No	Course Information (2019-2020)		
1	Unit name:	Industrial Management I (2019-2020)	
2	Code:	EcE 51006	
3	Classification:	Engineering Subject	
4	Credit value:	2.5 (2-1-0)	
5	Semester/ Year Offered:	1/5	
6	Pre-requisite:	-	
7	Mode of delivery: Lecture, Discussion, Teamwork		
8	Assessment system and	Tutorial, Assignment	
	breakdown of marks:	Activity	
		Exam	
	Tutorial	10%	
	Assignment	10%	
	Activity (classwork)	10%	
	Mid-term Examination	70%	
9	Academic staff teaching unit:	Department of Electronic Engineering	
10	Course outcome of unit:		
	In this course students will be able		
	• To demonstrate knowledge and understanding of engineering management		
	principles.		
	• To analyze the cash flow and the financial process by using business tools.		
	• To apply engineering management principles in implementing systems,		
	<ul><li>processes and projects that meet specific requirements</li><li>To apply professional engineering management practice in assessing and solving</li></ul>		
	societal and cultural issues an	d evaluating sustainability of the solution.	
	• To practise team work and co	mmunicate effectively.	
11	Synopsis of unit:		
	The course introduces engineering and technology management, management		
	characteristics and functions, engineering and technology management challenges and		
	skill needs, useful information on engineering and technology management.		
	Engineering management is devoted	l to organization, the human element and method of	

organization	, span of control, functions of engineering departments, qualities and	
activities of engineering managers, and committees and staff meetings. Important tools		
for making effective engineering and technology management decisions, including		
decision trees optimization techniques discounted cash flow analysis learning curve		
decision dees, optimization deciniques, discounted easi now analysis, learning europ		
analysis, depreciation analysis, fault tree analysis, and forecasting methods. Some of		
these topics are project selection methods and models, project management techniques,		
and project r	nanager's responsibilities, qualifications, selection, and reporting.	
Topic:		
Chapter	Title	
1	Introduction	
	I-I Introduction	
	1–2 History of Management 1–3 Terms of Definitions	
	<b>1–3</b> Terms of Dermitions <b>1–4</b> Management characteristics and functions and traditional	
	management vs modern management	
	<b>1–5</b> Engineering and technology management challenges and skill	
	requirements	
	<b>1–6</b> Useful information and engineering and technology	
	management	
	1–7 Problem	
2	Organizing and the Human Floment	
4	2-1 Introduction	
	2–2 The components of organizing and guidelines for planning an	
	organizations	
	<b>2–3</b> Organizational charts and basic relationships in organizational	
	structures	
	2-4 Centralization and decentralization of organizations, span of	
	control and delegation	
	2–5 Method of organization	
	<b>2–6</b> Functions of an engineering department and guidelines for	
	organizing a new engineering department	
	2-7 Characteristics and needs of an engineering, route for an engineer to obtain management positions and transition of an angineer to a	
	managerial position	
	<b>2-8</b> An engineering manager's qualities and activities	
	<b>2-9</b> Motivating others and analyzing team characteristics	
	<b>2-10</b> Committees and staff meetings	
	<b>2-11</b> Displacing manager and an organization size-efficiency model	
	2–12 Problem	

3	Tools for Marking Effective Engineering and Technology
	Management Decisions
	3–1 Introduction
	<b>3–2</b> Discounted cash flow
	<b>3–3</b> Depreciation analysis
	<b>3–4</b> Decision trees
	<b>3–5</b> Optimization techniques
	<b>3–6</b> Learning curve analysis
	<b>3–7</b> Fault tree analysis
	<b>3–8</b> Forecasting
	<b>3–9</b> Problem
4	Project Selection and Management
	4–1 Introduction
	4–2 Terms and definitions
	<b>4–3</b> Type of information required for evaluating a project
	4–4 Project selection models
	4–5 Need for project Management, Project organization life cycle
	phase, and project management functions and procedure
	characteristics
	<b>4–6</b> Project manager responsibilities, qualifications, selection and
	reporting
	4–7 Project management methods
	<b>4–8</b> Project management benefits and project management failure
	Factors
	<b>4–9</b> Problem
7	Creativity and Innovation
	7–1 Introduction
	7–2 Creativity and innovation definitions, classifications of inventions,
	and factors in creativity
	7–3 Creativity climate, ways and guidelines to develop creativity and
	creative problem solving process
	7–4 Types of barriers to creative thinking, management barriers to creativity and innovation prevention reasons
	7–5 Individual creative person engineer and manager characteristics; attributes of manager of creative people; and a noncreative person's characteristics
	7–6 New idea generation, presentation, evaluation and elimination
	- •
	7–7 Creativity methods

14	Main references:	
	B. S. DHILLON, ENGINEERING AND TECHNOLOGY MANAGEMENT TOOLS	
	AND APPLICATIONS	
15	Additional references:	
	1:Project Management for Business, Engineering and Technology , John M. Nicholas	
	and Herman Steyn, 3th Edition.	
	2: Engineering Economic Analysis, Donald G. Newnan, 9 <sup>th</sup> Edition.	