

## **BACHELOR OF SCIENCE in Entertainment and Multimedia Computing**

### **Program Description**

Bachelor of Science in Entertainment and Multimedia Computing is the study and use of concepts, principles, and techniques of computing in the design and development of multimedia products and solutions. It includes various applications such as in science, entertainment, education, simulations and advertising.

The Digital Animation Technology specialization is focused on the application of fundamental and advanced theories and advanced techniques in 2D and 3D animation, use and development for advancement of animation technologies, and production of commercially acceptable content and viable solutions for different platforms such as broadcast, web and mobile cast.

### **Program Educational Objectives**

Within three to five years after obtaining a Bachelor's degree in Entertainment and Multimedia Computing at the University of St. La Salle, a graduate is expected to have:

1. Assumed leading and significant roles as digital animation professionals by applying skills, abilities and techniques learned in the design and development of multimedia products and solutions which include the use of various digital animation technologies.
2. Exhibited high standards of professionalism while maintaining social and ethical responsibilities both in local and International organizational environment.
3. Capability of communicating and engaging in life-long learning activities relevant to their profession, including earning advanced degrees, attaining professional certification and engaging in research activities to further nation building and national development.

### **PROGRAM OUTCOMES**

By the time of graduation, the students of the program shall have the ability to:

1. Apply concepts of mathematics, computing sciences to the practice of being an entertainment and multimedia computing professional.
2. Analyze physical sciences concepts in relation to the practice of entertainment and multimedia computing.
3. Analyze and evaluate appropriate techniques, skills and modern computing tools necessary for the practice of being a professional game developer or animator.
4. Conceptualize and formulate ideas to solve problems based on the given requirements.
5. Compare and contrast the effects and impact of entertainment and multimedia computing projects on nature and society, and of their social and ethical responsibilities in consideration of intellectual property rights.
6. Demonstrate original, innovative, client-centric and creative outputs.
7. Illustrate, design, and build creative concepts that meets client needs within realistic constraints through project prototype implementation.
8. Integrate audio and video elements to clearly communicate the essence of the story.

9. Implement animated story using storyboarding and animation bible based on the user's specification.
10. Use rendering methods, tools and techniques required for an industry and standard based product portfolio.
11. Use, produce and apply the appropriate skills and techniques as well as the use of modern tools necessary for an animated film based on the client's needs and specifications.
12. Effectively collaborate in multi-disciplinary and multi-cultural teams.
13. Assess local and global impacts of computing on society relevant to professional computing practice and subscription accepted industry standards.
14. Communicate orally and in writing using the English language.

### **Admission Requirements**

1. High School graduates and transferees seeking admission to the BSEMC program must meet the criteria and cut-off scores set by the University for the BSEMC program.
2. Shiftees must not have accumulated 15 or more units of failures.

### **Retention Policies**

1. Students who fail in 50% or more of the subjects taken during the previous semester will be asked to shift to another course. Courses dropped are considered failed.
2. Students who fail in two or more major subjects in one semester shall be put on probation.
3. Student must not incur more than two failures in the same Math or EMC Core/ Professional courses; otherwise they will be advised to drop from the program

### **Teaching and Learning Activities**

1. Lecture and Classroom discussions
2. Programming demonstration
3. Guided Hands-on Programming Sessions
4. Guided Design and Development of Project Specifications
5. Independent Project Requirements Gathering, Design and Implementation
6. Mentorship and Monitored Internships.

**BACHELOR OF SCIENCE  
in Entertainment and Multimedia Computing**

**FIRST YEAR**

<b>First Semester</b>		<b>Total Credit Units</b>	<b>No. of hrs Lec Lab</b>		<b>Total Assessed Units</b>	<b>Pre- requisite</b>	<b>Co- requisite</b>
CC101	Introduction to Computing	3	3	0	3		
CC102	Computer Programming 1	3	2	3	5		
EMC201	Freehand Drawing	3	3	0	3		
EMP301	IT Infrastructure	3	3	0	3		
MATHMW	Mathematics in the Modern World	3	3	0	3		
PCOM	Purposive Communication	3	3	0	3		
STS	Science, Technology and Society	3	3	0	3		
IRS1	Lasallian Spirituality	3	3	0	3		
PED1	Physical Education 1 (Wellness and Fitness)	2	2	0	2		
IGG1	Group Guidance 1	1.5	1.5	0	1.5		
	<b>Total</b>	<b>27.5</b>	<b>26.5</b>	<b>3</b>	<b>29.5</b>		

**Second Semester**

<b>Second Semester</b>		<b>Total Credit Units</b>	<b>No. of hrs Lec Lab</b>		<b>Total Assessed Units</b>	<b>Pre- requisite</b>	<b>Co- requisite</b>
CC103	Computer Programming 2	3	2	3	5	CC102	
EME401	Graphics Design	3	2	3	5	EMC201	
EMC210	Principles of Animation	3	3	0	3	EMC201	
CWRLD	The Contemporary World	3	3	0	3		
IRS2	Christian Morality	3	3	0	3		
PED2	Physical Education 2 (Team Sports and Rhythmic Activities)	2	2	0	2		
Math 1	College Algebra	3	3	0	3		
RVARTS	Reading in Visual Arts	3	3	0	3		
PSPEAK	Public Speaking	3	3	0	3		
	<b>Total</b>	<b>26</b>	<b>24</b>	<b>6</b>	<b>30</b>		

**SECOND YEAR**

<b>First Semester</b>		<b>Total Credit Units</b>	<b>No. of hrs Lec Lab</b>		<b>Total Assessed Units</b>	<b>Pre- requisite</b>	<b>Co- requisite</b>
CC104	Data Structures and Algorithms	3	3	0	3	CC103	
CC105	Information Management	3	3	0	3	CC103	
EMC203	2D Game Art	3	2	3	5	EME401	
EMC205	2D Animation 1	3	2	3	5	EMC210	
EMC202	Usability, HCI and User Interaction Design	3	0	3	3	EME401	
IRS3	Spirituality in the Workplace	3	3	0	3		
Math 2	Trigonometry	3	3	0	3		
NSTP1	National Service Training Program 1	3	3	0	3		
PED3	Physical Education 3 (Individual and Dual Sports)	2	2	0	2		
	<b>Total</b>	<b>26</b>	<b>21</b>	<b>9</b>	<b>30</b>		

Second Semester		Total Credit Units	No. of hrs Lec	Lab	Total Assessed Units	Pre- requisite	Co- requisite
CC106	Cloud based Application Development	3	2	3	5	CC105	
EMC204	Intro to Game Design & Development	3	3	0	3	CC103	EME401
EMC206	Audio Design and Sound Engineering	3	2	3	5		
EMP304	2D Animation 2	3	2	3	5	EMC205	
LOGIC	Logic	3	3	0	3		
Math 3	Discrete Structures	3	3	0	3		
PED4	Recreation and Water Safety	2	2	0	2		
NSTP2	National Service Training Program 2	3	3	0	3		
	<b>Total</b>	<b>23</b>	<b>20</b>	<b>9</b>	<b>29</b>		

### THIRD YEAR

First Semester		Total Credit Units	No. of hrs Lec	Lab	Total Assessed Units	Pre- requisite	Co- requisite
EMC207	Script Writing and Storyboard Design	3	2	3	5	EMP304	
EMC208	3D Animation 1	3	2	3	5	EMP304	
EMC209	Design and Production Process	3	3	0	3	EMC204	
EMP303	Lighting and Effects	3	2	3	5	EMC205	
EME402	IT Service Management	3	3	0	3		
USELF	Understanding Self	3	3	0	3		
RIZAL	Rizal's Life, Works, and Writings	3	3	0	3		
Math 4	Probability and Statistics	3	3	0	3		
	<b>Total</b>	<b>24</b>	<b>21</b>	<b>9</b>	<b>30</b>		

### Second Semester

Second Semester		Total Credit Units	No. of hrs Lec	Lab	Total Assessed Units	Pre- requisite	Co- requisite
EMP302	Image and Video Processing	3	2	3	5	EMC204	
EMP306	Post Production	3	3	0	3	EMC209	
EMP307	Capstone 1	3	3	0	3	EMC209	
EMP308	Compositing and Rendering	3	3	0	3	EMC208	
EMP309	3D Animation 2	3	2	3	5	EMC208	
EMP311	Texture and Mapping	3	2	3	5	EMC208	
ARTAP	Art Appreciation	3	3	0	3		
RHIST	Readings in Philippine History	3	3	0	3		
	<b>Total</b>	<b>24</b>	<b>21</b>	<b>9</b>	<b>30</b>		

### FOURTH YEAR

First Semester		Total Credit Units	No. of hrs Lec	Lab	Total Assessed Units	Pre- requisite	Co- requisite
EMP310	Business and Events	3	2	3	5	EMP307	
EMP312	Capstone 2	3	3	0	3	EMP307	
EMP313	Social Issues & Professional Practices	3	3	0	3	4th year Standing	
EME403	Business Analytics	3	0	3	3		
EME404	Project Management	3	2	3	5		
GENSOC	Gender and Society	3	3	0	3		
ETHICS	Ethics	3	3	0	3		
GBOOKS	Great Books	3	3	0	3		
	<b>Total</b>	<b>24</b>	<b>19</b>	<b>9</b>	<b>28</b>		

**Second Semester**

		<b>Total Credit Units</b>	<b>No. of hrs Lec</b>	<b>Lab</b>	<b>Total Assessed Units</b>	<b>Pre- requisite</b>	<b>Co- requisite</b>
EMP314	Internship	9	500	0	9	4th Year Graduating	
	<b>Total</b>	<b>9</b>	<b>500</b>	<b>0</b>	<b>9</b>		

**SUMMARY OF REQUIRED COURSES**  
**Bachelor of Science in Entertainment and Multimedia Computing**

	<b>No. of Courses Required</b>	<b>Units Equivalent</b>	<b>Total Units</b>
<b>General Education</b>			
Mathematics in the Modern World		3	
Purposive Communication		3	
Science, Technology and Society		3	
The Contemporary World		3	
Understanding Self		3	
Reading Visual Art		3	
Art Appreciation		3	
Rizals Life, Works, and Writings		3	
Ethics		3	
Readings in Philippine History		3	
Great Books		3	33
<b>Mathematics</b>			
College Algebra		3	
Trigonometry		3	
Discrete Structures		3	
Probability and Statistics		3	12
<b>Other Non-Technical Courses</b>			
Group Guidance 1		1.5	
Lasallian Spirituality		3	
Christian Morality		3	
Spirituality in the Workplace		3	10.5
<b>Languages and Humanities</b>			
Public Speaking		3	
Logic		3	
Gender and Society		3	9
<b>Physical Education</b>			
Wellness and Fitness		2	
Team Sports and Rhythmic Activities		2	
Individual and Dual Sports		2	
Recreation and Water Safety		2	8
<b>NSTP</b>			
National Service Training Program 1		3	
National Service Training Program 2		3	6
<b>Common Computing Courses</b>			
Introduction to Computing		3	
Computer Programming 1		3	
Computer Programming 2		3	
Data Structures and Algorithms		3	
Information Management		3	
Cloud Based Application Development		3	18
<b>EMC Core Courses</b>			
Principles of Animation		3	
Freehand Drawing		3	
2D Game Art		3	
2D Animation 1		3	
Usability, HCI and User Interaction Design		3	
Introduction to Game Design and Development		3	
Audio Design and Sound Engineering		3	
Script Writing and Storyboard Design		3	
3D Animation 1		3	
Design and Production Process		3	30
<b>EMC Professional Courses</b>			
IT Infrastructure		3	

2D Animation 2	3	
Lighting and Effects	3	
Image and Video Processing	3	
Post Production	3	
Compositing and Rendering	3	
3D Animation 2	3	
Texture and Mapping	3	
Business and Events	3	
Social Issues and Professional Practices	3	30
<b>EMC Professional Elective Courses</b>		
Graphics Design	3	
IT Service Management	3	
Business Analytics	3	
Project Management	3	12
<b>Capstone Project</b>		
Capstone 1	3	
Capstone 2	3	6
<b>Internship</b>		
Internship	9	9
<b>Total</b>		<b>183.5</b>

**MAJOR COURSE DESCRIPTION****Bachelor of Science in Entertainment and Multimedia Computing****CC101 3 units  
INTRODUCTION TO COMPUTING (LECTURE)**

This course provides an overview of the Computing Industry and Computing Profession, including Research and Applications in different fields, the key components of computer systems.

At the end of the course, the students are expected to put up an exhibit as part of an information awareness on the latest ICT software and hardware innovations, computer security and viruses.

**CC102 3 units  
COMPUTER PROGRAMMING 1 (WITH LABORATORY)**

Problem solving using general purpose programming language. The emphasis is to train students to design, implement, test, and debug programs intended to solve computing problems using fundamental programming constructs.

At the end of the course, the students are expected to apply their skills and techniques to solve industry and societal problems by analyzing the requirement and implementing project prototypes.

**CC103 3 units  
COMPUTER PROGRAMMING 2 (WITH LABORATORY)**

Problem solving using general purpose programming language. The emphasis is to train students to design, implement, test, and debug programs intended to solve computing problems using basic data structures and standard libraries.

At the end of the course, the students are expected to apply their skills and techniques to solve industry and societal problems by analyzing the requirement and implementing project prototypes.

**CC104 3 units  
DATA STRUCTURES AND ALGORITHMS (LECTURE)**

The course covers the standard data representation and algorithms to solve computing problems efficiently (with respect to space requirements and time complexity of algorithm). This covers the following: Stacks, Queues, Trees, Graphs, Maps, and Sets. Thorough discussion of sorting and searching algorithms and hashing is covered.

At the end of the course, the students are expected to choose among which alternative data structure is most efficient to solve specific data-representation and algorithmic problems.

**CC105 3 units  
INFORMATION MANAGEMENT (LECTURE)**

This course covers information management, database design, data modeling, SQL, and implementation using a relational database system.

At the end of the course, the students are expected to model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model using SQL.

**CC106 3 units  
CLOUD-BASE APPLICATION DEVELOPMENT (WITH LABORATORY)**

Development of applications using web, mobile, and emerging technologies with emphasis on requirements management, interface design, usability, testing, deployment, including ethical and legal considerations.

At the end of the course, the students are expected to develop, design and implement, a web based software based on a given specification. Students are also expected to use a defined set of coding, documentation writing, and web based technology in order to achieve the desired output.

**EMC201 3 units  
FREEHAND DRAWING (LECTURE)**

This course introduces students to the fundamentals of image development using both traditional and digital drawing tools. Students are taught to develop effective drawing techniques to properly convey visual communications. Students are also taught human anatomy to appropriately render a balanced human form. Students are also taught the basics of camera angles and perspective to properly render background design. Furthermore, this course, the students are introduced to color theory and color representation models used in preparing digital media assets. The course emphasizes the application of color library and styling in producing eye catching images and videos.

At the end of the course, the students are expected to sketch and draw a balanced human form and landscape scenery using both traditional and digital tools. Students are also expected to perform and execute sketches that preserve the proportions as well as use proper color combinations in their artwork.

**EMC202 3 units  
USABILITY, HCI, AND USER INTERACTION DESIGN (LABORATORY)**

The course focuses on imparting to students the techniques in making software more intuitive to use and hence making it easy for target users to learn its fundamental functions and features. This



course includes the principles of human computer interaction and use interface design techniques.

At the end of the course, the students are expected to select appropriate HCI techniques and UI elements which will be implemented as part of the game design environment. Students are expected to develop an intuitive game design and environment using the different techniques learned.

### **EMC204 3 units INTRODUCTION TO GAME DESIGN AND DEVELOPMENT (LECTURE)**

The course gives an overview of the game development process from conception to production. It also discusses the history of game development here and abroad, and exposure to the 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 foundation for more advanced courses in the program.

At the end of the course, the students are expected to appraise the complexity of different in-game components. Students are expected to be able to design and document original game proposals based on the different GDD used components.

### **EMC205 3 units 2D ANIMATION 1 (WITH LABORATORY)**

In this course, the fundamentals of animation (which includes timing, physics, and movement arcs) and design and production of 2D digital animation using appropriate software are reviewed. Students explore the range of possibilities and limitations of dynamic media and digital animation. Students are also taught to design and develop their own original character, assets and background using different graphic and 2D animation software.

At the end of the course, the students are expected to create and design a 2D animation, using a 2D animation software, based on the specification provided. Students are also expected to create and design original assets and characters as well as incorporate the different animation principles into their 2D animation.

### **EMC206 3 units AUDIO DESIGN AND SOUND ENGINEERING (WITH LABORATORY)**

Sound is a crucial element in film, video and animation. The uses of sounds and the moving image in multimedia production are tackled herein. Core production skills of recording, digitizing, editing and manipulating of sound samples,

musical acoustics, and digital sound theory are learned in this course. Students are also taught to create, manipulate appropriate sounds and sound effects for a particular theme.

At the end of the course, the students are expected to generate, edit, and compose sound effects in order to meet the specification required based on the given genre. Students are expected to be able to compose original sound score, background sound and different sound effects that is needed and appropriate for a given scenario.

### **EMC207 3 units SCRIPT WRITING AND STORYBOARD DESIGN (WITH LABORATORY)**

This course focuses on the story telling skills for a time-based media. This course includes storyboarding conventions and techniques, visual and auditory language of a time-based media, design development, concept development animatics and story development. The principles and issues presented are relevant for animation, live-action, film and video. Application of these principles in an animated short is highly emphasized. This course also focuses on story telling in a coherent and compelling visual terms. Emphasis is placed on the process of refinement, iteration and development of the story.

At the end of this course, the students are expected to create a script based on a given story. Students are expected to design and develop a storyboard based on a given script and convert it into a sequence of movements.

### **EMC208 3 units PRINCIPLES OF 3D ANIMATION (WITH LABORATORY)**

In this course, students learn the fundamental concepts of 3D animation. Students are introduced to the different principles behind the creation of the 3D virtual world. Students will be taught to design different computer-based 3D imagery and produce a simple 3D animation sequence using a 3D software.

At the end of this course, the students are expected to create and design a 3D animation, using a 3D animation software, based on the specification provided. Students are also expected to create and design original assets and characters as well as incorporate the different animation principles into their 2D animation.

### **EMC209 3 units DESIGN AND PRODUCTION PROCESS (LECTURE)**

This course covers the design and production process in the field of animation. It will cover how the animation is built, including the many of the processes required to get an animation done from start to finish. This course provides the foundation and production for understanding the techniques used in animation. This course looks at how the stories is structure, where the students are introduced to many of the fundamental

production processes, including storyboarding, script writing, pitching, visual storytelling, character development as well as composition, editing, sound and visual design.

At the end of this course, the students are expected to submit a suitable animation development plan to achieve a specific project milestones under realistic constraints.

### **EMC210 3 units** **PRINCIPLES OF ANIMATION (LECTURE)**

This course is designed to give students the opportunity to explore the world of animation. Students will practice various methods of animation including stop-motion, cell animation, and claymation. Many projects will require students to collaborate and work as a team. This course will incorporate important skills which will transfer to other disciplines, such as problem solving, critical thinking, planning, and collaboration.

At the end of the course, the student will develop and apply the twelve basic principles of animation.

### **EMP301 3 units** **IT INFRASTRUCTURE (LECTURE)**

This course covers IT infrastructure components that provides platforms for information system in the business. Organizes data management technology for corporate processes with inventory, customers and vendors. Aligned to a specific networking such as Storage Area Network (SAN), virtualizations and array of telecommunication technology applicable in the industry today. Utilization of cloud computing models, mashups and other web applications. Includes, Total Cost Ownership (TCO) as essential components in different organizational environment during business or project proposals.

At the end of the course, the students are expected to design a network infrastructure for an industry-based scenario case study that accommodates specified requirements and constraints.

### **EMP302 3 units** **IMAGE AND VIDEO PROCESSING (WITH LABORATORY)**

In this course, students learn the fundamental operations on images and videos. Image processing includes color corrections, image recovery techniques, compositing, segmentation, differencing and morphing, and alignments. Video processing includes audio-video splitting, synchronization, and video transformations. This also covers the fundamentals of image and video processing which covers the most popular tools and software used.

At the end of this course, the students are expected to be able to use any software to process image and video. Students are expected to apply different techniques using the features of the software provided. Students are expected to be able to process any video and image properly based on the scenario and problem given.

### **EMP303 3 units** **LIGHTING AND EFFECTS (WITH LABORATORY)**

In this course, students learn the fundamentals of lighting controls and artificial visual effects as applied to 3D animation. Students experience a hands-on control of light and light sources using appropriate 3D animation suite. Proper and practical use of artificial effects to embellish portions of, or all of, a composited animated short is covered. At the end of this course, the students are expected to be able to adjust lighting and visual effects based on the needs of a specific animated scene to meet the production and aesthetic requirement.

Students are expected to be able to properly and appropriately find ways to achieve the visual lighting effects based on scene to convey a certain mood.

### **EMP304 3 units** **2D ANIMATION 2 (WITH LABORATORY)**

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.

At the end of this course, students are expected to design and create a 2D animation within a specified style, guidelines and parameters. Students are expected to be to design and create original characters, assets and background to using a 2D animated software.

### **EMP305 3 units** **MODELLING AND RIGGING (WITH LABORATORY)**

In this course, students learn how to develop character assets in varied gradients of detail based on given concept arts. Students also learn the mechanics of rigging a model with skeleton and muscle structures which animators may move about in an actual animation production. Students will learn the theory and proper placement of critical structures based on the animation quality required and timescale. Students learn advanced work in 3-D animation. Emphasis on character modeling, rigging and animation. This course focuses on the set up and rigging of bipedal characters, creatures and props for animation. Specific topics cover, bone/joint creation, skinning, constraints, blend shape creation, creating special attributes, weighting, and introduction to scripting a rig for characters, objects and facial set ups.

At the end of the course, the students are expected to create a 3D environment and 3D models based on the specification provided. Students are expected design an original character to be rigged and enable them to move. Students should create and design a prototype animation which shows movement and interaction in an animated project.

## **EMP306** **3 units**

### **POST PRODUCTION (LECTURE)**

This course builds on the production subject. Advanced techniques in sound production including the use of custom developed software will be covered. Students will learn to solve technical sound production problems beyond the solutions offered by popular software.

At the end of the course, the students are expected to generate an original sound effect, animated score or background sound. Students are also expected that they can edit existing audio, score or background sound in order to meet the specified requirement.

## **EMP307** **3 units**

### **CAPSTONE 1 (LECTURE)**

This course provides the students with opportunities to synthesize their accumulated knowledge to explore topics which reflect their personal interests, future goals and levels of ability to develop computing solutions through Information Technology (IT) infrastructure. It intends to provide practical experience in the whole process of software development of software-based projects from analysis through design to implementation and testing.

At the end of the course, the students are required to submit a complete written proposal documentation comprising the first three (3) chapters of the capstone project and conducted a successful proposal presentation before the panel members.

## **EMP308** **3 units** **COMPOSITING AND RENDERING** **(LABORATORY)**

In this course, students learn the compositing techniques and efficient rendering methods using an appropriate 3D animation software suite. At the end of the course, the students are expected to finalize camera positioning and angle to gain require appearance and to create proper mood through lighting and to render passes to create sufficient flexibility in the compositing stage.

## **EMP309** **3 units**

### **3D ANIMATION 2 (WITH LABORATORY)**

In this course, students learn 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).

At the end of the course, the students are expected to write scripts using a 3D animation software and develop and design an output based on the specification given.

## **EMP310** **3 units**

### **BUSINESS AND EVENTS** **(WITH LABORATORY)**

In this course, students do collaborative work with each other to design and produce a short animation project given a complete storyboard to work on.

At the end of the course, the students are expected to produce an animated short within the bounds of a specified style and guidelines using either 2D or 3D as their medium and their target platform.

## **EMP311** **3 units**

### **TEXTURE AND MAPPING** **(WITH LABORATORY)**

In this course, students learn how to develop texture maps and application techniques, in particular direct mapping and multi-texturing – light mapping, and bump mapping. Texture filtering, aliasing reduction techniques such as bilinear interpolation and trilinear interpolation, clamping, and warping are covered.

At the end of the course, the students are expected to create and design original 3D textures for animation to replicate various surfaces based on the guidelines specified. Students are also expected to extensively use assets and libraries of a 3D rendering software.

## **EMP312** **3 units**

### **CAPSTONE 2 (LECTURE)**

This course challenges students to proceed to systems development based on the approved capstone project proposal. The project will demonstrate the students' ability to analyze, synthesize, evaluate information, design and develop a prototype system.

At the end of the course, the students are required to submit a comprehensive written documentation comprising all chapters of the capstone project and conducted a successful oral presentation before the panel members.

## **EMP313** **3 units**

### **SOCIAL ISSUES AND PROFESSIONAL PRACTICES (LECTURE)**

This course studies the social impact, implications, and effects of computers, and the responsibilities of computer professionals in directing the emerging technology. Specific topics include an overview of the history of computing, computer applications and their impact, the computing profession, the legal and ethical responsibilities of professionals, and careers in computing.

At the end of the course, the students are expected to put up an exhibit as part of an information awareness campaign about IT security and computer threats.

## **EME401** **3 units** **GRAPHICS DESIGN (WITH LABORATORY)**

Students will be taught the fundamentals of working with raster and vector editing using industry-standard software such as Adobe Photoshop and Adobe Illustrator.

At the end of the course, the students are expected to demonstrate proficiency in a range of computer graphics technology, including bitmap image editing, vector graphics, page layout, web design, mobile web design effects and produce a portfolio of work that meets employer and marketplace expectations.

**EME402** **3 units**  
**IT SERVICE MANAGEMENT (WITH LABORATORY)**

The course provides the students with the overview of the outsourcing industry, including the rationale for outsourcing, critical factors which affect different outsourcing industries, and the process involved in engaging, operating, and maintaining an outsourced service. The course also introduces different tools and methodologies used in outsourcing operation and provide students with opportunities to apply these tools in laboratory simulation. The course also enables students to recognize areas of opportunities in outsourcing, as well as analyze and assess how changes in technology, regulation, and business environment may affect the current industries. It also increases the students' awareness of the different processes critical to maintaining outsourcing engagements, such as maintaining client relationship in the context of service culture, and the effective management of cost and resources.

At the end of the course, student are expected to prepare, analyze, and evaluate digital animation criteria based guidelines on the specification and constraints required by the BPO.

**EME403** **3 units**  
**BUSINESS ANALYTICS (LABORATORY)**

The course aims to prepare students in the study of incorporate awareness of ethical norms as well as compliance to corporate code of ethics, policies, rules, regulations, and best practices, applicable laws governing confidentiality, nondisclosure agreement, and proper conduct.

At the end of the course, the students will learn basic analytic methods and analyze case studies on organizations that successfully deployed these techniques.

**EME404** **3 units**  
**PROJECT MANAGEMENT (WITH LABORATORY)**

The course focuses on project management methodology that will increase the ability of the students to initiate and manage computing projects more efficiently and effectively.

At the end of the course, students will have the opportunity to apply these methodologies to case studies and final project.