Course Descriptors

Programmes:

- **New Zealand Diploma in Animation (Level 5)**
- **New Zealand Diploma in Animation (Level 6)**
- **Bachelor of Computer Generated Imagery with majors in Animation, Visual Effects, Technical Research and Development**
- **Graduate Diploma in Computer Generated Imagery**

Qualifications:

- **New Zealand Diploma in Animation (Level 5) - NZQF No.2634**
- **New Zealand Diploma in Animation (Level 6) - NZQF No.2635**
- **Bachelor of Computer Generated Imagery with majors in Animation, Visual Effects, Technical Research and Development – NZQF No. 3925**
- **Graduate Diploma in Computer Generated Imagery – NZQF No. 3926**

nmit
Nelson Marlborough Institute of Technology
Te Whare Wānanga o Te Tau Ihu o Te Waka a Maui

The Programme Regulations describe the formal rules for the completion of the Programme and its constituent courses, and is approved by the Academic Board and made available to students either prior to or within one week of commencement of the programme.

Programme Regulations are the legally binding contractual obligations of staff and enrolled students. They are used by academic staff to guide delivery of the Programme and its courses.

*These Programme Regulations should be read in conjunction with the following sections of the **NMIT Academic Statute:***
> ***Section 2 Definitions***
> ***Section 3 Academic Regulations***
> ***Section 7 Schedule of Course Result Keys***

The NMIT Academic Statute applies to all NMIT programmes, whether delivered at NMIT, or in conjunction with another provider or by distance.

The Academic Statute is available from all Programme Area Offices, the Library Learning Centre and on the NMIT website.

The website address is: www.nmit.ac.nz

All NMIT policies listed in this document are also available on the NMIT website.

VERSION CONTROL

Academic Board approved 28th June 2018

Version	Approval date	Effective from	Brief description
18/1	28 June 2018		
18/1/01	01 November 2018	1 January 2019	Update Regulations from version 18/1/00 to 18/1/01 following outcome of NZQA Approval and Accreditation October 2018 Removal of references to Fully Online Delivery mode in the following sections: • 2.7 Schedule of Courses • 3 Delivery • 3.1 Mode of Delivery • 3.2 Learning and Teaching Approaches • 4.1 Entry Requirements • 5.1 Assessment Rationale • 5.8 Attendance Requirements • 6.1 Other Requirements for Fully Online Study 4.3 Recognition of Academic Credit – removal of Level 5 90 credit RAC limit • Removal of CGI507 Project 1 (30 credits) from the list of courses for which RAC is not available.

Refer to   *NMIT Academic Statute s.2 Definitions*

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CGI501 PROFESSIONAL PRACTICE 1

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**5**
EFTS	**0.125**
Teaching hours	**40**
Workplace learning hours	**0**
Total hours of self-directed learning	**110**
Total hours of student learning	**150**

Pre-requisites:	None
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others - Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Building and applying knowledge of professional and commercial CGI production practices and environments, the contexts in which they operate, safe work practices and the development of professional portfolios for the animated film and gaming industries.
Indicative Content (may include)	• Animated film and game development production pipelines • Workflows - best practice vs adaptive • Roles and departments • Collaborative environments • Business skills • Intro to pre-production • Intro animation/industry sectors • Ethics, copyright, IP, law • CG file formats • Treaty of Waitangi • Planning and developing a portfolio • Industry specialist terminology

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Present an overview of the business of animation in the film and gaming industries.
2	Describe specialist roles in professional film and game production studios.
3	Investigate how an industry production pipeline would be used for an animated film or real time game animation project.
4	Explain and discuss the fundamental aspects of media law, copyright, intellectual property and safe work practices as they relate to animation and game development, design and distribution.
5	Explain the implications of Te Tiriti o Waitangi on the development, production and use of animated film and real time game animation in New Zealand.
6	Investigate a range of production techniques used in the animated film and gaming industries.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Case study		1, 3, 4, 5	40%
Project		2, 6	50%
Professionalism		1, 2, 3,4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	• Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes.
	• Each summative assessment is assigned a percentage weighting.
	• The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments.
	• To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs
	• Tutors, tutorial assistants
	• Classrooms equipped with computer(s) and data projector
	• NMIT Moodle
	• Specialist guest speakers
	• Library including online resources
	• Industry standard software e.g. Maya, Zbrush, Houdini, Mari, Nuke, and the Adobe Production Suite, Unreal Engine, Unity 3D
	• Recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to:
	• Completion of course work, set assignments/projects
	• Drawing, ideation, project planning
	• Reading, study group work
	• Preparation for classes
	• Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information)
	• Discussions with colleagues/subject matter experts
	• Practicing relevant practical and technical skills/methods/techniques
	• Self-evaluation of course work
	• Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI502 3D MODELLING 1

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	15
Level	5
EFTS	0.125
Teaching hours	80
Workplace learning hours	0
Total hours of self-directed learning	70
Total hours of student learning	150

Pre-requisites:	None
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Building core knowledge and skills in 3D modelling methods used in the production of animated film and real time game animation. Students will apply fundamental tools and techniques and experience the process of creating models for the animated film and gaming industries.
Indicative Content (may include)	**Concept Design:** • Collecting references • 2D sketching, colour, line, tone • Story development including stereotyping • Character design and introductory viewer psychology • Environment design • Create real-world scale in a 3D environment **3D Modelling Techniques:** • Fundamentals of 3D digital sculpting - model and sculpt a simple stylized 3D character • Model simple background props using surfaces and polygons • Creating proxy 3D models for efficient layout and pre-production design • Organic and hard-surface topology **UV and Texture Mapping:** • Creating efficient UV unwrapping techniques for film and game design • Photographic texturing techniques for film and game design • Stylized texturing techniques for film and game design • Procedural texturing techniques • Creating efficient texture maps for organic and hard-surface models • Preparation of 3D models and texture maps for shading and rendering

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Apply industry standard 3D modelling workflow to the life cycles of animation and game production.
2	Produce 3D modelling work using industry-standard software.
3	Create proxy models for layout design and industry-standard 3D production models for animation.
4	Use industry standard workflow in generating texture maps for animation and game production pipelines.
5	Produce 3D modelling for real time engines (AR, VR).

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		Learning Outcomes	% Weighting
Project – 3D character modelling and texturing		1, 2, 3, 4, 5	45%
Project – 3D background modelling and texturing		1, 2, 3, 4, 5	45%
Professionalism		1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Specialist guest speakers - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari, Nuke, and the Adobe Production Suite, Unreal Engine, Unity 3D. - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research - (e.g. exploration, location and selection of relevant information, review/evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI503 RIGGING AND ANIMATION 1

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**5**
EFTS	**0.125**
Teaching hours	**80**
Workplace learning hours	**0**
Total hours of self-directed learning	**70**
Total hours of student learning	**150**

Pre-requisite: or co-requisite	• CGI502 or equivalent skills and knowledge
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Creating character animation and using contemporary industry techniques to produce photo-realistic and stylised animated characters.
Indicative Content **(may include)**	• Principles of key frame animation • Basic character and mechanical rigging • Understanding basic anatomical structures • Time based animated sequences • Performance-based animation • Intro to animatics and pre-viz production

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Explore and apply professional animation techniques and use the most effective techniques for animation or game design pipelines.
2	Investigate the concept of key frames, timing and the techniques for creating them for the animation or gaming industries.
3	Illustrate and discuss the significance of timing in animated film or gaming.
4	Create a proxy rig for a 3D model.
5	Rig a character and create character facial animation.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project – Rigging	4, 5	45%
Project – Animated sequence	1 ,2, 3	45%
Professionalism	1 ,2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Nuke, Unity 3D, Unreal Engine • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing and ideation • Project planning • Reading • Study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI504 DYNAMIC EFFECTS 1

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**5**
EFTS	**0.125**
Teaching hours*	**80**
Supervised and assessed workplace learning hours	**0**
Total hours of self-directed learning**	**70**
Total hours of student learning	**150**

Pre-requisites or co-requisites	• CGI502 and CGI503 • Or equivalent skills and knowledge
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Building knowledge of dynamic effects (FX) and how they are used in a variety of scenarios, developing the practical skills for creating basic visual effects and using them in animated film and game animation projects.
Indicative Content (may include)	• Visual effects artist role • Real world object interaction and simulation • Cloth and hair simulations • Atmospheric and particle effects • Fluid, oceans and soft body dynamics • Pyro effects • Dynamics pipeline in the animated film and gaming industries

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Investigate industry practices for the integration of dynamic effects into animation and game production pipelines.
2	Reference and simulate real world object interactions.
3	Observe different types of anatomical and surface features and simulate them effectively for a digital character.
4	Simulate simple moving surfaces.
5	Achieve realistic simulations using various dynamics tools with selected specialist software.
6	Produce dynamic effects to meet the requirements of a project brief within the constraints of time and budget.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project – natural phenomena	1, 3, 4, 6	45%
Project – destruction effects	1, 2, 5, 6	45%
Professionalism	1, 2, 3, 4, 5, 6	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Nuke • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI505 LIGHTING AND POST-PRODUCTION 1

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**5**
EFTS	**0.125**
Teaching hours	**80**
Workplace learning hours	**0**
Total hours of self-directed learning	**70**
Total hours of student learning	**150**

Pre-requisites:	None
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Building understanding of the ways that lighting, rendering and compositing are used in animation, and the ways that real time lighting and shader design are used in game design, and developing the practical and technical skills to carry out these processes to industry requirements.
Indicative Content **(may include)**	• Introduction to CG lighting • Rendering workflow • HDRI imagery • Materials and shader design for animation and game development • Compositing pipeline for animation • Custom lighting effects • Cinematography for visual effects • Specialist software e.g. HDR Light Studio, Key Shot, VRAY, Arnold

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Effectively use basic rendering technologies to generate a range of CG images.
2	Explore, apply and evaluate a range of lighting techniques to create visual and emotive effects.
3	Facilitate effective rendering solutions for animation production.
4	Composite 3D rendered sequences to produce multi-layered animated sequences.
5	Design and use basic PBR materials and shaders for real time applications.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project - lighting and rendering for CGI	1, 2, 3	45%
Project - compositing for animation and real time effects	3, 4, 5	45%
Professionalism	1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI506 TECHNICAL DEVELOPMENT 1

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	15
Level	5
EFTS	0.125
Teaching hours	64
Workplace learning hours	0
Total hours of self-directed learning	86
Total hours of student learning	150

Pre-requisites or co-requisites	• CGI502 and CGI503 and CGI504 and CGI505 • Or equivalent skills and knowledge
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing basic skills and knowledge of programming for animation and game development and to develop custom tools and functions for a successful production pipeline.
Indicative Content (may include)	• Introduction to programming for animation and game production • Introduction to Blueprints in Unreal Engine • Introduction to OOP – Object Oriented Programming • Programming languages for VFX and game development e.g. Python, Mel, C++

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Investigate and compare different programming languages used for animation, visual effects and real time applications.
2	Evaluate the effectiveness of different scripting/programming for selected applications.
3	Select and use a number of different scripting languages to achieve the desired effects and tools.
4	Create custom tools to facilitate a production scenario.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project - - Designing efficient production pipeline (Technical Development)	1, 2, 4	45%
Project- – Using industry standard programming language to build tools for animation and game production pipeline	3, 4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI507 CGI PROJECT 1

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**30**
Level	**5**
EFTS	**0.25**
Teaching hours	**60**
Workplace learning hours	**0**
Total hours of self-directed learning	**240**
Total hours of student learning	**300**

Pre-requisite or co-requisites	• CGI501, CGI502, CGI503, CGI504, CGI505, CGI506 • Or equivalent skills and knowledge
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 5) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Working as a member of a production team to plan, carry out and present an animated film or real time game animation project, utilising a range of industry-standard strategies, processes, tools and production techniques.
Indicative Content **(may include)**	• Project planning • Schedule and budgeting • Pipeline development • Project analysis and constructive critical evaluation • Working cohesively in a team • Pitching and presentation • Building a professional portfolio • Career planning • Business of animation and game development

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Work collaboratively within a team to plan, manage and implement a production pipeline and process to meet the requirements of a project brief.
2	Create an animated work or game using a range of tools techniques and processes in response to a project brief.
3	Apply problem solving skill to a range of creative and/or technical challenges in the development of an animation or game development project.
4	Discuss their own and other's work with regard to its success in relation to the stated artistic and technical goals, including achieving the requirements of a project brief.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project planning	1	20%
Team project	2, 3	50%
Individual reflection and critique	4	20%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari, Nuke, Adobe Production Suite, Unreal Engine, Unity 3D, Keyshot, HDR Light Studio, Vray, Arnold, Shotgun • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self-directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI601 PROFESSIONAL PRACTICE 2

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**6**
EFTS	**0.125**
Teaching hours	**40**
Workplace learning hours	**0**
Total hours of self-directed learning	**110**
Total hours of student learning	**150**

Pre-requisites:	• CGI501 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing knowledge of professional and commercial CGI production environments, including industry roles, functional relationships between studio departments, and how workflow affects (and is affected by) the broader production pipeline.
Indicative Content **(may include)**	• Pipelines • Workflows - Best practice vs adaptive • Roles and departments • Collaborative workplaces • Time management • Toys, jewellery, visualisation industries • Uses of animation e.g. medicine, science, engineering architecture • Media formats → distribution • Presentation • Portfolio building • Treaty of Waitangi and implications on professional practice • Implications of media law including censorship law in different countries

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Investigate and discuss the use of animation and computer-generated imagery in a range of industry sectors.
2	Identify production problem solving methods used in the film and gaming industries.
3	Analyse how an industry production pipeline is used for an animated film or real time game animation project.
4	Investigate and discuss the impact of relevant media law, copyright and intellectual property on specific animated film or real time game design and development, for distribution in Aotearoa New Zealand and/or globally.
5	Create and pitch a business proposal for a project for a professional film or gaming production studio.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Presentation – sector investigation		1, 3, 4	40%
Presentation – pipeline		2, 5	50%
Professionalism		1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Specialist guest speakers - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari, Adobe Production Suite, Unreal Engine and Unity3D - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI602 3D MODELLING 2

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**6**
EFTS	**0.125**
Teaching hours	**64**
Workplace learning hours	**0**
Total hours of self-directed learning	**86**
Total hours of student learning	**150**

Pre-requisites:	• CGI502 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing knowledge and skills in 3D modelling methods used for animation. Students apply tools and techniques and experience the process of how to create well-developed models for a variety of industries such as film and gaming.
Indicative Content **(may include)**	• Overview of uses/examples of 3D modelling • Industry production workflows using integrated tools • Production pipelines • Pre-production techniques • Managing a 3D modelling project • NURBS surface and polygon modelling techniques • 3D character design • 3D hard-surface modelling • Texturing • Modelling organic shapes/objects • Topology • UV methodology and workflow process • Fundamentals of lighting, rendering and compositing • 3D layout • Storyboarding and animatic design • Fundamentals of cinematic design

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Evaluate and use industry standard workflow and 3D modelling technologies in the production of animated film or real time game animation.
2	Produce complex professional 3D modelling work using industry-standard software.
3	Use proxy models for complex layout design for animation or game development.
4	Develop procedural workflow in generating texture maps for the animation or game production pipeline.
5	Produce complex 3D modelling for real time engines (AR, VR).

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project - 3D character modelling and procedural texturing		1 ,2, 3, 4, 5	45%
Project - 3D background modelling and procedural texturing		1 ,2, 3, 4, 5	45%
Professionalism		1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI603 RIGGING AND ANIMATION 2

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**6**
EFTS	**0.125**
Teaching hours	**64**
Workplace learning hours	**0**
Total hours of self-directed learning	**86**
Total hours of student learning	**150**

Pre-requisites:	• CGI503 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Becoming familiar with contemporary techniques in character animation using a variety of animation tools and techniques used in the industry.
Indicative Content	• Principles of animation for VFX and game design • Traditional Key-frame techniques • Rigging for CGI animation and game design • Lifelike naturalistic animations • Real-world object Interactions • Houdini Character FX: Generating muscle systems for realistic character animation • Gamepad CHOP in Houdini to drive and control a camera rig • Creating hierarchical relationships between agents (for example, rider parented to horse)

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Use professional animation techniques and select the most effective techniques for an animated film or real time game design pipeline.
2	Investigate and use advanced key frame techniques to create complex animation for the animated film or gaming industries.
3	Investigate and examine the use of timing in different genres of animated film or real time game animation,
4	Create a proxy rig for a complex 3D model.
5	Rig a complex character and create realistic character facial animation.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project - Rigging	4, 5	45%
Project - Key framing	1, 2, 3	45%
Professionalism	1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI604 DYNAMIC EFFECTS 2

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**6**
EFTS	**0.125**
Teaching hours	**64**
Workplace learning hours	**0**
Total hours of self-directed learning	**86**
Total hours of student learning	**150**

Pre-requisites:	• CGI504 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Building knowledge of dynamic effects (FX) and how they are used in a variety of scenarios, developing the practical skills for creating complex and photorealistic visual effects and using them in animated film and real time game animation projects.
Indicative Content **(may include)**	• Houdini Pyro, fluids and ocean effects • Groom and produce complex hair and fur simulations • Particles and bullet rigid body solver in Houdini FX • Soft body effects with the Finite Element Solver in Houdini • Houdini engine to integrate dynamic effects into Maya and Unreal Engine

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Test and evaluate a range of technical outcomes and their effectiveness in the production of dynamic effects within animated film or game production pipelines.
2	Reference and simulate complex real world object interactions.
3	Observe different types of anatomical and surface features and simulate them effectively for a complex digital character.
4	Simulate interactive moving surfaces.
5	Achieve complex realistic simulations using specialised dynamics tools.
6	Produce complex dynamic effects to meet the requirements of a project brief within the constraints of time and budget.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project - Dynamics for character		1, 3, 5, 6	45%
Project - Dynamics for natural phenomena		1, 2, 4, 5, 6	45%
Professionalism		1, 2, 3, 4, 5, 6	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI605 ANIMATION LIGHTING AND POST-PRODUCTION

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**6**
EFTS	**0.125**
Teaching hours	**64**
Workplace learning hours	**0**
Total hours of self-directed learning	**86**
Total hours of student learning	**150**

Pre-requisites:	• CGI505 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery, • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Advancing understanding of the ways that lighting, rendering and compositing are used in animation, and developing the practical and technical skills to carry out these processes to industry requirements.
Indicative Content **(may include)**	• Advanced procedural workflow for CG lighting, shading and texturing • Rendering workflow using VRAY, Katana and Arnold for VFX • HDRI lighting workflow for animation and VFX • Procedural materials and shader design • Live-action post-production pipeline for animation • Cinematography for visual effects • Live-action and multi-layered compositing pipeline • Specialist software e.g. HDR Light Studio, Key Shot, VRAY, Arnold, Katana, Nuke

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Use advanced rendering technologies to generate CG images which realistically imitate real world materials and/or 3D objects and/or 3D scenes.
2	Explore, apply, design and evaluate a range of complex lighting techniques to create custom visual and emotive effects for animation.
3	Facilitate and design effective custom rendering solutions for animation production.
4	Composite complex visual effects shots with 3D rendered sequences to produce multi-layered animated sequences.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project - lighting and rendering for CGI	1, 2	45%
Project – compositing for animation and real time rendering	1, 3, 4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self-directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI606 REAL TIME LIGHTING AND SHADING

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	15
Level	6
EFTS	0.125
Teaching hours	64
Workplace learning hours	0
Total hours of self-directed learning	86
Total hours of student learning	150

Pre-requisites:	• CGI505 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery, • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Advancing understanding of the ways that real time lighting and shader design and effects are used in game design, and developing the practical and technical skills to carry out these processes to industry requirements.
Indicative Content (may include)	• Advanced procedural workflow for real time lighting, shading and texturing • Rendering workflow using VRAY for Unreal's real time engine • HDRI lighting for game design and look development • Procedural materials and shader design for game development • Rendering VFX and particle system and post-process effects • Cinematography for game design • Specialist software e.g. HDR Light Studio, Unreal Engine, Unity3D

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Use PBR materials and shaders in real time applications.
2	Explore, apply, design and evaluate a range of complex lighting techniques to create custom visual and emotive effects for game development.
3	Design custom shaders for real time applications.
4	Create photo realistic real time shaders for game development.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project - lighting for real time	1, 2	45%
Project - Real time shading	1, 3, 4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI607 ANIMATION TECHNICAL DEVELOPMENT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**6**
EFTS	**0.125**
Teaching hours	**64**
Workplace learning hours	**0**
Total hours of self-directed learning	**86**
Total hours of student learning	**150**

Pre-requisites:	• CGI506 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing production relevant skills and knowledge in programming and scripts used for animation and visual effects.
Indicative Content **(may include)**	• Python scripting for visual effects • Mel scripting • ExtendScript for Adobe After Effects (Mac/PC) • C/C++ plugin development for Adobe After Effects • Math for Visual Effects • Production shader writing and programming • Pipeline and tools development for animation and visual effects • Pyro, fluids, particles, cloth and fur, and crowds simulation system

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Implement production programming language in animation and visual effects.
2	Evaluate the effectiveness of scripting/programming in complex animation scenarios.
3	Select and use a number of different scripting languages to address complex technical issues in visual effects and animation.
4	Create custom tools to facilitate complex animation production scenarios.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project – Programming for animation and visual effects production	1, 2, 3, 4	45%
Project – Tool development for lighting, compositing and post production	1, 2, 3, 4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI608 REAL TIME TECHNICAL DEVELOPMENT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	15
Level	6
EFTS	0.125
Teaching hours	64
Workplace learning hours	0
Total hours of self-directed learning	86
Total hours of student learning	150

Pre-requisites:	• CGI506 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing production relevant skills and knowledge in programming and scripts used for real time game development, including object-oriented programming (OOP).
Indicative Content (may include)	• Programming for game development, C++ • Functional programming and OOP • Real time visualization and technical development • Building AR apps for both Apple's and Google handheld platforms • Houdini engine and Maya live-link development with Unreal real time engine • AI development in real time engines • Physically-based real time shader writing

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Implement production programming language in real time applications.
2	Evaluate the effectiveness of scripting/programming in complex real time scenarios.
3	Select and use a number of different scripting languages to address complex technical issues in gaming and real time applications.
4	Create custom tools to facilitate complex real time production scenarios.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	Learning Outcomes	% Weighting
Project – Programming for real time engines	1, 2, 3, 4	45%
Project – Tool development for real time visualisation	1, 2, 3, 4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Specialist guest speakers • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI609 CGI ANIMATION PROJECT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	30
Level	6
EFTS	0.25
Teaching hours	40
Workplace learning hours	0
Total hours of self-directed learning	260
Total hours of student learning	300

Pre-requisites:	• CGI601 or CGI611, CGI602, CGI603, CGI604, CGI605, CGI607 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing professional skills and knowledge in producing animation and VFX projects from the planning stages, through production methods and to final client's delivery and distribution.
Indicative Content (may include)	• Pre-production • Look development • Production management, teamwork and planning • Budget and scheduling • Integrating animation and visual effects tools and technology to produce professional animation work • Understanding computing constraints and learning how to overcome production challenges • Develop custom tools and scripts to facilitate production processes • Client's delivery and distribution

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Work collaboratively within a team to plan, manage and implement an animation production pipeline and process to meet the requirements of a client's brief.
2	Create an animated work using a range of tools techniques and processes in response to a client's brief.
3	Apply problem solving skill to a range of complex creative and/or technical challenges in the development of an animation project.
4	Discuss and analyse their own and other's work with regard to its success in relation to the stated artistic and technical goals, including achieving client's needs and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1	20%
Team project - animation		2, 3	60%
Individual reflection and critique		4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants, specialist guest speakers - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI610 CGI REAL TIME PROJECT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	30
Level	6
EFTS	0.25
Teaching hours	40
Workplace learning hours	0
Total hours of self-directed learning	260
Total hours of student learning	300

Pre-requisites:	• CGI601 or CGI611, CGI602, CGI603, CGI604, CGI606, CGI608 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • New Zealand Diploma in Animation (Level 6) • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing professional skills and knowledge in producing real time game designs from the planning stages, through industry-standard production methods, to client's delivery and online distribution.
Indicative Content (may include)	• Scripting (C++, Blueprint and Python) • Look Development and game cinematics for game design • Production management, teamwork and planning for real time projects • Budget and scheduling for real time projects • Integrating real time photoreal rendering and cinematic toolset • Understanding real time computing constraints and learning how to overcome production challenges • Develop custom tools and scripts to facilitate real time production processes • Using audio in real time engines • Develop AR app, game demos and real time visualization • Client's delivery and online distribution

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Work collaboratively within a team to plan, manage and implement a real time game production pipeline and process to meet the requirements of a client's brief.
2	Create a game using a range of tools techniques and processes in response to a client's brief.
3	Apply problem solving skill to a range of complex creative and/or technical challenges in the development of a game project.
4	Discuss and analyse their own and other's work with regard to its success in relation to the stated artistic and technical goals, including achieving client's needs and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1	20%
Team project		2, 3	60%
Individual reflection and critique		4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshop, computer labs - Tutors, tutorial assistants, specialist guest speakers - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research - (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI611 GRADUATE DIPLOMA CGI PROFESSIONAL PRACTICE

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	15
Level	6
EFTS	0.125
Teaching hours	40
Workplace learning hours	0
Total hours of self-directed learning	110
Total hours of student learning	150

Pre-requisites:	None
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing existing knowledge of contemporary CGI production environments, industry roles, processes, expectations and issues.
Indicative Content (may include)	• Live-action animation, VFX and game design pipelines • Workflows - best practice vs adaptive • Departmental roles and responsibilities • Interdisciplinary working environment • Planning, pitching, production management and skillset • Domestic and global distribution • Toys, jewellery, visualisation, entertainment industries • Uses of animation e.g. medicine, science, engineering architecture • Media formats → distribution • Pitching and presentation • Portfolio building for professional career • Legal, cultural, ethical issues

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Investigate and discuss ways that new technologies are used to facilitate and implement the production of animation and computer-generated imagery in a range of industry sectors.
2	Identify production problem solving methods used in the film and gaming industries based on the latest tools and technologies used in the industry.
3	Analyse how an industry production pipeline can be improved for an animated film or real time game animation project.
4	Investigate, discuss and present the findings regarding the impact of relevant media law, copyright and intellectual property on specific animated film or real time game design and development, for distribution in Aotearoa New Zealand and/or globally.
5	Create and pitch a business proposal for setting up production workflow scenario within a professional film or gaming production studio (domestic and/or international).

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Presentation - investigation		1, 3, 4	45%
Presentation – pipeline		2, 3, 5	45%
Professionalism		1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants, specialist guest speakers - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari, Adobe Production Suite, Unreal Engine and Unity3D - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI701 MOTION CAPTURE

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**7**
EFTS	**0.125**
Teaching hours	**40**
Workplace learning hours	**0**
Total hours of self-directed learning	**110**
Total hours of student learning	**150**

Pre-requisites:	• CGI602, CGI603 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Animation) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing advanced skills and knowledge in using motion capture technologies and real time animation pipeline for animation and real time game production pipelines.
Indicative Content (may include)	• Pre-visualization using motion control rigs • Real time motion capture production techniques for the animation and game industry • Working with marker-less motion capture suits • Facial animation control using custom facial rigging inertial-based motion capture system • Practical skills in live data streaming and post production motion data solving and processing • Putting Motion Capture Data onto a rig • Setting up motion capture workflow in Motion Builder • Using realistic real time motion capture animation data for visual effects visualization • Developing facial rigs to control subtle breathing deformations that create a naturalistic level of detail in characters and creatures • Code and develop artist-controlled simulation solution that could drive the frenzied motion of creatures and animals while still allowing for keyframe control. • Export motion as an FBX skeleton and import straight into Maya and re-target by driving the rigs with the FBX skeleton. • Stream motion capture data in real time on to the character in MotionBuilder.

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Develop facial rigs to control and create a naturalistic level of detail in characters and creatures.
2	Effectively use and evaluate real time motion capture production techniques for the animation and game industry.
3	Effectively use and evaluate realistic real time motion capture animation data for visual effects visualization.
4	Code and develop artist-controlled simulation solution for a complex interactive simulation.
5	Produce pre-visualization using motion control rigs, and stream motion capture data in real time on to the character.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project – Previsualisation with real time motion capture		2, 3, 5	40%
Project – Motion capture for animation and real time engines		1, 2, 3, 4, 5	50%
Professionalism		1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course, result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants, specialist guest speakers - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari, motionbuilder and the Adobe Production Suite - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI702 ADVANCED MODELLING

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	15
Level	7
EFTS	0.125
Teaching hours	40
Workplace learning hours	0
Total hours of self-directed learning	110
Total hours of student learning	150

Pre-requisites:	• CGI602 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Level 7) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Building students' advanced knowledge and skills in 3D modelling methods used for animation and real time engines. Students apply industry-standard tools and techniques, develop effective 3D modelling workflows between different 3D modelling packages and experience the process of how to create well-developed models for a variety of industries such as animation, visual effects (VFX) and real time game engines.
Indicative Content (may include)	• 3D modelling techniques and workflow for animation and real time engines • 3D scanning workflow and technique • Industry production workflows using custom and dedicated 3D modelling tools • Collaborative production pipelines • Pre-production techniques for animation and game design • Managing a 3D modelling project within an animation and real time pipeline • NURBS surface and polygon modelling techniques • 3D character design for animation and game design • 3D hard-surface modelling for animation and game design • Procedural modelling for complex 3D scenes • Procedural texturing and shading for animation and game design • Modelling organic shapes/objects for animation and game design • Topology, high-poly and low-poly 3D modelling techniques • UV methodology and workflow process for animation and game design • 3D layout in animation packages and real time engines • Storyboarding and animatic design for animation and game design • Fundamentals of cinematic design for animation and game design

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Use current industry standard workflow and 3D modelling technologies in animation and/or game production.
2	Create, develop and evaluate complex professional 3D modelling work using industry-standard software and custom tools.
3	Create, develop and evaluate efficient proxy models for complex layout design for animation and/or game development.

4	Develop, evaluate the efficiency of procedural workflow in generating texture maps and shaders for the animation and/or game production pipeline.
5	Produce, evaluate the efficiency of complex 3D modelling for real time engines (AR, VR).

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project - 3D character modelling, shading and texturing		1, 2, 3, 4, 5	45%
Project - 3D background modelling shading and texturing		1, 2, 3, 4, 5	45%
Professionalism		1, 2, 3, 4, 5	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya,Zbrush, Houdini, Mari, Adobe Production Suite, Unreal Engine and Unity3D
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI703 ADVANCED ANIMATION

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**7**
EFTS	**0.125**
Teaching hours	**40**
Workplace learning hours	**0**
Total hours of self-directed learning	**110**
Total hours of student learning	**150**

Pre-requisites:	• CGI603 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Level 7) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing advanced skills and knowledge in producing animation, VFX projects and real time animatics from the planning stages, through production methods and to final client's delivery and distribution.
Indicative Content (may include)	• Pre-production for animation and real time game development • Look development for animation and real time game design • Production management, teamwork and planning for animation and real time game development • Live-action animation pipeline, including cinematic editing in Unreal Engine • Budget and scheduling for animation and real time game development • Procedural Effects with large assets • Procedural Dynamic Simulations • Realistic crowd simulations • Integrating animation and visual effects tools and technology to produce professional animation work for animation and real time game development • Understanding computing constraints and learning how to overcome production challenges for animation and real time game development • Develop custom tools and scripts to facilitate production processes for animation and real time game development • Client's delivery and distribution for animation and real time game applications

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Plan, manage and implement a production pipeline work for an animation and/or real time game engine to meet the targeted production timeframe.
2	Create an animated work for an animation and/or real time game engine using a range of tools techniques and processes most efficient for the production requirement.
3	Apply problem solving skill to a range of complex creative and/or technical challenges in the development of an animation project, including writing and coding custom animation scripts to facilitate an animation and/or real time game development project.
4	Utilise advanced skills in realistic character expressions and mechanical/interaction animation.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1	20%
Project - Advanced Animation		1, 2, 3, 4	60%
Presentation		1, 2, 3, 4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course, result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI704 ADVANCED VISUAL EFFECTS

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**7**
EFTS	**0.125**
Teaching hours	**40**
Workplace learning hours	**0**
Total hours of self-directed learning	**110**
Total hours of student learning	**150**

Pre-requisites:	• CGI604 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Visual Effects) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing advanced skills in creating dynamic effects (FX) and how they are used in a variety of scenarios, developing the practical skills for creating complex and photorealistic visual effects and using them in animation and game projects.
Indicative Content **(may include)**	• Houdini Pyro, fluids and ocean effects • Volume Optical Flow SOP in Houdini • CHOPS, VEX and VOPS in Houdini • Groom and produce complex hair and fur simulations • Realistic muscle and skin simulation • Particles and bullet rigid body solver in Houdini FX • Soft body effects with the Finite Element Solver in Houdini • Houdini engine to integrate dynamic effects into Maya and Unreal Engine • Deep compositing • Live-action CGI compositing

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Produce realistic and complex simulations using various dynamics tools with selected specialist software and custom scripts.
2	Reference and simulate real world object interactions, and the principles of mathematics for visual effects work. Present the findings and outcomes of using different tools and scripts to efficiently produce the visual effects.
3	Observe and evaluate different types of fur, hair and muscles and simulate them effectively for crowd simulation work.
4	Produce and manage complex dynamic effects to integrate within the production shots and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1, 2, 3, 4	10%
Project – visual effects		1, 2, 3, 4	70%
Presentation		1, 2, 3, 4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI705 ADVANCED LIGHTING AND POST-PRODUCTION

| Version
Effective from: | 18101
1st January 2019 |
|---|---|
| Previous Version | 18100 |

NMIT Credits	15
Level	7
EFTS	0.125
Teaching hours	40
Workplace learning hours	0
Total hours of self-directed learning	110
Total hours of student learning	150

| Pre-requisites: | • CGI605
• Or equivalent skills and knowledge |
|---|---|
| Co-requisites: | None |
| Alignment to the Graduate Profile(s): | This course contributes to achievement of the graduate outcomes of the following qualifications:
• Bachelor of Computer Generated Imagery
• Graduate Diploma in Computer Generated Imagery |
| Core Transferable Skills | This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy |
| Course Aim: | Advancing understanding of the ways that lighting, rendering and compositing are used in animation and visual effects, and developing the practical and technical skills to carry out these processes to industry requirements. |
| Indicative Content
(may include) | • Advanced procedural workflow for CG lighting, shading and texturing
• Rendering workflow using VRAY, Katana and Arnold for VFX
• HDRI lighting workflow for animation and VFX
• Procedural materials and shader design
• Live-action post-production pipeline for animation
• Cinematography for visual effects
• Live-action and multi-layered compositing pipeline
• Deep compositing
• Specialist software e.g. HDR Light Studio, Key Shot, VRAY, Arnold, Katana, Nuke |

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Use advanced rendering technologies to generate CG images which realistically imitate real world materials and/or 3D objects and/or 3D scenes.
2	Explore, apply, design and evaluate a range of complex lighting techniques to create custom visual and emotive effects for animation.
3	Facilitate and design effective custom rendering solutions for animation production.
4	Composite complex visual effects shots with 3D rendered sequences to produce multi-layered animated sequences.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project planning	1, 2, 3, 4	10%
Project - advanced lighting and compositing	1, 2, 3, 4	70%
Presentation	1, 2, 3, 4	10%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI706 ADVANCED REAL TIME LIGHTING AND SHADING

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**15**
Level	**7**
EFTS	**0.125**
Teaching hours	**40**
Workplace learning hours	**0**
Total hours of self-directed learning	**110**
Total hours of student learning	**150**

Pre-requisites:	• CGI606 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing professional skills and advanced knowledge in producing real time PBR shaders and dynamic simulations from the planning stages, through industry-standard production methods, to client's delivery and online distribution.
Indicative Content **(may include)**	• Advanced procedural workflow for real time lighting, shading and texturing • Advanced rendering workflow using VRAY for Unreal's real time engine • Photorealistic HDRI lighting for game design and look development • Procedural materials and shader design for game development • Advanced rendering workflow for VFX and particle system and post-process effects • Cinematography for game design • Specialist software e.g. HDR Light Studio, Unreal Engine, Unity3D

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Write and code PBR materials and shaders in real time applications.
2	Explore, apply, design and evaluate a range of complex lighting techniques to create custom visual and emotive effects for game development.
3	Design procedural and complex shaders for real time applications.
4	Render complex photorealistic scenes for game development.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project planning	1, 2, 3, 4	10%
Project – advanced real time lighting and shading	1, 2, 3, 4	70%
Presentation	1, 2, 3, 4	10%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and Unreal Engine • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI707 ADVANCED CGI TECHNICAL DEVELOPMENT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**30**
Level	**6**
EFTS	**0.25**
Teaching hours	**80**
Workplace learning hours	**0**
Total hours of self-directed learning	**220**
Total hours of student learning	**300**

Pre-requisites:	• CGI607 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Technical Research and Development) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing advanced skills and knowledge in programming and scripts used for animation and visual effects production and pipeline.
Indicative Content **(may include)**	• Python scripting for visual effects • Coding for AI Crowd • Advanced scripting and maths for fluids, pyro, destruction and volumetrics • Coding and maths for hair and fur • Mel scripting • ExtendScript for Adobe After Effects (Mac/PC) • C/C++ plugin development for Adobe After Effects • Math for Visual Effects • Production shader writing and programming • Pipeline and tools development for animation and visual effects • Pyro, fluids, particles, cloth and fur, and crowds simulation system

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Implement maths for visual effects and use python programming language in animation and visual effects.
2	Use advanced python scripting/programming to debug and produce complex animation and visual effects sequences efficiently.
3	Code advanced production tracking and management tools to facilitate storage and rendering pipelines for animation and visual effects production.
4	Create custom tools to facilitate complex animation production scenarios, including cloud-based scenes distribution and collaborative pipelines.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project – Pipeline development for animation and visual effects	1, 2, 3	45%
Project – Tools development for animation and visual effects	1,2,4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI708 ADVANCED REAL TIME TECHNICAL DEVELOPMENT

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**30**
Level	**6**
EFTS	**0.25**
Teaching hours	**80**
Workplace learning hours	**0**
Total hours of self-directed learning	**220**
Total hours of student learning	**300**

Pre-requisites:	• CGI608 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Technical Research and Development) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing advanced production relevant skills and knowledge in programming and scripts used for real time game development, including object-oriented programming (OOP).
Indicative Content **(may include)**	• Scripting (C++, Blueprint and Python) • Look Development and game cinematics for game design • Production management, teamwork and planning for real time projects • Budget and scheduling for real time projects • Integrating real time photoreal rendering and cinematic toolset • Understanding real time computing constraints and learning how to overcome production challenges • Develop custom tools and scripts to facilitate real time production processes • Using audio in real time engines • Develop AR app, game demos and real time visualization • Client's delivery and online distribution

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Implement advanced production programming language in real time applications.
2	Evaluate the effectiveness and debugging of scripting/programming in complex real time scenarios.
3	Code, select and use several different scripting languages to address complex technical issues in gaming and real time applications.
4	Create custom advanced tools and scripts to facilitate complex real time production scenarios.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment	
Methods of Assessment	**Learning Outcomes**	**% Weighting**
Project - Pipeline development for gaming and real time engines	1, 2, 3, 4	45%
Project - Tools development for gaming and real time engines	1, 2, 3, 4	45%
Professionalism	1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and Unreal Engine • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI709 ADVANCED ANIMATION PROJECT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	**60**
Level	**7**
EFTS	**0.5**
Teaching hours	**80**
Workplace learning hours	**0**
Total hours of self-directed learning	**520**
Total hours of student learning	**600**

Pre-requisites:	• CGI701, CGI703 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Animation) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing professional skills and knowledge in producing animation projects from the planning stages, through production methods and to final client's delivery and distribution.
Indicative Content (may include)	• Pre-production • Look development • Production management, teamwork and planning • Budget and scheduling • Integrating animation and visual effects tools and technology to produce professional animation work • Understanding computing constraints and learning how to overcome production challenges • Develop custom tools and scripts to facilitate production processes • Client's delivery and distribution • foster collaboration from other creative disciplines

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Work collaboratively within a team to plan, manage and implement an animation production and process to meet the requirements of a client's brief.
2	Create an animated short using custom tools techniques and processes in response to a client's brief.
3	Solve, evaluate and debug a range of complex creative and/or technical challenges in the development of a complex animated short.
4	Discuss, evaluate and analyse their own and other's work regarding its success in relation to the stated artistic and technical goals, including achieving client's needs and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1, 2, 3, 4	10%
Project – advanced animation		1, 2, 3, 4	70%
Presentation		1, 2, 3, 4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI710 ADVANCED VISUAL EFFECTS PROJECT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	60
Level	7
EFTS	0.5
Teaching hours	80
Workplace learning hours	0
Total hours of self-directed learning	520
Total hours of student learning	600

Pre-requisites:	• CGI704, CGI705 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Visual Effects) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Producing complex visual effects sequences from the planning stages, through production methods and to final client's delivery and distribution.
Indicative Content (may include)	• Houdini Pyro, fluids and ocean effects • Volume Optical Flow SOP in Houdini • CHOPS, VEX and VOPS in Houdini • Time/budget management • Breaking down client's brief • Meeting industry needs • Presentation/pitch/investments (5 years) • Groom and produce complex hair and fur simulations • Realistic muscle and skin simulation • Particles and bullet rigid body solver in Houdini FX • Soft body effects with the Finite Element Solver in Houdini • Houdini engine to integrate dynamic effects into Maya and Unreal Engine • Deep compositing • Live-action CGI compositing • Fostering collaboration from other creative disciplines

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Work collaboratively within a team to plan, manage and implement a visual effects production pipeline and process to meet the requirements of a client's brief.
2	Discuss, plan and produce a visual effects sequence using custom tools techniques and processes in response to a client's brief.
3	Apply problem solving skill to a range of complex creative and/or technical challenges in the development of a visual effects sequence.
4	Discuss and analyse their own and other's work regarding its success in relation to the stated artistic and technical goals, including achieving client's needs and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1, 2, 3, 4	10%
Project – advanced visual effects		1, 2, 3, 4	70%
Presentation		1, 2, 3, 4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants, specialist guest speakers - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI711 ADVANCED CGI TECHNICAL DEVELOPMENT PROJECT

Version Effective from:	18101 1st January 2019
Previous Version	18100

NMIT Credits	60
Level	7
EFTS	0.5
Teaching hours	80
Workplace learning hours	0
Total hours of self-directed learning	520
Total hours of student learning	600

Pre-requisites:	• CGI707 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Technical Research and Development) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing professional skills and knowledge in scripting and coding for animation production from the planning stages, through production methods and to final client's delivery and distribution.
Indicative Content (may include)	• Python scripting for visual effects • Mel scripting • ExtendScript for Adobe After Effects (Mac/PC) • C/C++ plugin development for Adobe After Effects • Math for Visual Effects • Production shader writing and programming • Pipeline and tools development for animation and visual effects • Pyro, fluids, particles, cloth and fur, and crowds simulation system • foster collaboration from other creative disciplines

LEARNING OUTCOMES

On successful completion of this course students will be able to:	
1	Work collaboratively within a team and to plan, manage and implement an animation production, pipeline and process to meet the requirements of a client's brief.
2	Discuss, plan and produce an animated short using custom tools techniques and processes in response to a client's brief within a tight budget and time.
3	Solve, evaluate and debug a range of complex creative and/or technical challenges in the development of a complex animated short.
4	Discuss, evaluate and analyse their own and other's work regarding its success in relation to the stated artistic and technical goals, including achieving client's needs and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1, 2, 3, 4	10%
Project - advanced CGI technical development		1, 2, 3, 4	70%
Presentation		1, 2, 3, 4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	- Individual assessments may cover one or more of the learning outcomes. - Each summative assessment is assigned a percentage weighting. - The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. - To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	- Specialised CGI studio spaces, workshops, computer labs - Tutors, tutorial assistants, specialist guest speakers - Classrooms equipped with computer(s) and data projector - NMIT Moodle - Library including online resources - Industry standard software e.g. Maya, Zbrush, Houdini, Mari and the Adobe Production Suite - Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: - Completion of course work, set assignments/projects - Drawing, ideation, project planning - Reading, study group work - Preparation for classes - Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) - Discussions with colleagues/subject matter experts - Practicing relevant practical and technical skills/methods/techniques - Self-evaluation of course work - Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

CGI712 ADVANCED REAL TIME TECHNICAL DEVELOPMENT PROJECT

Version **Effective from:**	18101 1st January 2019
Previous Version	18100

NMIT Credits	**60**
Level	**7**
EFTS	**0.5**
Teaching hours	**80**
Workplace learning hours	**0**
Total hours of self-directed learning	**520**
Total hours of student learning	**600**

Pre-requisites:	• CGI708 • Or equivalent skills and knowledge
Co-requisites:	None
Alignment to the Graduate Profile(s):	This course contributes to achievement of the graduate outcomes of the following qualifications: • Bachelor of Computer Generated Imagery (Technical Research and Development) • Graduate Diploma in Computer Generated Imagery
Core Transferable Skills	This course contributes towards the development of the following Core Transferable Skills categories: Self/Others- Manaakitanga, Learning to Learn, Specialist Skills, Literacy, Numeracy, Digital Literacy
Course Aim:	Developing advanced skills and knowledge in scripting and coding for real time game development from the planning stages, through production methods and to final client's delivery and distribution.
Indicative Content **(may include)**	• Scripting (C++, Blueprint and Python) • Look Development and game cinematics for game design • Production management, teamwork and planning for real time projects • Budget and scheduling for real time projects • Integrating real time photoreal rendering and cinematic toolset efficiently • Evaluate and debug real time computing constraints and learning how to overcome production challenges • Develop advanced custom tools and scripts to facilitate real time production processes • Using audio in real time engines • Develop marketable AR app, game demos and real time visualization • Market research and analysis for real time development • Breaking down client's brief • foster collaboration from other creative disciplines • Client's delivery and online distribution, presentation and idea/prototype pitch

LEARNING OUTCOMES

	On successful completion of this course students will be able to:
1	Work collaboratively within a team to plan, manage, create custom tools and scripts and implement a real time production pipeline and process to meet the requirements of a client's brief.
2	Discuss, plan and create a game and/or AR/VR experience by creating range of tools techniques and processes in response to a client's brief within a tight budget and time.
3	Solve, evaluate and debug a range of complex creative and/or technical challenges in the development of a complex game project or AR/VR experience.
4	Discuss, evaluate and analyse their own and other's work regarding its success in relation to the stated artistic and technical goals, including achieving client's needs and requirements.

ASSESSMENTS

Basis of Assessment:	Achievement Based assessment		
Methods of Assessment		**Learning Outcomes**	**% Weighting**
Project planning		1, 2, 3, 4	10%
Project – advanced real time		1, 2, 3, 4	70%
Presentation		1, 2, 3, 4	10%
Professionalism		1, 2, 3, 4	10%

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Requirement	Must Pass
Pass all summative assessments	✓
Meet all learning outcomes	✓
Gain a course result of C- or higher	✓

RESULTS

Assessment Results:	Results for assessments are given in percentage marks
Course Results:	• Individual assessments may cover one or more of the learning outcomes. • Each summative assessment is assigned a percentage weighting. • The overall percentage mark for the course is calculated by adding the weighted results for all summative assessments. • To derive the course result the overall percentage mark is converted into a grade using Course Result Key AC-TANZ-01

LEARNING AND TEACHING

Learning and Teaching Approaches:	A variety of teaching and learning approaches will be used in the course with an emphasis on student-centred learning, using a balance of practical work, problem solving, project briefs, case studies, technical exercises, research, theory, critical evaluation and professional practices.
Learning and Teaching Resources:	• Specialised CGI studio spaces, workshops, computer labs • Tutors, tutorial assistants, specialist guest speakers • Classrooms equipped with computer(s) and data projector • NMIT Moodle • Library including online resources • Industry standard software e.g. Maya, Zbrush, Houdini, Mari and Unreal Engine • Recommended texts, recommended websites
Self-directed learning activities	Students are expected to spend time in self- directed learning activities to complete course requirements and achieve the learning outcomes for the course. Self-directed activities may include the following but are not limited to: • Completion of course work, set assignments/projects • Drawing, ideation, project planning • Reading, study group work • Preparation for classes • Research (e.g. exploration, location and selection of relevant information, review/ evaluation/analysis of information, recording information) • Discussions with colleagues/subject matter experts • Practicing relevant practical and technical skills/methods/techniques • Self-evaluation of course work • Gathering relevant contextual information/ issues/ideas to build knowledge of the subject

COURSE DESCRIPTORS BCGI DGCGI NZ DIPLOMAS IN ANIMATION L5 L6
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