NATIONAL CERTIFICATE (VOCATIONAL)

SUBJECT GUIDELINES

MULTIMEDIA BASICS

LEVEL 2

IMPLEMENTATION: JANUARY 2011
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INTRODUCTION

A. What is Multimedia Basics?

This subject teaches conceptual understanding of digital multimedia and basic skills and knowledge required for multimedia content development and application such as storytelling, sound production, sound editing, photographing and editing and computer based production of 2D and 3D graphics and animation.

B. Why is the subject important in the Multimedia programme?

1. Conceptual understanding of design and multimedia is the basis for students who are starting to learn multimedia as it provides knowledge such as characteristics and types of multimedia and application of multimedia. The design aspect of the subject will allow students to understand the basics of different designs in terms of the six elements of design and the relevance of these elements to the creative process. It also includes an understanding of the approach to typography and layout.

2. Storytelling provides students with the ability to build an overall story which underpins a digital content development environment. It includes the computer games environment, web content development, animation, TV drama and film.

3. Rendering and photography are key skills required for multimedia content development whilst drawing is an indispensable tool in any design process and is critical for self-expression, therefore, students cannot develop multimedia contents without these skills. These include:
   - basic hand-drawing skills and techniques including introduction to typography and design layout,
   - sound production/editing,
   - photographing/editing and surface design (mix media approach)
   - computer based production of 2D and 3D graphics and animation.

C. The link between the Learning Outcomes for Multimedia Basics Level 2 and Critical and Developmental Outcomes

Learning outcomes for Multimedia Basics Level 2 such as the skills to produce and edit sound, understand the basic elements needed to produce a graphic design image, animation, understanding the use of mixed media, including photography, in multimedia products and the ability to tell stories are highly relevant skills for students who want to start a career in the multimedia sector. The student should be employable in a support position in the private and public sectors and should be a valuable resource for civil society programmes and projects.

D. Factors that contribute to achieving the Multimedia Basics Level 2 learning outcomes

- Analytical and logical thinking ability
- Basics of drawing and design
- Application of a process from thought to a concept
- Application of appropriate typography in relation to a concept
- Keen observation skills
- Transferring of skills from familiar to unfamiliar situations
- Meticulous attention to detail
- Interest in computers and related fields
1. **DURATION AND TUITION TIME**

   This is a one year instructional programme comprising 200 teaching and learning hours with the following suggested time allocation:
   
   - 30 hours for the introduction to Graphic Design and Digital Multimedia
   - 20 hours for storytelling
   - 30 hours for sound production and editing
   - 60 hours for the skills of rendering and typographic and photography skills
   - 20 hours for desktop publishing
   - 40 hours for 2D and 3D graphics and animation.

   Students need additional time for experiential training to be fully competent.

2. **SUBJECT LEVEL FOCUS**

   **Exit Level Outcome:** Explain and apply conceptual basic skills and knowledge of digital multimedia and multimedia content development.
   
   The student should demonstrate the ability to apply basic concepts of drawing and design, to tell stories through utilising digital technology as media of expression, to produce and edit sound, to shoot a good photograph and edit a photo image via a digital camera or a computer and to produce and edit 2D and 3D graphics and animation.

3. **ASSESSMENT REQUIREMENTS**

   3.1 **Internal assessment (50 percent)**

   - **Theoretical Component**
     
     The theoretical component will form minimum 40 percent of internal assessment. Internal assessment of the theoretical component of Multimedia Basics will take the form of observation, class questions, group work, (informal group competitions with rewards), individual discussions with students, class tests, topic tests, semester tests and internal examinations. Daily observations should be made when marking exercises of the previous day and dealing with class questions. Assignments, case studies and tests can be done at the end of a topic. Tests and internal examinations must form part of internal assessment.

   - **Practical component**
     
     The practical component will form minimum 60 percent of internal assessment. Practical components include applications and exercises. All practical components must be indicated in a Portfolio of Evidence (PoE). Internal assessment of the practical component of Multimedia Basics will take the form of assignments, practical exercises, case studies and practical examination in a simulated business environment. Students may complete practical exercises on a daily basis. Assignments and case studies can be done at the end of a topic.

   Some examples of practical assessments include, but are not limited to:

   Presentations (lectures, demonstrations, group discussions and activities, practical work, observation, role play, self activity, judging and evaluation), use of aids, exhibitions, visits, guest speaker presentations, research and task performance in a simulated/structured environment.

   **Definition of the term “Structured Environment”**

   *Structured environment* for the purposes of assessment refers to an actual or simulated workplace, or workshop environment. It is advised that a practicum room is available on each campus for practical assessment.
Evidence for practical assessments

All evidence pertaining to evaluation of practical work must be reflected in the student’s PoE. The assessment instruments used for the purpose of conducting such assessments must be part of the evidence contained in the PoE.

3.1.3 Processing of the internal assessment mark for the year
A year mark out of 100 is calculated by adding the marks of the theoretical component and the practical component of the internal continuous assessment.

3.1.4 Moderation of internal assessment mark
Internal assessment is subjected to both internal and external moderation procedures as contained in the National Examinations Policy for FET College Programmes.

3.2 External assessment (50 percent)
A national examination is conducted annually in October/November by means of a paper set externally and marked and moderated internally. Details in respect of external assessment are contained in the Assessment Guidelines: Multimedia Basics (Level 2).

4. WEIGHTED VALUES OF TOPICS

<table>
<thead>
<tr>
<th>TOPICS</th>
<th>WEIGHTED VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Principles of Multimedia</td>
<td>15%</td>
</tr>
<tr>
<td>2. Concept and types of storytelling</td>
<td>10%</td>
</tr>
<tr>
<td>3. Rendering and typographic skills</td>
<td>10%</td>
</tr>
<tr>
<td>4. Sound production and editing</td>
<td>15%</td>
</tr>
<tr>
<td>5. Photographing techniques and editing</td>
<td>20%</td>
</tr>
<tr>
<td>6. Introduction to desktop publishing and layout</td>
<td>10%</td>
</tr>
<tr>
<td>7. Production and editing of 2D and 3D animation</td>
<td>20%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

5. CALCULATION OF FINAL MARK

<table>
<thead>
<tr>
<th>Internal Continuous assessment:</th>
<th>Student’s mark/100 x 50/1 = a mark out of 50 (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External assessment mark:</td>
<td>Student’s mark/100 x 50/1 = a mark out of 50 (b)</td>
</tr>
<tr>
<td>Final mark:</td>
<td>(a) + (b) = a mark out of 100</td>
</tr>
</tbody>
</table>

All marks are systematically processed and accurately recorded to be available as hard copy evidence for, amongst others, purposes of moderation and verification, as well as for purposes of reporting.

6. PASS REQUIREMENTS
The student must obtain at least fifty (50) percent in ICASS and fifty percent (50) in the examination.

7. SUBJECT AND LEARNING OUTCOMES
On completion of Multimedia Basics Level 2 the student should have covered the following topics:
TOPIC 1: PRINCIPLES OF MULTIMEDIA

Subject Outcome 1.1: Explain the concepts “Multimedia” and “design”

Learning Outcomes
The student should be able to:
• Define and explain the concept multimedia
• Explain the systems needed for multimedia tasks
• Explain where multimedia is applied
• Relate and explain the basic elements of design

Subject Outcome 1.2: Explain the concept “text”

Learning Outcomes
The student should be able to:
• Explain the expression methods of text
• Explain the different types of text files
• Explain recognition technology of text files
• Explain characteristics and types of e-books and electronic publications

Subject Outcome 1.3: Explain the concept “sound” as used in Multimedia

Learning Outcomes
The student should be able to:
• Explain the basic concept of sound
• Explain different types of sound
• Explain different types of sound files

Subject Outcome 1.4: Explain the use of imaging and graphics in Multimedia

Learning Outcomes
The student should be able to:
• Explain basic concepts of imaging and graphics
• Explain expression methods of images
• Explain saving methods of images
• Explain the basic components and characteristics of graphics
• Explain the colour model and lighting and shading of images

Subject Outcome 1.5: Explain the concept “animation”

Learning Outcomes
The student should be able to:
• Define and explain animation
• Explain the principles of two-dimensional (2D) animation
• Explain the principles of three-dimensional (3D) animation
Subject Outcome 1.6: Explain the concepts “video” and “a moving picture”

Learning Outcomes
The student should be able to:
• Explain the concepts video and a moving picture
• Explain the production process of a moving picture
• Explain the saving format of a moving picture

TOPIC 2: STORYTELLING CONCEPTS AND TYPES OF STORY TELLING

Subject Outcome 2.1: Explain the concept “digital storytelling”

Learning Outcomes
The student should be able to:
• Define and explain digital storytelling
• Explain various components of digital storytelling (range: graphics, text and virtual elements)

Subject Outcome 2.2: Explain different types of digital storytelling

Learning Outcomes
The student should be able to:
• Explain entertainment storytelling
• Explain information storytelling

Subject Outcome 2.3: Describe and perform the creation of appropriate entertainment stories

Learning Outcomes
The student should be able to:
• List different entertainment sectors
• Describe unique features and requirements of stories in different entertainment sectors.
• Describe the creation of stories fit for different entertainment sectors
• Create a film story
• Create an animation story
• Create a TV drama/show
• Create a game story

Subject Outcome 2.4: Create story building components

Learning Outcomes
The student should be able to:
• Select one entertainment sector to build a story
• Build a creative story concept
• Build a story synopsis
• Create characters
• Build a story pattern
• Submit a written entertainment story

TOPIC 3: RENDERING AND TYPOGRAPHIC SKILLS

Subject Outcome 3.1: Explain drawing techniques and manipulate images

Learning Outcomes:
The student should be able to:
• Recognise and develop basic design skills
• Explain and apply basic drawing techniques
• Use hand drawing as a means of expression to develop concepts
• Explain and manipulate visual artefacts as a form of language
Subject Outcome 3.2: Explain and apply typographic skills

Learning Outcomes:
The student should be able to:
• Explore and differentiate typographic tools
• Apply typography and layout in relation to a design
• Manipulate typography to suite layout and design needs

TOPIC 4: SOUND PRODUCTION AND SOUND EDITING

Subject Outcome 4.1: Create and record sound

Learning Outcomes
The student should be able to:
• Record sound using an analogue recorder (cassette tape recorder)
• Record sound using a digital recorder (voice recorder)
• Record external sound using a computer (recording software or microphone)
• Record internal sound using a computer (Internet music and sound)
• Create narration, sound effects and background music

Subject Outcome 4.2: Explain and apply saving of recorded audio in a digital file

Learning Outcomes
The student should be able to:
• Explain the principles of transforming analogue sound into digital sound
• Explain and apply the principles of compressing a sound file
• Transform analogue sound into digital sound using a computer
• Save digital sound in various sound files

Subject Outcome 4.3: Explain and perform noise removal from a sound file

Learning Outcomes
The student should be able to:
• Explain the causes of noise and types of noise in sound
• Perform noise reduction using noise removal
• Remove different types of noises (range: click noises, clipping and electrical noise)

Subject Outcome 4.4: Explain and create various sound effects

Learning Outcomes
The student should be able to:
• Explain the concept sound effect
• Create chorus and echo effects
• Create multi delay effects
• Create sound distortion
• Add silence and cut sound
• Create sound modulation (alteration) effects
• Create various sound effects by utilising sound software

Subject Outcome 4.5: Explain and process sound

Learning Outcomes
The student should be able to:
• Explain sound processing
• Remove blank sound
• Change the number of bits per sample
• Change a channel
• Correct sound colour
• Create fade in and fade out effects
• Change a range of sound into mute
• Correct volume balance
• Change the rate of sampling
• Perform various sound processing tasks (range: panning effect, reverse sound playing, control of tempo and control of volume)

TOPIC 5: PHOTOGRAPHING TECHNIQUES AND EDITING

Subject Outcome 5.1: Explain principles and mechanisms of photography

Learning Outcomes
The student should be able to:
• Explain differences between the human eye and a camera lens
• Explain the basic structure and mechanism of an analogue camera (range: exposure, film, lens, light, filter and composition of pictures)
• Explain basic concepts of a digital camera
• Explain the differences between analogue and digital cameras
• Explain picture saving methods in a digital camera

Subject Outcome 5.2: Explain and apply exposure, film and light

Learning Outcomes
The student should be able to:
• Explain the relationship between light, exposure and film
• Explain factors affecting exposure
• Measure appropriate exposure through various methods (range: incident light and reflective light)
• Compare blank and white film with color film
• Explain film sensitivity and characteristics of a photograph
• Explain characteristics and types of light sources
• Explain characteristics and types of light rays

Subject Outcome 5.3: Explain lenses and filters

Learning Outcomes
The student should be able to:
• Explain the structure and working principle of lenses
• Explain the characteristics and types of lenses
• Explain the principle on which a filter operates
• Explain the characteristics and types of filters

Subject Outcome 5.4: Explain and apply picture composition

Learning Outcomes
The student should be able to:
• Explain the purpose of picture composition
• Explain and demonstrate picture composition methods
• Explain the features of picture composition (range: camera positions and angles)
• Explain various methods of picture composition (range: emphasis of object, effect by light and expression by exposure)

Subject Outcome 5.5: Explain operation of an electronic flash
Learning Outcomes
The student should be able to:
• Explain the characteristics of an electronic flash
• Explain various types of electronic flashes
• Explain the effects of an electronic flash

Subject Outcome 5.6: Explain, perform and analyse portrait photographing
Learning Outcomes
The student should be able to:
• Explain framing methods to emphasise a portrait
• Explain characteristics and types of framing methods in portrait photographing
• Explain the effects of different angles and positions on portrait photographing
• Explain the effects of composition and space location on portrait photographing
• Perform portrait photographing based on theory
• Analyse photographed pictures

Subject Outcome 5.7: Explain, perform and analyse landscape photographing
Learning Outcomes
The student should be able to:
• Explain picture composition methods in landscape photographing
• Explain the characteristics and types of landscape compositions
• Explain the application of different landscape composition methods
• Perform landscape photographing based on theory
• Analyse photographed pictures

Subject Outcome 5.8: Explain and edit pictures using digital technology
Learning Outcomes
The student should be able to:
• Explain various effects applied to photo images
• Create an out-of-focus effect
• Create a distinction effect
• Apply colour effects to black and white photos
• Apply black and white effects to colour photos
• Apply obsolete film effects
• Apply a fog effect
• Apply a snow effect
• Correct face deformities
• Apply contrast control
• Merge two pictures
• Apply a window effect

TOPIC 6: INTRODUCTION TO DESKTOP PUBLISHING AND LAYOUT
Subject Outcome 6.1: Explain and apply editing and processing of images
Learning Outcomes
The student should be able to:
• Explain image expression methods
• Explain image saving methods
• Explain principles of image processing
• Explain an image histogram
• Apply image processes (range: equalisation, image filtering, image segmentation, restoration,
analysis and feature extraction)

• Explain tools used to manipulate images in the digital environment

Subject Outcome 6.2: Explain and create layouts

Learning Outcomes
The student should be able to:
• Explain the implications of typography in a layout
• Create basic digital graphic design concepts
• Experiment with and apply a range of basic layout approaches

TOPIC 7: TWO-DIMENSIONAL AND THREE-DIMENSIONAL ANIMATION

Subject Outcome 7.1: Explain graphic theory

Learning Outcomes
The student should be able to:
• Explain basic concepts of graphic theory
• Explain basic components and characteristics of graphic theory
• Explain the colour model
• Explain illumination and shading
• Explain the production process of 3D graphics

Subject Outcome 7.2: Explain and perform surface mapping

Learning Outcomes
The student should be able to:
• Experiment with mixed media
• Use drawing skills to communicate ideas
• Explain various types of surface materials
• Explain the characteristics and types of surface mapping
• Perform mapping on 2D surfaces
• Perform mapping on 3D surfaces

Subject Outcome 7.3: Explain the overall illumination model

Learning Outcomes
The student should be able to:
• Explain the effects of the overall illumination model
• Explain methods and characteristics of ray tracing
• Explain methods and characteristics of ray casting
• Explain methods and characteristics of radiosity

Subject Outcome 7.4: Explain and apply rendering

Learning Outcomes
The student should be able to:
• Explain the concept rendering
• Perform scan-line rendering
• Perform volume rendering

Subject Outcome 7.5: Explain the fundamentals of animation

Learning Outcomes
The student should be able to:
• Define and explain the concept animation
• Explain traditional 2D animation
• Explain computer based animation
• Explain special effects in animation

Subject Outcome 7.6: Apply basic interface
Learning Outcomes
The student should be able to:
• Use basic interface tools \(\text{(range: menu bar, main toolbar, status bar controls, animation and time controls, view port controls and command panels)}\)
• Use various interface functions \(\text{(range: view port navigation, create objects, transforming objects, modifying objects, materials and animation)}\)
• Modify content accord to software \(\text{(3D Max/ Maya/ Softimage/ Lightwave)}\)

Subject Outcome 7.7: Explain and create character modeling
Learning Outcomes
The student should be able to:
• Explain the basics of character modeling
• Create a simple character model
• Create various characters
• Correct character objects

Subject Outcome 8: Use special effects
Learning Outcomes
The student should be able to:
• Use various special effects \(\text{(range: morphing, scratch, rotoscoping, matt painting and fogging, onion skinning, cut-out and cycling)}\)

Subject Outcome 9: Explain 3D animation
Learning Outcomes
The student should be able to:
• Explain key-frame animation
• Explain motion capturing
• Explain various 3D animations \(\text{(range: face expression, walking, jumping, overlapping)}\)

Subject Outcome 10: Describe and create web animation
Learning Outcomes
The student should be able to:
• Describe web animation
• Create animation Graphic Interchange Format (GIF)
• Create web animation using Flash
8. RESOURCE NEEDS FOR THE TEACHING OF MULTIMEDIA BASICS – LEVEL 2

8.1 Physical resources
The following teaching aids should be made available:
- Lecture room
- Computer laboratory
- 1 student per networked computer
- 1 server
- 1 laser-networked printer per server
- External HDD / mini HDD / tape driver / flash disks / DVD / CD / teacher’s backup server
- MS Office
- Sound Editor (Cake walk/ Sound Forge/ CoolEdit/ GoldWave/ Wavelab, etc.)
- Digital Camera
- Image Editor (Photoshop/ Paint Shop Pro)
- Graphic tool (Corel Draw/ Illustrator/ 3D Studio Max, etc.)
- 3D graphic animation authoring tool (Maya/ Softimage/ 3D Max/ Lightwave, etc.)

8.2 Human resources
- The lecturer must have a technical support related qualification, specialising in hardware and software on at least Level 5.

8.3 Other resources
- File per leaner for PoE
- Technicians toolkit