

---

## Program Viewbook

### Bachelor of Science in Industrial and Engineering Management (BSciEM)

#### Program Description

The BSciEM program prepares graduates to lead in smart industry, digital transformation, and sustainable operational systems. The program focuses on developing engineers capable of improving complex systems across manufacturing, logistics, and service sectors through data-driven and technology-enabled solutions.

Students develop a strong foundation in mathematics, physics, computing, and engineering sciences, followed by specialized study in key industrial engineering areas such as operations research, systems modeling, probability and statistics, engineering economy, supply chain engineering, and quality engineering. The curriculum integrates theoretical knowledge with practical application through laboratory work, applied design projects, internship, and a graduation project, enabling students to address real-world challenges in systems optimization, industrial automation, and data-driven decision-making.

The BSciEM program offers two concentration pathways: (i) Smart Manufacturing and Industry Systems, and (ii) Logistics and Supply Chain Engineering. Students are required to select one concentration pathway as part of the degree requirements. Each concentration consists of nine (9) credit hours of elective courses, as detailed in Appendix 1.

In addition, the Internship in Industrial Engineering and Graduation Project (I and II) are completed in areas aligned with the selected concentration, ensuring that students achieve a minimum of 18 credit hours of concentration-focused learning.

The curriculum is designed to be consistent with international accreditation expectations, including the general and program-specific criteria of the Engineering Accreditation Commission (EAC) of ABET.

Graduates of this program will be prepared for professional roles such as Industrial Engineers, Operations Analysts, Supply Chain Engineers, Logistics and Distribution Engineers, Manufacturing Engineers, Quality and Process Improvement Engineers, Systems Analysts, Production and Operations Managers and Industrial Automation Specialists. The program also prepares graduates for entrepreneurial and research-oriented careers in smart manufacturing systems, logistics and supply chain management, industrial systems optimization, sustainable industrial operations, and emerging Industry 5.0 technologies, supporting the growing demand for advanced industrial engineering expertise in Dubai, the UAE, and the wider global economy.

#### Program Learning Outcomes (PLOs)

- PLO 1.** Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- PLO 2.** Apply engineering designs to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- PLO 3.** Communicate effectively with a range of audiences.

**PLO 4.** Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

**PLO 5.** Function effectively in a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.

**PLO 6.** Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

**PLO 7.** Acquire and apply new knowledge as needed, using appropriate learning strategies.

### Program Completion Requirements

The BScIEM degree shall be awarded to a student upon completing the following requirements:

- The student enrolled in the program must have passed 130 credit hours.
- The student must achieve a CGPA of not less than 2.0 on a scale of 4.0 points.
- The student must have earned at least 50% of credits at CUD.
- Internship and Project work must be completed at CUD.

### Program Structure

<b>Core Courses</b>	<b>112 Cr. Hrs.</b>
<b>Electives</b>	<b>09 Cr. Hrs.</b>
<b>Practical Experience and Projects</b>	<b>09 Cr. Hrs.</b>
<b>Total</b>	<b>130 Cr. Hrs.</b>

### List of Courses

<b>I. Core Courses</b>				
<b>Course</b>			<b>Prerequisite</b>	<b>Cr. Hrs.</b>
<b>Mathematics and Sciences Courses</b>				<b>30</b>
MTH	112	Calculus I	None	3
MTH	113	Calculus II	MTH 112	3
MTH	212	Calculus III	MTH 113	3
MTH	114	Linear Algebra	MTH 112	3
MTH	220	Ordinary Differential Equations	MTH 212	3
MTH	120	Discrete Mathematics	None	3
MTH	130	Probability and Statistics	MTH 112	3
SCI	210	Modern Physics	None	3
SHS	103	Chemistry	None	3
SCI	220	Engineering Mechanics	None	3
<b>Industrial Engineering Core Courses</b>				<b>48</b>
IEM	211	Operations Research I	None	3
IEM	212	Operations Research II	IEM 211	3
IEM	221	Production and Operations Management	None	3
IEM	230	Quality Control and Reliability Engineering	None	3

Course			Prerequisite	Cr. Hrs.
IEM	240	Facilities Planning and Design	None	3
IEM	222	Manufacturing Processes	IEM 221	3
IEM	241	Supply Chain and Logistics Engineering	IEM 240	3
IEM	341	Human Factors and Ergonomics	None	3
IEM	315	Simulation Modeling and Analysis	SWS 111	3
MEC	323	Industrial Automation	IEM 222	3
BUS	310	Project Management	Completed 60 Cr. Hrs.	3
IEM	322	Lean Manufacturing and Six Sigma	IEM 222	3
IEM	331	Global Supply Chain Management	IEM 241	3
ENG	316	Internet of Things and Data Science	SWS 111	3
BCS	407	Artificial Intelligence	SWS 111 and MTH 130	3
IEM	422	Smart Manufacturing	IEM 322	3
<b>Computing and Software Fundamentals</b>				<b>7</b>
SWS	110	Programming I	None	3
SWS	111	Programming II	SWS 110	3
ENG	122	Engineering Graphics and Design	None	1
<b>Professional Studies and General Education</b>				<b>24</b>
<b>Compulsory Courses</b>				
LNG	181	English I for Engineering and Computing	None	3
LNG	182	English II for Engineering and Computing	LNG 181	3
GED	190	Emirati Studies	None	3
GED	255	Critical Thinking and Problem Solving	LNG 182	3
ENT	141	Fundamentals of Innovation and Entrepreneurship 1	None	2
ENT	142	Fundamentals of Innovation and Entrepreneurship 2	ENT 141	1
ENT	241	Entrepreneurship 1	ENT 142	2
ENT	242	Entrepreneurship 2	ENT 241	1
ENG	416	Professional and Ethical Practice	Min 60 Cr. Hrs.	3
BUS	311	Engineering Economy	MTH 130	3
<b>Humanities Elective Courses (03 Credits):</b> Students are required to select one course from the following courses				<b>3</b>
GED	103	Head Anatomy Sculpture	None	3
GED	106	Smart Decisions: Data Literacy and Visualization	None	3
GED	110	Modern Art Appreciation	None	3
GED	111	Music Appreciation and Communication	None	3
GED	191	Islamic Studies	None	3
GED	196	Communication Skills in Arabic	None	3
GED	205	Psychology in Everyday Life	LNG 182	3
GED	324	Ethical Reasoning for Today's World	LNG 182	3
GED	330	Introduction to Canadian Studies	None	3



## II. Concentrations (Students will select one concentration pathway)

<b>Concentration Pathway 1: Smart Manufacturing and Industry Systems</b>				<b>18 Cr. Hrs.</b>
<b>Elective Courses: (Select THREE courses from the following four elective courses.)</b>				
IEM	450	Advanced Optimization Techniques	IEM 315	3
IEM	451	Additive Manufacturing and 3D Printing	IEM 222	3
IEM	452	Enterprise Resource Planning (ERP) Systems	IEM 241	3
IEM	453	Human–Machine Collaboration	MEC 323	3
<b>Practical Experience and Project (The internship and projects will align with the concentration pathway.)</b>				
IEM	480	Internship in Industrial Engineering	60 Credit Hours and CGPA $\geq$ 2.0	3
IEM	407	Graduation Project I	Completed 90 Cr. Hrs.	3
IEM	408	Graduation Project II	IEM 407	3
<b>Concentration Pathway 2: Logistics and Supply Chain Engineering</b>				<b>18 Cr. Hrs.</b>
<b>Elective Courses: (Select THREE courses from the following four elective courses.)</b>				
IEM	454	Inventory and Warehouse Management	BUS 310	3
IEM	455	Transportation and Distribution Systems	IEM 241	3
IEM	456	Sustainable Supply Chains	IEM 331	3
IEM	457	Digital Logistics and Smart Supply Chain Systems	IEM 331	3
<b>Practical Experience and Project (The internship and projects will align with the concentration pathway.)</b>				
IEM	480	Internship in Industrial Engineering	60 Credit Hours and CGPA $\geq$ 2.0	3
IEM	407	Graduation Project I	Completed 90 Cr. Hrs.	3
IEM	408	Graduation Project II	IEM 407	3



### Eight Semesters Study Plan

Semester	Course Code	Course Title	Prerequisite	Cr. Hrs.
<b>1</b>	LNG 181	English I for Engineering and Computing	None	3
	MTH 112	Calculus I	None	3
	SHS 103	Chemistry	None	3
	SWS 110	Programming I	None	3
	ENT 141	Fundamentals of Innovation and Entrepreneurship 1	None	2
	GED 190	Emirati Studies	None	3
	<b>Total</b>			
<b>2</b>	LNG 182	English II for Engineering and Computing	LNG 181	3
	ENT 142	Fundamentals of Innovation and Entrepreneurship 2	ENT 141	1
	MTH 113	Calculus II	MTH 112	3
	MTH 120	Discrete Mathematics	None	3
	ENG 122	Engineering Graphics and Design	None	1
	SWS 111	Programming II	SWS 110	3
	SCI 210	Modern Physics	None	3
	<b>Total</b>			
<b>3</b>	MTH 130	Probability and Statistics	MTH 112	3
	MTH 212	Calculus III	MTH 113	3
	ENT 241	Entrepreneurship 1	ENT 142	2
	MTH 220	Ordinary Differential Equations	MTH 212	3
	SCI 220	Engineering Mechanics	None	3
	MTH 114	Linear Algebra	MTH 112	3
	<b>Total</b>			
<b>4</b>	IEM 211	Operations Research I	None	3
	IEM 221	Production and Operations Management	None	3
	IEM 230	Quality Control and Reliability Engineering	None	3
	IEM 240	Facilities Planning and Design	None	3
	ENT 242	Entrepreneurship 2	ENT 241	1
	BUS 311	Engineering Economy	MTH 130	3
	<b>Total</b>			
<b>5</b>	GED XXX	Humanities Elective	None	3
	IEM 212	Operations Research II	IEM 211	3
	IEM 222	Manufacturing Processes	IEM 221	3
	IEM 241	Supply Chain and Logistics Engineering	IEM 240	3
	ENG 416	Professional and Ethical Practice	Min 60 Cr. Hrs.	3
	IEM 315	Simulation Modeling and Analysis	SWS 111	3
<b>Total</b>				<b>18</b>
<b>6</b>	BUS 310	Project Management	Completed 60 Cr. Hrs.	3
	MEC 323	Industrial Automation	IEM 222	3
	IEM 322	Lean Manufacturing and Six Sigma	IEM 222	3
	IEM 331	Global Supply Chain Management	IEM 241	3
	IEM 341	Human Factors and Ergonomics	None	3
	<b>Total</b>			
<b>7</b>	BCS 407	Artificial Intelligence	SWS 111, MTH 130	3
	ENG 316	Internet of Things and Data Science	SWS 111	3
	IEM 407	Graduation Project I	Completed 90 Cr. Hrs.	3
	IEM 422	Smart Manufacturing	IEM 322	3
	IEM XXX	Program Elective (1)		3
	<b>Total</b>			
<b>8</b>	IEM 408	Graduation Project II	IEM 407	3
	GED 255	Critical Thinking and Problem Solving	LNG 182	3
	IEM XXX	Program Elective (2)		3
	IEM XXX	Program Elective (3)		3
	<b>Total</b>			
Internship in Industrial Engineering to be taken in summer after completion of 60 Cr. Hrs. and CGPA 2.0 or more.				3
<b>Total Credit Hours</b>				<b>130</b>