

Course title and code	IE 314 Industrial Operations Management-II 3(3,2,0)						
Catalog Data	Aggregate planning, Material requirement planning (MRP), Enterprise resource planning (ERP), scheduling for the short term, and decision modeling.						
Prerequisite	IE 214						
Co-requisites	None						
Level	6						
Textbook	Operations Management, by J. Heizer and B. Render, 11th Ed., Prentice Hall (2014).						
Reference	Production Planning and Industrial Scheduling, Examples, Case studies, and applications. By D. Sule 2nd edition, CRC press, (2008).						
Course purpose	The course aims to introduce students to the managerial concepts and quantitative techniques required in the areas of aggregate planning, MRP, scheduling for the short term, and decision modeling. To enable students to make efficient operations management decisions in practice.						
Topics to be covered:	List of Topics					No of Weeks	Contact hours
	<i>Aggregate planning:</i> what is aggregate planning? Aggregate planning strategies, mathematical approaches to planning, comparison of aggregate planning methods.					3	15
	<i>Material requirement planning (MRP):</i> Master production schedule, bill of material, MRP plan, lot size techniques (lot for lot, EOQ, PPB), introduction to MRP-II, ERP and SAP.					3	15
	<i>Short-term scheduling:</i> scheduling issues, sequencing jobs, finite capacity scheduling, and theory of constraint introduction.					3	15
	<i>Just-In-Time (JIT) and Assembly-line balancing:</i> the differences between the “Push Systems” and “Pull Systems” in production.					3	15
	<i>Decision making tools :</i> fundamentals of decision making, decision tree, multi criteria decision making.					3	15
Total contact hours per semester		Lecture	Tutorial	Laboratory	Practical	Other: Design Studio	Total
	Contact Hours	45	30				75
Additional private study/learning hours expected for students per week.	4 hours per week to understand the material and do homework and assignments.						
Course Learning Outcomes							

(CLOs)	Outcome Code	Outcome Name		SO
	CLO1	Identify the concepts of the Industrial Operations Management, especially, aggregate planning, material requirement planning, and job shop scheduling, assembly line balancing and decision making tools.		1
	CLO2	Formulate and Solve engineering problems issues related to industrial operations management.		1
	CLO3	Enable the students to function effectively on a team through a project to meet objectives of performing management analysis of real life data.		5
	CLO4	Enable the students to develop alternative engineering solutions by considering global, economic and environmental factors.		2
ABET Student Learning Outcomes (SLOs) for the course	SO1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.		
	SO2	An ability to apply engineering design 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.		
	SO5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.		
Schedule of Assessment Tasks for Students During the Semester	Assessment	Assessment task (e.g. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
	1	Midterm1	Within the 7th week	20%
	2	Midterm2	Within the 13th week	20%
	3	Course Project	Within the 15th week	10%
	4	Assignments/Homework/Quizzes	Within the 14th week	10%
	5	Final Exam	As scheduled by the registrar	40%
Laboratory and Practical/Field work/Internship	None			

Project work	Independent group projects for case studies covering the course topic
Computer Usage	Computer use covers case studies
Estimated Category Content	Engineering Science: 2.25 credit hours (75%) Engineering Design: 0.75 credit hour (25%)
Prepared by	<i>Dr. Haitham Mahmoud</i>
Preparation Date	March 2021