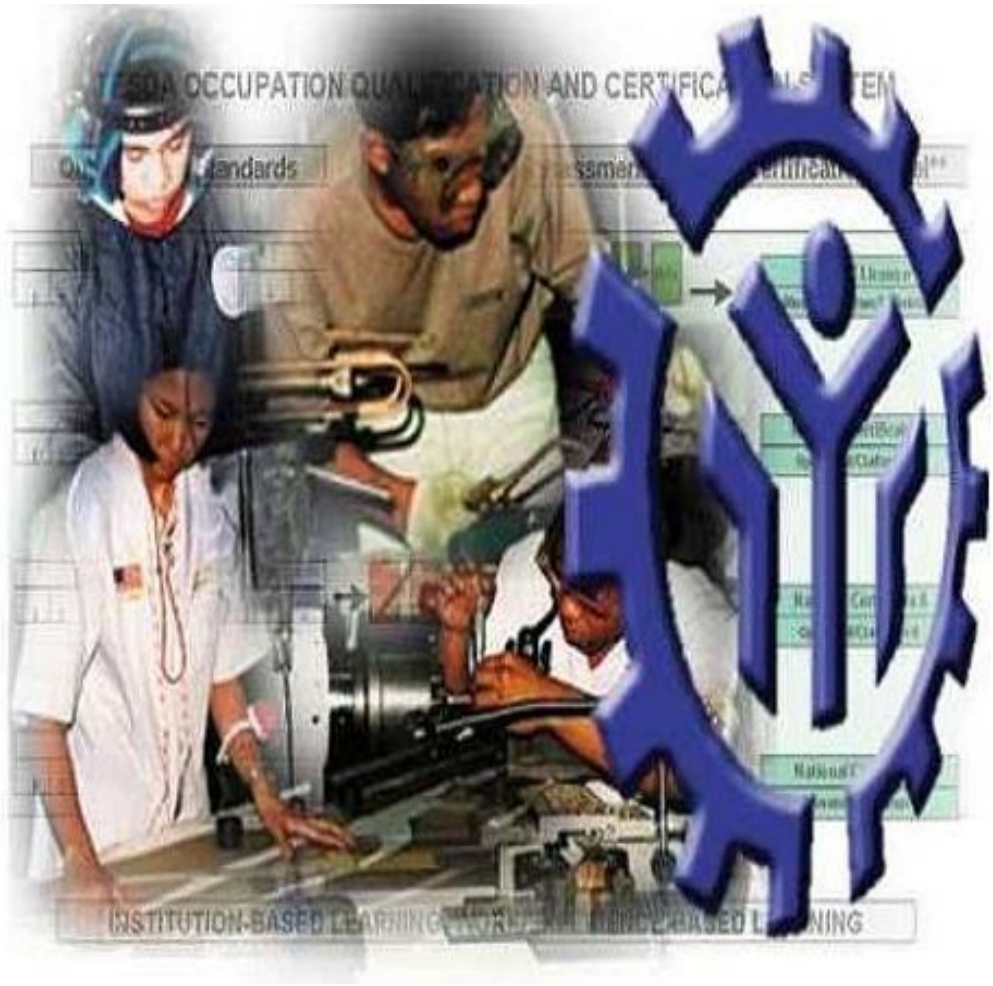
TRAINING REGULATIONS



3D GAME ART DEVELOPMENT NC III

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

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ICT SECTOR

3D GAME ART DEVELOPMENT

NATIONAL CERTIFICATE LEVEL III

TRAINING REGULATIONS FOR
3D GAME ART DEVELOPMENT NC III

Section 1 3D GAME ART DEVELOPMENT NC III QUALIFICATIONS

The **3D GAME ART DEVELOPMENT NC III** Qualification consists of competencies that are required for digital 3D art for video games.

The units of competency comprising this qualification include the following:

UNIT CODE	BASIC COMPETENCIES
5 00 311 1 09	Lead workplace communication
5 00 311 1 10	Lead small teams
5 00 311 1 11	Develop and practice negotiation skills
5 00 311 1 12	Solve problems related to work activities
5 00 311 1 13	Use mathematical concepts and techniques
5 00 311 1 14	Use relevant technologies

COMMON COMPETENCIES

ICT315203	Apply critical thinking and thought organization
ICT315202	Apply quality standards
ICT311203	Perform computer operations

Code	CORE COMPETENCIES
ICT313344	Develop and conceptualize art style
ICT313346	Create storyboard and asset list
ICT313346	Prepare art document
ICT313349	Develop 3D model using 3D graphic application
ICT313350	Develop 3D textures using graphic application
ICT313351	Apply rigged in-game animation

A person who has achieved this Qualification is competent to be:

- 3D game artist
- Game concept / visual artist
- Game animator
- Modeler
- Rigger
- Texture artist

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in **3D GAME ART NC III.**

BASIC COMPETENCIES

UNIT OF COMPETENCY : **LEAD WORKPLACE COMMUNICATION**

UNIT CODE : 500311109

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to lead in the dissemination and discussion of ideas, information and issues in the workplace.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Communicate information about workplace processes	1.1. Appropriate ***communication method*** is selected 1.2. Multiple operations involving several topics areas are communicated accordingly 1.3. Questions are used to gain extra information 1.4. Correct sources of information are identified 1.5. Information is selected and organized correctly 1.6. Verbal and written reporting is undertaken when required 1.7. Communication skills are maintained in all situations
2. Lead workplace discussions	2.1. Response to workplace issues are sought 2.2. Response to workplace issues are provided immediately 2.3. Constructive contributions are made to workplace discussions on such issues as production, quality and safety 2.4. Goals/objectives and action plan undertaken in the workplace are communicated
3. Identify and communicate issues arising in the workplace	3.1. Issues and problems are identified as they arise 3.2. Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3. Dialogue is initiated with appropriate personnel 3.4. Communication problems and issues are raised as they arise

RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods of communication	1.1. Non-verbal gestures 1.2. Verbal 1.3. Face to face 1.4. Two-way radio 1.5. Speaking to groups 1.6. Using telephone 1.7. Written 1.8. Internet

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Dealt with a range of communication/information at one time 1.2. Made constructive contributions in workplace issues 1.3. Sought workplace issues effectively 1.4. Responded to workplace issues promptly 1.5. Presented information clearly and effectively written form 1.6. Used appropriate sources of information 1.7. Asked appropriate questions 1.8. Provided accurate information
2. Required Knowledge and Attitude	2.1. Organization requirements for written and electronic communication methods 2.2. Effective verbal communication methods
3. Required Skills	3.1. Organize information 3.2. Understand and convey intended meaning 3.3. Participate in variety of workplace discussions 3.4. Comply with organization requirements for the use of written and electronic communication methods
4. Resource Implications	The following resources **MUST** be provided: 4.1. Variety of Information 4.2. Communication tools 4.3. Simulated workplace
5. Methods of Assessment	Competency may be assessed through: 5.1. Competency in this unit must be assessed through 5.2. Direct Observation 5.3. Interview
6. Context for Assessment	6.1. Competency may be assessed in the workplace or in simulated workplace environment

UNIT OF COMPETENCY : **LEAD SMALL TEAMS**

UNIT CODE : **500311110**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes to lead small teams including setting and maintaining team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Provide team leadership	1.1. ***Work requirements*** are identified and presented to team members 1.2. Reasons for instructions and requirements are communicated to team members 1.3. ***Team members' queries and concerns*** are recognized, discussed and dealt with
2. Assign responsibilities	2.1. Duties, and responsibilities are allocated having regard to the skills, knowledge and aptitude required to properly undertake the assigned task and according to company policy 2.2. Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible
3. Set performance expectations for team members	3.1. Performance expectations are established based on client needs and according to assignment requirements 3.2. Performance expectations are based on individual team members duties and area of responsibility 3.3. Performance expectations are discussed and disseminated to individual team members
4. Supervise team performance	4.1. ***Monitoring of performance*** takes place against defined performance criteria and/or assignment instructions and corrective action taken if required 4.2. Team members are provided with ***feedback***, positive support and advice on strategies to overcome any deficiencies 4.3. ***Performance issues*** which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy 4.4. Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction 4.5. Team operations are monitored to ensure that employer/client needs and requirements are met 4.6. Follow-up communication is provided on all issues affecting the team 4.7. All relevant documentation is completed in accordance with company procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	1.1. Client Profile 1.2. Assignment instructions
2. Team member's concerns	2.1. Roster/shift details
3. Monitor performance	3.1. Formal process 3.2. Informal process
4. Feedback	4.1. Formal process 4.2. Informal process
5. Performance issues	5.1. Work output 5.2. Work quality 5.3. Team participation 5.4. Compliance with workplace protocols 5.5. Safety 5.6. Customer service

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1. Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2. Assessed and monitored team and individual performance against set criteria 1.3. Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4. Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 1.5. Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2. Required Knowledge and Attitude	2.1. Company policies and procedures 2.2. Relevant legal requirements 2.3. How performance expectations are set 2.4. Methods of Monitoring Performance 2.5. Client expectations 2.6. Team member's duties and responsibilities
3. Required Skills	3.1. Communication skills required for leading teams 3.2. Informal performance counseling skills 3.3. Team building skills 3.4. Negotiating skills
4. Resource Implications	The following resources **MUST** be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or task
5. Methods of Assessment	Competency may be assessed through: 5.1. Direct observations of work activities of the individual member in relation to the work activities of the group 5.2. Observation of simulation and/or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context of Assessment	6.1. Competency assessment may occur in workplace or any appropriately simulated environment 6.2. Assessment shall be observed while task are being undertaken whether individually or in-group

UNIT OF COMPETENCY: **DEVELOP AND PRACTICE NEGOTIATION SKILLS**

UNIT CODE : **500311111**

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes required to collect information in order to negotiate to a desired outcome and participate in the negotiation.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Plan negotiations	1.1 Information on ***preparing for negotiation*** is identified and included in the plan 1.2 Information on creating ***non verbal environments*** for positive negotiating is identified and included in the plan 1.3 Information on ***active listening*** is identified and included in the plan 1.4 Information on different ***questioning techniques*** is identified and included in the plan 1.5 Information is checked to ensure it is correct and up-to- date
2. Participate in negotiations	2.1 Criteria for successful outcome are agreed upon by all parties 2.2 Desired outcome of all parties are considered 2.3 Appropriate language is used throughout the negotiation 2.4 A variety of questioning techniques are used 2.5 The issues and processes are documented and agreed upon by all parties 2.6 Possible solutions are discussed and their viability assessed 2.7 Areas for agreement are confirmed and recorded 2.8 Follow-up action is agreed upon by all parties

RANGE OF VARIABLES

VARIABLE	RANGE
1. Preparing for negotiation	1.1 Background information on other parties to the negotiation 1.2 Good understanding of topic to be negotiated 1.3 Clear understanding of desired outcome/s 1.4 Personal attributes 1.4.1 self awareness 1.4.2 self esteem 1.4.3 objectivity 1.4.4 empathy 1.4.5 respect for others 1.5 Interpersonal skills 1.5.1 listening/reflecting 1.5.2 non verbal communication 1.5.3 assertiveness 1.5.4 behavior labeling 1.5.5 testing understanding 1.5.6 seeking information 1.5.7 self disclosing 1.6 Analytic skills 1.6.1 observing differences between content and process 1.6.2 identifying bargaining information 1.6.3 applying strategies to manage process 1.6.4 applying steps in negotiating process 1.6.5 strategies to manage conflict 1.6.6 steps in negotiating process 1.6.7 options within organization and externally for resolving conflict
2. Non-verbal environments	2.1 Friendly reception 2.2 Warm and welcoming room 2.3 Refreshments offered 2.4 Lead in conversation before negotiation begins
3. Active listening	3.1 Attentive 3.2 Don't interrupt 3.3 Good posture 3.4 Maintain eye contact 3.5 Reflective listening
4. Questioning techniques	4.1 Direct 4.2 Indirect 4.3 Open-ended

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Demonstrated sufficient knowledge of the factors influencing negotiation to achieve agreed outcome 1.2 Participated in negotiation with at least one person to achieve an agreed outcome
2. Required Knowledge and Attitude	2.1 Codes of practice and guidelines for the organization 2.2 Organizations policy and procedures for negotiations 2.3 Decision making and conflict resolution strategies procedures 2.4 Problem solving strategies on how to deal with unexpected questions and attitudes during negotiation 2.5 Flexibility 2.6 Empathy
3. Required Skills	3.1 Interpersonal skills to develop rapport with other parties 3.2 Communication skills (verbal and listening) 3.3 Observation skills 3.1 Negotiation skills
4. Resource Implications	The following resources **MUST** be provided: 4.1 Room with facilities necessary for the negotiation process 4.2 Human resources (negotiators)
5. Methods of Assessment	Competency may be assessed through: 5.1 Observation/demonstration and questioning 5.2 Portfolio assessment 5.3 Oral and written questioning 5.4 Third party report
6. Context for Assessment	6.1 Competency to be assessed in real work environment or in a simulated workplace setting.

UNIT OF COMPETENCY : SOLVE PROBLEMS RELATED TO WORK ACTIVITIES

UNIT CODE : 500311112

UNIT DESCRIPTOR : This unit of covers the knowledge, skills and attitudes required to solve problems in the workplace including the application of problem solving techniques and to determine and resolve the root cause of problems.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify the problem	1.1. Variances are identified from normal operating parameters; and product quality 1.2. Extent, cause and nature are of the problem are defined through observation, investigation and ***analytical techniques*** 1.3. ***Problems*** are clearly stated and specified
2. Determine fundamental causes of the problem	2.1. Possible causes are identified based on experience and the use of problem solving tools / analytical techniques. 2.2. Possible cause statements are developed based on findings 2.3. Fundamental causes are identified per results of investigation conducted
3. Determine corrective action	3.1. All possible options are considered for resolution of the problem 3.2. Strengths and weaknesses of possible options are considered 3.3. Corrective actions are determined to resolve the problem and possible future causes 3.4. **Action *plans*** are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures
4. Provide recommendation/s to manager	4.1. Report on recommendations are prepared 4.2. Recommendations are presented to appropriate personnel. 4.3. Recommendations are followed-up, if required

RANGE OF VARIABLES

VARIABLE	RANGE
1. Analytical techniques	1.1. Brainstorming 1.2. Intuitions/Logic 1.3. Cause and effect diagrams 1.4. Pareto analysis 1.5. SWOT analysis 1.6. Gant chart, Pert CPM and graphs 1.7. Scattergrams
2. Problem	2.1. Non - routine process and quality problems 2.2. Equipment selection, availability and failure 2.3. Teamwork and work allocation problem 2.4. Safety and emergency situations and incidents
3. Action plans	3.1. Priority requirements 3.2. Measurable objectives 3.3. Resource requirements 3.4. Timelines 3.5. Co-ordination and feedback requirements 3.6. Safety requirements 3.7. Risk assessment 3.8. Environmental requirements

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1. Identified the problem 1.2. Determined the fundamental causes of the problem 1.3. Determined the correct / preventive action 1.4. Provided recommendation to manager These aspects may be best assessed using a range of scenarios / case studies / what ifs as a stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.
2. Required Knowledge and Attitude	2.1. Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations 2.2. Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 2.2.1. Relevant equipment and operational processes 2.2.2. Enterprise goals, targets and measures 2.2.3. Enterprise quality, OHS and environmental requirement 2.2.4. Principles of decision making strategies and techniques 2.2.5. Enterprise information systems and data collation 2.2.6. Industry codes and standards
3. Required Skills	3.1. Using range of formal problem solving techniques 3.2. Identifying and clarifying the nature of the problem 3.3. Devising the best solution 3.4. Evaluating the solution 3.5. Implementation of a developed plan to rectify the problem

4. Resource Implications	4.1. Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios / case studies / what ifs will be required as well as bank of questions which will be used to probe the reason behind the observable action.
5. Methods of Assessment	Competency may be assessed through: 5.1. Case studies on solving problems in the workplace 5.2. Observation The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components.
6. Context of Assessment	6.1. In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.

UNIT OF COMPETENCY: **USE MATHEMATICAL CONCEPTS AND TECHNIQUES**

UNIT CODE : **500311113**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required in the application of mathematical concepts and techniques.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify mathematical tools and techniques to solve problem	1.1 Problem areas are identified based on given condition 1.2 ***Mathematical techniques*** are selected based on the given problem
2. Apply mathematical procedure/solution	2.1 Mathematical techniques are applied based on the problem identified 2.2 Mathematical computations are performed to the level of accuracy required for the problem 2.3 Results of mathematical computation is determined and verified based on job requirements
3. Analyze results	3.1 Result of application is reviewed based on expected and required specifications and outcome 3.2 ***Appropriate action*** is applied in case of error

RANGE OF VARIABLES

VARIABLE	RANGE
1. Mathematical techniques	May include but are not limited to: 1.1 Four fundamental operations 1.2 Measurements 1.3 Use/Conversion of units of measurements 1.4 Use of standard formulas
2. Appropriate action	2.1 Review in the use of mathematical techniques (e.g. recalculation, re-modeling) 2.2 Report error to immediate superior for proper action

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified, applied and reviewed the use of mathematical concepts and techniques to workplace problems
2. Required Knowledge and Attitude	2.1 Fundamental operation (addition, subtraction, division, multiplication) 2.2 Measurement system 2.3 Precision and accuracy 2.4 Basic measuring tools/devices
3. Required Skills	3.1 Applying mathematical computations 3.2 Using calculator 3.3 Using different measuring tools
4. Resource Implications	The following resources **MUST** be provided: 4.1 Calculator 4.2 Basic measuring tools 4.3 Case Problems
5. Methods of Assessment	Competency may be assessed through: 5.1 Authenticated portfolio 5.2 Written Test 5.3 Interview/Oral Questioning 5.4 Demonstration
6. Context of Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY: **USE RELEVANT TECHNOLOGIES**

UNIT CODE : **500311114**

UNIT DESCRIPTOR : This unit of competency covers the knowledge, skills, and attitude required in selecting, sourcing and applying appropriate and affordable technologies in the workplace.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Study/select appropriate technology	1.1 Usage of different ***technologies*** is determined based on job requirements 1.2 Appropriate technology is selected as per work specification
2. Apply relevant technology	2.1 Relevant technology is effectively used in carrying out function 2.2 Applicable software and hardware are used as per task requirement 2.3 ***Management concepts*** are observed and practiced as per established industry practices
3. Maintain/enhance relevant technology	3.1 Maintenance of technology is applied in accordance with the ***industry standard operating procedure***, ***manufacturer's operating guidelines*** and ***occupational health and safety procedure*** to ensure its operative ability 3.2 Updating of technology is maintained through continuing education or training in accordance with job requirement 3.3 Technology failure/ defect is immediately reported to the concern/responsible person or section for ***appropriate action***

RANGE OF VARIABLES

VARIABLE	RANGE
1. Technology	May include but are not limited to: 1.1 Office technology 1.2 Industrial technology 1.3 System technology 1.4 Information technology 1.5 Training technology
2. Management concepts	May include but are not limited: 2.1 Real Time Management 2.2 KAIZEN or continuous improvement 2.3 5s 2.4 Total Quality Management 2.5 Other management/productivity tools
3. Industry standard operating procedure	3.1 Written guidelines relative to the usage of office technology/equipment 3.2 Verbal advise/instruction from the co-worker
4. Manufacturer's operating guidelines/ instructions	4.1 Written instruction/manuals of specific technology/ equipment 4.2 General instruction manual 4.3 Verbal advise from manufacturer relative to the operation of equipment
5. Occupational health and safety procedure	5.1 Relevant statutes on OHS 5.2 Company guidelines in using technology/equipment
6. Appropriate action	6.1 Implementing preventive maintenance schedule 6.2 Coordinating with manufacturer's technician

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Studied and selected appropriate technology consistent with work requirements 1.2 Applied relevant technology 1.3 Maintained and enhanced operative ability of relevant technology
2. Required Knowledge and Attitude	2.1 Awareness on technology and its function 2.2 Repair and maintenance procedure 2.3 Operating instructions 2.4 Applicable software 2.5 Communication techniques 2.6 Health and safety procedure 2.7 Company policy in relation to relevant technology 2.8 Different management concepts 2.9 Technology adaptability
3. Required Skills	3.1 Relevant technology application/implementation 3.2 Basic communication skills 3.3 Software applications skills 3.4 Basic troubleshooting skills
4. Resource Implications	The following resources **MUST** be provided: 4.1 Relevant technology 4.2 Interview and demonstration questionnaires 4.3 Assessment packages
5. Methods of Assessment	Competency must be assessed through: 5.1 Interview 5.2 Actual demonstration 5.3 Authenticated portfolio (related certificates of training/seminar)
6. Context of Assessment	6.1 Competency may be assessed in actual workplace or simulated environment

COMMON COMPETENCIES

UNIT TITLE : **APPLY CRITICAL THINKING AND THOUGHT ORGANIZATION**

UNIT CODE : **ICT315203**

UNIT DESCRIPTOR : This unit covers the knowledge, skills, attitudes and values needed to develop the ability to extract and use relevant data. This unit will enhance the ability to critically assess the data or information gathered in order to make sound arguments, informed decisions and problem solving.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify the theoretical foundations of **critical thinking**	1.1. Assess and choose one of the ***study methods*** to effective data gathering, decision-making and problem solving. 1.2. Identify the ***components of critical thinking***. 1.3. Identify the impediments of critical thinking to avoid them in data gathering and decision making situations. 1.4. Identify the ***types of claims***.
2. Develop constructive arguments	2.1. Establish the premise and possible conclusion based on the information provided from a job or industry scenario. 2.2. Use ***methods of careful analysis*** to make constructive arguments based on a job or industry scenario.
3. Apply methods of reasoning	3.1. Analogies are used to support reasoning. 3.2. Identify the cause and effects based on the criteria or information provided to support reasoning. 3.3. Identify and avoid the ***common mistakes in reasoning about causes***. 3.4. Make evaluations based on the criteria or information provided.
4. Affirm generalization	4.1. Use past experiences to come up with a good generalization. 4.2. Use ***appropriate samples*** to support generalization. 4.3. Validate the generalization with margin of errors, variation in population and risk.
5. Arrive at a conclusion	5.1. Make rational arguments using the ***elements of reasoning.*** 5.2. Clarify conceptual ideas using organized gathered data and evidences 5.3. ***Alternatives*** are worked out to place argument in the context of study. 5.4. Challenge or validate the position of the conclusion and make counter responses to emphasize a viewpoint.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Study methods	May include but are not limited to: 1.1 Creating schedules 1.2 Prioritizing tasks 1.3 Researching on resources
2. Components of critical thinking	May include but are not limited to: 2.1 Motivation 2.2 Set of information 2.3 Belief generating 2.4 Processing skills 2.5 Intellectual commitment 2.6 Using skills to guide behavior 2.7 Possession of a set of skills 2.8 Skillful manipulation of ideas 2.9 Exercise without acceptance of skill results
3. Types of claims	3.1 Objective 3.2 Subjective 3.3 Moral claims
4. methods of careful analysis	May include but are not limited to: 4.1 Clarity 4.2 Fill in connecting premises 4.3 Thought organization
5. Common mistakes in reasoning about causes	May include but are not limited to: 5.1 Logical fallacies 5.2 Over-analysis 5.3 Biased Thinking 5.4 Unawareness/Decisions made based on incomplete information 5.5 Bandwagon Mentality 5.6 Reversing cause and effect
6. Appropriate samples	May pertain but are not limited to: 6.1 Representative of the population being studied 6.2 Sample size 6.3 Depth of the study conducted using the sample

7. Elements of reasoning	May pertain but are not limited to: 7.1 Purpose 7.2 Question at issue 7.3 Assumptions 7.4 Implications 7.5 Consequences 7.6 Information 7.7 Concept 7.8 Conclusions interpretations 7.9 Point of view 7.10 Alternatives 7.11 Context
8. Alternatives	May include but are not limited to: 8.1 Role playing 8.2 Viewing of media clips 8.3 Questioning 8.4 Mind mapping 8.5 Simulation 8.6 Demonstration

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment must show that the candidate: 1.1 Extract and processed relevant data 1.2 Recognize fact from fiction 1.3 Reason with constructive arguments 1.4 Reason using analogies, and cause and effect as part of the argument 1.5 Evaluate scenarios and explanations 1.6 Recognize and evaluated assumptions 1.7 Identify the theoretical foundations of **critical thinking**
2. Required Knowledge and Attitude	2.1 Thought organization 2.2 Logic 2.3 Basic statistics 2.4 Reasoning
3. Required skills	3.1 Writing skills 3.2 Thought organization 3.3 Negotiation skills
4. Method of assessment	Competency may be assessed through: 4.1 Direct Observation and Oral Questioning 4.2 Proficiency in doing written analysis 4.3 Practical demonstration 4.4 Indirect observation through coaching
5. Resource implication	The following resources **MUST** be provided: 5.1 Case studies 5.2 Paper and pen
6. Context of Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT TITLE : **APPLY QUALITY STANDARDS**

UNIT CODE : **ICT315202**

UNIT DESCRIPTOR : This unit covers the knowledge, skills, attitudes and values needed to apply quality standards in the workplace. The unit also includes the application of relevant safety procedures and regulations, organization procedures and customer requirements.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Assess quality of received materials	1.1. Work instruction is obtained and work is carried out in accordance with standard operating procedures. 1.2. Received ***materials*** are checked against workplace standards and specifications. 1.3. Faulty materials related to work are identified and isolated. 1.4. ***Faults*** and any identified causes are recorded and/or reported to the supervisor concerned in accordance with workplace procedures. 1.5. Faulty materials are replaced in accordance with workplace procedures.
2. Assess own work	2.1. ***Documentation*** relative to quality within the company is identified and used. 2.2. Completed work is checked against workplace standards relevant to the task undertaken. 2.3. ***Errors*** are identified and isolated. 2.4. Information on the quality and other indicators of production performance are recorded in accordance with workplace procedures. 2.5. In cases of deviations from specific ***quality standards***, causes are documented and reported in accordance with the workplace' s standards operating procedures
3. Engage in quality improvement	3.1. Process improvement procedures are participated in relative to workplace assignment. 3.2. Work is carried out in accordance with process improvement procedures. 3.3. Performance of operation or quality of product of service to ensure ***customer*** satisfaction is monitored.

RANGE OF VARIABLES

VARIABLE	RANGE
1 Materials	1.1 Materials May include but are not limited: 1.1.1. Manuals 1.1.2. Job orders 1.1.3. Instructional videos
2 Faults	2.1 Faults May include but are not limited: 2.1.1. Materials not to specification 2.1.2. Materials contain incorrect/outdated information 2.1.3. Hardware defects 2.1.4. Materials that do not conform with any regulatory agencies
3 Documentation	3.1 Organization work procedures 3.2 Manufacturer's instruction manual 3.3 Customer requirements 3.4 Forms
4 Errors	4.1 Errors may be related but not limited to the following: 4.1.1. Deviation from the requirements of the Client 4.1.2. Deviation from the requirement of the organization
5 Quality standards	5.1 Quality standards may be related but not limited to the following: 5.1.1. Materials 5.1.2. Hardware 5.1.3. Final product 5.1.4. Production processes 5.1.5. Customer service
6 Customer	6.1 Co-worker 6.2 Supplier/Vendor 6.3 Client 6.4 Organization receiving the product or service

EVIDENCE GUIDE

1 Critical Aspects of Competency	Assessment must show that the candidate: 1.1 Carried out work in accordance with the company's standard operating procedures 1.2 Performed task according to specifications 1.3 Reported defects detected in accordance with standard operating procedures 1.4 Carried out work in accordance with the process improvement procedures
2 Required Knowledge and Attitude	2.1 Relevant production processes, materials and products 2.2 Characteristics of materials, software and hardware used in production processes 2.3 Quality checking procedures 2.4 Workplace procedures 2.5 Safety and environmental aspects of production processes 2.6 Fault identification and reporting 2.7 Quality improvement processes
3 Required Skills	3.1 Reading skills required to interpret work instruction 3.2 Communication skills needed to interpret and apply defined work procedures 3.3 Carry out work in accordance with OHS policies and procedures 3.4 Critical thinking 3.5 Solution providing and decision-making
4 Method of Assessment	The assessor must select two of the following to objectively evaluate the candidate: 4.1 Observation and oral questioning 4.2 Third party report 4.3 Portfolio 4.4 Practical demonstration
5 Resource Implication	5.1 Materials, software and hardware to be used in a real or simulated situation
6 Context of Assessment	6.1 Assessment may be conducted in the workplace or in a simulated environment

UNIT TITLE : **PERFORM COMPUTER OPERATIONS**

UNIT CODE : **ICT311203**

UNIT DESCRIPTOR : This unit covers the knowledge, skills, attitudes and values needed to perform computer operations which include inputting, accessing, producing and transferring data using the appropriate hardware and software.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Plan and prepare for task to be taken undertaken	1.1. Requirements of task are determined in accordance with the required output. 1.2. Appropriate ***hardware*** and ***software*** are selected according to task assigned and required outcome. 1.3. Task is planned to ensure that ***OH & S guidelines*** *and* procedures are followed. 1.4. Client -specific guidelines and procedures are followed. 1.5. Required data security guidelines are applied in accordance with existing procedures.
2. Input data into computer	2.1. Data are entered into the computer using appropriate program/application in accordance with company procedures. 2.2. Accuracy of information is checked and information is saved in accordance with standard operating procedures. 2.3. Inputted data is stored in ***storage media*** according to requirements. 2.4. Work is performed within ***ergonomic guidelines.***
3. Access information using computer	3.1. Correct program/application is selected based on job requirements. 3.2. Program/application containing the information required is accessed according to company procedures. 3.3. ***Desktop icons*** are correctly selected, opened and closed for navigation purposes. 3.4. Keyboard techniques are carried out in line with OH & S requirements for safe use of keyboards.

4. Produce output/ data using computer system	4.1. Entered data are processed using appropriate software commands. 4.2. Data are printed out as required using computer hardware /peripheral devices in accordance with standard operating procedures. 4.3. Files and data are transferred between compatible systems using computer software, hardware/peripheral devices in accordance with standard operating procedures.
5. Use basic functions of a www-browser to locate information	5.1. Information requirements for internet search are established. 5.2. Browser is launched. 5.3. Search engine is loaded. 5.4. Appropriate search criteria/or URL of site is entered. 5.5. Relevant links are followed to locate required information. 5.6. Useful pages are bookmarked or printed as required.
6. Maintain computer equipment and systems	6.1. Procedures for ensuring security of data, including regular back-ups and virus checks are implemented in accordance with standard operating procedures. 6.2. Basic file maintenance procedures are implemented in line with the standards operating procedures.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Hardware and peripheral devices	1.1 Personal computers 1.2 Networked systems 1.3 Communication equipment 1.4 Printers 1.5 Scanners 1.6 Keyboard 1.7 Mouse 1.8 Voice/Data logger
2. Software	Software includes the following but not limited to: 2.1 Word processing packages 2.2 Database packages 2.3 Internet 2.4 Spreadsheets 2.5 Client Specific Software
3. OH & S guidelines	3.1 OHS guidelines 3.2 Enterprise procedures
4. Storage media	Storage media include the following but not limited to: 4.1 CDs / DVDs 4.2 Memory sticks / USB drives 4.3 hard disk drives, local and remote 4.4 Optical drives
5. Ergonomic guidelines	5.1 Types of equipment used 5.2 Appropriate furniture 5.3 Seating posture 5.4 Lifting posture 5.5 Visual display unit screen brightness

6. Desktop icons	6.1 Icons include the following but not limited to: 6.2 Directories/folders 6.3 Files 6.4 Network devices 6.5 Recycle bin 6.6 Program icons
7. Maintenance	7.1 Creating and managing more space in the hard disk and other peripherals 7.2 Reviewing programs 7.3 Deleting unwanted files 7.4 Backing up files 7.5 Checking hard drive for errors 7.6 Using up to date anti-virus programs 7.7 Cleaning dust from internal and external surfaces

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment must show that the candidate: 1.1 Selected and used hardware components correctly and according to the task requirement 1.2 used basic software applications to create new files and documents 1.3 Produced accurate and complete data in accordance with the requirements 1.4 Used appropriate devices and procedures to transfer files/data accurately 1.5 Used basic functions of a www-browser to locate information.
2. Required Knowledge and Attitude	2.1 Basic ergonomics of keyboard and computer user 2.2 Main types of computers and basic features of different operating systems 2.3 Main parts of a computer 2.4 Storage devices and basic categories of memory 2.5 Relevant types of software 2.6 General security, privacy legislation and copyright 2.7 Viruses 2.8 OH & S principles and responsibilities 2.9 Calculating computer capacity 2.10 Productivity Application 2.11 Business Application 2.12 System Software
3. Required skills	3.1 Reading and comprehension skills required to interpret work instruction and to interpret basic user manuals. 3.2 Communication skills to identify lines of communication, request advice, follow instructions and receive feedback. 3.3 Technology skills to use equipment safely including keyboard skills.
4. Method of assessment	The assessor may select two of the following assessment methods to objectively assess the candidate: 4.1 Direct Observation and Oral Questioning 4.2 Practical demonstration
5. Resource implication	5.1 Computer hardware with peripherals 5.2 Appropriate software
6. Context of Assessment	6.1 Competency may be assessed in workplace or simulated environment.

CORE COMPETENCIES

UNIT OF COMPETENCY : **DEVELOP AND CONCEPTUALIZE ART STYLE**

UNIT CODE : **ICT313344**

UNIT DESCRIPTOR : This unit defines the knowledge, skills and attitude required to prepare and develop initial art based on game design document.

ELEMENT	PERFORMANCE CRITERIA ***Bold and Italicized*** *terms are elaborated in the Range of Variables*
1. Develop look-and-feel	1.1 Concept Studies are drawn and compiled based on GDD 1.2 ***References*** are gathered in line with the game key concept 1.3 ***Style guide*** is defined and explained in line with key concept and target platform
2. Draw and compile characters	2.1 ***Game characters*** are identified based on GDD 2.2 Characters are drawn based on the style guide and asset list 2.3 ***Character attributes*** are explained following enterprise procedures
3. Draw the game world	3.1 Specific environments or level background are identified based on GDD 3.2 Environments or level backgrounds are drawn based on Style Guide 3.3 In-game worlds/backgrounds are explained following enterprise procedures
4. Draw and compile other assets	4.1 Resource asset list is prepared in line with GDD 4.2 ***Resources*** are drawn based on style guide and asset list 4.3 Assets behavior and functions are described following enterprise procedures
5. Develop graphical user interface	5.1 ***Graphical User Interface (GUI) elements*** are identified based on GDD 5.2 GUI is drawn based on Style Guide

RANGE OF VARIABLES

VARIABLE	RANGE
1. References	May include but not limited: 1.1. Sample themes 1.2. Previous designs 1.3. Textures and patters
2. Style guide	Style may include: 2.1. Game art style 2.2. Game engine specification 2.3. Game metrics
3. Game characters	May include but not limited: 3.1. Main character 3.2. Supporting characters 3.3. Non-playable characters
4. Character attributes	May include but not limited: 4.1. Personality 4.2. Background information 4.3. Physical attributes
5. Resources	May include but not limited: 5.1. Equipment 5.2. Items/Objects
6. Graphical User Interface (GUI) elements	May include but not limited: 6.1 User Interface (UI) icons/controls 6.2 UI backgrounds

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Developed look-&-feel 1.2 Drawn and compiled characters 1.3 Drawn the game world 1.4 Drawn and compiled other assets 1.5 Developed game interface
2. Required Knowledge and Attitude	2.1 Time management 2.2 Understanding the subject matter 2.3 Understanding the expectation 2.4 Organizing your thoughts 2.5 Studying together 2.6 Perspective 2.7 Composition/Layout 2.8 IP knowledge 2.9 Basic Anatomy 2.10 Art Style/Genre
3. Required Skills	3.1 Drawing skills & techniques 3.2 Creating a project timetable 3.3 Understanding key terminology 3.4 Draft a mind map 3.5 Research skills 3.6 Organization skills 3.7 Discussion skills 3.8 Communication skills 3.9 Creative skills 3.10 Adherence to instructions 3.11 Preparing Style Guide documentation 3.12 Interpreting Style Guide specifications and user requirements

4. Resource Implications	The following resources must be provided 4.1 PC with drawing application with peripherals 4.2 Mouse 4.3 Pencil 4.4 Paper 4.5 Pen
5. Methods of Assessment	Competency may be assessed through 5.1 Demonstration / Practical exam 5.2 Presentation with questioning 5.3 Portfolio of work samples 5.4 Group interview 5.5 Individual interview
6. Context of Assessment	6.2 Competency may be assessed in workplace or simulated environment.

UNIT OF COMPETENCY : **CREATE STORYBOARD AND ASSET LIST**

UNIT CODE : **ICT313345**

UNIT DESCRIPTOR : This unit defines the knowledge, skills and attitudes required to create storyboard and asset list based on the identified key references and storyline.

ELEMENT	PERFORMANCE CRITERIA ***Bold and Italicized*** *terms are elaborated in the Range of Variables*
1. Develop storyboard panels	1.1 Storyline is identified based on GDD 1.2 ***Key references*** are identified based on GDD 1.3 Create Thumbnails/Roughs based on Storyline. 1.4 Create Asset list based on GDD
2. Create narrative devices	1.1 ***Narrative elements*** are prepared based on GDD 1.2 ***Storyline*** elements are documented based on storyboard and given script 1.3 Items are improve d and added to the previously created asset list based on GDD
3. Create cut scenes	1.1 Cut scenes are identified based on storyboard and script 1.2 Individual storyboards are drawn using proxies for each cut scene based on the style guide 1.3 Asset list is finalize based on GDD

RANGE OF VARIABLES

VARIABLE	RANGE
1. Key references	May include but are not limited: 1.1 Scenes 1.2 Duration 1.3 Characters 1.4 Backgrounds 1.5 Props 1.6 Special Effects 1.7 Angles
2. Narrative elements	May include but are not limited: 1.1 Story outline 1.2 Scenario matrix 1.3 Dialogues
3. Storyline	May include but are not limited: 1.1 Scenes 1.2 Characters 1.3 Backgrounds 1.4 Props 1.5 Special Effects 1.6 Angles/Shots 1.7 Triggers/Flag

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Developed storyboard panels 1.2 Created narrative devices 1.3 Created cut-scenes
1. Required Knowledge and Attitude	2.1 Creating narrative devices 2.2 IP knowledge 2.3 Perspective 2.11 Composition/Layout 2.12 Dynamic Anatomy
2. Required Skills	3.1 Drawing Skills 3.2 Research Skills 3.3 Organization Skills 3.4 Communication Skills 3.5 Creative Skills 3.6 Story Telling Skills 3.7 Combine previous skills and knowledge 3.13 Adherence to instructions
4. Resource Implications	The following resources must be provided 4.1 Mock theme, model sheets, and script 4.2 Pen and paper
5. Methods of Assessment	Competency may be assessed through 4.3 Demonstration / Practical exam 4.4 Presentation with questioning 4.5 Portfolio of work samples 4.6 Group interview 4.7 Individual interview
6. Context of Assessment	6.1 Competency may be assessed in workplace or simulated environment

UNIT OF COMPETENCY : **PREPARE ART DOCUMENT**

UNIT CODE : **ICT313346**

UNIT DESCRIPTOR : This unit defines the knowledge, skills and attitudes required to develop concept art for character, props/objects and background layout constructs. It also involves concepts for special effects.

ELEMENT	PERFORMANCE CRITERIA ***Bold and Italicized*** *terms are elaborated in the Range of Variables*
1. Prepare concept for characters	1.1. Character model sheets are made with ***constructs*** in line with GDD 1.2. Functionality and detail of character construct are noted in line with enterprise procedures. 1.3. Object priority is assigned based on character model sheets
2. Prepare concept art for props/objects	2.1. Prop/Object model sheets are made with constructs in line with GDD 2.2. Functionality and detail of object constructs are noted in line with enterprise procedures 2.3. Object priority is assigned based on prop/object model sheets
3. Prepare concept art for background layout	3.1. Background model sheets are made with constructs in line with GDD 3.2. Functionality and detail of object constructs are noted in line with enterprise procedures.
4. Prepare concepts for special effects	4.1. Type of effect is established in line with storyboard and script 4.2. Special effects studies are created based on the established type of effect 4.3. Reference frames are drawn based on approved special effects studies 4.4. Mock color is added to the effects based on given special effects studies 4.5. ***Object priority*** is assigned based on given special effects studies
5. Prepare concept arts for GUI	5.1 Prop/Object model sheets are made with constructs in line with GDD 5.2 Functionality and detail of object constructs are noted in line with enterprise procedures 5.3 Object priority is assigned based on prop/object model sheets

RANGE OF VARIABLES

VARIABLE	RANGE
1. Constructs	May include but are not limited: **Characters:** 1.1 Expressions 1.2 Turnaround 1.3 Poses 1.4 Character physical attributes 1.5 Clothing and accessories 1.6 Mock colors **Props/objects** 1.7 Turnaround 1.8 Perspective 1.9 Functionality 1.10 Size comparison 1.11 Mock color 1.12 References **Background layout** 1.13 Form 1.14 Perspective 1.15 Scale of objects within the background 1.16 Layout of the map and functionality of the elements in the map such as doors, traps, stairs, trees, etc 1.17 Setting (morning, dusk, etc.) - add to *definition of terms* 1.18 Mock color and texture of each element in the background and the background itself 1.19 Visual appeal
2. Object Priority	May include but are not limited: 2.1 Assign responsibility 2.2 Assign relationship 2.3 Assign limitations 2.4 Assign layer

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared concept art for characters 1.2 Prepared concept art for props/objects 1.3 Prepared concept art for background layout 1.4 Prepared concepts for special effects 1.5 Prepared concepts for GUI
2. Required Knowledge and Attitude	2.1 Knowledge of Constructs 2.2 Characters 2.3 Objects 2.4 Backgrounds & Layouts 2.5 Special Effects 2.6 Researching using library and printed literature 2.7 Coping with stress 2.8 Problem solving 2.9 Project management 2.10 Observation 2.11 Estimation (for scaling/perspective/volume) 2.12 Color coordination 2.13 Basic animation 2.14 Composition and Layout
3. Required Skills	3.1 Drawing Skills 3.2 Conceptualize 3.3 Conduct a simple research 3.4 Setting realistic goals 3.5 Draft a mind map 3.6 Active listening 3.7 Decision making exercise 3.8 Discussion 3.9 Implement execution plan 3.10 Research Skills 3.11 Organization Skills 3.12 Basic problem solving Skills 3.14 Adherence to instructions
4. Resource Implications	The following resources must be provided 4.1 PC with drawing application with peripherals 4.2 Mouse 4.3 Pencil 4.4 Paper 4.5 Pen

5. Methods of Assessment	Competency may be assessed through 5.1 Demonstration / Practical exam 5.2 Presentation with questioning 5.3 Portfolio of work samples 5.4 Group interview 5.5 Individual interview
6. Context of Assessment	6.1 Competency may be assessed in workplace or simulated environment

UNIT OF COMPETENCY : **DEVELOP 3D MODEL USING 3D GRAPHIC APPLICATION**

UNIT CODE : **ICT313349**

UNIT DESCRIPTOR : This unit defines the knowledge, skills and attitudes required to develop a 3D model and details based on approved modifications using 3D graphic application.

ELEMENT	PERFORMANCE CRITERIA ***Bold and Italicized*** *terms are elaborated in the Range of Variables*
1.Preparing 3D document	1.1 Unit of measurements and orientations are set in accordance with the ***style guide***. 1.2 Image Plane is prepared based on approved ***visual references***. 1.3 Art work on each 3D Plane is in accordance with the style guide.
2. Prepare base mesh	2.1 Models are made with ***constructs*** in line with style guide 2.2 ***Object priority*** is assigned in accordance with the style guide.
3. Develop mesh	3.1 ***Topology*** is checked in accordance with the style guide. 3.2 Model is cleaned up based on style guide. 3.3 Implement UV Unwrap in accordance with the style guide.
4. Finalize mesh	4.1 Touch-up is made on model in accordance with the style guide. 4.2 UV is checked for stretching in accordance with the style guide. 4.3 Re-UV Unwrap in accordance with the style guide. 4.4 Proper formats are exported in accordance with the style guide.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Style guide	May include but not limited: 1.1 Game art style 1.2 Game engine specifications 1.3 Game metrics
2. Visual References	May include but not limited: 2.1 Model Sheets 2.2 Style Guide 2.3 Concept art
3. Constructs	May include but not limited: 3.1 Characters: • Expressions • Turnaround • Poses • Character physical attributes • Clothing and accessories • Mock colors • Scale/proportion 3.2 Props/objects • Turnaround • Perspective • Functionality • Size comparison • Mock color • References 3.3 Background layout • Form • Perspective • Scale of objects within the background • Layout of the map and functionality of the elements in the map such as doors, traps, stairs, trees, etc • Setting (morning, dusk, etc.) –add to definition of terms • Mock color and texture of each element in the background and the background itself • Visual appeal
4. Object priority	May include but are not limited: 4.1 Assign responsibility 4.2 Assign relationship 4.3 Assign limitations 4.4 Assign layer
5. Topology	May include but are not limited: 5.1 Polygon count 5.2 Edge loops 5.3 Direction of normals 5.4 N-gons

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepare 3D workspace 1.2 Prepared base mesh 1.3 Develop mesh 1.4 Finalized mesh
2. Required Knowledge and Attitude	2.1 IP Knowledge 2.2 Coping with stress 2.3 Problem solving 2.4 Object Library knowledge 2.5 Coping with stress 2.6 Problem solving 2.7 Project management 2.8 Organizing your thoughts 2.9 Knowledge of File Types & Formats 2.10 Project management 2.11 Use of Appropriate 3D Software/Tools 2.12 Perspective 2.13 Interpretation Skills
3. Required Skills	3.1 Spatial visualization ability 3.2 Implement execution plan 3.3 Setting realistic goals 3.4 Draft a mind map 3.5 Decision making exercise 3.6 Coloring 3.7 Applying Various Graphical Composition (Vector/Raster) 3.8 Research Skills 3.9 Organization Skills 3.10 3D Graphic Software manipulation 3.11 Adherence to instructions 3.12 Eye for Detail 3.13 Modeling Skills 3.14 Drawing skills 3.15 UV manipulation skills 3.16 Software manipulation
4. Resource Implications	The following resources must be provided 4.1 Computer with 3D software with peripherals 4.2 Electronic pen and tablet 4.3 Mouse
5. Methods of Assessment	Competency may be assessed through 5.1 Portfolio 5.2 Demonstration 5.3 Interview
6. Context of Assessment	6.1 Competency may be assessed in workplace or simulated environment

UNIT OF COMPETENCY : DEVELOP 3D TEXTURES USING GRAPHICS APPLICATION

UNIT CODE : ICT313350

UNIT DESCRIPTOR : This unit defines the knowledge, skills and attitudes required to develop a 3D texture utilizing an exported UV map based on approved modifications using graphics application.

ELEMENT	PERFORMANCE CRITERIA ***Bold and Italicized*** *terms are elaborated in the Range of Variables*
1. Prepare UV-Map	1.1 Project specifications are checked in accordance with the ***style guide***. 1.2 Export UV-wrap from ***3D software*** then import into the ***Graphic Software*** in accordance to the style guide. 1.3 Proper layers are organized and named in accordance with the style guide.
3. Apply color to UV-Map	2.1 Base colors are applied in layers based on the style guide. 2.2 Shades and effects are applied in layers based on the style guide.
4. Prepare final palette / color map sheet	2.1 All colors used in the colored art work are indexed, tagged in RGB code in accordance with the style guide. 2.2 Color map is prepared based on index and tags in accordance with the style guide. 2.3 Color map sheet is supplemented with the final artwork in accordance with the style guide.
4. Export UV-Map	4.1 UV-Texture is checked in accordance with the style guide. 4.2 UV-Texture is exported in accordance with the style guide.
5. Import UV-Texture	5.1 Texture is applied to the model in accordance with the style guide 5.2 Check the texture quality in accordance with the style guide

RANGE OF VARIABLES

VARIABLE	RANGE
1. Style Guide	May include but not limited: 1.1 Game art style 1.2 Game engine specifications 1.3 Game metrics
2. Graphic Software	May include but not limited: 2.1 Adobe Photoshop 2.2 Gimp (GNU Image Manipulation Program) 2.3 Corel 2.4 PaintTool Sai (SYSTEMAX Inc.)
3. 3D Software	May include but not limited: 3.1 3D Studio Max (Autodesk) 3.2 Maya (Autodesk) 3.3 Blender (Blender Foundation) 3.4 Lightwave (NewTek)

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Prepared UV-Map 1.2 Apply color to UV-Map 1.3 Prepared final palette / color map sheet 1.4 Exported UV-Map 1.5 Imported UV-Texture
2. Required Knowledge and Attitude	2.1 IP knowledge 2.2 Use of Appropriate 3D Software/Tools 2.3 Graphic Software knowledge 2.4 Palette/Color Map knowledge 2.5 Object Library knowledge 2.6 Coping with stress 2.7 Problem solving 2.8 Project management 2.9 Organizing your thoughts 2.10 Color perception 2.11 Color Intuition 2.12 Lighting knowledge 2.13 Graphic Composition knowledge (Vector/Raster) 2.14 Concept of layered graphics 2.15 Knowledge of File Types & Formats 2.16 Interpretation Skills
3. Required Skills	3.1 Spatial visualization ability 3.2 Drawing Skills 3.3 Implement execution plan 3.4 Setting realistic goals 3.5 Draft a mind map 3.6 Decision making exercise 3.7 Coloring 3.8 Applying Various Graphical Composition (Vector/Raster) 3.9 Research Skills 3.10 Organization Skills 3.11 Software manipulation 3.12 Graphic Software manipulation 3.13 Adherence to instructions 3.14 Eye for Detail
4. Resource Implications	The following resources must be provided 4.1 Computer with 3D software with peripherals 4.2 Electronic pen and tablet 4.3 Mouse
5. Methods of Assessment	Competency may be assessed through 5.1 Portfolio 5.2 Demonstration 5.3 Interview
6. Context of Assessment	6.1 Competency may be assessed in workplace or simulated environment

UNIT OF COMPETENCY : APPLY RIGGED IN-GAME ANIMATION

UNIT CODE : ICT313351

UNIT DESCRIPTOR : This unit defines the knowledge, skills and attitudes required to create or develop a rig to be used in developing key-frame animation using 3D graphic software.

ELEMENT	PERFORMANCE CRITERIA ***Bold and Italicized*** *terms are elaborated in the Range of Variables*
1. Import textured model asset	1.1. Textured model is imported in accordance with the ***style guide.*** 1.2. All ***assets*** & ***textures*** are checked in accordance with the style guide. 1.3. Any additional assets are grouped in accordance with the style guide.
2. Create bones/joints	2.1. ***Bones*** are added in accordance with the style guide***.*** 2.2. ***Kinematics*** is set in accordance with the style guide. 2.3. Naming conventions are checked in accordance with the style guide***.***
3. Apply rig to textured model	3.1. ***Bone Linking techniques*** are observed and established based on industry practices. 3.2. Envelopes & weights are set in accordance with the style guide. 3.3. ***Imperfections*** are checked in accordance with the style guide.
4. Apply In-game animation	4.1. Rigged model is tested in accordance with the style guide. 4.2. Basic animation key frames are applied with rigged model in accordance to the style guide. 4.3. Animation sequence is finalized in accordance with the style guide. 4.4. Animation is rendered and exported in accordance with the style guide. 4.5. Motion File is exported in accordance with the style guide.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Style Guide	May include but not limited: 1.1 Game art style 1.2 Game engine specifications 1.3 Game metrics
2. Assets	May include but not limited: 2.1. 3D models 2.2. UV maps 2.3. Proxy objects
3. Textures	May include but not limited: 3.1. Bump map 3.2. Diffuse map 3.3. Specular map 3.4. Normal map
4. Bones	May include but not limited: 4.1 Splines 4.2 Joints 4.3 Chain 4.4 Nodes
5. Bone linking techniques	May include but not limited: 4.5 Add Bones 4.6 Skin 4.7 Connecting 4.8 Grouping 4.9 Merging 4.10 Physique
6. Kinematics	5.1 Inverse (IK) 5.2 Forward (FK)
7. Imperfections	May include but not limited: 6.1 Stretching 6.2 Weighting 6.3 Joint influences

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Imported textured model asset 1.2 Created bones / joints 1.3 Applied rig to textured model 1.4 Applied in-game animation
2. Required Knowledge and Attitude	2.1 Graphic manipulation 2.2 Observation 2.3 Learning with others 2.4 Deductive reasoning 2.5 Human, animal, objects and background drawing principles 2.6 Perspective, proportion, volume, camera fielding, timing technicalities 2.7 Acting, observation of movements and deductive reasoning 2.8 Basic animation principles 2.9 Rigging knowledge 2.10 Graphic software 2.11 Animation software 2.12 Phonetics knowledge 2.13 Creative/Drawing and composition 2.14 Storyboard and layout 2.15 Problem solving 2.16 Project management
3. Required Skills	3.1 Spatial visualization ability 3.2 Active listening 3.3 Narrative Skills 3.4 Software manipulation 3.5 Drawing skills 3.6 Organizational skills 3.7 Analytical Skills 3.8 Able to read and interpret storyboard and layout 3.9 Timing, space, weight analysis skills to animate actions effectively 3.10 3D Graphic software manipulation skills 3.11 Animation software manipulation skills 3.12 Communication Skills 3.13 Composition of elements and staging skills/eye for details 3.14 Adherence to instructions 3.15 Research 3.16 Decision making exercise 3.17 Implement execution plan

4. Resource Implications	The following resources must be provided 4.1 Computer with 3D software with peripherals 4.2 Electronic pen and tablet 4.3 Mouse
5. Methods of Assessment	Competency may be assessed through 5.1 Portfolio 5.2 Demonstration 5.3 Interview
6. Context of Assessment	6.1 Competency may be assessed in workplace or simulated environment

SECTION 3 TRAINING STANDARDS

3.1 CURRICULUM DESIGN

Course Title: 3D Game Art Development **NC Level:** NC III

Nominal Training Duration:

64 hrs.	- Basic Competencies
70 hrs.	- Common Competencies
1,230 hrs.	- Core Competencies

1,364 hrs.	

Course Description:

This course is designed to develop & enhance the knowledge, skills, & attitudes of 3D Game Artist in accordance with industry standards. It covers the basic & common competencies in addition to the core competencies such as preparing art document, creating storyboard and asset list, developing concept art, developing 3D model using 3D graphic software, develop 3D textures using graphic software and applying rigged in-game animation. TVET providers can however, offer a longer, ladderized course covering the NC III basic, common and core units.

BASIC COMPETENCIES

64 hrs.

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Lead workplace communication	1.1 Communicate information about workplace processes. 1.2 Lead workplace discussions. 1.3 Identify and communicate issues arising in the workplace	• Group discussion • Role Play • Brainstorming	• Observation • Interviews

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
2. Lead small teams	2.1 Provide team leadership. 2.2 Assign responsibilities among members. 2.3 Set performance expectation for team members. 2.4 Supervise team performance	• Lecture • Demonstration • Self-paced (modular)	• Demonstration • Case studies
3. Develop and practice negotiation skills	3.1 Identify relevant information in planning negotiations 3.2 Participate in negotiations 3.3 Document areas for agreement	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test
4. Solve workplace problem related to work activities	4.1 Explain the analytical techniques. 4.2 Identify the problem. 4.3 Determine the possible cause/s of the problem.	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test
5. Use mathematical concepts and techniques	5.1 Identify mathematical tools and techniques to solve problem 5.2 Apply mathematical procedures/solution 5.3 Analyze results	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test
6. Use relevant technologies	6.1 Identify appropriate technology 6.2 Apply relevant technology 6.3 Maintain/enhance relevant technology	• Direct observation • Simulation/role playing • Case studies	• Written test • Practical/ performance test

COMMON COMPETENCIES

70 hrs.

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Apply critical thinking and thought organization	1.1. Identify the theoretical foundations of critical thinking 1.2. Develop constructive arguments 1.3. Apply methods of reasoning 1.4. Affirm generalization 1.5. Arrive at a conclusion	▪ Field trip ▪ Symposium ▪ Film showing ▪ Simulation ▪ Supervised industry training	▪ Demonstration & questioning ▪ Observation & questioning ▪ Third party report
2. Apply Quality Standards	2.1. Asses quality of received materials 2.2. Assess own work 2.3. Engage in quality improvement	▪ Field trip ▪ Symposium ▪ Film showing ▪ Simulation ▪ Supervised industry training	▪ Demonstration & questioning ▪ Observation & questioning ▪ Third party report
3. Perform computer operations	3.1. Plan and prepare for task to be taken undertaken 3.2. Input data into computer 3.3. Access information using computer 3.4. Produce output/ data using computer system 3.5. Use basic functions of a www-browser to locate information 3.6. Maintain computer equipment and systems	▪ Modular ▪ Film showing ▪ Computer based training (e-learning) ▪ Project method ▪ Supervised industry training	▪ Demonstration & questioning ▪ Observation & questioning ▪ Third party report ▪ Assessment of output product ▪ Portfolio ▪ Computer based assessment

CORE COMPETENCIES
1230 hrs.

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Prepare art document 96 hrs.	1.1. Develop "look and feel" 1.2. Draw and compile characters 1.3. Draw the game world 1.4. Draw and compile other assets 1.5. Develop game interface	• Lecture/ Discussion • Workshop • Demonstration • Supervised industry training	• Demonstration / Practical exam • Presentation with questioning • Portfolio of work samples • Individual interview
2. Create storyboard and asset list 50 hrs.	2.1. Develop storyboard panels and scripts 2.2. Create Narrative devices 2.3. Create cut scenes	• Lecture/ Discussion • Workshop • Demonstration • Supervised industry training	• Demonstration / Practical exam • Presentation with questioning • Portfolio of work samples • Individual interview
3. Develop concept art 112 hrs.	3.1. Develop concept art for characters 3.2. Develop concept art for props/objects 3.3. Develop concept art for background layout 3.4. Develop concept art for special effects	• Lecture/ Discussion • Workshop • Demonstration • Supervised industry training	• Demonstration / Practical exam • Presentation with questioning • Portfolio of work samples • Individual interview
4. Develop 3D model using 3D graphic application 294 hrs.	4.1. Prepare 3D document 4.2. Prepare Base Mesh 4.3. Develop Mesh	• Lecture/ Discussion • Workshop • Demonstration • Supervised industry training	• Demonstration / Practical exam • Presentation with questioning • Portfolio of work samples • Individual interview

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
5. Develop 3D textures using graphic application 184 hrs.	5.1. Prepare UV-Map 5.2. Apply color to UV-Map 5.3. Prepare final palette / color map sheet 5.4. Export UV-Map 5.5. Import UV-Texture	• Lecture/ Discussion • Workshop • Demonstration • Supervised industry training	• Demonstration / Practical exam • Presentation with questioning • Portfolio of work samples • Individual interview
6. Apply rigged In-Game animation 294 hrs.	6.1. Import textured model assets 6.2. Create Bones/Joints 6.3. Apply rig to textured model 6.4. Apply basic animation	• Lecture/ Discussion • Workshop • Exercises • Demonstration • Supervised industry training	• Demonstration / Practical exam • Presentation with questioning • Portfolio of work samples • Individual interview

Note: The Supervised Industry Training (SIT) component may be implemented in flexible manner. It may be integrated within various modules or units of competency or at the end of the in-school or classroom training.

3.2 TRAINING DELIVERY

The delivery of training shall adhere to the design of the curriculum. Delivery shall be guided by the 10 basic principles of competency-based TVET.

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based on both on- and off-the-job components
- Training program allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Training programs are registered with the UTPRAS.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in - school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.

- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer just facilitates the training delivery.

- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.

- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.

- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.

- Project-based instruction is an authentic instructional model or strategy in which students plan, implement and evaluate projects that have real world applications.

3.3 TRAINEE ENTRY REQUIREMENTS

The trainees who wish to enter the course should possess the following requirements:

- High school level or equivalent.
- With artistic and drawing skills which will be validated through:
  - a talent entrance exam to be administered by the training institution using a tool devised by the Technical Experts Panel (TEP) and Participants in the National Validation of these Training Regulations
  - the submission of a portfolio (*hard & soft copy should be provided*)
- Has the capacity to communicate in both oral and written forms.
- Physically able to manipulate a mouse, track-ball, electronic pen, etc.

This list does not include specific institutional requirements such as educational attainment, appropriate work experience and others that may be required from the trainees by the school or training center delivering the TVET program.

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS

Recommended list of tools, equipment and materials for the conduct of training in 3D Game Art NC III:

TOOLS		EQUIPMENT		MATERIALS	
Qty.	Description	Qty.	Description	Qty.	Description
15	Electronic pen and tablet	15	Ergonomic computer tables and chairs	15	Mock theme and script
15	Mouse	2	Scanner	15	Pen and paper
15	Eraser	1	LCD Projector	15	Learning elements
1	Internet access/ LAN connected	1	Ink-jet Printer	15	Printable storyboard
15 licenses per software	Computer Application e.g. - Maya - 3D Studio Max - Softimage - Lightwave - Maxxon - Blender	1	LCD Monitor/TV, 42 inches	15	Hand-outs
		15	Computer (with peripherals) Windows PC or Mac - 19in. LCD monitor, - multi-core 2GHz CPU, - Direct X10, open GL capable video card, - 4GB memory, - 500 GB hard disk	15	Practice materials
				15	Reference books
				15	Learning materials/ guide
		2	White board and / or glass board		

The quantity of tools and equipment to be used for the conduct of training for this qualification shall depend on the number of students, size of the class, and/or modality of training. The most important consideration is to make sure that tools and equipment are adequately provided to all trainees when needed. The actual list of tools, equipment, machines, supplies and other materials to be used shall be identified and detailed in the Competency Based Curriculum (CBC) to be submitted by the TVET provider when registering a course or training program with TESDA.

Due to the fast-changing nature of the Information and Communications Technology (ICT) sector, TVET providers are reminded to use and provide their trainees with the latest technology tools, equipment and materials where appropriate and applicable.

In cases where there are specialized tools, equipment and facilities that are not generally considered standard requirements or not absolute requisites for training, the industry working group or TESDA may provide guidelines or specific advice on such matters.

3.5 TRAINING FACILITIES

Based on class size of 15 students/trainees the space requirements for the teaching/learning and circulation areas are as follows:

TEACHING/LEARNING AREAS	SIZE IN METERS	AREA IN SQ. METERS	QTY	TOTAL AREA IN SQ. METERS
Lecture Area	5 x 8	40	1	40
Computer Lab		50	1	60
Learning Resource Area	4 x 5	20	1	20
Wash ,Toilet & Locker Room	2 x 5	10	2	20
Total				80
Facilities / Equipment / Circulation**				30
Total Area				**110**

***** Area requirement is equivalent to 30% of the total teaching/learning areas***

Appropriate consideration should be given in providing and allocating work space, communications facilities, and the usual workplace amenities to ensure a proper learning environment. Where applicable, training shall be held or conducted in learning facilities in accordance with generally accepted industry standards and practice.

3.6 TRAINERS QUALIFICATIONS

- Holder of National TVET Trainer's Certificate (NTTC) Level 1
- * Must have at least 2-years relevant industry experience.
- Must be physically & mentally fit.

* Optional: Only when required by the hiring institution.

3.7 INSTITUTIONAL ASSESSMENT

Institutional Assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

As a matter of policy, graduates of programs registered with TESDA under these training regulations are required to undergo mandatory national competency assessment upon completion of the program.

SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1 To attain the National Qualification of **3D Game Art Development NC III**, the candidate must demonstrate competence as described in sub-section 4.2.1 of this Training Regulations. Successful candidates shall be awarded a National Certificate signed by the TESDA Director-General.

4.2 The qualification of **3D Game Art Development NC III** may be attained through:

4.2.1 Accumulation of Certificates of Competency (**COC**) in all the following units of competency:

4.2.1.1 Develop initial art assets
- Prepare art document
- Create storyboard and asset list
- Develop and conceptualize art style

4.2.1.2 Develop 3D model using 3D graphic software

4.2.1.3 Develop 3D Textures using Graphic Software

4.2.1.4 Apply rigged In-Game animation

4.3 Upon accumulation and submission of all COCs acquired for all the relevant units of competency comprising this qualification, an individual shall be issued the corresponding National Certificate (**NC**).

4.4 Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.

4.5 The following are qualified to apply for assessment and certification:

4.5.1. Graduates of formal, non-formal and informal including enterprise-based training programs.

4.5.2. Experienced workers (wage-employed or self-employed)

4.6 The guidelines on assessment and certification are discussed in detail in the "Procedures Manuals on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTQCS)".

ANNEX A. ICT COMPETENCY MAP
3D GAME ART DEVELOPMENT NC III

BASIC COMPETENCIES

Receive And Respond To Workplace Communication	Work With Others	Demonstrate Work Values	Practice Basic Housekeeping Procedures	Participate In Workplace Communication
Work In A Team Environment	Practice Career Professionalism	Practice Occupational Health And Safety Procedures	**Lead Workplace Communication**	**Lead Small Team**
Develop And Practice Negotiation Skills	**Solve Problems Related To Work Activities**	**Use Mathematical Concepts And Techniques**	**Use Relevant Technologies**	Utilize Specialist Communication Skills
Develop Team And Individuals	Apply Problem Solving Techniques In The Workplace	Collect, Analyze And Organize Information	Plan And Organize Work	Promote Environmental Protection

COMMON COMPETENCIES

Apply critical thinking and thought organization	**Apply Quality Standards**	**Perform Computer Operations**

CORE COMPETENCIES

Communicate Effectively In A Customer Contact Center	Render Quality Customer Service	Utilize Enterprise/ Company Technology	Conduct Contact Center Campaign	Provide Specialized Support And Assistance To Customers
Lead A Contact Center Work Team	Manage The Activities Of A Contact Center Work Team	Use Business Technology	Use Medical Technology To Carry Out Task	Produce Text From Audio Transcription
Review/Edit Documents	Produce Key Drawings For Animation	Produce Cleaned-Up And In-Between Drawings	Create 2D Digital Animation	Use An Authoring Tool To Create An Interactive Sequence
Use 2D Digital Animation Software	Build Library Of Objects	Build Scenes And Assets	Produce 2D Digital Animation Movies & Animated Movie Clips	Create 3D Digital Animation
Coordinate The Production Of Animation	Produce Storyboard For Animation	Produce Background Designs	Composite And Edit Animation Sequence	Produce Over-All Designs For Animation
Design Game Program Logic	Apply Game Programming Techniques	Apply Game-Production Approaches	Lead A Team In Delivering Quality Service	Manage The Activities Of A Work Team
Create Vector Graphics Using Graphics Application Software	Create Vector Graphics Using Graphics Application Software	Develop Final Artwork Using Graphic Software	Apply Basic Animation	**Prepare Art Document**
Create Storyboard And Asset List	**Develop Concept Art**	**Develop 3D Model Using 3D Graphic Software**	**Develop 3D Textures Using Graphic Software**	**Apply Rigged In-Game Animation**

DEFINITION OF TERMS

GENERAL

1) **Certification -** is the process of verifying and validating the competencies of a person through assessment

2) **Certificate of Competency (COC)** - is a certification issued to individuals who pass the assessment for a single unit or cluster of units of competency

3) **Common Competencies** - are the skills and knowledge needed by all people working in a particular industry

4) **Competency** - is the possession and application of knowledge, skills and attitudes to perform work activities to the standard expected in the workplace

5) **Competency Assessment** - is the process of collecting evidence and making judgments on whether competency has been achieved

6) **Competency Standard (CS)** - is the industry-determined specification of competencies required for effective work performance

7) **Context of Assessment** - refers to the place where assessment is to be conducted or carried out

8) **Core Competencies** - are the specific skills and knowledge needed in a particular area of work - industry sector/occupation/job role

9) **Critical aspects of competency** - refers to the evidence that is essential for successful performance of the unit of competency

10) **Elective Competency -** are the additional skills and knowledge required by the individual or enterprise for work

11) **Elements** - are the building blocks of a unit of competency. They describe in outcome terms the functions that a person perform in the workplace

12) **Evidence Guide** - is a component of the unit of competency that defines or identifies the evidences required to determine the competence of the individual. It provides information on critical aspects of competency, Required Knowledge, required skills, resource implications, assessment method and context of assessment

13) **Level -** refers to the category of skills and knowledge required to do a job

14) **Method of Assessment** - refers to the ways of collecting evidence and when evidence should be collected

15) **National Certificate (NC)** - is a certification issued to individuals who achieve all the required units of competency for a national qualification defined under the Training Regulations. NCs are aligned to specific levels within the PTQF

16) **Performance Criteria** - are evaluative statements that specify what is to be assessed and the required level of performance

17) **Qualification** - is a cluster of units of competencies that meets job roles and is significant in the workplace. It is also a certification awarded to a person on successful completion of a course in recognition of having demonstrated competencies in an industry sector

18) **Range of Variables** - describes the circumstances or context in which the work is to be performed

19) **Recognition of Prior Learning (RPL)** - is the acknowledgement of an individual's skills, knowledge and attitudes gained from life and work experiences outside registered training programs

20) **Resource Implications -** refers to the resources needed for the successful performance of the work activity described in the unit of competency. It includes work environment and conditions, materials, tools and equipment

21) **Basic Competencies -** are the skills and knowledge that everyone needs for work

22) **Training Regulations (TR)** - refers to the document promulgated and issued by TESDA consisting of competency standards, national qualifications and training guidelines for specific sectors/occupations. The TR serves as basis for establishment of qualification and certification under the PTQF. It also serves as guide for development of competency-based curricula and instructional materials including registration of TVET programs offered by TVET providers

23) **Required Knowledge** - refers to the competency that involves in applying knowledge to perform work activities. It includes specific knowledge that is essential to the performance of the competency

24) **Required Skills** - refers to the list of the skills needed to achieve the elements and performance criteria in the unit of competency. It includes generic and industry specific skills

25) **Unit of Competency** - is a component of the competency standards stating a specific key function or role in a particular job or occupation; it is the smallest component of achievement that can be assessed and certified under the PTQF

SECTOR SPECIFIC

1. **3D Model -** a mathematical representation of any visible three-dimensional object.
2. **3D Modeling -** is the process of creating a three-dimensional representation of any surface and/or object by manipulating polygons, edges, elements, boarders and vertices in simulated 3D space.
3. **Aliasing -** Artifact or distortion, often referred to as 'jaggies', that occurs in a digital image.
4. **Ambient Occlusion -** is a shading method that is often used as a replacement to Global Illumination.
5. **Anti-aliasing -** Techniques to remove aliasing artifacts. Some examples are oversampling/super-sampling and filtering
6. **Art Style** - Drawn or implied visual characteristics and elements combined then expressed in a particular (often unique) and consistent manner.
7. **Art Document** - A written instrument that can be used to furnish visual instruction and definitive information in order to achieve a certain trend and standard.
8. **Animation** - is the rapid display of a sequence of images of 2-D or 3-D artwork or model positions in order to create an illusion of movement. The effect is an optical illusion of motion due to the phenomenon of persistence of vision, and can be created and demonstrated in several ways.
9. **Asset List** - A series of created resources categorized into a organized medium for reference.

10. **Axis -** In 3D space, the axis most commonly refers to a dimension on the X,Y,Z coordinate system, but it can also be described as directional traits of an object in local space.
11. **Background** - the part of a scene or view furthest from the point of interest thus giving further impression on the subject.
12. **Browser** - a software package that provides the user interface for accessing Internet, intranet and extranet Web sites.
13. **Break** - a common term used in game development to describe the process in decomposing, cutting, slicing, or modify an asset for a 2D Artist.
14. **Color Map** - is a neatly arranged and index of color pallets that are based on a specific image requirement. Some color maps, contain corresponding RBG code, CMYK code, HTML code, etc. near it's respected color swatch.
15. **Compiler** - is a program that translates (compiles) source code(s) written in a high-level language into a set of machine-language instructions that can be understood and executed by a digital computer's Central Processing Unit (CPU). This can also directly pertain to the process of compressing text, images, and other data into one specific file format.
16. **Computer** - a device that has the ability to accept data; internally store and execute a program of instructions; perform mathematical, logical, and manipulative operations on data; and report the results.
17. **Computer Terminal** - any input/output device connected by telecommunications links to a computer.
18. **Construct** - Refers to any specific characteristic, trait, detail or reference used by an artist in the visual development of a single whole game object or each of its combining/building parts, which will be found in the model sheet and/or the game environment. Objects in the game environment may refer to a character, props, background, or any other object in game development. Example, character construct, facial construct, weapon construct, etc.
19. **Concept** - Something formed in the mind; a thought or notion.
20. **Concept Art** - is a form of illustration where the main goal is to convey a visual representation of a design, idea, and/or mood for use in films, video games, animation, or comic books before it is put into the final product. Concept art is also referred to as visual development and/or concept design. This term can also be applied to retail design, set design, fashion design and architectural design.
21. **Critical Thinking** - is the process of thinking that questions assumptions. It is a way of deciding whether a claim is true, false; sometimes true, or partly true.
22. **Cut Scenes** - A cutscene (sometimes in-game cinematic or in-game movie) is a sequence in a video game over which the player has no or only limited control, breaking up the gameplay and used to advance the plot, strengthen the main character's development, introduces enemy characters, and provide background information, atmosphere, dialogue, and clues. Cutscenes often feature on the fly rendering, using the gameplay graphics to create scripted events. Cutscenes can also be animated, live action, or pre-rendered computer graphics streamed from a video file.
23. **Data** - objective measurements of the attributes (characteristics) of entities such as people, places, things, and events.
24. **Diffuse Map -** is a texture that is used to define the surface's main color.
25. **Documentation** - a collection of documents or information.
26. **Edit** - to modify the form or format of data
27. **Encryption** - to scramble data or convert it, prior to transmission, to a secret code that masks the meaning of he data to unauthorized recipients.
28. **End-User** - the consumer or player of the end-product for a video game.
29. **Ergonomics** - the science and technology emphasizing the safety, comfort, and ease of use of human-operated machines. The goal of ergonomics is to produce systems that are user-friendly: safe, comfortable and easy to use.

30. **Flag** - refer to one or more bits that are used to store a binary value or code that has an assigned meaning, but can refer to uses of other data types.
31. **Flash** - can manipulate vector and raster graphics and supports bi-directional streaming of audio and video. It contains a scripting language called Action-Script. It is available in most common web browsers and some mobile phones and other electronic devices. Several software products, systems, and devices are able to create or display Flash, including the Adobe Flash Player. The Adobe Flash Professional multimedia authoring program is used to create content for the Adobe Engagement Platform, such as web applications, games and movies, and content for mobile phones and other embedded devices.
32. **Forward Kinematics Animation -** Also known as FK Animation, it is the processed method in 3D Animation where the position of a child object in an articulated "chain" are determined by the position and orientation of its parent object. For example, in a hierarchical linkage of a human figure, when the torso (the parent) bends over, the head (the child) moves along with it, but the head can be turned without affecting the torso.
33. **Game** - any medium of entertainment that involves manipulating a device in response to an interface that views a hypothetical visual world created by a combination of assets.
34. **Game Artist (2D/3D)** - an artist who creates art for one or more types of games. Game artists are responsible for all of the aspects of game development that call for visual art.
35. **Game Designer** - an individual who provides a direction to the visual and technical aspect of the game. Making sure the development from start to finish is according to the theme and manner of approach that matches the genre of the game.
36. **Game Design Document (GDD**) - A body of writing that an be used to furnish decisive instructional and definitive information covering the over all technicalities and range of a game in order to mold and achieve a certain standard.
37. **Game Programmer** - a software developer who uses programming languages and tools to implement game mechanics and parameters ranging from simple input responses, object physics, and artificial intelligence.
38. **Global illumination -** a global light source in the 3D space and world determining the light falling onto a surface, it maybe light which has taken a path directly from a light source (direct illumination), or light which has undergone reflection from other surfaces in the world (indirect illumination).
39. **Graphic Composition** - is when the use of digital graphic formats, styles, renders, modes, and outputs are selected and put together for a dedicated output for various digital media. Such as Raster Graphics and Vector Graphics.
40. **Graphical User Interface (GUI)** - is a type of user interface that allows the users to interact with electronic devices through images rather than text commands.
41. **Graphic Application** - any software or collection of programs that enable a person to manipulate visual images on a device or media.
42. **Heightmap -** is a digital gray-scale image used to store three-dimensional data. It´s usually used in bump mapping, displacement mapping and for terrain mesh generation, the intensity of a pixel's color represents the height displacement of the mesh's corresponding coordinate. A white pixel represents the highest point in the map while a black pixel marks the lowest point in the map.
43. **In-Game Animation** - any representation of action, may it be minor (limited loop sequenced) or major (cinematic) as long as it is integrated within the proper game flow .
44. **Information** - data placed in a meaningful and useful context for an end user.
45. **Information and Communication Technology (ICT)** - refers to technologies associated with the transmission and exchange of data in the form of sound, text, visual images, signals or any combination of those forms through the use of digital

technology. It encompasses such services as telecommunications, posts, multimedia, electronic commerce, broadcasting, and information technology.

46. **Integrated Development Environment (IDE)** - A software that provides comprehensive features and user interface for more efficient software development. Features usually include but not limited to: single input compile, execute, and debug; convenient source code display; library links for programming language reference.
47. **Inverse Kinematics Animation -** Also known as IK Animation, it is the processed method in 3D Animation that consist on positioning the ending limb of an articulated "chain" to obtain an automatic pose or articulation of the whole chain. Inverse kinematics is based on the following principles: 1. Joints are constrained with specific positional and rotational properties. 2. Position and orientation of parent objects is determined by the position and orientation of child objects.
48. **Keyframe** - is a single still image in an animated sequence that occurs at an important point in that sequence; key frames are defined throughout an animated sequence, in order to define pivotal points of motion before the frames in between are drawn or otherwise created to "tween" the motion between the two key frames.
49. **Line-Work** - A finalized art work that is normally not colored but has been cleaned and has been readied for final rendering.
50. **Local Area Network (LAN)** - a communications network that typically connects computers, terminals, and other computerized devices within a limited physical area such as an office, building, manufacturing plant and other work sites.
51. **Microsoft DirectX -** is a collection of application programming interfaces (APIs) for handling tasks related to multimedia, especially game programming and video, on Microsoft platforms.
52. **Mesh -** The entire surface of a 3D model that is referred as.
53. **Normal (Surface Normal) -** is a three-dimensional vector which is perpendicular to a surface.
54. **NURBS** - Also known as Non-uniform rational basis spline, is a mathematical model used in 3D modeling to generate and represent curves and surfaces which allow flexibility and precision for both analytic and modeled shapes.
55. **Object code** - Output files resulting from compiling the source code. These files contains the machine instructions used upon program execution.
56. **Object Library** - a consolidated collection of assets developed through the timeline that will be used for production.
57. **Object Priority** - a component in game development that focuses on the various developed objects and assets to be given an assigned responsibility for the game engine and other development tools within your develop environment.
58. **Outsourcing** - is when a major business process is contracted with another company.
59. **Production** - is the main stage of development, when assets and source code for the game are assembled and tested.
60. **Programmer** - write codes or instructions to make the computer do specific tasks. These instructions are called programs.
61. **Prototype** - an experimental model that illustrates the typical qualities of the person, animal, object or any element from which it is based on.
62. **Prototyping** - the method of experimenting on the model that illustrates the typical qualities of the person, animal, object or any element from which it is based on.
63. **Quality Assurance** - is an implemented process that ensures that a product or service meets a set of documented standards. This process guarantees that the product is free from errors, bugs, and other forms of glitches.
64. **Raster** - a raster graphics image, or bitmap, is a data structure representing a generally rectangular grid of pixels, or points of color. These images are stored in image files with varyious formats.

65. **References** - is an item from which a work is based on. This may include: an existing artwork, a reproduction (i.e., photo), a directly observed object (i.e., person), a documented description, or the artist's memory.
66. **Resource Asset List** - a registry of resources that is being kept and completed.
67. **Rigging -** is the process to prepare and create a 3D model ready for animation.
68. **Roughs/Thumbnails** - A non-formal form of expressing ideas to simple easy to understand sketches for planning the main artwork or scene.
69. **Script** - a text that contains organized flow of scenes captioned from a root story that is expressed as interaction of characters, object movement and dialogue.
70. **Shader -** is a process within an application and rendering to determine the final surface properties of an object or image. This often includes arbitrarily complex descriptions of light absorption, diffusion, texture mapping, reflection, refraction, shadowing, surface displacement and post-processing effects.
71. **Simulation** - the process of imitating a real phenomenon. Advanced computer programs can simulate weather conditions, chemical reactions, atomic reactions, even biological processes.
72. **Software** - computer programs and procedures concerned with the operation of an information system
73. **Sound Designer** - an individual that manipulates the composition of the songs, effects, voice and music that will be used in each event.
74. **Source code** - a text or set system instruction used in a programming language.
75. **Spline -** is a Bezier-type curve that can be shaped and manipulated with a set number of control points, called CVs. Splines are used frequently in NURBS modeling, where a three dimensional mesh can be "lofted" between two or more splines to create a smooth surface.
76. **Standards** - A criteria to which results are set upon.
77. **Story Board** - are graphic organizers in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing a motion picture, animation, motion graphic or interactive media sequence.
78. **Style Guide** - is a set of written design documents, which contain gathered references and key concepts used for a specific publication, organization, metrics, style, approach or field. The implementation of a style guide provides uniformity in style and formatting of a document for compiling concepts for a game.
79. **System** - an assembly of methods, procedures, or techniques unified by regulated interaction to form an organized whole.
80. **Texel -** is a Texture element, as it is just a pixel that is part of a texture map.
81. **Texture mapping -** the process of adding detail to surfaces of a 3D model. These details may be in the form of a raster image (texture) or color.
82. **Topology -** Is the geometric surface characteristics of a 3D object, characterized by polygon distribution and edge-flow.
83. **User-friendly** - also known as “Usability” is the ease of use and learn-ability of a human-made object. The object of use can be a software application, website, book, tool, machine, process, or anything a human interacts with. A usability study may be conducted as a primary job function by a usability analyst or as a secondary job function by designers, technical writers, marketing personnel, and others.
84. **UV Mapping -** is a process in 3D modeling in making and flatting a 2D image representation of a 3D model, with this process it allows a texture map to be placed onto a 3D object. The letters "U" and "V" are used to describe the 2D mesh because "X", "Y" and "Z" are already used to describe the 3D object in model/3D space.
85. **Vector** - is a line or a movement defined by end-points or, essentially, the distance between point A and point B. Vectors can be used to calculate animated motion mathematically instead of through the use of manual key frames.
86. **Vertex -** a point where two lines intersect that forms an angle.
87. **Video Game** - is a game that involves interaction with an electronic user interface to generate visual feedback on a video device.

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        - Nelie Llovido, Supervising TESD Specialist