

## COURSE CONTENT

<b>Course Code</b>	DT2019
<b>Course Title</b>	Animation for Games II
<b>Pre-requisites</b>	DT2018 Animation for Games I
<b>No of AUs</b>	3
<b>Contact Hours</b>	39

### **Course Aims**

In this practical course you will acquire a high standard of proficiency in creating assets and animation for a real-time game engine. You will explore character creation, cyclic animation and nonlinear animation editing for games. You will create a variety of models from humans to props and animals. You will investigate stylized body mechanics, motion capture editing and retargeting, using a range of specialist workflows, techniques and software tools. This course will prepare you for more sophisticated applications for games, VR and real time application for narrative animation and visual effects.

### **Intended Learning Outcomes (ILO)**

By the end of this course, you should be able to:

1. Create characters and motion that operate successfully in a real time/game environment.
2. Apply stylized body mechanics to a character that will be key animated or motion captured.
3. Demonstrate proficiency with advanced real time animation work flows and techniques.
4. Creatively apply principles learned in class to your own animations.
5. Critique your own advanced techniques and your peers' animations and motions in a clear and constructive manner.

### **Course Content**

- **Assets for real time.**  
You will receive an overview of key concepts and theories around the creation of characters, environments and props to be employed in a real-time context. You will perform exercises which will reinforce a specific range of techniques and principles.
- **How to animate for real time.**  
A series of lectures with examples will present an overview of the unique characteristics of creating movement for games. You will then perform a series of exercises to provide you with the experience of working in this medium. An emphasis will be placed on technique, workflows and best practice, in order to create expressive, efficient animations for real time.
- **Non-linear animation and motion capture editing**  
Building on your existing skillset, you will create a series of complex cycles and animation sets. Through the use of motion capture data and key animation you will apply advanced concepts in the creation of character stylized motion that can be edited and refined in a non-linear way to be deployed in an interactive environment; this includes, but is not limited to creatures, character interaction and props animation.
- **Transfer the knowledge acquired to your own personal work.**  
Through a series of in-class projects, you will create a short game cinematic that includes characters, props and environments to be deployed in real time software. This will enhance

and expand your understanding of creating a proper game pipeline.

**Assessment (includes both continuous and summative assessment)**

Component	ILO Tested	Programme LO	Weighting	Team/ Individual
<p><b>Continuous Assessment</b> Assignments based on in-class activities/exercises (refer to activities in weekly schedule)</p>	1,2,3,4	N.A.	40	Individual
<p><b>Final Project:</b> Assemble and present a short cinematic that is deployed in a real time environment.</p>	1,2,3,4,5	N.A.	40 (20% will be assessed based on the individual's performance, and 20% will be assessed based on the group's overall performance.)	<p>Team or Individual</p> <p>(Small groups are formed in order to research and present material on a given topic, however while the group project is assessed holistically (based on depth of research, clarity of argument, effective structuring of material), individual contributions are taken into account as evidenced through each individual spoken contribution to the presentation, so that the grade is balanced between the group and individual student and</p>

				discrepancies of quality and effort can be accounted for.)
<b>Continuous Assessment: Participation</b>	5	N.A.	20	Individual
Total			100%	

### Recommended Reading and References

1. Assaf, Eyal. *Rigging for Games: A Primer for Technical Artists Using Maya and Python*. Focal Press, 2015.
2. Cooper, Jonathan. *Game Anim: Video Game Animation Explained: A Complete Guide to Video Game Animation*. CRC Press, 2019.
3. Spencer, Scott. *ZBrush Creature Design: Creating Dynamic Concept Imagery for Film and Games*. John Wiley & Sons, 2012.
4. Whitlatch, Terry. *Science of Creature Design: Understanding Animal Anatomy*. Design Studio Press, 2015.

### Course Policies and Student Responsibilities

#### (1) General

Students are expected to complete all assigned activities, assignments, attend all classes punctually and complete all scheduled assignments by due dates. Students are expected to take responsibility to follow up with assignments and course related announcements. Students are expected to participate in all project critiques, class discussions and activities.

#### (2) Punctuality

Students are expected to be punctual for all classes. If you are more than 30 minutes late, you will be deemed as absent and will not be able to sign in to the attendance register.

#### (3) Absenteeism

In-class activities and participation make up a significant portion of your course grade. Absence from class without a valid reason will affect your participation grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

### Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognise your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip

yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, and collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [academic integrity website](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

### Planned Weekly Schedule\*

\*Subjected to adjustment by instructor according to students' progress, public holidays and unforeseeable circumstances.

Week	Topic	Course LO	Readings/ Activities
1	<b>Assets for real time</b>	1,2	<b>Introductory Lecture :</b> introduction to course objective and goals <b>Lecture:</b> Modelling low to mid resolution characters, props and simple modular environment. Introductory class activities.
2	<b>Full body IK set up and use</b>	1,2,3	Rigging for games. FBIK set up for different creatures <b>In-class exercise:</b> creation your own animation assets
3	<b>Exploit the full body IK for creature creation</b> Overview of key issues and concepts in relation to creating a complex character for a game	1,2,3	Rigging for games. FBIK set up for different creatures <b>In-class exercise:</b> continue on creation your own animation assets
4 - 5	<b>Animating animals and creatures</b> Overview of key issues and concepts in relation to animating quadrupeds and flying creatures	1,2,3,4	<b>Lecture:</b> Creature animation Comparative anatomy Understanding the fundamental principles of motions in the animal kingdom. Quadrupeds Birds in flight Quadrupedal gates <b>In-class exercise:</b> creation your own creature animation
6-7	<b>Motion Builder for key animation and motion capture editing</b>  Activities are planned for this class that will strengthen the skills of the student in creating efficient 3D animations for real time	1,2,3,4	<b>In-class exercises:</b> creating motion cycles <b>Lecture:</b> on Complex motion: Blending motion and non-linear editing Character with props that work on a game Create secondary action for games <b>In-class exercise:</b> Create a series of unique motion for the character that you have created

8	<b>Blending animation</b> <b>Nonlinear animation and cycle blending</b> <b>Create Animation Trees</b> <b>Animation Retargeting</b>	1,2, 3,4	<b>Lecture:</b> on Complex Motion; stylized and exaggerated motion for games, fighting and interacting; dealing with props. How all comes together.  <b>In-class exercises:</b> creating a series of actions and cycles that can be blended together.
9- 10	<ul style="list-style-type: none"> <li>• <b>Camera editing and use in games</b></li>   <li>• <b>Building a cinematic for game</b>  Creating a short cinematic of your own animations. Developed through peer/instructor feedback sessions in the course of the semester</li> </ul>	2, 3,4,5	<b>Lecture:</b> Assembling and exporting all the assets in a game engine ready for deployment.  <b>Final Projects</b> Assemble and animate a scenario demonstrating how characters, creatures and props interact with each other. Students work individually or in small teams of 2 or 3.  <b>Project Critique</b> lab class where students will receive personalised and team feedback as they work on their assignments
11-12	<b>Project workshop</b> Continuous review and feedback of final assignment through various stages of completion	2, 3,4,5	<b>Assigned Projects</b> <b>Project 4 Final assignment:</b> Students in studio work. Continuous assessment and feedback throughout production.
13	<b>Final Presentation</b>	2, 3,4,5	<b>Student Presentations:</b> final cinematic outcome correctly deployed in a game engine, critique and feedback