



# AISSMS

## COLLEGE OF ENGINEERING

Kennedy Road, Near R.T.O., Pune - 411 001

ज्ञानम् सकलजनहिताय  
(Accredited by NAAC with 'A+' Grade)



# JOURNAL

Name : Vedant Y. Bandarkar

Subject : Project Management (P.M)

Department : ETC

Class : T-F Roll No. : 21ET302

Exam No. : \_\_\_\_\_

Semester / Year : \_\_\_\_\_



*[Signature]*  
**PRINCIPAL**  
ALL INDIA SHRI SHYAMJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

A.I.S.S.M.S. COLLEGE OF ENGINEERING PUNE 411001

# INDEX

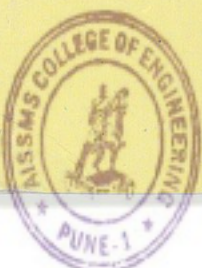
Expt. No.	Title of the Experiment	Date on which		Page No.	Remarks
		Experiment Performed	Expt. & result Submitted		
1.	Impact of Delays	22/2/23	13/5/23	1	
2.	WBS	15/3/23	23/3/23	75	
3.	Case study of conflict	23/3/23	14/4/23	25	
4.	Example on Project	19/4/23	31/5/23	38	
5.	Risk Identification	3/5/23	17/3/23	49	
6.	Business plan for sample	17/5/23	24/5/23	59	
7.				71	
8.	Case study - Electronics	6/5/23	24/5/23	89	
9.	Case study - Civil	12/5/23	24/5/23	99	
10.	Case study - Mechanical	26/5/23	24/5/23	109	
11.					
12.					
13.					
14.					
15.					

This is certify that Mr. / Miss Vedant Yashwant Bandarkar of  
 Class ETET.E Roll No. 21ET302 has completed all the practical  
 work as listed above, satisfactorily in the subject of Project Management  
 in the Department of ETEC as prescribed by the  
 Savitribai Phule Pune University. During the academic year 20 22 20 23

Date

Prof. in-charge

Head of the Department



PRINCIPAL  
 ALL INDIA SHRI SHYAMJI MEMORIAL SOCIETY'S  
 COLLEGE OF ENGINEERING  
 KENNEDY ROAD, PUNE-411 001



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING, PUNE-01**

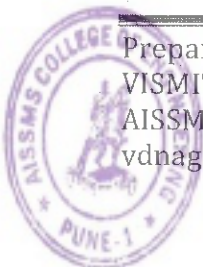
**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION  
ENGINEERING  
[Formerly Department of Electronics Engineering]**

**T.E. E&TC (SEMESTER-VI) TERM-II  
SUBJECT: PROJECT MANAGEMENT (2019 PATTERN)  
SUBJECT CODE: 304193**

**PROJECT MANAGEMENT TUTORIALS AND CASE STUDIES  
SUBJECT CODE: 304193**

**Teaching Scheme: Theory 3 Hrs/Week**

**Examination Scheme: 30 Marks INSEM AND 70 Marks END TERM**



Prepared By:  
VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.  
vdnagrале@aissmscoe.com

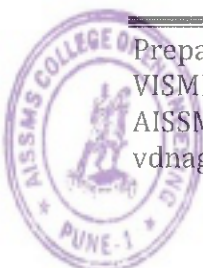
PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

## Preface

This instructor's Tutorial is to provide faculty with a comprehensive teaching package that allows them to enhance student learning with various tool and introduce students to the concept of Project Management in an exciting way.

This tutorial and case studies are designed to be a powerful but simple - to-use teaching tool. There are a broad range of features that are straight forward, current, relevant and easy to teach from.

The aim is to keep it brief and cover all the skill set required for learning project management skills with all essential like budget and Risk with finance without burdening students or faculty with unnecessary details.



Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

vdnagr@aiissmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

## Prologue

All India Shri Shivaji Memorial Society, established as early as in 1917, is a premier educational institution in Pune. Ours is a result-oriented Society dedicated to the noble cause of Military, General, Technical & Management Education in India by Shri Chhatrapati Shahu Maharaj of Kolhapur also known as "Rajarshi Shahu". He was the first Maharaja of the princely state of Kolhapur and a great social reformer.

He was an invaluable gem in the history of Maharashtra he worked tirelessly for the cause of the lower caste subjects in his state. Primary education to all regardless of caste and creed was one of his most significant priorities. In our Institute we follow the noble practices established by our great leader and as we know Leader decide the destiny we are blessed to have a leadership and a rich cultural heritage which is totally focused on the noble cause of Quality Education. It functions beyond race, caste, creed, religion & political spirit. The Society Management is very pragmatic & progressive.

On Nov 10, 1917, Rajarshi Chhatrapati Shahu Maharaj announced in Delhi, his proposal to establish a Memorial of Chhatrapati Shivaji Maharaj in the City of Pune. In the proposal, he declared his intention of creating a central hall with Chhatrapati Shivaji Maharaj's life size statue and a hostel to accommodate a hundred Maratha students. The institute was to act as a rallying centre for Maratha activities all over India, giving a concrete shape and impetus to the diverse endeavours for the advancement of the Maratha community.

On Dec 27, 1917, Rajarshi Chhatrapati Shahu Maharaj, on a pressing demand from Khaserao Jadhav, presided over the 11th session of the Maratha Educational Conference at Khamgoan. Rajarshi Chhatrapati Shahu Maharaj had convened a meeting of the committee of the All India Shivaji Memorial Society on 25 May 1922. Chhatrapati Rajaram Maharaj was elected President of the All India Shivaji Memorial Society and took on.

### Core Values:

- Leadership and cultural heritage
- Honesty and Integrity
- Freedom of thought and Expression

Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,

AISSMS COE, Pune.

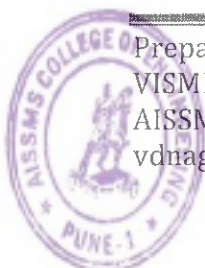
vdnagrale@aissmscoe.com

ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

- Excellence
- Accountability and Transparency
- Encouragement
- Social Responsibility

**Honesty & Integrity:**

The foreword of our society is "Satyala Maran Nahi" which means "Truth is eternal"



Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

vdnagr@aiissmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

## INDEX

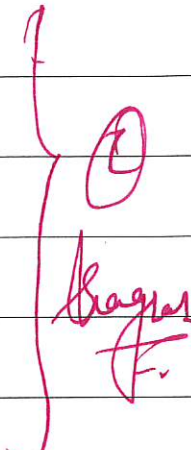
SR	TITLE	PAGE	REMARK
1	Title	i	
2	Preface and Prologue	ii-iv	
3	Index and Certificate	v-vi	
4	College Vision and Mission	vii	
5	Department Vision and Mission	viii	
6	Program outcomes, Program Educational Objectives and Program Specific Outcomes	ix-xi	(C)
7	Course Objective and Course Outcomes	xii	
8	List of Books	xiii	
9	MOOC / NPTEL Courses:	xiv-xv	
10	List of tutorials	xvi	
11	Impact of Delays in Project	xvii	
12	Designing WBS	xviii	
13	case study on conflict resolution	xix	
14	Ex. on Project Scheduling	xx-xxiii	

Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.


vdnagrale@aissmscoe.com

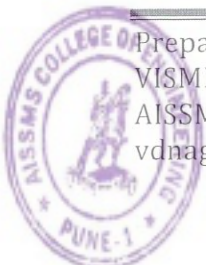
PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

Sr.no	Title	Date of performance	Date of submission	Page no	Signature
15	Risk Identification and analysis	3/5	17/5		
16	Business plan for sample product	17/5	24/5		
17	List of case studies				
18	case study Electronic	6/5	24/5		
19	Case study civil	12/5	24/5		
20	Case study mechanical	16	24/5		


**Declaration :**

  
**Subject Incharge**  
**Ms. V.D.Nagrale**

  
**Head of Department**  
**Dr. S.B.Dhonde**



Prepared By:  
 VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
 AISSMS COE, Pune.  
 vdnagrale@aissmscoe.com

  
**PRINCIPAL**  
 ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
 COLLEGE OF ENGINEERING  
 KENNEDY ROAD, PUNE-411 001



---

**COLLEGE VISION AND MISSION****Vision:**

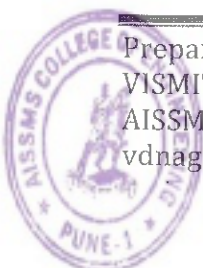
Service to society through quality education.

**Mission:**

- Generation of national wealth through education and research
- Imparting quality technical education at the cost affordable to all strata of the society
- Enhancing the quality of life through sustainable development
- Carrying out high quality intellectual work
- Achieving the distinction of highest preferred engineering college in the eyes of the stake holders

**Goal:**

- To inculcate learning habits
- To create an environment to make the students creative and innovative
- To promote project based learning
- To strengthen industry – institute interaction
- To ensure continuous improvement in quality
- To develop entrepreneurship skills
- To nurture the spirit of team work
- To catalyze all – round development of students
- To develop technologies for sustainable development



Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

vdnagrale@aissmscoe.com

ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

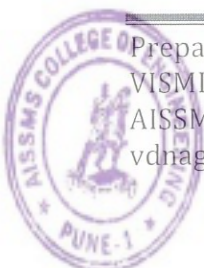
**DEPARTMENT VISION AND MISSION****Vision:**

Society Growth and Welfare through Competent Electronics and telecommunication Engineering Graduates

**Mission:**

- To facilitate E and TC graduates with sight of innovation.
- To provide stimulating learning environment with modern tools and technologies.
- To produce dynamic graduates with ethics and moral values.
- To impart quality education in the field of E and TC engineering to solve societal and industrial problems

*Nagrale*



Prepared By:  
VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.  
vdnagrale@aisssmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

**Academic Year: 2022 - 23**

Name of the Programme: Electronics & Telecommunication Engineering.

**Program Outcomes: -**

**PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

**PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

vdnagrale@aissmscoe.com

ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

**PO9. Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

#### **Programme Educational Objectives (PEOs):**

- **PEO1:** To build strong fundamental knowledge among graduates required to pursue their higher education and continue professional development.
- **PEO2:** To enable graduates to identify, analyze and solve Electronics Engineering problems by applying basic principles and modern techniques.
- **PEO3:** To enable graduates to innovate, design and develop hardware & software components and groom their ability to succeed in multidisciplinary and diverse field.
- **PEO4:** To inculcate in graduates professional attitude, effective communicational skills, team work skills for becoming a responsible, cultured human being.

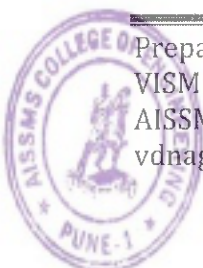
Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,

AISSMS COE, Pune.

vdnagrale@aissmscoe.com

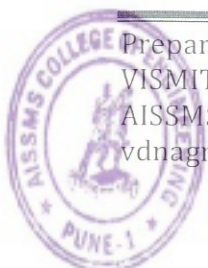
PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001



**Programme Specific Outcomes:**

An E & TC engineering graduate will be able to:

- **PSO1: Systems Development:** Design and develop prototype or system using hardware and software skills for multi-disciplinary applications.
- **PSO2: Adaptability:** Demonstrate an ability to adapt emerging technologies in the field of Artificial Intelligence machine learning, Internet of things and Robotics to solve the real life problems.
- **PSO3: Skill Development:** Develop technical and management skills through student clubs and industry interactions.



Prepared By:  
VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.  
vdnagrale@aissmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

**Course Objectives:**

To make the students understand

- The basics of project management and its life cycle
- The process of project identification, selection criteria of the project and how the project planning is undertaken.
- The organizational structure within a project and issues related to project management
- The techniques for effective project scheduling and resource considerations in project.
- The basics of effective handling the risks as well as managing finances within the project
- The complete product development process and requirements for entrepreneurship along with related legal issues.

**Course Outcomes:**

On completion of the course, learner will be able to –

- CO1:** Apply the fundamental knowledge of project management for effectively handling the projects.
- CO2:** Identify and select the appropriate project based on feasibility study and undertake its effective planning.
- CO3:** Assimilate effectively within the organizational structure of project and handle project management related issues in an efficient manner.
- CO4:** Apply the project scheduling techniques to create a Project Schedule Plan and accordingly utilize the resources to meet the project deadline.
- CO5:** Identify and assess the project risks and manage finances in line with Project Financial Management Process.
- CO6:** Develop new products assessing their commercial viability and develop skillsets for becoming successful entrepreneurs while being fully aware of the legal issues related to Product development and Entrepreneurship.

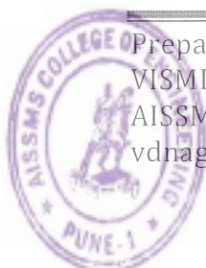
Prepared By:

WISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,

AISSMS COE, Pune.

vdnagrале@aissmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001



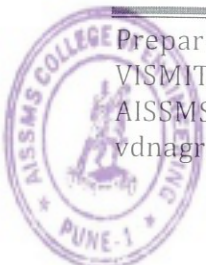
**List of Books:****Syllabus:****Text Books**

1. H.Kerzer, "Project Management: A Systems Approach to Planning, Scheduling, and Controlling", John Wiley & Sons, Inc., 10th Edition, 2009.
2. Chandra, P., "Projects", Tata McGraw-Hill Education, 8th Edition, 2009.

**Reference Books**

1. Morris, P. W. G. and Pinto, J. K., "The Wiley Guide to Managing Projects", JohnWiley & Sons, 2004.
2. Karl Ulrich, Steven Eppinger, "Product Design and Development", McGraw Hill / Irvin, 3rd Edition 2009.
3. R. Majumdar, "Product Management in India", PHI, 2nd Edition, 2010.
4. G.S. Batra, "Development of Entrepreneurship", Deep and Deep publications, New Delhi.
5. Christine Petersen, "The Practical Guide to Project Management", PMP, 1st Edition, 2013.
6. Russell W. Darnall, John M. Preston, "Project Management from Simple to Complex", The Saylor Foundation.
7. Levy, F. K. and Wiest, J. D., "A Management Guide to PERT/CPM", Prentice Hall, 2nd Edition, 1969.
8. Lewis, R., "Project Management: Strategic Design and Implementation", McGraw-Hill, 5th Edition. 2006.
9. Venkataraman. R., J.K. Pinto, "Cost and Value Management in Projects", John Wiley & sons.

*Nagrale*



Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

vdnagrale@aissmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001

**MOOC / NPTEL Courses:**

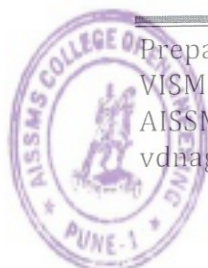
1. NPTEL Course "**Project Management for Managers**"

Link of the Course: <https://nptel.ac.in/courses/110/107/110107081/>

2. NPTEL Course on "**Intellectual Property Rights and Competition Law**"

Link of the Course: <https://nptel.ac.in/courses/110/105/110105139/>

*Nagrале*



Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

[vdnagrале@aissmscoe.com](mailto:vdnagrале@aissmscoe.com)

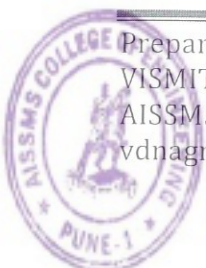
PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001



**List of Tutorials to be carried out**

1.	Understanding Impact of Delays in Project Completions with a company's case study.
2.	Designing a Work Breakdown Structure (WBS) for any sample project.
3.	Case study on Conflict Resolution and understanding its challenges.
4.	Solve examples on Project scheduling using CPM and PERT Model.
5.	Assignment on Risk Identification and Risk Analysis with a company's example and/ or exploration of various project management tools.
6.	Prepare a Business plan for an sample Product/ Service to be launched.

*Nagrале*



Prepared By:

VISMITA NAGRALE, Department of Electronics & Telecommunication Engineering,  
AISSMS COE, Pune.

vdnagrале@aissmscoe.com

PRINCIPAL  
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S  
COLLEGE OF ENGINEERING  
KENNEDY ROAD, PUNE-411 001