The University of Mindanao

COLLEGE OF COMPUTING EDUCATION

BACHELOR OF SCIENCE IN ENTERTAINMENT AND MULTIMEDIA COMPUTING - DIGITAL ANIMATION TECHNOLOGY

COURSE OFFERINGS FOR SY 2022-2023

FIRST YEAR			
First Semester	**Subject Title**	**Unit**	**Course Description**
EMC 1	Introduction to EMC	3.0	This course is one of the foundations in the effective rendition for the higher level of game design and development. This course provides an introduction to game development and covers topics in animation of shapes and objects, slideshow creation, incorporation of media to movies and adding keyframes.
CCE 102/L	Computer Programming 1	3	This course introduces the students to the fundamentals of logic formulation together with their implementation in the Java programming language with the use of Eclipse as the Integrated Development Environment. It covers fundamental programming concepts such as algorithmic processes, data types, variables, objects, expressions, control structures (sequence, selection and looping), file handling, methods and arrays.

Second Semester	**Subject Title**	**Unit**	**Course Description**
CCE 103/L	Computer Programming 2	3	This course covers the object-oriented design, encapsulation and information hiding, separation of behavior and implementation, classes and subclasses, inheritance, polymorphism, class hierarchies, and collection classes and iteration protocols. This includes the applications and implementation of the relationship between an object and its corresponding class and use appropriate algorithm for solving computing problems.

EMC 2/L	Freehand and Digital Drawing	3	This course covers basic computer illustration skills: seeing proportions, angles, spatial relationships and grounds: expressing ideas visually using varying techniques, rules of composition, and subject matter; understanding the necessity of thoroughly formulating and investigating ideas, doing practice sketches; appreciation of a finished work of digital art.

SECOND YEAR			
First Semester	**Subject Title**	**Unit**	**Course Description**
EMC3/L	Introduction to Game Design and Development	3.0	This course gives an overview of the game development process from conception to production. It also discusses a history of game development here and abroad, and exposure to positions, job responsibilities that each member of a game development team has along with the industry requirements for the creation of a game design document (GDD) and technical design document (TDD). Game design includes game play, storytelling, challenges, and basic interactive design, which includes interface design, information design and world interaction. Students will experience designing a small casual game and understand the complexities in developing these projects. The experience will be used as a foundation for more advanced courses in the program.
EMC 4/L	Data Structures and Algorithms	3.0	This course introduces the students the principles of the data structures implementations using Java language. It covers different algorithms that show how to model a variety of real-world problems in computing using appropriate forms of linear and hierarchical data structures and representing organization of a hierarchical file system and database file structure.
DA 1/L	Image and Video Processing	3.0	This course introduces the basic fundamentals of motion picture cinematography, to include both technical knowledge and artistic application. Special focus will be placed on the specific camera and lighting equipment to be used throughout the duration of the digital animation curriculum. Topics will include, but are not limited to: camera operation, composition and framing, lens choice, camera movement, setting proper exposure, lighting, collaboration, blocking, continuity and all aspects of visual storytelling.

Second Semester	Subject Title	Unit	Course Description
EMC 5/L	Computer Graphics Programming	3.0	This course covers computer graphics programming that applies to games, computer-aided design, virtual simulators and visualizations. This course also include topics in mathematical foundations of graphics like 2D and 3D coordinate systems.
EMC 6/L	Human Computer Interaction	3.0	The course intends to introduce students to the discipline concerned with the design, evaluation & implementation of various computing systems intended for human use. Emphasis will be placed on understanding human behavior with interactive objects, knowing how to develop and evaluate interactive software using a human-centered approach, and general knowledge of HCI design issues with multiple types of interactive applications.
EMC 7/L	Principles of 2D Animation	3.0	This course provides students with an appreciation for the art of animation by surveying its history, types, production processes, and current industry trends. It aims to equip students with the skills of visual storytelling through the interpretation of narrative and movement via traditional and digital hand-drawn animation techniques.
EMC 8/L	Information Management	3.0	This course discusses basic concepts and definitions of database programming, the basics of Relational Databases as one of the fundamental data storage technology of an entertainment system. It also includes discussion on the processes involves in the development of database. In this course, the students will be able to learn on how to design database based on database design concepts and principles, able to document design using ERD and use SQL to manipulate data and information. Also, in particular the subject focuses on database analysis design and management applicable to students taking up BSEMC.
DA 2/L	Modeling and Rigging	3.0	This course builds on the principles of 2D animation subject. Advanced techniques in preparing 2D animation assets for use in games will be covered including automatic generation of 2D animation assets through programming.

DA 3/L	Lighting and Effects	3.0	This course covers the core motion graphic animation skills—motion effects, animation, and rendering—within a real-world, project-based workflow. The students will learn to translate equally well to film, motion graphics, game design, and animation. This course explores the basics of the Adobe After Effects, including selecting and manipulating objects, text, organizing scenes, customizing the interface, integrate cameras, lighting, and effects into the rendering process.

THIRD YEAR			
First Semester	**Subject Title**	**Unit**	**Course Description**
EMC 9/L	Audio Design and Sound Engineering	3.0	This course provides students with an appreciation for sounds. This course includes topics in audio recording, sound editing and mixing. This course also explores the different tools to create and capture sounds.
EMC 10	Script Writing and Storyboard Design	3.0	This course explores the different techniques in interpretation of story with the goal of identifying themes and procedures for creating game ideas. This course also includes topics on how to define characters, setting, and structure to create a game concept.
EMC 11/L	Principle of 3D Animation	3.0	In this course, students learn how to become proficient 3D model builders, and animators using current industry software. Students will be introduced to several other aspects of the software's capabilities as it relates to the motion picture field, commercials, special effects, multimedia, webpage content, and game development.
DA 4/L	Texture Mapping	3.0	This course covers the core 3D animation skills—modeling, texturing, rendering, and animation—within a real-world, project-based workflow. This course explores the basics of the Maya interface, including selecting and manipulating objects, organizing scenes, and customizing the interface. Students will learn about polygonal modeling, creating and refining meshes, sculpting, and working with NURBS surfaces.
DA 5/L	Advanced 2D Animation	3.0	This course builds on the principles of 2D animation subject. Advanced techniques in preparing 2D animation assets for use in games will be covered including automatic generation of 2D animation assets through programming.

Second Semester	Subject Title	Unit	Course Description
DA 6/L	Advanced 3D Animation and Scripting	3.0	This course covers topics on how to write scripts to generate repeated animation effects and pre-determined movements. Students will learn in general the basic structures used in numerous scripting languages and will learn in detail the scripting language of a specific 3D animation software tool (e.g. Python for Blender and MEL for Maya).
DA 7/L	Advanced Sound Production	3.0	This course builds on the sound design and production principles. Advanced techniques in sound production including the use of professional commercial software will be covered. Students will learn to solve technical sound production problems beyond the solutions offered by popular software.
DA 8/L	Compositing and Rendering	3.0	This course explores the advanced techniques for 3D animation and rendering development. Topics included are 3D pre-visualization, match moving, dynamics, multi-pass rendering and digital compositing.
DA 9/L	Animation Design and Production	3.0	This course exposes the students to different types of animation projects giving emphasis on systematic approach on project completion. This course is designed to engage the students in group activities and require written documentation of the project. Students will have to provide and present a completed short animation film.
EMC 12/L	Design and Production Process	3.0	This course covers the technical workflow required to establish the framework upon which games are structured. The students will evaluate engines and game technology, determine a technical implementation plan, and create a technical Design Document for their final project. Students learn how to use industry standard version control software and use it throughout their final project development.
DA 11/L	DA Elective 1	3.0	The course takes a website pilot project from start to finish, from setting up the HTML page and containers to styling established elements for small, medium and large screens. This course also covers how to reposition the navigation bar for better viewing on mobile devices, create animated transitions, and turn bulleted lists into interactive menus with full touch support.

CCE 106/L	Application Development and Emerging Technologies	3.0	This course covers the development of applications using web, mobile and emerging technologies with emphasis on requirement management, interface design, usability, testing and deployment, including ethical and legal considerations. The student is expected to design and develop a sufficiently computer application that solves complex problems.

SUMMER			
Subject Title		**Unit**	**Course Description**
DA 12/L	Capstone Project 1	3.0	The course focuses on the proposal stage. The students are expected to write papers from Chapter 1 to Chapter 3. Chapter 1 composed of the Background of the study, objectives, significance of the study, scope and delimitations of the proposed study. Chapter 2 composed of the related literature, and systems. Chapter 3 composed of the conceptual framework and the technical discussions of the technology to be utilized by the researchers. The paper will be presented in the title and outline defense.
IT 19/L	Technopreneurship	3.0	This course covers the principles and theories of technopreneurship. This course prepares the students to be budding technopreneurs through a journey of gradual process of self-mastery, environment mastery, enterprise mastery and the development of business plan (SEED course model). At the end of the course, the students are expected to develop a feasible entertainment business plan using lean startup model and present it. Furthermore, it is hoped that they

FOURTH YEAR			
Subject Title **First Semester**		**Unit**	**Course Description**
DA 13/L	Capstone Project 2	6.0	This subject is a continuation of Capstone Project 1 and focuses on the implementation phase of the project and evaluation of its testing. Based on the instrument constructed in pre-requisite course, the project will be validated by experts in the field and research coordinator of the college, by then, it will launch an alpha testing for selected groups of users and then followed by a beta testing. The findings, conclusions, and recommendations after a series of tests and evaluation will be presented in the final defense.

DA 14/L	DA Elective 2	3.0	This course complements the advanced character animation courses and provides students an opportunity to produce a cinematic animation. Students create through intensive pre-production and storyboarding, a rigid schedule and an Animatic to animate form. The focus will be on high quality animation and acting within the framework of a proprietary animation engine.

Second Semester	**Subject Title**		**Course Description**
DA 15	On-the-Job Training	9.0	This subject is designed to expose the students to the real-world problems and situations by letting them work as on-the-job trainees in various establishments in the region. The exposure will help them acquire the skills and experiences necessary for becoming Entertainment and Multimedia professionals.