A photograph of three young adults in a modern office or classroom environment. A man with glasses and a blue blazer is holding a tablet, looking at the screen. A woman with glasses and a yellow scarf is standing behind him, also looking at the tablet. A man with short brown hair is standing to the right, looking at the tablet with a smile. The background shows wooden pillars and a whiteboard.

Version 1.0

Game Design and Development with Unity

Assessment Four

Go-Go Kart

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Welcome to The Academic Institute of Excellence

The AIE (Academic Institute of Excellence) family of educational brands, we represent some of SA's leading learning institutes. Known for our innovative approach to quality education, our excellence in delivery and modern technological approach, we are a family proud of our brands, people and students.

Our Vision

To deliver demand-driven education, built upon the principal of quality education through innovation and technology.

Our Mission

To work tirelessly towards continuous improvement and dedication to quality education.

To create, develop, support and deliver innovative programs that will prepare our learners for a future of exponential industrial disruption with a strong focus on innovation and technology, empowering future generations to solve problems, to think critically, to innovate and to empower others.

To design learning paths by analyzing global skills demands and providing relevant programs to meet these demands, creating employable, productive, emotionally intelligent and skilled learners.

To deliver programs in a smarter, more efficient and cost-effective way through innovation and technology, extending the reach of our learning interventions.




Teaching Philosophy

Please remember that as the programme is outcomes based – this implies the following:

- You are responsible for your own learning – make sure you manage your study, practical, workplace and portfolio time responsibly.
- Learning activities are learner driven – make sure you use the Learner Guide, Learner Workbook and Learner Portfolio of Evidence Guide in the manner intended and are familiar with the Portfolio requirements.
- The Facilitator is there to reasonably assist you during contact, practical and workplace time of this programme – make sure that you have his/her contact details.






Our Learning Delivery Methods

Study methods generally vary from person to person. We have created a learning experience that appeals to the different study habits of our students and those currently in a full time job.

Full Time		Reach your full potential through our instructor led classes combined with interactive lessons, practical assignments and in field experience. Our full time offering consist of a full working day, 8 hours per day divided into multiple periods.
Part Time		Designed for the working professional, our part time program covers the same amount of information as our full time offering. Combined with our Online Learning, at home exercises/assignments and in class lectures, this will have you ready for exams in no time.
Correspondence		We have re-defined correspondence studies. Our Assisted Distance Learning ensures that the student never gets left alone to do only self-study by combining online Virtual Classrooms and at home exercises and assignments, all managed by our <i>myAcademy</i> Student Portal.

Keys to Icons

The following icons are used throughout the study guide to indicate specific functions:

	Take note This icon indicates information of importance.
	Activity This indicates activity to be completed in the Learner Workbook for assessment purposes
	Video Lesson This refers to video lessons
	Quiz This icon indicates an online quiz
	Additional reading This icon indicates further studies or reading.

External Sources and References

*STUDENTS NEED TO BE CAUTIOUS BECAUSE SOME EXTERNAL SOURCES DO NOT
NECESSARILY DEMONSTRATE THE CORRECT TECHNIQUES.*

- Students should consult with the Mentor regarding the usefulness of tutorials.
- Generally, students should try to take in as much as possible from lessons and practice applying techniques in similar ways to create their own storyboards, Treatments and concept art.
- Students should constantly practice what they are learning. The projects themselves should take up a lot of time, but if students find that they have extra time, they should apply what they have learnt in making their own characters or objects.
- Learning requires allocation of time for each module. Students are advised to follow the study planner and preparation guide.
- All students are advised to apply concepts learnt during lesson activities at or practical sessions.
- Students are encouraged to use effective work habits to master the subject easily. Effective work habits are an easy way out avoiding last minute productions. Working smarter can be thought and the implemented to improve your ability to produce great quality work. These habits include approaching work with the right attitude, choosing the right environment, minimizing distractions, setting a realistic schedule.
- Images included within the assessment document are there for INSPIRATIONAL PURPOSE and should not be considered as a restriction or a limitation to what is required from the assessment.

Tips for students

- Understand course expectations.
- Know the syllabus and the weight of each project
- Communicate when you are struggling.
- Get/Stay Organized
- Use Time Wisely
- Become "Noteworthy"
- Take notes in lessons
- Rewrite or organize notes on your computer outside of class
- Use Textbooks do not just rely on what you find on the internet
- Read all assigned material.
- Know what's critical
- Use outlining system to help comprehend material.

10 Habits to Work More Effectively

- Don't attempt to cram all into one session.
- Plan when you're going to work.
- Study at the same time.
- Each work session should have a specific goal.
- Never procrastinate your planned work session.
- Start with the easier topic/tasks first rather than attempting the hardest thing and then getting desponded.
- Always review your notes before starting a project.
- Make sure you're not distracted while you're working.
- Use work groups effectively.
- Review your notes and other course materials over the weekend.

10 Things that require ZERO Talent

- Being on time.
- Work Ethic
- Effort
- Body Language
- Energy
- Attitude
- Passion
- Being Coachable
- Doing Extra.
- Being Prepared

Assessment Description



(Originals)

In this assessment you are required to create your very own kart racing game, you will need to make six different racers and 2 different tracks using the tools in Unity 3D. Most kart racers have power ups, stage hazards and most importantly short cuts. But let's add a little more into this kart racer, you will also need to set up a death battle system in the game so players can take out other opponents if they can't catch up.

On top of programming the game you will also have to model your racers and use the theme of hand painted looking assets, and you may use free assets from unity's assets store. Any asset you use however must be mentioned in your Game Design Document. Your modeled karts can be lowpoly.



Weighting of this Assessment towards your Final End Year Mark is 10%

Assessment Duration 4 Week

*Images included within the assessment document are there for INSPIRATIONAL PURPOSE and should not be considered as a restriction or a limitation to what is required from the assessment.

Learning Outcomes

- Create designs/concept art for your unique game.
- Complete research on the topic that is required for the assessment.
- Write a Game Design Document (GGD).
- Importing supplied assets.
- Use the Unity assets store.
- Create C# scripts using Microsoft Visual Studio.
- Start making use of the Grey Boxing technique to block out the approved game concept.
- Exporting the game for Microsoft Windows Platform.
- Script health and damage stats using C# for the player ship.
- Script score tracking using C#.
- Insight into the game creation process.
- Insight into the production pipeline of a Game Design Studio.
- Insight in how to plan your game production and set goals to work towards.
- Industry standard coding practices.
- Setting up a file structure that is production pipeline friendly.
- Exporting the game for Microsoft Windows Platform.
- Have the player respawn when they are destroyed and then restart at the start of the level.
- Have a loose condition within the game.
- Have a win condition within the game.
- Make use of the UI tools within Unity 3D.
- Use the particle engine within Unity 3D.
- Refine the Game Design Document (GGD).
- Reinforce industry standard coding practices.
- Plan the timeline for the game creation process.
- Setting up a File structure that is production pipeline friendly.
- Have power-ups for the player.
- Publish final game for Microsoft Windows.
- Finalize the Game Design Document (GDD).
- Do the final folder structure clean up before creating the final ZIP file
- Create the final ZIP file for the assessment submission.
- Upload the assessment to the portal.

Assessment Restrictions

- Design and plan two different course.
- Use the theme of hand painted.
- If the student wants to use the unity assets store, they can only use free assets.
- If any free assets from the unity store are used the student must include links to these assets in their Game Design Document.
- The kart racer must include a death victory system.

Minimum Requirements

- ☐ The kart racers need to be concepted and drawn by you for your game.
- ☐ The approved kart racers must be modeled using Autodesk Maya.
- ☐ The racetracks must be concepted and drawn by you.
- ☐ All modeled assets must be UV'ed using Autodesk Maya.
- ☐ All UV'ed assets must be textured using Autodesk Mudbox.
- ☐ Three power-ups for the racers.
- ☐ A system where the player and enemy can destroy one another.
- ☐ Keep of the place each player is in.
- ☐ Show kart's HP bars.
- ☐ Player should be able to exit the game using a Pause Menu while playing.
- ☐ Have a win/lose system if the player can complete three laps.
- ☐ The final game must have audio, the audio will be in the form of sound effects and background music and sounds.

Submission Policies

Plagiarism and Cheating

Disciplinary action will be taken against any students who are caught cheating or plagiarizing.

Stealing

Stealing will not be tolerated, any student caught stealing will face the full wrath of the law.

Criminal charges will be laid against any offenders.

Copying other developers code is also considered as stealing as you are required to develop the game using the skills that you learn throughout this course.

Files and Folders

Each brief needs to be submitted as a **SINGLE ZIPPED** file. Your name and surname with assessment number must be the name of the zipped file. If the final ZIPPED file is too large to be uploaded to the portal you are required to create a document with a share link to the ZIP file along with your name and surname and assessment number within the document. This document must then be saved as a PDF and uploaded to the portal. So that the Mentors can download your submission from the cloud storage of your choice.

Please refer to Appendix A for the folder structure for your final submission before creating the final ZIPPED file that you are required to submit.

Method of Assessment

Summative Assessment:

The NQF's objective is to create independent and self-sufficient learners. This means that you will also be required to do independent research and assignments, such as Knowledge Questions Practical Activity (completed in the workplace), Witness Testimony and Logbook. The assessment process is discussed in detail in the Learner Portfolio of Evidence Guide. When you are ready, you will advise your mentor that you are ready for assessment. He or she will then sign off the required sections in the Learner Portfolio of Evidence Guide and you will be able to submit your Portfolio of Evidence for assessment. The summative assessment activities placed in the Learner Portfolio of Evidence Guide for your convenience. If any of your assessment is conducted using observation, role plays or verbal assessment, place a signed copy of the checklists, once completed by your mentor or line manager in your Learner Portfolio of Evidence Guide, as indicated.

The Mentor will Assess Your Submission

If successful, you will receive the credit value of this learning program. The entire assessment process is explained in the Learner Portfolio of Evidence Guide and you are urged to read this guide as soon as possible as it explains the assessment process in detail and clarifies your rights and responsibilities to ensure that the assessment is fair, valid and reliable. If you are not successful, you will receive all the guidance needed to resubmit your Portfolio of Evidence within a specific time period, as per the Training Provider requirements.

Classroom Behavior

- Classroom disruptions will not be tolerated
- Disrespect towards Facilitator/Mentors, administrative staff and or fellow students will not be tolerated, and such offenders will be subject to disciplinary proceedings (refer to the Student Code of Conduct)
- Consumption of alcoholic beverages and or narcotic substances is strictly prohibited, and criminal charges can be laid against such student/s
- Bigotry and prejudices will not be tolerated
- Use of polite speech and body language
- Students must use polite speech when responding to the lecturer or fellow classmates.

Classroom Participation

- Students are required to be actively involved in class projects, group activities, assessments, class activities and or presentations as may be required by the Facilitator/Mentor.
- Students are required to attend class prepared and they must complete the task delegated to them in time.
- Students must take break only during break time. No students will be allowed to take break in the middle of the lecture or lesson.
- An Eighty Percent (80%) attendance record must be obtained during the time frame of the assessment.



(Carmageddon Max Pack)

Preproduction

- Design your own two racetracks environment through illustration.
- Design your own kart racers through illustration.
- Complete concept illustrations of all assets that you will included in your game.
- Write your Game Design Document.
- References all images/inspiration that you used to help you in the concepting phase for Preproduction within your Game Design Document.
- Use MLA Harvard referencing method within your Game Design Document for any work you used from other artists or website and books.

3D Modelling

- Model any required assets for your game that you drew out concept art for.
- Model the world that your player is going to have to play through that you concepted during the Pre-Production phase.
- Model the approved character that the player will be using as the main character in your game.
- All assets modelled must have to concept art approved before they are modelled.

UV Layout

- Use Autodesk Maya to create simple UV maps for texturing.

Photo Based Rendering (PBR) Setup

- UV map all created models and assets.
- Texture all UV mapped models and assets.

Production

- Create your game using Unity 3D and Microsoft Visual Studio.
- Use the latest version of the Unity 3D engine for the creation of your game.

Postproduction

- Export your game for Microsoft Windows
- Finalizing your Game Design Documents so that it reflects your process of the game creation.

Pacer

<i>Timeline</i>	<i>Progress Checklist</i>
Week 01	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Start writing the game design document. <input checked="" type="checkbox"/> Start concepting designs for assets. <input checked="" type="checkbox"/> Set up Unity project. <input checked="" type="checkbox"/> Start creating 3D assets
Week 02	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Start prototyping gameplay. <input checked="" type="checkbox"/> Prototyping Mechanics. <input checked="" type="checkbox"/> Complete Concept designs for assets. <input checked="" type="checkbox"/> Update game design document. <input checked="" type="checkbox"/> Start on in-game UI.
Week 03	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Prototyping of gameplay completed. <input checked="" type="checkbox"/> Complete assets. <input checked="" type="checkbox"/> Update Game Design Document. <input checked="" type="checkbox"/> Add sound effects.
Week 04	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Polish game play. <input checked="" type="checkbox"/> Complete In game UI. <input checked="" type="checkbox"/> Complete game design document. <input checked="" type="checkbox"/> Submission.

Deliverables Checklist

- ☐ Game Design Document exported as a PDF.
- ☐ The Autodesk Maya projects for the Karts that you created for your game.
- ☐ Your final exported game Microsoft Windows.
- ☐ The Unity 3D project for your game that you created.

All the above **MUST BE ZIPPED TOGETHER** using an application like WinRAR so that there is just **ONE FILE** that gets uploaded to the portal. Please refer to the Submission Structure document that is on the Portal.

Assessment Section Weightings

<i>Areas of Assessment</i>	<i>Weight</i>
Preproduction	15%
Modelling	15%
Texturing	10%
Production	55%
Postproduction	5%



(Simmons)

Additional Open Education Resources (OER)

Websites

Unity user's manual

<https://docs.unity3d.com/Manual/index.html>

Mudbox Tutorials

<https://area.autodesk.com/all/tutorials/mudbox/>

Autodesk Maya user manual

https://download.autodesk.com/global/docs/maya2014/en_us/

Videos

Adobe Creative Cloud's channel

<https://www.youtube.com/user/AdobeCreativeCloud>

Unity 3D's channel

<https://www.youtube.com/user/Unity3D>

Blizzard Style Hand-Painted Textures

<https://www.youtube.com/watch?v=njxJUAXc7yo>

Hand-Painted Texture Tutorial: Stone

<https://www.youtube.com/watch?v=fNa49OY0o9E>

Brackeys

https://www.youtube.com/channel/UCYbK_tjZ2OrIZFBvU6CCMiA

Maya Learning Channel (Contains information on Autodesk Mudbox)

<https://www.youtube.com/user/MayaHowTos>

Autodesk's Channel

<https://www.youtube.com/user/Autodesk>

Books

Introduction to Game Design, Prototyping, and Development: From Concept to Playable Game with Unity and C# (2nd Edition)

https://www.amazon.com/Introduction-Game-Design-Prototyping-Development/dp/0134659864/ref=sr_1_1?ie=UTF8&qid=1546836883&sr=8-1&keywords=introduction+to+game+design

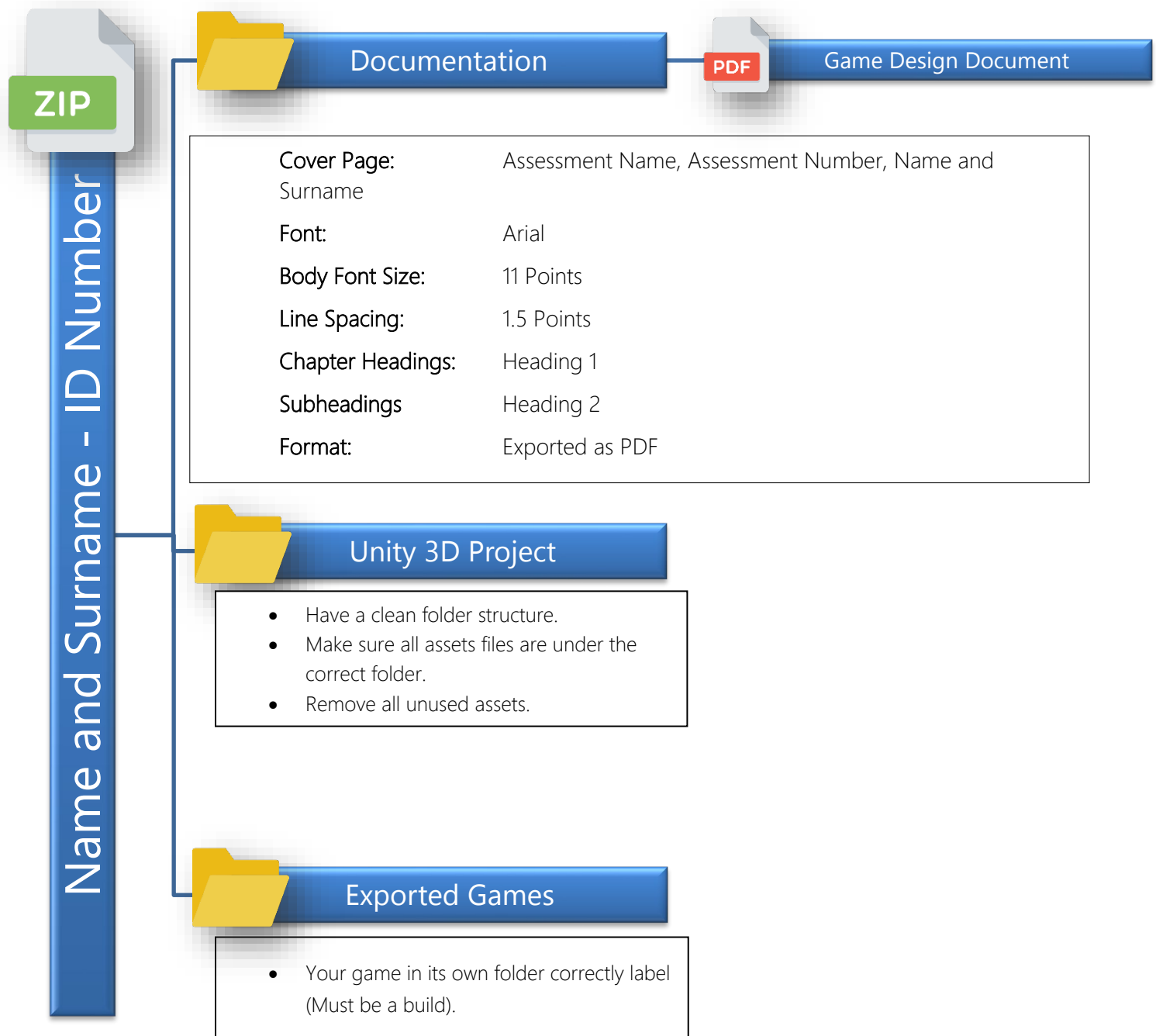
Fundamentals of Game Design (3rd Edition)

https://www.amazon.com/Fundamentals-Game-Design-Ernest-Adams/dp/0321929675/ref=sr_1_2?ie=UTF8&qid=1546836839&sr=8-2&keywords=game+mechanics+advanced+game+design

Recommended Extra Activities

- Get yourself a A4 Dairy that has each day as a full page get an actual dairy do not rely on Apps and setting up schedule on your phone or laptop. You can use your devices to set alarms for your working hours and lunch times and other timers that would help you keep on track during your workday.
- Get yourself sticky notes that will be used as task and goal markers
- Set out reasonable and obtainable goals for each week that runs for the duration of this project. Write them out on the sticky notes and stick them in at the end of each week that you are aiming to have that goal/task completed.
- In the morning of each day set yourself task that you would like to have completed for the day and write out each task on its own sticky note and check them off as you complete them.
- At the end of the day carry over the tasks that you did not complete for the day to the next day.
- Set yourself an hour break each day in to dairy for an hour and take a break each day during that time. **KEEP TO THE SCHEDULE**. Remember taking breaks are just as important as the work.
- Set out for yourself a workday like it would be in a studio. For example, from 8:30 till 17:00. This will be the time you need to get your work done in.
 - If you are employed and during the Course part-time or online do the same as mentioned above but set something up that would work for your schedule and use your Weekends as work days and set yourself working hours that you need to stick to.

Appendix A – Submission Structure



Bibliography

Carmageddon Max Pack. 30 August 1997. Image. 29 January 2020.

<https://www.gog.com/game/carmageddon_max_pack>.

Originals, TR. *techraptor.net*. 3 September 2017. Image. 29 January 2020. <TR Originals>.

Simmons, Jacob. *10 Kart Racing Games You Won't Believe Exist*. 25 June 2019. Image. 29 January 2020.