

Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skill for All"



Course Contents / Lesson Plan

Course Title: Certificate in IT (Game Development & Modelling)

Duration: 6 Months

Course Details / Description & Preliminaries

Course Title	Certificate in IT (Game Development & Modelling)
Objectives and Expectations	<p><u>Employable skills for Bachelor of Computer Science (BCS) / B.Sc (Computer Science) through an intensive course on Game Development & Modelling</u></p> <p>This is a special course designed to address unemployment in the youth. The course aims to achieve the above objective through hands on practical training delivery by a team of dedicated professionals having rich market/work experience. This course is therefore not just for developing a theoretical understanding/back ground of the trainees. Contrary to that it is primarily aimed at equipping the trainees to perform commercially in a market space in independent capacity or as a member of a team.</p> <p>The course therefore is designed to impart not only technical skills but also soft skills (i.e. interpersonal/communication skills; personal grooming of the trainees etc) as well as entrepreneurial skills (i.e. marketing skills; free lancing etc). The course also seeks to inculcate work ethics to foster better citizenship in general and improve the image of Pakistani work force in particular.</p> <p><u>Main Expectations:</u></p> <p>In short, the course under reference should be delivered by professional instructors in such a robust hands- on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion.</p> <p>This course thus clearly goes beyond the domain of the traditional training practices in vogue and underscores an expectation that a</p>

Key Features of Training & Special Modules

market centric approach will be adopted as the main driving force while delivering it. The instructors should therefore be experienced enough to be able to identify the training needs for the possible market roles available out there. Moreover, they should also know the strengths and weaknesses of each individual trainee to prepare them for such market roles during/after the training.

- i. Specially designed practical tasks to be performed by the trainees have been included in the Annexure-I to this document. The record of all tasks performed individually or in groups must be preserved by the management of the training Institute clearly labelling name, trade, session etc so that these are ready to be physically inspected/verified through monitoring visits from time to time. The weekly distribution of tasks has also been indicated in the weekly lesson plan given in this document.
- ii. In order to materialize the main expectations, a special module on **Job Search & Entrepreneurial Skills** has been included in the later part of this course (5th & 6th month) through which, the trainees will be made aware of the Job search techniques in the local as well as international job markets (Gulf countries). Awareness around the visa process and immigration laws of the most favoured labour destination countries also forms a part of this module. Moreover, the trainees would also be encouraged to venture into self-employment and exposed to the main requirements in this regard. It is also expected that a sense of civic duties/roles and responsibilities will also be inculcated in the trainees to make them responsible citizens of the country.

Training Tools/ Methodology

iii. A module on **Work Place Ethics** has also been included to highlight the importance of good and positive behaviour at work place in the line with the best practices elsewhere in the world. An outline of such qualities has been given in the Appendix to this document. Its importance should be conveyed in a format that is attractive and interesting for the trainees such as through PPT slides +short video documentaries. Needless to say that if the training provider puts his heart and soul into these otherwise non-technical components, the image of Pakistani workforce would undergo a positive transformation in the local as well as international job markets.

In order to maintain interest and motivation of the trainees throughout the course, modern techniques such as:

- Motivational Lecture
- Success Stories
- Case Studies

These techniques would be employed as an additional training tool wherever possible (these are explained in the subsequent section on Training Methodology).

Lastly, evaluation of the competencies acquired by the trainees will be done objectively at various stages of the training and proper record of the same will be maintained. Suffice to say that for such evaluations, practical tasks would be designed by the training providers to gauge the problem solving abilities of the trainees.

(i) Motivational Lecture

The proposed methodology for the training under reference employs motivation as a tool. Hence besides the purely technical content, a trainer is required to include elements of motivation in his/her lecture

to inspire the trainees to utilize the training opportunity to the full and strive towards professional excellence. Motivational lectures may also include general topics such as the importance of moral values and civic role & responsibilities as a Pakistani. A Motivational Lecture should be delivered with enough zeal to produce a deep impact on the trainees. It may comprise of the following:

- Clear Purpose to convey message to trainees effectively.
- Personal Story to quote as an example to follow.
- Trainees Fit so that the situation is actionable by trainees and not represent a just idealism.
- Ending Points to persuade the trainees on changing themselves.

A good Motivational Lecture should help drive creativity, curiosity and spark the desire needed for trainees to want to learn more.

Impact of a successful motivational strategy is amongst others commonly visible in increased class participation ratios. It increases the trainees' willingness to be engaged on the practical tasks for longer time without boredom and loss of interest because they can clearly see in their mind's eye where their hard work would take them in short (1-3 years); medium (3 -10 years) and long term (more than 10 years).

As this tool is expected that the training providers would make arrangements for regular well planned Motivational Lecture (*For further detail please see Page No: 4*)s as part of a coordinated strategy interspersed throughout the training period as suggested in the weekly lesson plans in this document.

(ii) Success Stories

Another effective way of motivating the trainees is by means of Success Stories. Its inclusion in the weekly lesson plan at regular intervals has been recommended till the end of the training.

A success story may be disseminated orally, through a presentation or by means of a video/documentary of someone that has risen to fortune, acclaim, or brilliant achievement. A success story shows how a person achieved his goal through hard work, dedication and devotion. An inspiring success story contains compelling and significant facts articulated clearly and easily comprehensible words. Moreover, it is helpful if it is assumed that the reader/listener knows nothing of what is being revealed. Optimum impact is created when the story is revealed in the form of:-

- Directly in person (At least 2-3 cases must be arranged by the training institute)
- Through an audio/ videotaped message (2-3 high quality videos must be arranged by the training institute)

It is expected that the training provider would collect relevant high quality success stories for inclusion in the training as suggested in the weekly lesson plan given in this document.

_Suggestive structure and sequence of a sample success story and its various shapes can be seen at annexure III.

(iii) Case Studies

Where a situation allows, case studies can also be presented to the trainees to widen their understanding of the real life specific problem/situation and to explore the solutions.

In simple terms, the case study method of teaching uses a real life case example/a typical case to demonstrate a phenomenon in action and explain theoretical as well as practical aspects of the knowledge related to the same. It is an effective way to help the trainees comprehend in depth both the theoretical and practical aspects of the complex phenomenon in depth with ease. Case teaching can also stimulate the trainees to participate in discussions and thereby boost their confidence. It also makes class room atmosphere interesting thus maintaining the trainee interest in training till the end of the course.

	<p>Depending on suitability to the trade, the weekly lesson plan in this document may suggest case studies to be presented to the trainees. The trainer may adopt a power point presentation or video format for such case studies whichever is deemed suitable but it's important that only those cases are selected that are relevant and of a learning value. The Trainees should be required and supervised to carefully analyze the cases.</p> <p>For the purpose they must be encouraged to inquire and collect specific information / data, actively participate in the discussions and intended solutions of the problem / situation.</p> <p>Case studies can be implemented in the following ways:-</p> <ol style="list-style-type: none"> i. A good quality trade specific documentary (At least 2-3 documentaries must be arranged by the training institute) ii. Health & Safety case studies (2 cases regarding safety and industrial accidents must be arranged by the training institute) iii. Field visits (At least one visit to a trade specific major industry/ site must be arranged by the training institute)
<p>Learning Outcome of the Course</p>	<p>After completion of this course, the trainees must be able to:</p> <ul style="list-style-type: none"> • Determine the relative position of any objects or points on the earth. • Determine the distance and angle between different objects. • Prepare a map or plan to represent an area on a horizontal plan. • Determine the required areas and volumes of land and materials needed during construction. • Ensure that the construction takes place in the correct relative and absolute position on the ground. • Record the final position of the construction, including any design changes. • Provide permanent control points from which particularly important

	<p>projects can be surveyed - such as regular monitoring of a construction to check for movement.</p> <ul style="list-style-type: none"> • Develop methods using the knowledge of modern science & technology and using them in the field. • Solve measurement problems in an optimal way
Entry level of trainees	<p>Since intake level is Bachelor of Computer Science (BCS) / B.Sc (Computer Science) so expectations of the trainees are:</p> <ul style="list-style-type: none"> • To have knowledge of Programming Concepts • To have studied languages such as C, C++, JAVA, C#.net • To have concept of Computer system
Course Execution Plan	Total Duration of Course: 6 Months (26 Weeks)
	Class Hours: 4 Hours per day (06 Days/Week)
	Theory: 20% Practical: 80%
	Weekly Hours: 24 Hours Per week
	Total Contact Hours: 600 Hours
Companies Offering Jobs in the respective trade	<p>Besides overseas employment, the following Pakistani companies/firms/Organizations are also offering jobs as well, with details as under:-</p> <ol style="list-style-type: none"> 1. Freelancing (Fiverr, Upwork, Freelancers) 2. Government Institutes 3. Software Houses 4. Crossover, TopTel etc
Job Opportunities	<p>All over the world there is a high demand in the Information Technology industry for developers in various fields such as game developers, gaming studios and game graphics modular's. With the help of this course, we will be able to give technical training of Information Technology to our youth. There are also opportunities for start-up entrepreneurship due to the high demand in the market in following designated jobs; Pakistan Industry reference A quick guide about salaries, opportunities and available jobs is listed below.</p> <ol style="list-style-type: none"> i. A comparison of game developers in Pakistan, https://www.glassdoor.com/Salaries/pakistan-game-developer-salary-

	<p>SRCH_IL.0,8_IN192_KO9,23.htm</p> <p>ii. List of jobs and titles available in the industry, https://www.mustakbil.com/companies/pakistan/computer-games https://www.rozee.pk/job/jsearch/q/Game%20Developers</p>
No of Students	25
Learning Place	Classroom / Lab

WEEKLY SCHEDULE OF TRAINING

Scheduled Week	Module Title	Learning Units	Remarks
Week 1	Introduction / Installing Unity	<ul style="list-style-type: none"> • Course Introduction • Motivational Lecture <i>(For further detail please see Page No: 4)</i> • Applications of the course • Institute/Work ethics <i>(For further detail please see Annexure-II at the end)</i> • Job market overview • How and where to download • Version understanding • Register license • Understanding the pro and free version of Unity • How to add modules after the installation • Understanding unity • Understand the layout • Understanding tabs • Understanding windows • Understanding the unity Layout and Creating a new project. 	<p>• Home Assignment <i><u>Details may be seen at Annexure-IV</u></i></p>
Week 2	Basics of C#	<ul style="list-style-type: none"> • Java • C# • Boo • Syntax • Class • Function • Variables • Loops 	<p>• Home Assignment <i><u>Details may be seen at Annexure-IV</u></i></p>

		<ul style="list-style-type: none"> • If else statement • Switch statements • Vectors • Institute/Work ethics <i>(For further detail please see Annexure-II at the end)</i> 	
Week 3	Create the ZigZag Animation	<ul style="list-style-type: none"> • Feedback of the previous Task • Motivational Lecture<i>(For further detail please see Page No: 4)</i> • Adding 3D items to Hierarchy Window • Arranging them in a scene view • View them in-game view • Setting up the camera • Move The ball With Input • Change the direction on Input • Learn raycast to Know the ground • Spawning the platform Randomly • Spawning the collectible • Collecting the collectible • Success story <i>(For further detail please see Page No: 5 and Annexure-III at the end)</i> • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> 	<ul style="list-style-type: none"> • Task – 1 <i><u>Details may be seen at Annexure-I</u></i> • Home Assignment <i><u>Details may be seen at Annexure-IV</u></i>
Week 4	Refine Animation	<ul style="list-style-type: none"> • Feedback of the previous Task • Score System • Increase the ball speed with time • Game Over System • Basic UI <ul style="list-style-type: none"> • Start Menu 	<ul style="list-style-type: none"> • Task – 2 <i><u>Details may be seen at Annexure-I</u></i> • Monthly Test 1

		<ul style="list-style-type: none"> • Game Over Menu • Buttons • Images • Finalize the game • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • Case Study(Health & Safety) <i>(For further detail please see Annexure-III at the end)</i> 	
Week 5	Single Person Game	<ul style="list-style-type: none"> • Feedback of the previous Task • How to import assets to Unity • Setting up the textures • Making character humanoid • Creating animator • Working in animator to animate a character • Working with blend trees • State machines • Making the player controller • Understanding a character controller • Understanding the physics system • Attaching weapon to the player • Shooting system • Ammo system • Picking up items • Motivational Lecture<i>(For further detail please see Page No: 4)</i> • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> 	<ul style="list-style-type: none"> • Task – 3 <i><u>Details may be seen at Annexure-I</u></i> • Home Assignment <i><u>Details may be seen at Annexure-IV)</u></i>

<p>Week 6</p>	<p>Using AI</p>	<ul style="list-style-type: none"> • Feedback of the previous Task • Setting up enemy • Animate it • Apply ragdoll animation • Navmesh agent • Navmesh surface • Make the enemy find a path to the player • Attacking the player • Health system both for player and enemy • The dying system both for player and enemy • Animation events for attacking with a melee weapon • Success story (For further detail please see Page No: 5 and Annexure-III at the end) • Written Assessment <ul style="list-style-type: none"> • MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes) • Case Study (For further detail please see Annexure-II at the end) 	<p>•Task – 4 <u>Details may be seen at Annexure-I</u></p> <p>•Home Assignment <u>Details may be seen at Annexure-IV</u></p>
<p>Week 7</p>	<p>Creating Backgrounds</p>	<ul style="list-style-type: none"> • Feedback of the previous Task • Understanding the basics of the terrain system • Create a terrain • Texture it • Use rise tool to create mountains • Add trees and grass • Create a footpath • Texture Mountains, footpath Ground with different textures 	<p>•Task – 5 <u>Details may be seen at Annexure-I</u></p> <p>•Home</p>

		<ul style="list-style-type: none"> • Understand the basics of pro builder • Design a level using a pro builder • Adjusting lights • Case Study 2 (For further detail please see Annexure-III at the end) • Written Assessment <ul style="list-style-type: none"> • MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes) 	Assignment <u>Details may be seen at Annexure-IV</u>
Week 8	3D Modelling	<ul style="list-style-type: none"> • Feedback of the previous Task • Setup Autodesk Maya • Learn how to get a free student license • Understanding the layout of the software • Understanding the tools • Creating a simple object • Creating a complex object • Understanding UV unwrapping • Learning the materials • Rendering • Exporting to unity • Success story (For further detail please see Page No: 5 and Annexure-III at the end) • Start of Entrepreneurship • Written Assessment <ul style="list-style-type: none"> • MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes) • Institute/Work ethics (For further detail please see Annexure-II at the end) 	Task – 6 <u>Details may be seen at Annexure-I</u> • Monthly Test 2

Week 9	3D Modelling	<ul style="list-style-type: none"> • Feedback of the previous Task • Motivational Lecture(<i>For further detail please see Page No: 4</i>) • Learning key frames • Graph editor • Export animation to unity • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> 	<p>•Task – 7 <i><u>Details may be seen at Annexure-I</u></i></p> <p>•Home Assignment <i><u>Details may be seen at Annexure-IV</u></i></p>
Week 10	Unity AR	<ul style="list-style-type: none"> • Feedback of the previous Task • Introduction • Vuforia Engine • Installing • Creating a project • Adding Digital scene • Building and running app • Success story(<i>For further detail please see Page No: 5 and Annexure-III at the end</i>) • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • <i>Case Study (For further detail please see Annexure-III at the end)</i> 	<p>Task – 8 <i><u>Details may be seen at Annexure-I</u></i></p>
Week 11	Designing Bird	<p>This week is about designing the game assets in Photoshop. We will learn the basics of Photoshop, its interface and tools. In this week we will cover the following topics:</p> <ul style="list-style-type: none"> • Feedback of the previous Task • Installing Photoshop 	

		<ul style="list-style-type: none"> • Installing illustrator • Learning basic tools • Creating shapes • Splash screens • Icons • Written Assessment • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> 	
Week 12	UI	<ul style="list-style-type: none"> • Creating background • Looping background • Creating the main menu • Buttons • Scene management • Scripting to control bird • Game over UI • Restart UI • Score management • Motivational Lecture(<i>For further detail please see Page No: 4</i>) • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • Institute/Work ethics (<i>For further detail please see Annexure-II at the end</i>) 	<ul style="list-style-type: none"> • Task – 9 <i><u>Details may be seen at Annexure-I</u></i>
Week 13	Overview of the previous weeks & Mid Term Examination		
Week 14	2D Game	<ul style="list-style-type: none"> • Feedback of the previous Task • Tiled vs. Sprite • Creating resources 	<ul style="list-style-type: none"> • Task – 10 <i><u>Details may be seen at Annexure-I</u></i>

		<ul style="list-style-type: none"> • Setting up level • Adding character • Controlling player • Spawn enemies • Collectables • Game over • Success story <i>(For further detail please see Page No: 5 and Annexure-III at the end)</i> • Introduction to Freelancing • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • <i>Case Study (For further detail please see Annexure-III at the end)</i> 	
Week 15	Knowing Unity Input Systems	<ul style="list-style-type: none"> • Feedback of the previous Task • Basic input system • Adding or changing input keys in editor • Understanding joystick inputs • Touch controls & Swipe input • Axis to control the touch input • Creating touch joystick to control a ball • Success story <i>(For further detail please see Page No: 5 and Annexure-III at the end)</i> • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • <i>Case Study (For further detail please see Annexure-II at the end)</i> • Freelancing sites and starting actual 	

		<p><i>Game Development / General Topics)</i></p> <ul style="list-style-type: none"> • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • Institute/Work ethics (<i>For further detail please see Annexure-II at the end</i>) 	
Week 18	<p>Game Networking 2</p> <p>CV Building</p>	<ul style="list-style-type: none"> • Feedback of the previous Task • Motivational Lecture(<i>For further detail please see Page No: 4</i>) • Using PRCs • User interface • Shooting System • Gun fx • Health System • Respawning • Tweaking • Session on CV Building. • How to make notable CV. • Dos and Don'ts of CV making. • Success story(<i>For further detail please see Page No: 5 and Annexure-III at the end</i>) • Freelancing <i>continued....</i> • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> 	<p>•Task – 14</p> <p><u><i>Details may be seen at Annexure-I</i></u></p>

<p>Week 19</p>	<p>Learn how to start making the game</p>	<ul style="list-style-type: none"> • Feedback of the previous Task • Where to start to develop a game • How to collect references • Rough Sketches • Creating Blueprint • Writing a story for your game • Gathering requirements • Making a list of all the assets required • Dividing the work into a team • Case study <i>For further detail please see Page No: 5 and Annexure-III at the end</i> • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> • Freelancing <i>(Get more small projects of Game Development / General Topics)</i> 	<p>•Task – 15 <u><i>Details may be seen at Annexure-I</i></u></p>
<p>Week 20</p>	<p>Practice (Everything learned so far)</p>	<ul style="list-style-type: none"> • Feedback of the previous Task • Motivational Lecture <i>(For further detail please see Page No: 4)</i> • Character creating • Rigging • Animating • Setup animations in unity • Character control • Shooting system • Physics collision • Spawning • Health system • Creating UI 	<p>•Task – 16 <u><i>Details may be seen at Annexure-I</i></u></p>

		<ul style="list-style-type: none"> • Attack system • Picking up items • Session on Self-Employment • How to start a Business. • Requirements (Capital, Physical etc) • Benefits/Advantages of self-employment • Freelancing (<i>Get more small projects of Game Development</i>) • Written Assessment <ul style="list-style-type: none"> • <i>MCQ Type having 30 questions with maximum 4 options per question (Time Allowed: 40 Minutes)</i> 	
<p>Week 21 to Week 23</p>	<p>Start your project</p>	<ul style="list-style-type: none"> • During the month (week 21 to 24) it is required to create a complete game. From generating Idea to gathering r resources and reference images. A plan is to divide month into four weeks and assign specific task to each week and start working according to your plan. • Motivational Lecture(For further detail please see Page No: 4) • Generate Game idea • Gather Requirements • List of systems to be used • Gather reference images • Communicate with gamers what they like in games • Do your paperwork before starting a project • Start from creating modules • Model required 3d assets 	

	Overseas Employment General	<ul style="list-style-type: none"> • Player control • Another system according to your game • Case Study (For further detail please see Page No: 4) • Session on General Overseas Employment opportunities. • Job search Avenues. • Visa Processes and other necessary requirements. • Immigration Information (Legal age requirements, Health Certificate, Police Clearance & Travel Insurance) 	
Week 24	Revisions, free lancing and overseas employment	<ul style="list-style-type: none"> • Revision of all previously studied material. • Free lancing and earning result • Selection of two countries of destination (Gulf Countries, Malaysia, South Korea etc) focusing on:- <ul style="list-style-type: none"> I. Trade specific Job Prospects and Earning levels in that country. II. Country Specific Labor laws, entry and exit requirements (Legal age requirements, Health Certificate, Police Clearance & Travel Insurance etc.). 	
Week 25	Business Development and Entrepreneurship	<ul style="list-style-type: none"> • Free lancing continued.... • Session on Self-Employment • How to start a Business. • Requirements (Capital, Physical etc) • Benefits/Advantages of self-employment 	
Week 26	Final Assessment and project	<ul style="list-style-type: none"> • Final Project & Assessment 	Final Assessment

Annexure-I

Tasks For Certificate in IT (Game Development & Modelling)

Task No.	Task	Description	Week No
1	Create a ZigZag Game	First make a floor then create a ball and when button is pressed, ball starts moving. After moving the ball, we will use and if-else statement to change the direction of the ball on input. Now write a camera script to follow the ball by using vectors. Then we will learn how to instantiate prefab in-game and then will generate random cubes to make a path like a Zigzag	Week-3
2	Enhancing ZigZag Game	Add scoring system in the game. For this, use the time and update the score integer so every second score will increase and by using this score, the speed of the ball will also increase after every 10 seconds. After that, create a simple UI of the main menu, game over menu and buttons to restart or play a game.	Week-4
3	Creating a 1st Person Shooting Game	First set up a character controller and its animations and then create a script to control these animations. Also work on blend trees to move look more realistic. Then use raycasting for shooting and simple integers and if-else statements to make an ammo system	Week-5
4	Creating Enemy in 1st Person Shooting Game using AI	Set up enemies and also create a navmesh surface so enemies know which surface is walkable and how they can get to the player. Use ragdoll animation so make enemies look realistic when they die. Use particle system to make blood and instantiate this blood particle whenever enemy is hit. Use an event system to make the melee attack better also create a health system and connect it to UI to show in the game.	Week-6
5	Creating Forrest in 1st Person Shooting Game using Unity terrain system and pro builder	Create a simple terrain and then texture it to create a path and use the terrain tool to make hills and create a forest by adding trees and grass by using unity standard assets. Use pro builder to create a building.	Week-7
6	Knowing 3D Modelling	Create a simple model then texture and render it. After that use reference images to create a complex model. After modelling, we will export it to unity in order to see how measurement works in different software.	Week-8
7	Rig and Animate 3d	This week we will work on animation in Maya. We will	Week-9

	model created in previous Week	Use a model created in previous week and then rig both human character and a non human character. Now use key frames and animate the model and then export it to unity. Create an animation for equipping a gun, firing and reloading a gun.	
8	Unity Augmented Reality (Create 3d model in Maya and then use it in AR app)	Use Vuforia engine to create an application and show the object in the real world.	Week-10
9	Designing UI of Flappy bird	Design sprites for 2D game in which you have to create a background like a continuous image also design button sprites and Main menu screens.	Week-12
10	Make Mario game using 2D Game development	To create a sprite base 2D game, first create a simple character in Photoshop and then animate it. Create to control the player add levels of game. Also add enemies..	Week-14
11	Adding Sounds and particles in game	Add sounds in 2D game developed in week-14. Create particles in order to give blood effects, the bullet hit effects and muzzle flash.	Week-16
12	Publish Game on Play Store	Publish the 2D game developed by your trainees on play store	Week-16
13	Creating Networked Game	Use the photon to create a networked based game developed in Week-16.	Week-17
14	Enhance Networked Game	Enhance the networked game developed in Week -17 by adding Shooting System, Health System, Respawn and Tweaking	Week-18
15	Make a game for Someone after gathering his/her requirements (Make 2 or 3 Members Team)	Make a game on the basis of the requirement given by client. For this purpose you have to find a client for yourself and gather his/her requirements in order to make a complete game. For this purpose, first you have to collect references, Rough Sketches, Creating Blueprint, Writing a story for your game, Gathering requirements. Divide the work among the team members and make a list of all the assets required.	Week-19
16	Make a game using all of the topics studied till date	In this task you have to practice all the things you have learned so far. You have to create modules like Character creating,	Week-20

		character controller, rigging, setting up animation in unity, shooting system, health system, physical collision, spawning, attack system with User Interface.	
17	Start your project (Complete in 1 month)	<p>For the purpose of your Project, you have to generate a game idea and for this purpose you have to gather requirements gather resources and reference images. Then you have to make a plan and then divide it into four weeks and then start working according to your plan.</p> <p>You have to achieve:</p> <ul style="list-style-type: none"> • Generate Game idea • Gather Requirements • List of systems to be used • Gather reference images • Communicate with gamers what they like in games • Do your paperwork before starting a project • Start from creating modules • Model required 3d assets • Player control • Another system according to your game • Publish this game on Play store 	Week-21 to 24

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue or value to strengthen character and individual abilities. It is a set of values centered on importance of work and manifested by determination or desire to work hard.

The following ten work ethic are defined as essential for student success:

1. Attendance:

Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. Character:

Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. Team Work:

The ability to get along with others including those you don't necessarily like. The ability to carry your own weight and help others who are struggling. Recognize when to speak up with an ideas and when to compromise by blend ideas together.

4. Appearance:

Dress for success, set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a life time

5. Attitude:

Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems and procedures in light of changing responsibilities.

6. Productivity:

Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your

work, do things the best you know how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. Organizational Skills:

Make an effort to improve, learn ways to better yourself. Time management, utilize time and resources to get the most out of both. Takes an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. Communication:

Written communication, being able to correctly write reports and memos.

Verbal communications, being able to communicate one on one or to a group.

9. Cooperation:

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing workplace situations and the application of new or different skills.

10. Respect:

Work hard, work to best of your ability. Carry out orders, do what's asked the first time. Show respect, accept and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions and suggestions.

Suggestive Format and Sequence Order of Success Story

S. No	Key Information	Detail/Description
1.	Self & Family background	<ul style="list-style-type: none"> • Self-introduction • Family background and socio economic status, • Education level and activities involved in • Financial hardships etc
2.	How he came on board NAVTTC Training/ or got trained through any other source	<ul style="list-style-type: none"> • Information about course, apply and selection • Course duration, trade selection • Attendance, active participation, monthly tests, interest in lab work
3.	Post training activities	<ul style="list-style-type: none"> • How job / business (self-employment) was set up • How capital was managed (loan (if any) etc). • Detail of work to share i.e. where is job or business being done; how many people employed (in case of self-employment/ business) • Monthly income or earnings and support to family • Earning a happy life than before
4.	Message to others (under training)	<ul style="list-style-type: none"> • Take the training opportunity seriously • Impose self-discipline and ensure regularity • Make Hard work pays in the end so be always ready for the same.

Note: Success story is a source of motivation for the trainees and can be presented in a number of ways/forms in a NAVTTC skill development course as under:-

1. To call a passed out successful person of institute. He/she will narrate his/her success story to the trainees in his/her own words and meet trainees as well.
2. To see and listen to a recorded video/clip (5 to 7 minutes) showing a successful person Audio video recording that has to cover the above mentioned points.
3. The teacher displays the picture of a successful trainee (name, trade, institute, organization, job, earning per month etc) and narrates his/her story in teacher's own motivational words.

Home Assignment

Designing Effective Homework

To achieve a positive impact on student learning, homework assignments must be well-designed and carefully constructed. Some specific research findings include:

- ▶ Homework is most effective when it covers material already taught.
- ▶ Homework is most effective when it is used to reinforce skills learned in previous weeks or months.
- ▶ Homework is less effective if it is used to teach complex skills.

Characteristics of Good Assignments

When teachers plan homework, they should consider the characteristics listed below:

- ▶ Provide clear instructions for students;
- ▶ Can be completed successfully and is not too long;
- ▶ Can be completed within a flexible time frame;
- ▶ Use information and materials that are readily available;
- ▶ Reinforce and allow practice of previously taught skills;
- ▶ Must not be unfinished class work;
- ▶ Are interesting to students and lead to further exploration and study;
- ▶ Stimulate creativity and imagination in the application of skills;
- ▶ Stimulate home and class discussion

Homework Don'ts

Do not assign homework that:

- ▶ is unfamiliar, boring or impossible to do
- ▶ requires complex skills or requires unreasonable time frames
- ▶ is a “time filler” to keep students busy or a punishment for not doing class work
- ▶ do not wait until the last minute to organize and assign the *homework* (*You may give useless or impossible tasks and/or giving inadequate directions*)
- ▶ do not assume that all homes have equal resources, that all parents have equal skills and talents to support their children as learners
- ▶ do not collect any homework you do not intend to check, review or grade.
- ▶ do not assign homework that is so difficult and unfamiliar to students that their parents are tempted to:
 - do the work for them;
 - accuse their children of being inattentive in class; or
 - accuse their children of failing.

References

1. A Union of Professionals, Classroom Tips, Assigning Effective Homework
<https://files.eric.ed.gov/fulltext/ED516934.pdf> visited on 7th June, 2020