimedia elements accessibility 4.5 Assess multimedia elements compatibility 4.6 Assess multimedia content 4.7 Record optimisation assessment result		20	Practical (computer lab)	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Cautious in evaluating multimedia elements. ii. Prudent in assessing multimedia element accessibility, usability, functionality, and compatibility *Environment* i. Adhere to ergonomic requirements			
5 Integrate multimedia application	5.1 Multimedia application integration method 5.2 User interface Design (UID) compilation 5.3 Team work 5.4 Compilation checklist			8	Lecture	5.1 UID merge among team members coordinated 5.2 Multimedia application compilation method applied 5.3 UID among team members complied 5.4 Compilation checklist recorded
		5.1 Coordinate UID compilation among team members 5.2 Apply multimedia application compilation method 5.3 Compile UID among team members 5.4 Record compilation checklist		16	Demonstration, Practical (computer lab)	
			Attitude: i. Creative in compiling UID ii. Responsible in recording compilation checklist *Environment* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
6. Debug multimedia application	6.1 Type of errors • Programming • Content • Function • Linking and navigation • Hardware 6.2 Errors handling process • Errors Identification • Cause of errors • Solve the errors			8	Lecture	6.1 Multimedia application errors analysed 6.2 Multimedia application error resolved 6.3 Debugged multimedia application verified 6.4 Multimedia application stored
		6.1 Analyse multimedia application errors 6.2 Resolve multimedia application errors 6.3 Verify debugged multimedia application 6.4 Store multimedia application		24	Demonstration, Practical (computer lab)	
			Attitude: i. Thorough in identifying application errors ii. Precise in determining application error solution *Environment* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
7. Produce multimedia authoring and integration report	7.1 Report format. 7.2 Writing skill 7.3 Issues related to multimedia authoring and integration, such as: • Compilation • Optimisation • Error handling 7.4 Negotiation skill 7.5 Personal grooming 7.6 Social etiquette			10	Lecture	7.1 Report format determined. 7.2 Issues to be highlighted determined 7.3 Multimedia authoring and integration report prepared. 7.4 Multimedia authoring and integration report presented to team members/ management
		7.1 Determine report format. 7.2 Determine issues to be highlighted 7.3 Prepare multimedia authoring and integration report. 7.4 Present multimedia authoring and integration report to team members/ management		15	Case study, simulation & presentation	
			Attitude: i. Accurate in writing multimedia authoring and integration report ii. Precise in highlighting issues related to multimedia authoring and integration in the report iii. Adhere to the company confidentiality policy			

Employability Skills

Core Abilities	Social Skills
04.09 Prepare project/work plans 04.10 Utilize science and technology to achieve goals 05.04 Delegate responsibilities and/or authority	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Computer	1:1
2. Projector	1:25
3. Authoring tools	1:1
4. Coding Flowchart	1:1
5. Computer Operating system	1:1

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CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT TESTING**						
COMPETENCY UNIT DESCRIPTOR	Multimedia product testing is a stage to test product content functionality, reliability, compatibility, usability and accessibility. This stage requires a high understanding of actual product specification. The personnel who are competent in multimedia product testing shall be Analyse multimedia product specification, Perform multimedia product tests and report multimedia product testing result						
COMPETENCY UNIT ID	**IT-020-4:2011-C03**	**LEVEL**	4	**TRAINING DURATION**	200 Hours	**CREDIT HOURS**	20

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse multimedia product specification	1.1 Types operating system specification such as • Windows • Linux • Macintosh 1.2 Types of Web Browser such as • Firefox • Safari • Opera • Chrome • Internet Explorer 1.3 Computer hardware such as • Micro- processor • Hard drive • Graphic card			14	Lecture	1.1 Multimedia product type interpreted 1.2 Product specification interpreted 1.3 Product test criteria identified 1.4 Hardware requirement determined 1.5 Web browser to test the product determined

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Random access memory 1.4 Multimedia product type such as • Application • Web base • CD/DVD base • Mobile					
		1.1 Interpret types of multimedia product 1.2 Interpret product specification 1.3 Determine hardware requirements 1.4 Determine web browser to test the product		26	Demonstration, Practical in computer lab & case study	
			Attitude: i. Meticulous in interpreting product specification ii. Precise in identifying product test criteria *Environment:* i. Adhere to ergonomic requirements			
2 Perform multimedia product test	2.1 Product test criteria, such as: • Functionality • Usability • Reliability • Compatibility • Cross platform			35	Lecture	2.1 Product test criteria determined 2.2 Product functionality test carried out 2.3 Content reliability

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	2.2 Cross browser platform Font criteria: • Format such as underline, bold and size • Types such as Arial, Times New Roman and etc. 2.3 Graphic resolution, such as: • 72 dpi • 300 dpi 2.4 Graphic format, such as: • Bitmap (bmp,gif, png, pict) • Vector (AI, cgm, dxf, cmx) 2.5 Audio file format such as • mp3 • wav • aiff 2.6 Bit rate • 16bit stereo • Mono 2.7 Video format such as • Avi • Flv • Quick time					test carried out 2.4 Product usability test carried out 2.5 Product compatibility test carried out 2.6 Product accessibility test carried out 2.7 Programming defect rectified 2.8 Font suitability verified 2.9 Multimedia elements reliability verified 2.10 Multimedia product compatibility according to bandwidth capability verified 2.11 Product testing result validated

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	2.8 Bandwidth such as • Internet speed • CD ROM /DVD speed 2.9 Multimedia structure such as • Storyboard (visual) • Flow chart (Coding) 2.10 End product hardware such as • PC • Kiosk • Mobile devices software such as Operating System (OS)					
		2.1 Determine product test criteria 2.2 Carry out product functionality test 2.3 Carry out content reliability test 2.4 Carry out product usability test 2.5 Carry out product compatibility test 2.6 Carry out product accessibility test 2.7 Rectify programming defect 2.8 Verify font suitability		100	Demonstration, Practical in computer lab & case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		2.9 Verify multimedia elements reliability 2.10 Verify multimedia product compatibility according to bandwidth capability 2.11 Validate product testing result				
			Attitude: i. Professional in determining storyboard flow and its requirement ii. Meticulous in product functionality efficiency *Environment:* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3 Report multimedia product testing result	3.1 Report format. 3.2 Writing skill 3.3 Issues related to product testing result • Reliability • Usability • Compatibility • Suitability • Accessibility 3.4 Presentation skills 3.5 Negotiation skill 3.6 Social etiquette 3.7 Personal grooming			10	Lecture	3.1 Report format determined 3.2 Issues to be highlighted determined 3.3 Multimedia product test report produced. 3.4 Multimedia product testing report presented to the management and team members 3.5 Feedbacks from the management and team members analysed 3.6 Solution presented to the management/team members
		3.1 Determine report format. 3.2 Determine issues to be highlighted 3.3 Produce multimedia product testing report. 3.4 Present multimedia product testing report to the management /team members 3.5 Analyse feedbacks from management/team members 3.6 Present solution to the management/ team members		15	Case study	
			Attitude: i. Transparent in reporting multimedia product testing result ii. Precise in highlighting			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			issues related to multimedia authoring and integration in the report iii. Adhere to the company confidentiality policy			

Employability Skills

Core Abilities	Social Skills
04.08 Prepare project/work plans 04.09 Utilize science and technology to achieve goals	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Speaker	1:1
2. Projector	1:25
3. Computer	1:1
4. Storyboard	1:1
5 Computer Operating system	1:1
6 Web browser s Firefox, Safari, Opera	1:1

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CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT QUALITY ASSURANCE**						
COMPETENCY UNIT DESCRIPTOR	Quality assurance is a guarantee of quality excellence during and after the production of multimedia product to ensure client's requirement met. Quality assurance is a guarantee of quality excellence during and after the production of products to ensure client's requirement met. Multimedia product quality assurance management competency unit involve unit quality test carried out by the programmer. The personnel who are competent in multimedia product quality assurance shall be able to Identify multimedia product quality requirements, Plan multimedia product quality assessment activities, Perform unit quality test (usability and functionality) and Produce quality acceptance report.						
COMPETENCY UNIT ID	**IT-020-4:2011-C02**	**LEVEL**	4	**TRAINING DURATION**	170 Hours	**CREDIT HOURS**	17

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify multimedia product quality requirements	1.1 Multimedia testing and quality control (QC), include: • Alfa Testing • Focus Group Testing • Beta Testing, known as Quality Assurance (QA) 1.2 Aspects of multimedia testing, include: • Functionality • Usability (GUI) • Compatibility • Accessibility • Security • Unit Testing • Integration Testing			10	Lecture	1.1 Multimedia product specification determined 1.2 Aspects of multimedia product testing determined 1.3 Multimedia product content quality determined

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• System Testing 1.3 Multimedia content quality aspect, include: • Font criteria and size • Graphic resolution • Audio • Bit rate • Video • Bandwidth 1.4 Current Industry regulation & guideline: • Film Censorship Act (Act 620) • Communication and Multimedia Act (Act 588) • Malaysian communications and multimedia content code 1.5 Copyright and Intellectual property guideline					
		1.1 Determine multimedia product specification 1.2 Determine aspect of multimedia product testing 1.3 Determine multimedia product contents quality		25	Demonstration, Practical (computer lab) & case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Meticulous in interpreting multimedia product specification ii. Adhere to the current industry standard and guideline			
			Environment: i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Plan multimedia product quality assessment activities	2.1 Multimedia Product Quality Assessment scope, include: • Content Review • Instructional Design • Animations, Layouts & Graphics • Conformance to Storyboard 2.2 Types of Quality Assurance process • Informal • Managed • Methodical • Supported 2.3 Quality Assurance tools, such as: • SoapUI • RFT (Rational Functional Tester) 2.4 Quality assessment checklist			10	Lecture	2.1 Quality assurance scope determined 2.2 Quality Assurance process flowchart produced 2.3 Quality test activities prioritised 2.4 Quality Assurance tools applied 2.5 Quality Assurance checklist prepared

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		2.1 Determine multimedia product quality assurance scope 2.2 Produce multimedia product quality assurance process flowchart 2.3 Prioritise multimedia product quality test activities 2.4 Identify multimedia product quality assurance tools to be used 2.5 Prepare multimedia product quality assurance checklist		20	Demonstration, Practical (computer lab) & case study	
			Attitude: i. Precise in determining quality assurance scope ii. Meticulous in prioritising quality test activities iii. Accurate in applying quality Assurance tools iv. Detail in preparing quality Assurance checklist			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform unit quality test (usability and functionality)	3.1 Product "use case" guideline 3.2 Responsibility of Quality Assurance personnel • Check product quality • Rectify quality problem • Suggest corrective action • Prepare QA report 3.3 Quality Assurance scope • Content Review • Instructional Design • Animations, Layouts & Graphics • Conformance to Storyboards 3.4 Editor Review • Text Body • Technical Review (Functionality) • Interface Icons, Buttons and Scroll Bar • Animations and Graphics • Voice-over and Sound Effects • Games 3.4 Virus scanning 3.5 Assurance of usability, compatibility and functionality in terms of: • Instructional design strategy (content and content presentation quality) • Quality of media (image, animation, movie, sound,			20	lecture	3.1 Multimedia product defects identified 3.2 Multimedia product defects rectified 3.3 Product functionality verified 3.4 Product compatibility verified 3.5 Product usability verified 3.6 Product content reliability verified 3.7 Unit quality test checklist recorded 3.8 Product "use case" guideline adhered

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		3.1 Carry out unit testing and application testing 3.2 Identify multimedia product defects 3.3 Rectify multimedia product defects 3.4 Verify product functionality 3.5 Verify product usability 3.6 Verify product compatibility 3.7 Verify product security 3.8 Verify product integration 3.9 System Testing 3.10 Verify product content reliability 3.11 Follow to product "use case" guideline 3.12 Validate product quality assurance		60	Demonstration, Practical (computer lab) & case study	
			Attitude: i. Meticulous in testing product unit quality ii. Meticulous in testing product unit content iii. Adhere to product "use case" guideline *Environment:* ii. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4. Produce quality acceptance report	4.1 Product quality acceptance report format 4.2 Writing skill 4.3 Issues related to product quality assurance, such as: • Functionality • Usability • Compatibility • Accessibility • Security • Unit Testing • Integration Testing • System Testing 4.4 Presentation skills 4.5 Negotiation skill 4.6 Social etiquette 4.7 Personal grooming			10	lecture	4.1 Report format determined. 4.2 Issues to be highlighted determined 4.3 Product quality acceptance report generated. 4.4 Product quality acceptance report. presented to the management/ team members
		4.1 Determine report format. 4.2 Determine issues to be highlighted 4.3 Generate product quality acceptance report. 4.4 Present product quality acceptance report. to the management/ team members		15	Case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Accuracy in writing product quality acceptance report ii. Precise in highlighting the issue in the report iii. Adhere to the company confidentiality policy			

Employability Skills

Core Abilities	Social Skills
04.09 Prepare project/work plans 04.10 Utilize science and technology to achieve goals	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Speaker	1:1
2. Projector	1:25
3. Computer	1:1
4. Sample of Storyboard	1:1
5 Computer Operating system	1:1
6 Web browser: Firefox, Safari, Opera	1:1
5. Sample of Quality acceptance report	1:1

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5. Tay Vaughan (2010) Multimedia Making It Work Eighth Edition,McGraw-Hill Osborne Media, 8th Edition, ISBN-13: 9780071748469 / 978-0-07-174846-9

CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT REFINEMENT**						
COMPETENCY UNIT DESCRIPTOR	Multimedia product refinement is an amendment stage after the reviewing of final product according to client's requirement. Multimedia product refinement is carried out after the analysis of quality assurance report and review report. The personnel who are competent in multimedia product refinement shall be able to Analyse multimedia product quality assurance report and Client review report, Perform multimedia product amendment according to Quality Assurance Report and Client Review Report, Optimise multimedia elements and Report multimedia product refinement.						
COMPETENCY UNIT ID	**IT-020-4:2011-C05**	**LEVEL**	4	**TRAINING DURATION**	180 Hours	**CREDIT HOURS**	18

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse multimedia product quality assurance report and Client review report	1.1 Multimedia product quality issues, such as: • functionality issues • usability issues • content reliability issues • compatibility issues • Accessibility for disabled user 1.2 Product quality benchmarking, such as: • Search capability • Navigation • Accessibility			10	Lecture	1.1 Product functionality Issues identified 1.2 Product usability issues identified 1.3 Product content issues identified 1.4 Client's change request interpreted 1.5 Product refinement checklist prepared

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	1.3 Adaptation of software features according to current multimedia technology such as • Software limitation • Hardware limitation 1.4 Multimedia product specification 1.5 Product Quality Assurance checklist 1.6 Product review report checklist					
		1.1 Identify product functionality Issues 1.2 Identify product usability issues 1.3 Identify product content issues 1.4 Interpret client's change request 1.5 Prepare product refinement checklist		25	Demonstration, Practical in computer lab & case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Thorough in analysing multimedia product issues ii. Accurate in interpreting product quality assurance report iii. Adhere to current industry standard and guideline *Environment:* i. Adhere to ergonomic requirements			
2. Perform multimedia product amendment according to Quality Assurance Report and Client Review Report	2.1 Multimedia Product Blueprint 2.2 Multimedia Programming guideline 2.3 Current Industry regulation & guideline: • Film Censorship Act (Act 620) • Communication and Multimedia Act (Act 588) • Malaysian communications and multimedia content code 2.4 Current copyright and Intellectual property guideline			15	Lecture	2.1 Multimedia Product Blueprint and Multimedia Programming Guideline interpreted 2.2 Multimedia product quality issues rectified 2.3 Programming script enhanced 2.4 Client's change request carried out

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		2.1 Interpret Multimedia Product Blueprint and Multimedia Programming Guide 2.2 Rectify product quality issues 2.3 Enhance programming script 2.4 Carry out client's change request		50	Demonstration, Observation & Practical in computer lab	
			Attitude: i. Meticulous in rectifying product quality issues ii. Detail in enhancing programming script iii. Prudent in carrying out client's change request iv. Adhere to current Industry regulation and guidelines v. Adhere to intellectual property guideline *Environment:* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Optimise multimedia elements	3.1 Concept of multimedia optimisation • Multimedia element evaluation • Usability • Functionality • Accessibility • Compatibility • Reliability • Contents 3.2 Multimedia content refinement, include: • Font criteria and size • Graphic resolution • Audio • Video • Bit rate • Bandwidth			15	Lecture & Demonstration,	3.1 Multimedia product usability enhanced 3.2 Multimedia product functionality enhanced 3.3 Multimedia product accessibility enhanced 3.4 Multimedia product compatibility enhanced 3.5 Multimedia product content enhanced 3.6 Multimedia product quality verified
		3.1 Enhance multimedia product usability 3.2 Enhance multimedia product functionality 3.3 Enhance multimedia product accessibility 3.4 Enhance multimedia product compatibility 3.5 Enhance multimedia product content reliability 3.6 Verify multimedia product quality		40	Demonstration, Observation & Practical in computer lab	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Meticulous in enhancing multimedia product optimisation ii. Creative in optimising multimedia product iii. Detail in verifying multimedia product quality *Environment:* i. Adhere to ergonomic requirements			
4. Report multimedia product refinement	4.1 Report format. 4.2 Issues related to product refinement • Client's change request • Multimedia product quality issues • Multimedia elements optimisation • Programming script enhancement 4.3 Presentation skills 4.4 Negotiation skill 4.5 Social etiquette 4.6 Personal grooming			10	Lecture	4.1 Report format determined. 4.2 Writing skill applied 4.3 Issues to be highlighted determined 4.4 Multimedia product refinement report prepared. 4.5 Multimedia product refinement report presented to the management / team members

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		4.1 Determine report format. 4.2 Apply writing skill 4.3 Determine issues to be highlighted related to product refinement 4.4 Prepare multimedia product refinement report. 4.5 Present multimedia product refinement report to the management / team members		15	Case study	
			Attitude: i. Accuracy in writing product refinement report ii. Precise in highlighting the issue in the report iii. Adhere to the company confidentiality policy			

Employability Skills

Core Abilities	Social Skills
04.08 Prepare project/work plans 04.09 Utilize science and technology to achieve goals	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Speaker	1:1
2. Projector	1:25
3. Computer	1:1
4. Storyboard	1:1
5. Computer Operating system	1:1
6. Web browser s Firefox, Safari, Opera	1:1
7. Sample of Product refinement report	1:1
8. Sample of Multimedia Product Review Report	1:1
9. Sample of Multimedia Quality Assurance Report	1:1

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2. Patton R, Indianapolis, IN: Sams Publishing (2001), Software Testing
3. Michael Christel, (2009) Automated Metadata in Multimedia Information Systems: Creation, Refinement, Use in Surrogates, and Evaluation (Synthesis Lectures on Information Concepts, Retrieval & Services) ISBN-13: 9781598297713 / 978-1-59829-771-3
4. Rajaraman, A. (2009) Computer Graphics with Multimedia, Narosa Publishing House Pvt. Ltd, ISBN-13: 9788173194771 / 978-81-7319-477-1
5. Tay Vaughan (2010) Multimedia Making It Work Eighth Edition,McGraw-Hill Osborne Media, 8th Edition, ISBN-13: 9780071748469 / 978-0-07-174846-9

CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT FINALISATION**						
COMPETENCY UNIT DESCRIPTOR	Multimedia product finalisation stage is the transition from final product to become end product, ready for seal and deliver to the client. The personnel who are competent in multimedia product finalisation shall be able to Analyse multimedia finished product criteria, Produce multimedia finished products, Present multimedia finished product to client and Produce multimedia product finalisation report						
COMPETENCY UNIT ID	**IT-020-4:2011-C06**	**LEVEL**	4	**TRAINING DURATION**	200 Hours	**CREDIT HOURS**	20

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse multimedia finished product criteria	1.1 Product components Subsections such as • User Interface (UI) • Application Programming Interface (API) • Audio • Video • Plug-in • Images 1.2 Technology Market trend 1.3 Finished Product specification 1.4 Multimedia Project Terms and conditions			15	Lecture	1.1 Multimedia product component subsection interpreted 1.2 Technology market trend interpreted 1.3 Multimedia finished product specification determined 1.4 Multimedia finished product reviewed according Multimedia Project

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		1.1 Interpret multimedia product components subsection 1.2 Interpret technology market trend 1.3 Determine multimedia finished product specification 1.4 Review multimedia finished product according to Multimedia Project Agreement Terms and Conditions		35	Demonstration, Observation & Practical	Agreement terms and conditions
			Attitude: i. Accurate in determining market technology trend ii. Precise in determining finished product specification iii. Detail in interpreting Multimedia Project Agreement Terms and Conditions *Environment:* i. Adhere to ergonomic requirements			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Produce multimedia finished products	2.1 Finished product platform, such as: • CD/DVD • Web-based • Mobile platform • Kiosk 2.2 Multimedia Product User manual • Instruction • Installation • FAQ • User guideline 2.3 Multimedia product packaging 2.4 Multimedia Finished product checklist			20	Lecture	2.1 Multimedia product stored into finished product platform 2.2 Multimedia product user manual developed 2.3 Multimedia product administrator manual developed 2.4 Multimedia product packaging carried out 2.5 Multimedia finished product validated
		2.1 Store multimedia product into finished product platform 2.2 Develop multimedia product user manual 2.3 Develop multimedia administrator manual 2.4 Carry out multimedia product packaging 2.5 Validate multimedia finished product		45	Practical in Computer lab Case study & presentation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Precise in developing Multimedia user manual ii. Creative in producing Multimedia product packaging iii. Detail in validating finished product			
3 Present multimedia finished product to client	3.1 Types of presentation tools • AVA (Audio Visual Aid) 3.2 Client acceptance process • Final stage • Sign-off document 3.3 Presentation skill 3.4 Effective Communication 3.5 Personal grooming 3.6 Social etiquette 3.7 Sales technique			20	Lecture	3.1 Type of presentation tool to be used determined 3.2 Multimedia finished product presentation conducted 3.3 Clients acceptance status recorded 3.4 Sign-off document acquired
		3.1 Determine type of presentation tool to be used 3.2 Conduct finished product presentation to client 3.3 Record clients acceptance status 3.4 Acquire sign-off document		45	Case study & presentation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Meticulous in determining type of presentation tool to be used ii. Detail in briefing finished product to client iii. Accurate in recording clients acceptance status			
4 Produce multimedia product finalisation report	4.1 Report format 4.2 Report writing technique 4.3 Issues related to product finalisation • User manual • Administrator Manual • Sign-off document			10	Lecture	4.1 Report format determined. 4.2 Report writing technique applied 4.3 Issues to be highlighted determined 4.4 Multimedia product finalisation report prepared. 4.5 Multimedia product finalisation report submitted to the management
		4.1 Determine report format. 4.2 Apply writing skill 4.3 Determine issues to be highlighted related to product finalisation 4.4 Prepare multimedia product refinement report. 4.5 Present multimedia product refinement report to the management		10	Case study	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Accuracy in writing product finalisation report ii. Precise in highlighting the issue in the report iii. Adhere to the company confidentiality policy			

Employability Skills

Core Abilities	Social Skills
04.08 Prepare project/work plans 04.09 Utilize science and technology to achieve goals	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Computer	1:1
2. Projector	1:25
3. Authoring tools	1:1
4. Computer Operating system	1:1
5. Sample of Project Terms and Conditions	1:1
6. Sample of product finalisation form	1:1
7. Web browser : Firefox, Safari, Opera, Chrome	1:1

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2. Michael Christel, (2009) Automated Metadata in Multimedia Information Systems: Creation, Refinement, Use in Surrogates, and Evaluation (Synthesis Lectures on Information Concepts, Retrieval & Services) ISBN-13: 9781598297713 / 978-1-59829-771-3
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CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**APPLICATION SYSTEM DEVELOPMENT**						
JOB AREA	**MULTIMEDIA PROGRAMMING**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA PRODUCT AFTER SALES SUPPORT SERVICES**						
COMPETENCY UNIT DESCRIPTOR	Multimedia product after sales support services demands active participation from programmers to serve client. The personnel should equip himself/herself with latest product version update so that he/she shall be able to Analyse client's after sales support services needs, Plan scope of multimedia product after sales support services, Perform multimedia product after sales support services and Report multimedia product after sales support service status						
COMPETENCY UNIT ID	**IT-020-4:2011-C07**	**Level**	4	**Training Duration**	160 Hours	**Credit Hours**	16

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse client's after sale support services needs	1.1 Types of after sales support services • On call service • Onsite service • Online support service • Online version updates 1.2 Multimedia product market trend 1.3 Multimedia technology update 1.4 Type of client's enquiries • Frequently Asked Questions (FAQs) related to multimedia product • Technical assistant 1.5 After sales support service agreement			15	Lecture	1.1 Clients' after sales support services need identified 1.2 Multimedia product market trend interpreted 1.3 Multimedia technology update identified 1.4 Multimedia product enquiries from clients interpreted 1.5 After sales support services agreement interpreted 1.6 Multimedia product enhancement proposed to client

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		1.1 Identify clients' after sales support services need 1.2 Interpret multimedia product market trend 1.3 Identify multimedia technology update 1.4 Interpret multimedia product enquiries from clients 1.5 Interpret product support service agreement 1.6 Propose new product enhancement to client.		25	Practical in computer lab, case study & presentation	
			Attitude: i. Precise in identifying clients' after sales support service need ii. Accurate in interpreting multimedia market trend iii. Meticulous in interpret after sales support services agreement *Environment:* i. Adhere to Ergonomic requirement			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Plan scope of multimedia product after sales support services	2.1 Product after sales support services terms and conditions 2.2 after sales support service resources such as • Manpower • Equipment • Budget 2.3 Multimedia product after sales support services guideline 2.4 Product after sales support services timeline			10	Lecture	2.1 After sales support service terms and conditions according to the project agreement determined 2.2 After sales support service resources determined 2.3 After sales support services guideline established 2.4 After sales support services timeline determined 2.5 After sales support services schedule prepared
		2.1 Determine after sales support services terms and conditions according to the project agreement 2.2 Determine after sales support services resources 2.3 Establish after sales support services guideline 2.4 Determine after sales support services timeline 2.5 Prepare after sales support services schedule		20	Practical in computer lab, case study & presentation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Precise in determining after sales support services' terms and conditions ii. Meticulous in establishing after sales support services guideline iii. Accurate in preparing after sales support services schedule *Environment:* i. Adhere to Ergonomic requirement			

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform multimedia product after sales support services	3.1 Reliability of product with current technology such as • OS (windows / Android/Linux • API • Patch • Plug-in • Browser 3.2 Multimedia product blueprint 3.3 Multimedia Programming Guideline 3.4 Company's resources, such as: • Manpower (staff) • Equipment) • Licensing • Budget 3.5 Client feedbacks form			20	Lecture	3.1 Company's resources allocated 3.2 After sales support services executed 3.3 Clients' feedbacks assessed 3.4 Clients' complaints handled 3.5 Multimedia Product Blueprint and Multimedia Programming Guideline followed
		3.1 Allocate company's resources 3.2 Execute after sales support services 3.3 Assess clients' feedbacks 3.4 Handle clients' complaints 3.5 Follow Multimedia Product Blueprint and Multimedia Programming Guideline		45	Demonstration, Observation & Practical in computer lab	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Efficient in executing multimedia after sales support services ii. Efficient in handling clients' complaints iii. Adhere Multimedia Product Blueprint and Multimedia Programming Guideline *Environment:* i. Adhere to Ergonomic requirement			
4. Report multimedia product after sales support services status	4.1 Report format. 4.2 Issues related to multimedia product support services • After sales support services terms and conditions • Contents enhancement • Resources • Client's feedbacks • Timeline 4.3 Report format. 4.4 Communication skills 4.5 Negotiation skills 4.6 Personal grooming 4.7 Social etiquette			10	Lecture	4.1 Report format determined. 4.2 After sales support services issues to be highlighted determined 4.3 After sales support services report prepared. 4.4 After sales support services status reported to the management

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		4.1 Determine report format. 4.2 Determine issues to be highlighted related to multimedia product support services 4.3 Prepare after sales support services report. 4.4 Present after sales support services status to the management		15	case study, simulation & presentation	
			Attitude: i. Accurate in reporting after sales support services report ii. Precise in highlighting issues in the report iii. Adhere to the company confidentiality policy			

Employability Skills

Core Abilities	Social Skills
04.08 Develop and negotiate staffing plans 04.09 Prepare project/work plans 04.10 Utilize science and technology to achieve goals	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Computer	1:1
2. Projector	1:25
3. Authoring tools	1:1
4. Computer Operating system	1:1
5. Web browser Firefox, Safari, Opera	1:1
6. Sample of support service agreement	1:1
7. Sample of Multimedia product support service status report	1:1

REFERENCES

1. Commonwealth Educational Media Centre for Asia (2007),Quality Assurance of Multimedia Learning Materials
2. Jon Duckett, WROX (2010) Beginning HTML, XHTML, CSS and Java Script , ISBN: 978-0-470-54070-1
3. Michael Christel, (2009) Automated Metadata in Multimedia Information Systems: Creation, Refinement, Use in Surrogates, and Evaluation (Synthesis Lectures on Information Concepts, Retrieval & Services) ISBN-13: 9781598297713 / 978-1-59829-771-3
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CURRICULUM of COMPETENCY UNIT (CoCU)

SECTOR	**INFORMATION AND COMMUNICATIONS TECHNOLOGY**						
SUB SECTOR	**DIGITAL CREATIVE**						
JOB AREA	**CREATIVE CONTENT DEVELOPMENT**						
NOSS TITLE	**MULTIMEDIA PROGRAMMING**						
COMPETENCY UNIT TITLE	**MULTIMEDIA INSTRUCTIONAL DESIGN**						
COMPETENCY UNIT DESCRIPTOR	This competency unit describes the skill, knowledge and attitude requirements in multimedia instructional design are to follow the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities and try out and evaluation of all instruction and learner activities. The person who is competent in multimedia production management shall be able to Analyse project requirements, Produce instructional design, Establish content development team, Monitor instructional design production progress, Assess instructional design production progress and Record instructional design production report						
COMPETENCY UNIT CODE	**IT-020-4:2011-E01**	**LEVEL**	4	**TRAINING DURATION**	200 Hours	**CREDIT HOURS**	20

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse project requirements	1.1 Project requirement detail. 1.2 Tools, equipment and material. 1.3 Pre-existing content. 1.4 Project requirement. 1.5 E-learning. 1.6 Learning Management System (LMS).			10	Lecture	1.1 Project requirement detail gathered. 1.2 Tools, equipment and material selected 1.3 Pre-existing content assessed. 1.4 Project requirement updated.

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
		1.1 Compile project requirement detail. 1.2 Identify delivery format. 1.3 Identify tools, equipment and material. 1.4 Evaluate pre-existing content. 1.5 Finalise project requirement.	*Attitude:* i. Committed towards good learning. ii. Adaptive to curricular and methodological innovations.	20	Demonstration & Observation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
2. Produce instructional design	2.1 Target end user. 2.2 Learning theory such as behaviourism, cognitivism and constructivism. 2.3 Constructivism: Discovery Learning (Bloom Taxonomy, games, experiment, role play). 2.4 Instructional design models (ADDIE, Gagne's Nine Step of Instruction, John Keller's ARCS Model).			20	Lecture	2.1 Targeted end- user notified. 2.2 Learning activities designed. 2.3 Learning activities created.
		2.1 Recognise target end user. 2.2 Design learning activities. 2.3 Construct learning activities.	*Attitude:* i. Analytical mind in designing and constructing learning activities.	50	Demonstration & Observation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
3. Establish content development team	3.1 Subject Matter Expert (SME). 3.2 Team members. 3.3 Task to team members.			6	Lecture	3.1 Subject Matter Expert (SME) is notified. 3.2 Team members are chosen. 3.3 Tasks are assigned to team members.
		3.1 Identify Subject Matter Expert (SME). 3.2 Select team members. 3.3 Assign task to team members.	*Attitude:* i. Responsible in identifying Subject Matter Expert (SME).	12	Demonstration & Observation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
4. Monitor instructional design production progress	4.1 Storyboard development. 4.2 Storyboard document.			10	Lecture	4.1 Storyboard development monitored. 4.2 Instructional design validated. 4.3 Storyboard document endorsed.
		4.1 Supervise storyboard development according to approve instructional design. 4.2 Verify storyboard document.	*Attitude:* i. Detailed in verifying storyboard document. ii. Give effective feedback to team members. iii. Cooperative in group task. *Environment:* i. Use recycle paper whenever possible.	20	Demonstration & Observation	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
5. Assess instructional design production progress	5.1 Storyboard for client approval. 5.2 Storyboard to production team.	5.1 Present storyboard for client's approval. 5.2 Assign storyboard to production team.	<u>*Attitude:*</u> i. Professional in storyboard presentation. ii. Communicate ideas clearly and concisely.	10 20	Lecture Demonstration & Observation	5.1 Storyboard for client's approval is demonstrated. 5.2 Storyboard to production team is assigned.
6. Record instructional design production report	6.1 Team member's performance. 6.2 Project report.	6.1 Record team member's performance. 6.2 Update project final report.		7 15	Lecture Demonstration & Observation	6.1 Team member's performance assessed. 6.2 Final project report generated.

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environment	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Non-biased in assessing team members' performance.			

Employability Skills

Core Abilities	Social Skills
04.08 Develop and negotiate staffing plans 04.09 Prepare project/work plans 04.10 Utilize science and technology to achieve goals 05.03 Allocate and record usage of financial and physical resources 05.04 Delegate responsibilities and/or authority 05.05 Coordinates contract and tender activities 06.08 Identify and analyze effect of technology on the environment	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM: Trainees)
1. Personal computer and operating system 2. Word processing software 3. Spread sheet software 4. Presentation software	1:1 1:1 1:1 1:1

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2. Instructional Design: The ADDIE Approach. Branch, Robert Maribe. (Oct 2009), ISBN: 9780387095059
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6. The Presentation Secrets of Steve Jobs: How to Be Insanely Great in Front of Any Audience. Gallo, Carmine. McGraw-Hill (September 2009). ISBN: 9780071636087

APPENDIX

CONTACT HOUR DISTRIBUTION
MULTIMEDIA PROGRAMMING - LEVEL 4

Core Competency Unit (CU)		%	Hrs	Work Activities		Knowledge (HRS)	Performance (HRS)	TOTAL
1	**MULTIMEDIA PRODUCT VISUALISATION**	12.50%	160	1	Analyse storyboard	10.00	25.00	35.00
				2	Perform logic flow structure	10.00	35.00	45.00
				3	Evaluate storyboard visualisation outcome	15.00	40.00	55.00
				5	Produce product visualisation outcome report	10.00	15.00	25.00
					Sub-total	45.00	115.00	160.00
2	**MULTIMEDIA PRODUCT AUTHORING AND INTEGRATION**	16.41%	210	1	Identify multimedia programming language and tools	10.00	15.00	25.00
				2	Plan multimedia elements authoring and integration activities	6.00	14.00	20.00
				3	Develop multimedia element integration and scripting	14.00	40.00	54.00
				4	Optimise multimedia elements	10.00	20.00	30.00
				5	Integrate multimedia application	8.00	16.00	24.00
				6	Debug multimedia application	8.00	24.00	32.00
				7	Produce multimedia authoring and integration report	10.00	15.00	25.00
					Sub-total	66.00	144.00	210.00
3	**MULTIMEDIA PRODUCT TESTING**	15.63%	200	1	Analyse multimedia product specification	14.00	26.00	40.00
				2	Perform multimedia product test	35.00	100.00	135.00
				3	Report multimedia product testing result	10.00	15.00	25.00
					Sub-total	59.00	141.00	200.00
4	**MULTIMEDIA PRODUCT QUALITY ASSURANCE**	13.28%	170	1	Identify multimedia product quality requirements	10.00	25.00	35.00
				2	Plan multimedia product quality assessment activities	10.00	20.00	30.00
				3	Perform unit quality test (usability and functionality)	20.00	60.00	80.00
				4	Produce quality acceptance report	10.00	15.00	25.00
					Sub-total	50.00	120.00	170.00
5	**MULTIMEDIA PRODUCT REFINEMENT**	14.06%	180	1	Analyse multimedia product quality assurance report and client review report	10.00	25.00	35.00
				2	Perform multimedia product amendment according to Quality Assurance Report and Client Review Report	15.00	50.00	65.00
				3	Optimise multimedia elements	15.00	40.00	55.00
				4	Report multimedia refinement activities	10.00	15.00	25.00
					Sub-total	50.00	130.00	180.00
6	**MULTIMEDIA PRODUCT FINALISATION**	15.63%	200	1	Analyse multimedia finished product criteria	15.00	35.00	50.00
				2	Produce multimedia finished product	20.00	45.00	65.00
				3	Present multimedia finished product to client	20.00	45.00	65.00
				4	Produce multimedia product finalisation report	10.00	10.00	20.00
					Sub-total	65.00	135.00	200.00

7	**MULTIMEDIA PRODUCT AFTER SALES SUPPORT SERVICES**	12.50%	160	1	Analyse client's after sales support services need	15.00	25.00	40.00
				2	Plan scope of multimedia product after sales support service	10.00	20.00	30.00
				3	Perform multimedia product after sales support services	20.00	45.00	65.00
				4	Report multimedia product after sales support services status	10.00	15.00	25.00
					Sub-total	55.00	105.00	160.00
			1280.00		**TOTAL**	**390.00**	**890.00**	**1,280.00**

Elective Conpetency unit		**%**	**Hrs**		**Work Activities**	**Knowledge (HRS)**	**Performance (HRS)**	**TOTAL**
8	**MULTIMEDIA INSTRUCTIONAL DESIGN**		200	1	Analyse project requirements	10.00	20.00	30.00
				2	Produce instructional design	20.00	50.00	70.00
				3	Establish content development team	6.00	12.00	18.00
				4	Monitor instructional design production progress	10.00	20.00	30.00
				5	Assess instructional design production progress	10.00	20.00	30.00
				6	Record instructional design production report	7.00	15.00	22.00
					Sub-total	63.00	137.00	200.00