

**Programme** : **Diploma in CE/EE/ET/ ME/MT/CM/IT**  
**Programme Code** : **01/02/03/04/05/06/07/15/16/17/18/19**  
**Name of Course** : **Principles of Management**  
**Course Code** : **MA661**

**Teaching Scheme:**

	<b>Hours /Week</b>	<b>Total Hours</b>
<b>Theory</b>	<b>03</b>	<b>48</b>
<b>Practical</b>	<b>---</b>	<b>---</b>

**Evaluation Scheme:**

	<b>Progressive Assessment</b>	<b>Semester End Examination</b>			
		<b>Theory</b>	<b>Practical</b>	<b>Oral</b>	<b>Term work</b>
<b>Duration</b>	<b>Two class tests of 60 Minutes</b>	<b>03 Hrs.</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Marks</b>	<b>20</b>	<b>80</b>	<b>---</b>	<b>---</b>	<b>---</b>

**Course Rationale:**

This subject deals with the evolution of manager with respect to different approaches of management such as project planning, strategic planning, corporate planning, long range planning, decision making & creative problem solving. It also deals with the impact of computers and information technology in innovation and organizational design and planning.

**Course Objectives:**

After studying this course, the student will be able to

- Understand the managerial roll & skills.
- Understand the evolution of management thought and different approaches to management.
- Assimilate the concept of project planning, strategic planning, corporate planning & long range planning.
- Visualize the impact of computers in organization.
- Visualize the impact of information Technology in organizational communication

& leadership.

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weightage
<b>1.</b>	<b>Principles &amp; Functional Aspects of Management</b>		
	1.1 Management – Definition, Principles of Management, Functions of Management-Planning Organizing, Leading ,Controlling, Authority , Decision making Organization charts, Leadership, Organizational structure, Budgeting ,Problem solving ,Group dynamics and team functions, Conflict resolution, Communication ,Change, Organizational theory	<b>08</b>	<b>16</b>
<b>2.</b>	<b>Forms of ownership</b>		
	2.1 Types of ownership, individual ownership, partnership, joint stock companies, co-operative organization, Government undertakings (State ownership), their relative advantages and disadvantages.	<b>04</b>	<b>08</b>
<b>3.</b>	<b>Financial Management</b>		
	3.1 Financial Management- Objectives & Functions	<b>08</b>	<b>12</b>
	3.2 Capital Generation & Management- Types of Capitals, sources of raising Capital		
	3.3 Budgets and accounts- Types of Budgets, Production Budget Labour Budget, Introduction to Profit & Loss Account, Balance Sheet ( only concepts) ;		
	3.4 Introduction to – Excise Tax, Service Tax, Income Tax, VAT, Custom Duty		
<b>4.</b>	<b>Human Resource Management</b>		
	4.1 Personnel Management - Introduction, Definition, Functions	<b>08</b>	<b>12</b>
	4.2 Staffing- Introduction to HR Planning, Recruitment Procedure, Personnel– Training & Development		
	4.3 Types of training- Induction, Skill Enhancement,		
	4.4 Leadership & Motivation- Maslow’s Theory of Motivation,		
	4.5 Safety Management- Causes of accident, Safety precautions, industrial hygiene		

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	4.6	Introduction to Factory Act, ESI Act, Workmen Compensation Act, Industrial Dispute Act		
<b>5.</b>	<b>Materials Management</b>			
	5.1	Industrial management, forecasting, master planning, schedules.	<b>06</b>	<b>08</b>
	5.2	Inventory Management - Meaning & Objectives		
	5.3	ABC Analysis, Economic Order Quantity		
	5.4	Purchase Procedure- Objects of Purchasing, Functions of Purchase Dept. Steps in Purchasing		
	5.5	Modern Techniques of Material Management- JIT / SAP / ERP		
<b>6.</b>	<b>Marketing Management</b>			
	6.1	Definition, concepts of marketing,, benefits of marketing concept, Functions of marketing management, Market research, its objectives and importance, sales forecasting, advertising and sales promotion.	<b>06</b>	<b>12</b>
<b>7.</b>	<b>Quality Management</b>			
	7.1	Concept of quality, standardization, merits and demerits. Types of standards, quality policy. Introduction to ISO 9001-2000, TQM, Kaizen, 6 Sigma	<b>06</b>	<b>08</b>
<b>8.</b>	<b>Project Management</b>			
	8.1	Introduction CPM & PERT Techniques (Simple Numericals)	<b>02</b>	<b>04</b>
		<b>Total</b>	<b>48</b>	<b>80</b>

**Instructional Strategy:**

<b>Sr. No.</b>	<b>Topic</b>	<b>Instructional Strategy</b>
<b>1.</b>	Principles & Functional Aspects of Management	Class room Teaching
<b>2.</b>	Forms of ownership	Class room Teaching
<b>3.</b>	Financial Management	Class room Teaching
<b>4.</b>	Human Resource Management	Class room Teaching
<b>5.</b>	Materials Management	Class room Teaching
<b>6.</b>	Marketing Management	Class room Teaching
<b>7.</b>	Quality Management	Class room Teaching
<b>8.</b>	Project Management	Class room Teaching

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**Text Books:**

Sr. No	Author	Title	Publication
1.	Koontz	Prescribed Text Essentials of Management	Tata McGraw Hill
2.	Saxena	Principles & Practices of Management	Tata McGraw Hill

**Reference Books:**

Sr. No	Author	Title	Publication
1.	Hannagan.	Management Concepts & Practices	---
2.	Bovee and Schatzman,	Business Communication	Pearson Education
3.	V. S. Rao,	Management Text & Case	Excel
4.	S.A.Sherlekar & V.A. Sherlekar,	Modern Business Organization & Management	Himalaya Publications
5.	O.P.Khanna,	Industrial Organization and Management	Dhanpat Rai and Sons
6.	Banga and Sharma,	Industrial Organization and Management	Khanna Publications
7.	---	Essentials of Management	Tata Mc Graw Hill
8.	---	Principles of practice of Management	Tata Mc Graw Hill

**Learning Resources:**

board.

OHP, LCD, Projector, and Transference, White

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**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Principles & Functional Aspects of Management	05	05	02	16
2.	Forms of ownership	05	05	02	08
3.	Financial Management	05	05	02	12
4.	Human Resource Management	05	05	02	12
5.	Materials Management	05	05	02	12
6.	Marketing Management	04	04	04	12
7.	Quality Management	03	02	03	08
8.	Project Management	--	--	--	--
	<b>Total</b>	<b>32</b>	<b>31</b>	<b>17</b>	<b>80</b>

(Prof. Dr. S. B. Nikam)

Prepared By

(Prof. S. B. Kulkarni)

Secretary, PBOS

(Prof. C. C. Dandvatimath)

Chairman, PBOS

**Programme** : **Diploma in CE/ EE/ET/ME/MT/CM/ IT**  
**Programme Code** : **01/02/03/04/05/06/07/15/16/17/18 /19**  
**Name of Course** : **Entrepreneurship Development**  
**Course Code** : **MA662**

**Teaching Scheme:**

	Hours /Week	Total Hours
Theory	03	48
Practical	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests of 60 Minutes	03 Hrs.	---	---	---
Marks	20	80	---	---	---

**Course Rationale:**

To make the students aware of entrepreneurship as one of the career options and hence to teach them the various aspects of starting a enterprise.

**Course Objectives:**

After studying this course, the student will be able to

- SWOT analysis.
- Business Environment scanning and opportunity scanning. (Search)
- Market assessment.
- Project formulation.
- Identification of product / Technology / Equipment
- Financial Sources.
- Sales and Marketing
- Reasons of failure of entrepreneurs.

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weightage
<b>1.</b>	<b>Entrepreneurship Awareness</b>		
	Entrepreneurship – need, scope & philosophy Definition of an entrepreneur, attributes & characteristic. Intrapreneuring & Entrepreneurship. Need Analysis: Human Need, SWOT Analysis, goal setting, business environment, emerging trends, Information & collection techniques, opportunities.	08	10
<b>2.</b>	<b>Starting &amp; Identification of Project</b>		
	Product and services, demand availability & resource requirement. Market survey technique – Identification of market, marketing trends, market survey techniques, agencies & organizations to be contacted. Product, suppliers of plant, equipment & raw material technology.	08	14
<b>3.</b>	<b>Preparation of Project report business plan</b>		
	Structure of project report, purpose of project report. Working & fixed capital, financial institutions, procedures & Norms for financing feasibility criteria, project planning, time management, legal formalities, municipal by laws. Safety considerations, plant layout commissioning of plant & equipment, trial production & quality assurance.	10	16
<b>4.</b>	<b>Information &amp; support systems</b>		
	Information needed & their sources. Information related to Project Information related to procedures & formalities. Support systems a) Small scale business planning Requirements b) Govt. & financial Agencies, Formalities. Role of Central Government and State Government in promoting Entrepreneurship- introduction to various incentives ,, subsidies and grants – Export Oriented Units – fiscal and tax concession available.	10	16
<b>5.</b>	<b>Management of Enterprises</b>		
	Forms of business Organization. Human behavior, personnel sales Management. Marketing practice, distribution channels, Advertisings, Packaging.	06	12

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<b>6.</b>	<b>Why do entrepreneurs fail</b>		
	The four entrepreneurial pitfalls (Peter Ducker) Case studies of successful entrepreneur. Women entrepreneurs – Robeson’s for low women entrepreneurs, problems & prospectus.	06	12
	<b>Total</b>	<b>48</b>	<b>80</b>

**Instructional Strategy:**

Sr. No.	Topic	Instructional Strategy
1.	Entrepreneurship Awareness	<b>Lecture, market survey, workshops, interviews.</b>
2.	Starting & Identification of Project	
3.	Preparation of Project report business plan.	
4.	Information & support systems.	
5.	Management of Enterprises :	
6.	Why do entrepreneurs fail.	

**Text Books:**

Sr. No	Author	Title	Publication
1.	S. Saini, B.S. Rathore	Entrepreneurship – Theory & Practice	

**Reference Books:**

Sr. No	Author	Title	Publication
1.	Vasant Dsai, Pragati Desai	Entrepreneurial development Vol. I	
2.	Vasant Dsai, Pragati Desai	Entrepreneurial development Vol. II	
3.	Vasant Dsai, Pragati Desai	Entrepreneurial development Vol. III	
4.	Colombo Staff College, Manila	Entrepreneurship Development Plan	TMH, New Delhi
5.	Jerald Greenberg, Robert A. Baron/ Carol A. Sales/	Behaviour in organizations, Pearson Education.	Tata Mcgraw Hill.



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	Frances A. Owen / Verlag (1999)		
6.	The winning Edge, corporate creativity.	Pradip N. Kandwalla	Tata Mcgraw Hill.(2006)
7.	John L. Colley, Jacqueline L. Doyle,	Corporate Governance	Tata Mcgraw Hill. (2003)
8.	Timpe, Dale A	Creativity	M/s. Jaico Publishing House, New Delhi. Tata Mcgraw Hill. (2005),

**Learning Resources:** Books, Articles, Case studies

**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Entrepreneurship Awareness	02	06	02	10
2	Starting & Identification of Project :	04	06	04	14
3.	Preparation of Project report business plan.	03	10	03	16
4	Information & support systems.	04	08	04	16
5	Management of Enterprises :	04	06	02	12
6	Why do entrepreneurs fail.	04	04	04	12
	<b>Total</b>	<b>21</b>	<b>40</b>	<b>19</b>	<b>80</b>

(Prof.Smt.P.S.Karyakarte)  
Prepared By

(Prof. S. B. Kulkarni)  
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Chairman, PBOS

**Programme** : **Diploma in CE/ EE/ ET/ ME/ MT/ CM/ IT**  
**Programme Code** : **01/02/03/04/05/06/07/15/16/17/18 /19**  
**Name of Course** : **Project Management**  
**Course Code** : **MA663**

**Teaching Scheme:**

	Hours /Week	Total Hours
Theory	03	48
Practical	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests, each of 60 Min. duration	03 Hrs.	---	---	---
Marks	20	80	---	---	---

**Course Rationale:**

In all projects, huge financial investments are made. It is therefore necessary to manage all the resources for effective project implementation. A Diploma technician has to acquire this knowledge as per the job requirements.

**Course Objectives:**

After studying this course, the student will be able to

- Appreciate the importance of planning, scheduling, and controlling resources.
- Calculate project durations
- Understand the importance of cost – time analysis

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weight-age	
<b>1.</b>	<b>Introduction</b>			
	1.1	What is Project Management?	<b>04</b>	<b>08</b>
	1.2	Principles and Functions of Project Management		
	1.3	Project life cycle		
	1.4	Major types of Projects		
	1.5	Role of Project Manager		
<b>2.</b>	<b>Organising For Project Management</b>			
	2.1	Organization of project participants	<b>08</b>	<b>12</b>
	2.2	Types – Line, Line and staff, Functional organization		
	2.3	Merits and demerits of each type		
	2.4	Leadership and Motivation for the project team		
	2.5	Interpersonal behaviour and communication – Its types, barriers in communication		
<b>3.</b>	<b>Project Planning</b>			
	3.1	Basic concepts in the development of project plans	<b>08</b>	<b>12</b>
	3.2	Defining work tasks / activities		
	3.3	Defining precedence relationships among activities		
	3.4	Estimating activity durations		
	3.5	Estimating resource requirements for activities		
<b>4.</b>	<b>Fundamental Scheduling Procedures</b>			
	4.1	Critical path method	<b>10</b>	<b>16</b>
	4.2	Meaning of terms – events, activity, earliest start time, Latest start time, earliest finish time, latest finish time, total float, free float, critical activity, dummy activity, critical path, project duration, .		
	4.3	PERT, Comparison between CPM and PERT		
<b>5.</b>	<b>Cost – Time Analysis in Network Planning</b>			
	5.1	Importance of Time – Cost analysis	<b>04</b>	<b>08</b>
	5.2	Project cost, direct cost, and indirect cost.		
	5.3	Variation of direct cost with time		
	5.4	Normal time, normal cost, crash time, crash cost, cost – slope.		

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	5.5	Variation of indirect cost with time.		
<b>6.</b>	<b>Use of Computers in Project Management</b>			
	6.1	Computer aids for project. Software available in PJM. Project information – Types and Uses.	<b>04</b>	<b>08</b>
<b>7.</b>	<b>Introduction to Important Laws</b>			
	7.1	Factories Act – Scope and provisions	<b>04</b>	<b>08</b>
	7.2	Minimum Wages Act – Scope and provisions		
	7.3	Workmen’s compensation Act– Scope and Provisions.		
<b>8.</b>	<b>Safety in Execution Of Works</b>			
	8.1	Importance of Safety, Causes of accidents at work places. Precautions to avoid accidents, Safety programmes. Terms-Accident cost, Injury frequency rate, Injury severity rate.	<b>06</b>	<b>08</b>
		<b>Total</b>	<b>48</b>	<b>80</b>

**Instructional Strategy:**

<b>Sr. No.</b>	<b>Topic</b>	<b>Instructional Strategy</b>
<b>1.</b>	Introduction	Class room teaching
<b>2.</b>	Organizing for project management	Class room teaching
<b>3.</b>	Project planning	Class room teaching
<b>4.</b>	Fundamental scheduling procedures	Class room teaching
<b>5.</b>	Cost – time analysis in network planning	Class room teaching
<b>6.</b>	Use of computers in project Management	Class room teaching
<b>7.</b>	Introduction to important laws	Class room teaching
<b>8.</b>	Safety in execution of works	Class room teaching

**Text Books:**

<b>Sr. No</b>	<b>Author</b>	<b>Title</b>	<b>Publication</b>
<b>1.</b>	M. Spinner	Elements of Project Management	Prentice Hall Englewood Cliffs, New Jersey
<b>2.</b>	Victor G. Hajek	Project Engineering	McGraw – Hill Book Company

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**Reference Books:**

Sr. No	Author	Title	Publication
1.	Chris Hedrickson and Tung Au.	Project Management for Construction	Prentice Hall Englewood Cliffs, New Jersey
2.		Bar Laws	

**Learning Resources:** Computer software, OHP, LCD, Projector, and Transference, PPTS, White board

**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Introduction	04	04	---	08
2.	Organizing for Project Management	04	04	04	12
3.	Project Planning	04	06	02	12
4.	Fundamental scheduling procedures	02	02	12	16
5.	Cost – time analysis in network planning	04	04	--	08
6.	Use of computer in project management	04	--	04	08
7.	Introduction to important laws	04	04	---	08
8.	Safety in execution of works	--	04	04	08
	<b>Total</b>	<b>26</b>	<b>28</b>	<b>26</b>	<b>80</b>

(Prof. R. H. Dhorje)  
Prepared By

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Secretary, PBOS

(Prof.C.C. Dandvatimath )  
Chairman, PBOS

**Programme** : **Diploma in CE/ EE/ ET/ ME/ MT/ CM/ IT**  
**Programme Code** : **01/02/03/04/05/06/07/15/16/17/18/19**  
**Name of Course** : **Material Management**  
**Course Code** : **MA664**

**Teaching Scheme:**

	Hours /Week	Total Hours
Theory	03	48
Practical	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests of 60 Minutes	03 Hrs.	---	---	---
Marks	20	80	---	---	---

**Course Rationale:**

This course deals with management of materials. Smooth running of any industry depends upon the interdepartmental relations and planning for execution of work jointly. Efficiency of production department also depends upon the availability of raw material of required quality and quantity. Therefore there should be proper co-ordination between production department, production planning, stores department and purchase department. Incorrect materials planning can also lead to higher inventories & high cost.

**Course Objectives:**

After studying this course, the student will be able to

- To know the importance of materials and inventory management
- To know the different aspects of buying procedure and price forecasting.
- To acquaint with latest techniques in materials management
- To know procedure for giving requisition of materials along with specifications
- To know different features of negotiation technique and management of obsolete and scrap materials.

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weight-age	
<b>1.</b>	<b>Importance of Materials Management</b>			
	1.1	Growing importance of Materials Management	<b>10</b>	<b>16</b>
	1.2	Scope of Materials Management		
	1.3	Objectives and functions of Materials Management		
	1.4	Organising for Materials Management		
	1.5	Introduction to Materials planning		
	1.6	Importance of specifications in Materials Management		
<b>2.</b>	<b>Inventory Management</b>			
	2.1	Selective control – ABC Analysis - Purpose and objectives of ABC Analysis Mechanics &	<b>10</b>	<b>16</b>
	2.2	Advantages of ABC Analysis limitations of		
	2.3	ABC Analysis		
	2.4	Order point – Lead Time, safety stock, Re-order point, standard order. Economic order		
	2.5	Quantity (EOQ), Graphical & Analytical Method		
<b>3.</b>	<b>Buying procedure</b>			
	3.1	Sourcing, Buy or lease	<b>10</b>	<b>16</b>
	3.2	Purchase systems		
	3.3	Problems in relations with supplier		
	3.4	Value Analysis → Definition & scope		
	3.5	Selection of products for value analysis		
	3.6	Value analysis framework		
	3.7	Implementation & methodology		
	3.8	Ethics in purchasing		
<b>4.</b>	<b>Price forecasting</b>			
	4.1	Importance & Approaches	<b>06</b>	<b>10</b>
	4.2	Types of forecasting		
	4.3	Elements of good forecasting method		
	4.4	Different price forecasting techniques		
<b>5.</b>	<b>Latest Techniques in Materials Management</b>			
	5.1	Just in Time (JIT) zero inventory concept	<b>05</b>	<b>10</b>
	5.2	Integrated computerised management systems in Materials Management		

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<b>6.</b>	<b>Management of obsolete Surplus and Scrap material</b>		
6.1	Definitions, Reasons for generation and accumulation of obsolete Surplus and scrap, Survey committee, presale preparations, sale, auction, sale by tender.	<b>07</b>	<b>12</b>
	<b>Total</b>	<b>48</b>	<b>80</b>

**Instructional Strategy:**

Sr. No.	Topic	Instructional Strategy
1.	Importance of Materials Management	Class room teaching
2.	Inventory Management	Class room teaching
3.	Buying procedure	Class room teaching
4.	Price forecasting	Class room teaching
5.	Latest Techniques in Materials Management	Class room teaching
6.	Management of obsolete & scrap material	Class room teaching

**Text Books:**

Sr. No	Author	Title	Publication
1.	Ammer Deans S.	Materials Management	R.D. Irwin Hillions
2.	P. Gopalkrishan and M. Sundaresan	Materials Management An Integrated approach	Prentice – Hall of India Pvt. Ltd. New Delhi.
3.	M.M. Shah	An integrated concept of Materials Management	Tata McGraw Hill Publisher Co. Ltd. New Delhi

**Reference Books:**

Sr. No	Author	Title	Publication
1.	P.G. Menon	Materials Management	
2.	A Deb	Materials Management	Academic Publishers
3.	Dobler D.W. and Lee C	Purchasing and Materials Management	---
4.	Brandy C.S.	Materials Handbook	---



**Learning Resources:** OHP, LCD, Projector, and Transference, White board

**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Importance of Materials Management	6	6	4	16
2.	Inventory Management	6	6	4	16
3.	Buying procedure	6	6	4	16
4.	Price forecasting	--	6	4	10
5.	Latest techniques in Materials Management	2	4	4	10
6.	Management of obsolete and scrap materials	6	6	--	12
	<b>Total</b>	<b>26</b>	<b>34</b>	<b>20</b>	<b>80</b>

(Prof.R.H.Dhorje)  
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Chairman, PBOS

**Programme** : **Diploma in CE/EE / ET/ ME/MT/ CM / IT**  
**Programme Code** : **01/02/03/04/05/06/07/15/16/17/18/19**  
**Name of Course** : **Supervisory Management**  
**Course Code** : **MA665**

**Teaching Scheme:**

	Hours /Week	Total Hours
Theory	03	48
Practical	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests, each of 60 Min. duration	03 Hrs	---	---	---
Marks	20	80	---	---	---

**Course Rationale:**

The diploma holders are intended to work as a supervisor in the industry. He has to perform a versatile role in the activities of an industry; he has to coordinate his subordinates and the higher personals.

The students are required to understand to function as a supervisor. He should be able to plan, organize, and direct the subordinates to achieve better results within time for a task assigned to him.

**Course Objectives:**

After studying this course, the student will be able to

- Know the basic duties of a supervisor.
- Plan a particular job by splitting the whole job into pieces and monitoring each step.
- Understand human behaviors, identify skills, utilize skills, and observe safety of workers.
- Achieve better overall efficiency and utilize maximum capacity of machineries.

**Course Content:**

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<b>Chapt er No.</b>	<b>Name of Topic/Sub topic</b>	<b>Hrs</b>	<b>Weig htage</b>
<b>1.</b>	<b>Introduction</b>		
	<b>1.1</b> Management of a job. Necessity for Scientific Management for supervisor. Handling complexity and achieving optimization.	<b>02</b>	<b>04</b>
<b>2.</b>	<b>Planning by Supervisor</b>		
	<b>2.1</b> Objectives of planning. Planning activities. Planning by supervisor. Detailing and following of each step. Prescribing standard forms for various activities. Budgeting at supervisory level for materials and man power. Planning a programme and actions for a job.	<b>04</b>	<b>08</b>
<b>3</b>	<b>Organizing by supervisor</b>		
	<b>3.1</b> Organizing physical resources. Matching human needs with job needs. Allotment of tasks to individual and establishing relationship among persons working in a group.	<b>04</b>	<b>08</b>
<b>4.</b>	<b>Directions by supervisor</b>		
	<b>4.1</b> Need for such directions and instructions to subordinates. Need for clarity, completeness and feasibility of instructions. Reviving of effectiveness of communication. Personal counseling. Advance predictions of possible mistakes. Elaborating decisions. On the spot adjustments during execution of job. Laying disciplinary standards in over all working.	<b>06</b>	<b>10</b>
<b>5.</b>	<b>Motivation to subordinates</b>		
	<b>5.1</b> Workers participation in management of a job. Achievement motivation. Recognition for devotion. Delegating responsibilities to subordinates. Activities and intensions towards the growth of an individual. Identification of human needs and providing safety to the workers.	<b>06</b>	<b>10</b>

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<b>6.</b>	<b>Coordination &amp; implementation</b>			
	<b>6.1</b>	Understanding link between various departments in respect of process and quality standards. Synchronization of duties of subordinates. Control over the performance in respect of quality; quality of production; time and cost. Measuring performance, comparing with standard, correcting unfavorable deviations.	<b>10</b>	<b>14</b>
<b>7.</b>	<b>Check list by supervisor</b>			
	<b>7.1</b>	Introduction to subordinates regarding the job undertaken. Planning the days work suitable for the job. Responsibility survey. Checking possibility for acceptance of assignment from new department.	<b>08</b>	<b>10</b>
<b>8.</b>	<b>Moving up in the organization</b>			
	<b>8.1</b>	Demonstration of job competence. Exhibition of leadership and initiative. Looking for to accept challenging responsibilities and acceptance of the same. Attitude and actions to be followed and avoided. Stressing the value of own contribution. Achievement of trust of subordinates and the higher management.	<b>08</b>	<b>16</b>
		<b>Total</b>	<b>48</b>	<b>80</b>

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**Instructional Strategy:**

Sr. No.	Topic	Instructional Strategy
1.	Introduction	Lecture method
2.	Planning by supervisor	Lecture method
3.	Organizing by supervisor	Lecture method
4.	Directions by supervisor	Lecture method
5.	Motivation to subordinates	Lecture method
6.	Coordination & implementation	Lecture method
7.	Check list by supervisor	Lecture method
8.	Moving up in the organization	Lecture method

**Text Books:**

Sr. No	Author	Title	Publication
1	Industrial Management	Shrinivasan	Khanna publisher, New Delhi

**Reference Books:**

Sr. No	Author	Title	Publication
1.	Industrial organization and Engineering Economies	Banga and sharma.	Khanna publisher, New Delhi
2.	Industrial Engineering and Management	O.P. Khanna	Dhanpat Rai and Sons, New Delhi
3.	What every Supervisor Should Know	Lestec R. Bittel John W. Newstrom	McGraw Hill Publishing Company, ( GREGG Division )

**Learning Resources:**

Books, Articles, C.D.'s, Visits, Video Cassettes  
No. 115 and 120

**GOVERNMENT POLYTECHNIC, PUNE**  
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**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Introduction	02	02	-	04
2.	Planning by supervisor:	06	01	01	08
3.	Organizing by supervisor	04	02	02	08
4.	Directions by supervisor	05	03	02	10
5.	Motivation to subordinates	05	03	02	10
6.	Coordination & implementation	10	02	02	14
7.	Check list by supervisor	06	02	02	10
8.	Moving up in the organization	08	04	04	16
	<b>Total</b>	<b>46</b>	<b>19</b>	<b>15</b>	<b>80</b>

(Prof. P.K.Metkar)  
Prepared By

(Prof. S. B. Kulkarni)  
Secretary, PBOS

(Prof.C.C. Dandvatimath)  
Chairman, PBOS

**Programme** : **Diploma in CE/EE / ET/ ME/MT/ CM / IT**  
**Programme Code** : **01/02/03/04/05/06/07/15/16/17/18 /19**  
**Name of Course** : **Total Quality Management**  
**Course Code** : **MA666**

**Teaching Scheme:**

	Hours /Week	Total Hours
<b>Theory</b>	<b>03</b>	<b>48</b>
<b>Practical / Tutorial</b>	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
<b>Duration</b>	<b>Two class tests, each of 60 minutes</b>	<b>3Hrs.</b>	--	--	--
<b>Marks</b>	<b>20</b>	<b>80</b>	--	--	--

**Course Rationale:**

In today's international market the quality is another name for universal acceptance for product and services .Hence the mechanical engineers must have consciousness about various quality aspects required for manufacturing /service sector.

To fulfill this need this subject about various factors and philosophies in quality development is introduced. So that student will have most of basic inputs before they enter their profession.

**Course Objectives:**

After studying this course, the student will be able to

- To understand the importance of Quality Standards and consumer need for quality items for price paid by him..
- To understand Quality Management Foundation and introduction to total quality management
- To know about Quality circle, Kaizen and various Quality improvement tools.
- To know about Quality Assurance Systems and Quality Management through ISO 9000 series.

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- To know about Toyota way and Six Sigma concepts.

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weightage
<b>1.</b>	<b>Introduction</b>		
	1.4 Basic concepts related with quality, Various definition of quality. Quality of design and quality of conformance, Service quality Vs product quality.	<b>06</b>	<b>12</b>
	1.5 Quality policy: definition and objectives. Quality audit.		
	1.6 Quality assurance: - definition, meaning it's various forms and advantages .Quality audit, quality mindedness, inspection and quality control.		
<b>2.</b>	<b>Quality Management Foundation and introduction to total quality management.</b>		
	2.8 Strategic quality management (Hoshin Kanri) Strategic quality planning, quality goals. The vision – future state of organization, good understanding by everyone, inspiration, achievable QCDF (Quality Cost Delivery Flexibility), Customer focus, sharing by all values of the leadership, organization and employees.	<b>08</b>	<b>12</b>
	2.9 Total Quality:- definition ,objectives, eight dimensional model of total quality.		
	2.10 Total Quality management:- definition , need ,mission, initiative and concept. Barriers, implementation and advantages..		
	2.11 TQM Models :- Juran trilogy , Deming programme , Mckinsey model, Crosby program..		
<b>3.</b>	<b>Quality Management Processes</b>		
	3.5 <b>Quality planning</b> Quality culture ( Kaizen and Quality circle ) Quality Circle: - concept, objective, structure, steps in formation of quality Circle. Roles of people involved in quality Circle. advantages of quality Circle.	<b>12</b>	<b>16</b>



	<p>3.6 What is Kaizen.</p> <ul style="list-style-type: none"> <li>- The concept, meaning and definition ,areas for Kaizen</li> <li>- 10 ground rules for change.</li> <li>- Traditional methods Vs Kaizen , Kaizen Vs innovation</li> <li>- Types of waste and Waste elimination, value added work, hidden waste and obvious waste, Identification of wastes.</li> <li>- 5S in housekeeping and their meaning</li> <li>- Improvement in work methods.</li> </ul> <p>Achievement after Kaizen</p>		
	<p>3.7 Quality improvement Old statistical and analytical tools for quality.</p> <ul style="list-style-type: none"> <li>i) Tally-sheet</li> <li>ii) Graphs</li> <li>iii) Histograms</li> <li>iv) Stratification</li> <li>v) Scatter diagram</li> <li>vi) Control chart</li> <li>vii) Pareto diagram</li> </ul>		
	<p>3.8 New tools of quality</p> <ul style="list-style-type: none"> <li>i) Ishikawa diagram</li> <li>ii) Arrow diagram</li> <li>iii) Relations diagram</li> <li>iv) Tree diagram</li> <li>v) Affinity diagram</li> <li>vi) Matrix diagram</li> </ul>		
	<p>3.9 Additional tools of quality improvement</p> <ul style="list-style-type: none"> <li>i) Brains storming</li> <li>ii) Flow charts</li> <li>iii) 5W &amp; 1H</li> <li>iv) 5 WHYS</li> </ul>		

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<b>4.</b>	<b>Quality Management Infrastructure</b>			
	4.1	History of ISO 9000. European economic community ( EEC ), need for quality system standards, International organization for standardization ( ISO ) adopted by Bureau of Indian Standards (BIS )	<b>12</b>	<b>16</b>
	4.2	<i>ISO 9000: 2000</i> Quality system ISO 9000 series standards, ISO 9000 elements understanding requirement, assessment with respect to quality system. Documentation and implementation, quality manual, structure, internal quality audit, external audit and certification.		
	4.3	Various Quality Systems Vocabulary and features  ISO 9001: Requirements for a quality management system ISO 9004 : Guidelines for the effectiveness and efficiency of the quality management system IS 14000: 2004 series, its importance      ISO 19011: guidance on auditing and environmental management systems.		
<b>5.</b>	<b>Principles of the Toyota way</b>			
	5.1	Introduction to Toyota way, Toyota production system (TPS), lean production, '4' P model of Toyota way.	<b>04</b>	<b>12</b>
	5.2	Toyota way principles and their meaning.		
<b>6.</b>	<b>Six Sigma</b>			
	6.3	Introduction to six sigma, Psychology of six sigma,	<b>06</b>	<b>12</b>
	6.4	<b>Six sigma DMAIC process</b>		
	6.5	The six sigma players, their roles and Responsibilities. Champions , Master black Belts, Black belts, Green belts.		
	6.4	Factors to be considered while selecting a project for six sigma, Do's and Don'ts for making six sigma effective. Advantages of six sigma. The zero defects concept.		
<b>Total</b>			<b>48</b>	<b>80</b>

**Instructional Strategy:**

Sr. No.	Topic	Instructional Strategy
1.	Introduction	Lecture method
2.	Quality Management Foundation and introduction to total quality management.	Lecture method
3.	Quality Management Processes	Lecture method, Transparencies, Internet surfing.
4.	Quality Management Infrastructure	Lecture method, Transparencies, Internet surfing.
5.	Principles of the Toyota way	Lecture, Ppt & Discussion
6.	Six Sigma	Lecture method, Ppt & Discussion

**Text Books:**

Sr. No	Author	Title	Publication
4.	Dr. K.C.Arora	Total Quality Management	S.K.Kataria and sons
5.	B.Janakiraman and R.K. Gopal	Total Quality Management Text and cases	Prentice Hall of India pvt. Ltd. New Delhi.
6.	Subburaj	Total Quality Management	Tata Mc - Graw Hill Co., New Delhi.
7.	Gupta, Srinivas N & B Valarmathi	Total Quality Management	Tata Mc - Graw Hill Co., New Delhi.

**Reference Books:**

Sr. No	Author	Title	Publication
4.	Peter S.Pande Robert P. Neuman Roland R.Cavanagh	Six Sigma way	Tata Mc - Graw Hill Co., New Delhi.
5.	Jeffrey K. Liker	The Toyota Way	Tata Mc - Graw Hill Co., New Delhi.
6.	Suganthi and Samuel	Total Quality Management	Prentice Hall of India pvt. Ltd. New Delhi

**Learning Resources:** Books, journals, Internet searches.

**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Introduction	12	--	--	12
2.	Quality Management Foundation and introduction to total quality management.	08	04	--	12
3.	Quality Management Processes	08	08	--	16
4.	Quality Management Infrastructure	08	08	--	16
5.	Principles of the Toyota way	08	04	--	12
6.	Six Sigma	08	04	--	12
<b>Total</b>		<b>52</b>	<b>28</b>	<b>--</b>	<b>80</b>

(Prof. P.U.Garge )  
Prepared By

(Prof. S. B. Kulkarni)  
Secretary, PBOS

(Prof.C.C. Dandvatimath)  
Chairman, PBOS

**Programme** : **Diploma in CE/ EE/ ET/ME/MT/CM/IT**  
**Programme Code** : **01/ 02/ 03 / 04 / 05 / 06 /07/15/16/17/18/19**  
**Name of Course** : **Software Project Management**  
**Course Code** : **MA667**

**Teaching Scheme:**

	Hours /Week	Total Hours
Theory	03	48
Practical	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests of 60 Minutes	03 Hrs.	---	---	---
Marks	20	80	---	---	---

**Course Rationale:**

This subject forms the foundation of Software Project Management. It is essential to know these fundamentals to understand the concept of Project Management.

**Course Objectives:**

After studying this course, the student will be able to

- Understand the core concept of Software Project Management.
- Understand how to create the software projects.

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weight -age
<b>1.</b>	<b>Starting Your Software Project</b>		
	1.1 Examining the Big Picture of Project Management <ul style="list-style-type: none"> <li>• Understanding Universal Constraints (Time, Cost, and Scope)</li> <li>• Understanding What Makes Software Project Management So Special</li> </ul>	<b>08</b>	<b>14</b>
	1.2 Initiating a Software Project <ul style="list-style-type: none"> <li>• Identifying the Project Purpose</li> <li>• Moving from Here to There</li> <li>• Living with Stakeholders</li> <li>• Understanding How Executives Select Projects</li> <li>• Making Your Project Wish List</li> </ul>		
	1.3 Creating the Software Scope <ul style="list-style-type: none"> <li>• Understanding Product Scope and Project Scope</li> <li>• Understanding Product Scope and Project Scope</li> <li>• Building the Software Scope</li> <li>• Creating the Project Scope</li> <li>• Creating a Work Breakdown Structure</li> </ul>		
<b>2.</b>	<b>Planning Your Software Project</b>		
	2.1 Planning for Communications <ul style="list-style-type: none"> <li>• The Importance of Communicating Effectively</li> <li>• Avoiding Communication Breakdowns</li> <li>• Building an Effective Communication Management Plan Defining Who Needs What Information, Defining When Communication Is Needed, Defining Communication Modalities</li> </ul>	<b>16</b>	<b>24</b>
	2.2 Planning for Software Project Risks <ul style="list-style-type: none"> <li>• Identifying Pure and Business Risks</li> <li>• Managing Risks in Your Organization</li> <li>• Using Software Models for Risk Management</li> <li>• Preparing a Risk Response Plan</li> <li>• Examining Risk Responses and Impacts</li> </ul>		

	2.3	<p>Planning for Software Quality</p> <ul style="list-style-type: none"> <li>• Defining Quality</li> <li>• Working with a Quality Policy</li> <li>• Balancing Time, Cost, and Quality</li> </ul>		
	2.4	<p>Building the Project Team</p> <ul style="list-style-type: none"> <li>• Determining Your Project Needs</li> <li>• Asking the Right Questions</li> <li>• Determining Who Is Really in Charge</li> </ul>		
	2.5	<p>Creating Project Time Estimates</p> <ul style="list-style-type: none"> <li>• Preparing to Create Your PND</li> <li>• Identifying Activity Duration Influencers</li> <li>• Making the Project Duration Estimate</li> <li>• Understanding the Way PND Paths Interact</li> <li>• Creating the Project Schedule</li> </ul>		
	2.6	<p>Building Your Project Budget</p> <ul style="list-style-type: none"> <li>• Creating Cost Estimates</li> <li>• Controlling Project Costs</li> <li>• Following simple strategies to manage project expenses</li> <li>• Having More Project than Cash</li> </ul>		
<b>3.</b>	<b>Executing Your Software Project Plan</b>			
	3.1	<p>Working the Project Plan</p> <ul style="list-style-type: none"> <li>• Authorizing the Project Work</li> <li>• Managing Software Project Risks</li> </ul>		
	3.2	<p>Working with Project People</p> <ul style="list-style-type: none"> <li>• Examining the Phases of Team Development</li> <li>• Managing Project Conflicts</li> <li>• Using Your Super Magic Project Manager Powers</li> </ul>	<b>08</b>	<b>14</b>
	3.3	<p>Procuring Goods and Services</p> <ul style="list-style-type: none"> <li>• Finding a Vendor</li> <li>• Selecting the Vendor</li> <li>• Negotiating for the Best Solution</li> <li>• Administering Contracts</li> <li>• Closing the Vendor Contract</li> </ul>		

<b>4.</b>	<b>Controlling Your Software Project</b>			
	4.1	Managing Changes to the Software Project <ul style="list-style-type: none"> <li>• Controlling the Project Scope</li> <li>• Controlling Project Costs</li> <li>• Controlling the Project Schedule</li> </ul>	<b>08</b>	<b>14</b>
	4.2	Using Earned Value Management in Software Projects <ul style="list-style-type: none"> <li>• Defining Earned Value Management</li> <li>• Playing with Values</li> </ul>		
		Tracking Project Performance <ul style="list-style-type: none"> <li>• Planning Project Metrics</li> <li>• Implementing a Tracking Plan</li> <li>• Tracking Project Performance</li> <li>• Communicating Project Performance</li> </ul>		
<b>5.</b>	<b>Closing Your Software Project</b>			
	5.1	Finalizing the Project Management Processes <ul style="list-style-type: none"> <li>• Closing the Software Project</li> <li>• Completing the Project</li> <li>• Releasing project team members from the project team</li> </ul>	<b>08</b>	<b>14</b>
	5.2	Documenting Your Software Project <ul style="list-style-type: none"> <li>• Completing the Lessons Learned Documentation</li> <li>• Organizing Your Lessons Learned Document</li> <li>• Creating the User Manual &amp; Help System</li> </ul>		
		<b>Total</b>	<b>48</b>	<b>80</b>

**Instructional Strategy:**

Sr. No.	Topic	Instructional Strategy
1.	Introduction	Class room teaching
2.	Organizing for project management	Class room teaching
3.	Project planning	Class room teaching
4.	Fundamental scheduling procedures	Class room teaching
5.	Cost – time analysis in network planning	Class room teaching
6.	Use of computers in project Management	Class room teaching
7.	Introduction to important laws	Class room teaching
8.	Safety in execution of works	Class room teaching



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**Text Books:**

Sr. No	Author	Title	Publication
1.	Teresa Luckey	Software Project Management For Dummies	John Wiley and Sons

**Reference Books:**

Sr. No	Author	Title	Publication
1.	Software Project Management	Bob Hughes, Mike Cotterell	--

**Learning Resources:**

board.

OHP, LCD, Projector, and Transference, White

**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Starting Your Software Project	08	04	02	14
2.	Planning Your Software Project	11	07	06	24
3.	Executing Your Software Project Plan	07	05	02	14
4.	Controlling Your Software Project	06	06	02	14
5.	Closing Your Software Project	07	05	02	14
	<b>Total</b>	<b>39</b>	<b>27</b>	<b>14</b>	<b>80</b>

(Prof.Smt.T. A. Kumbhare)  
Prepared By

(Prof. S. B. Kulkarni)  
Secretary, PBOS

(Prof.C.C. Dandvatimath)  
Chairman, PBOS

**Programme** : **Diploma in CE/ EE/ET/ ME/MT/ CM /IT**  
**Programme Code** : **01/02/03/04/05/06 /07/15/16/17/18/19**  
**Name of Course** : **Management Information System**  
**Course Code** : **MA668**

**Teaching Scheme:**

	Hours /Week	Total Hours
Theory	03	48
Practical	---	---

**Evaluation Scheme:**

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Two class tests, each of 60 Min. duration	03 Hrs.	---	---	---
Marks	20	80	---	---	---

**Course Rationale:**

MIS is a concept continuous to evolve, emerging trend consistent with the evolution of the MIS concept endures computing. It is the power of computers, which makes MIS feasible. From this point of view, the course is introduced.

**Course Objectives:**

After studying this course, the student will be able to

- Understand the role of MIS in various functional areas of management.
- Understand the determination of requirement and analysis it to design information system necessary.
- Understand the supporting role of MIS in decision-making.

**Course Content:**

Chapter No.	Name of Topic/Sub topic	Hrs	Weightage	
<b>1.</b>	<b>Information and Management</b>			
	1.1	Types of information, why do we need a computer based information system? Management structure, Management and information requirements, qualities of information. Examples of Information Systems Various functions in organizations, Information processing for a store- An overview, Varieties of information systems. Information Systems Analysis Overview:	<b>04</b>	<b>10</b>
	1.2	Overview of design of an information system. The role and tasks of systems analysts, Attributes of systems analyst, Tools used by system analyst.		
<b>2.</b>	<b>Information Gathering</b>			
	2.1	Strategy to gather information, Information sources, Methods of searching for information, Interviewing techniques, Questionnaires, Other methods of information search, Case example-Hostel information system.	<b>04</b>	<b>10</b>
	2.2	System Requirements Specification: System requirements specification: Example, Data dictionary, Steps in Systems Analysis, Modularizing requirements specifications, Conclusions.		
<b>3.</b>	<b>Feasibility Analysis</b>			
	3.1	Deciding on project goals, Examining alternative solutions, Evaluating proposed solution, Cost-benefit analysis, Pay back period, Feasibility report, and System proposal.		
	3.2	Data flow diagrams Symbols used in DFD's Describing a system with a DFD, Good conventions in developing DFDs Leveling of DFDs, Logical and Physical DFDs.	<b>08</b>	<b>15</b>
	3.3	Process Specifications Process specification methods, structured English Some examples of process specification.		

<b>4.</b>	<b>Decision Tables</b>			
	4.1	Decision table terminology and development, Extended entry decision tables, Establishing the logical correctness of decision tables, Use of Karnaugh maps to detect logical errors in decision tables, Eliminating redundant specifications. Importance of Logical Database Design in MIS	<b>08</b>	<b>15</b>
	4.2	Entity-relationship model, Relationship cardinality and participation, relations, Normalizing relations, Why do we normalize a relation? Second normal form relation. Third normal form, Boyce-Codd normal form (BCNF), Fourth and Fifth normal forms, Some examples of Database design.		
	4.3	Data input Methods: Data input, Coding techniques, Detection of error in codes, Validating input data, interactive data input.		
<b>5.</b>	<b>Database and Database Management Systems for MIS</b>			
	5.1	Problem with file based systems, -Objectives of Database management, -Overview of database management systems,	<b>12</b>	<b>15</b>
	5.2	Database administrator,		
	5.3	Database design, Conclusions		
	5.4	Object Oriented System Modeling		
	5.5	Object and their properties, Implementation of classes, Identifying objects in an application, Modeling systems with objects, Conclusions.		
	5.6	Object Oriented System Modeling: Object and their properties, implementation of classes, Identifying objects in an application, Modeling systems with objects, Conclusions.		
	5.7	Designing Outputs: Output devices, objectives of output design, Design of output reports, Design of screens, Use of business graphics.		

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<b>6.</b>	<b>Control, Audit and Security of Information Systems</b>		
6.1	Control in information systems, Audit of Information Systems, Testing of Information Systems, Security of Information Systems.	<b>12</b>	<b>15</b>
6.2	Electronic Commerce What is E-Commerce? Advantages and Disadvantages of E-Commerce, E-Commerce System architecture, Electronic data interchange, Security in E-commerce, Electronic payment systems, Conclusions.		
6.3	System Design Example: A system for journal acquisition, Document and Data flow diagrams, Feasibility of the system, System specification, Database design, Control, audit and test plan, implementation plan, conclusions.		
<b>Total</b>		<b>48</b>	<b>80</b>

**Instructional Strategy:**

Sr. No.	Topic	Instructional Strategy
1.	Information and Management	Class room teaching for all
2.	Information Gathering	
3.	Feasibility Analysis	
4.	Decision Table	
5.	Database Management Systems (DBMS)	
6.	Control Audit and security of information systems	

**Text Books:**

Sr. No	Author	Title	Publication
1.	V Rajaraman	Analysis & design of Information system	PHI

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**Reference Books:**

Sr. No	Author	Title	Publication
1.	Gordon B. Davis and Margeth H. Olson	MIS	
2.	Kroenke Davis	Management information System	2 <sup>nd</sup> edition
3.	Sein	MIS	
4.	Jawadekar W.S.	MIS	
5.	Millind Oka	MIS	
6.	Jayashankar	Decision Support Systems	
7.	Lucas	Information System Concepts for Management	4 <sup>th</sup> edition

**Learning Resources:**

OHP, LCD Projector and Transparency.

**Specification Table:**

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Information and Management	04	04	02	10
2.	Information Gathering	04	02	04	10
3.	Feasibility Analysis	02	08	05	15
4.	Decision Table	02	08	05	15
5.	Database Management Systems (DBMS)	06	04	05	15
6.	Control Audit and security of information systems	04	05	06	15
	<b>Total</b>	<b>22</b>	<b>31</b>	<b>27</b>	<b>80</b>

(Prof.Smt.T. A. Kumbhare)  
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