Bansilal Ramnath Agarwal Charitable Trust's

Vishwakarma Institute of Information Technology, Pune-48

Syllabus for

S.Y. M.Tech. (STRUCTURE)

(Pattern 2018)

Department of Civil Engineering

VISION:

Excellence in Electronics & Telecommunication Engineering Education

MISSION:

Provide excellent blend of theory and practical knowledge. sustainable development of society

Establish centre of excellence in post graduate studies and research.

Prepare engineering professionals with highest ethical values and a sense of responsible citizenship.

Second Year M. Tech. (SYMT) - Semester III (Pattern 2018)

Course Code	Course	Course Type	Teaching Scheme		Examination Scheme					Total	Credits
					Formative Assessment			Summative			
			L	P	ISE		CE	ESE	OR		
					T1	T2					
CVPB211	Elective V	CE	3	-	-	-	50	-	-	50	3
IOEP2118 2	Open Elective	CE	3	-	-	-	50	-	-	50	3
CVPB2118 3	Internship# / Value added course# / In-	CE-OR	-	12	-	-	100	-	100	200	6
CVPB2118 4	Dissertation Phase – I#	CE-OR	-	8	-	-	100	-	100	200	4
	Total		**6**	**20**	**40**	**20**	**300**	**-**	**200**	**500**	**18**

Course code	Elective V	Course code	Open Elective
CVPB21181A	Design of Earthquake Resistant structures	IOEP21182A	Product Design Engineering
CVPB21181B	Design of Industrial Structures	IOEP21182B	Ethical Hacking
CVPB21181C	Advanced Design of Concrete Structures	IOEP21182C	Project Planning and Management

Dean Academics
Director

Second Year M. Tech. (SYMT) - Semester IV (Pattern 2018)

Course Code	Course	Course Type	Teaching Scheme		Examination Scheme					Total	Credits
					Formative Assessment			Summative Assessmen			
			L	P	ISE		CE	ESE	OR		
					T1	T2					
CVPB2218 1	Dissertation Phase – II	CE-OR	-	32	-	-	100	-	100	200	16
	Total		**-**	**32**	**-**	**-**	**100**	**-**	**100**	**200**	**16**

Dean Academics
Director

Semester – III

ELECTIVE V
Design of Earthquake Resistant Structures (CVPB21181A)

Teaching Scheme

Credits:3
Lectures : 3 hrs./week
Practical : NA
Tutorial : NA

Examination Scheme

Formative Assessment: 50 Marks
Summative Assessment: 00 Marks

Prerequisite: Structural Dynamics, Earthquake Engineering, Engineering Geology

Course Objectives:

To prepare the students to analyze and design earthquake resistant RCC building

Course Outcomes:

Upon the completion of the course, students will be able to

1) Comprehend characterization of ground motion
2) Comprehend the aspects of earthquake resistant building
3) Compare the seismic demand and seismic capacity of the structure
4) Compute the seismic force using equivalent lateral force method and response spectrum method
5) Explain the ductile detailing of RCC beam, column and shear wall
6) Design (G+3) RCC building for gravity loads and lateral loads including ductile detailing

Unit I:Engineering Seismology

Origin of earthquakes, Classification of earthquakes, Strong motion characteristics, Magnitude and intensity of earthquakes, Characterization of ground motion, Generation of seismic forces and Evaluation of seismic risk

Unit II:Earthquake-Resistant Buildings

Basics of Earthquake-Resistant Design and Construction , Basic Aspects of Seismic Design, The Four Virtues of Earthquake Resistant Buildings, Earthquake Demand versus Earthquake Capacity, Force-based Design to Displacement-based Design

Unit III:Structural Systems for Seismic Resistance

Lateral force path, Structural behavior under gravity loads and seismic loads, Requirement of an efficient earthquake resistant structural systems, Estimation of seismic demand and measures to reduce the seismic demand, Estimates of capacity and measures to improve seismic capacity

Unit IV: Computation of Seismic Forces

Principal steps involved in the earthquake resistant design of RCC structures as per IS code, Equivalent lateral force procedure, Dynamic analysis procedure, Lateral drift and P-Δ analysis, Load combinations, Effect of soil structure interaction and masonry infill, Irregularities in the building structures

Unit V: Design and Detailing of Reinforced Concrete Building

Ductility in R.C. structures, Ductile detailing of Flexure Member, Ductile detailing of column and flexural member subject to Combined Bending and Axial Load, R.C. Shear Walls-Structural behavior, failure pattern, design and detailing of shear wall

Unit VI:Earthquake resistant design of RC buildings

Earthquake resistant design of RC buildings – Preliminary data, loading data, analysis of subframes,load combinations, design of subframes(maximum of 3 storeys).

Text books:

1. "Earthquake Resistant Design of Building Structures", Dr. Vinod Hosur, Wiley Publications
2. "Earthquake Resistant Design of Structures", Agrawal Pankaj &Shrinkhande Manish, Prentice Hall of India Pvt Ltd, New Delhi

Reference books:

1. "Earthquake Tips - Learning Earthquake Design and Construction", Murty, C.V.R., IITK-BMTPC, National Information Center of Earthquake Engineering, IIT Kanpur, India
2. "Dynamics of Structures", Anil K. Chopra, Prentice Hall, India.

ELECTIVE-V
Design of Industrial Structures(CVPB21181B)

Teaching Scheme

Credits:3
Lectures:3 hrs./week
Practical : NA
Tutorial : NA

Examination Scheme

Formative Assessment : 50 Marks
Summative Assessment : NA

Prerequisite: Strength of Materials, Structural Analysis, Structural Design

Course Objectives: The course will help students

To identify the application of basic concepts of design of steel structures.

To recognize the purpose of specific steel structure and interpret its behavior under various loads.

To design various steel structures having specific application.

Course Outcomes: By the end of the course, Students will be able to

1) Design welded plate girders.
2) Design steel portal, gable frames.
3) Design steel bunkers and silos.
4) Design chimneys.
5) Design water tanks.
6) Design pressed steel water tanks.

Unit I:Welded Plate Girder

Design of welded plate girder: design of cross section, curtailment of flange plates, stiffeners and connections.

Unit II:Portal Frames

Design of portal frame with hinge base, design of portal frame with fixed base - Gable Structures

Unit III:Steel Bunkers and Silos

Design of square bunker , Jansen's andAiry's theories, IS Code provisions, Design of side plates, Stiffeners, Hooper, Longitudinal beams, Design of cylindrical silo, Side plates, Ring girder, stiffeners.

Unit IV:Chimneys

Introduction, dimensions of steel stacks, chimney lining, breech openings and access ladder, loading and load combinations, design considerations, stability consideration, design of base plate, design of foundation bolts, design of foundation.

Unit V:Water Tanks

Design of rectangular riveted steel water tank , Tee covers, Plates, Stays, Longitudinal and transverse beams, Design of staging, Base plates, Foundation and anchor bolts.

Unit VI:Design of pressed steel water tank

Design of stays, Joints, Design of hemispherical bottom, water tank, side plates, Bottom plates, joints, Ring girder, Design of staging and foundation.

Reference books:

1. Design of Steel Structure, Punmia B. C., Jain Ashok Kr., Jain Arun Kr., 2nd Ed., Lakshmi Publishers, 1998.
2. Design of Steel Structures, Ram Chandra, 12th Ed., Standard Publishers, 2009.
3. Design of Steel Structures, N.Subramaniyan, Oxford University Press, New Delhi.
4. Limit state design of steel structures by S K Duggal, Tata McGraw Hill Education, New Delhi.

ELECTIVE V

Advanced Design of Concrete Structures (CVPB21181C)

Teaching Scheme

Credits: 3
Lectures: 3 hrs./week
Practical : NA
Tutorial : NA

Examination Scheme

Formative Assessment : 50 Marks
Summative Assessment:50 Marks

Prerequisite: Elementary design of concrete structures.

Course Objectives: The course will help students

1. To **analyze**behaviour of reinforced concrete structural elements under specific loading conditions.
2. To **design** reinforced concrete structural elements under specific loading conditions.
3. To **analyze** special concrete structures.
4. To **study**codal provisions in IS codes for special concrete structures.
5. To **design** special concrete structures using IS codes

Course Outcomes:
By the end of the course, Students will be able

1. To **design** special reinforced concrete structural elements.
2. To **analyze** special concrete structures.
3. To **design** special concrete structures using IS codes.

Unit I: Design of RC beams for torsion

Behavior of R.C. rectangular sections subjected to torsion, Design of sections subjected to combined bending and torsion, combined shear and torsion.
Hands on Illustrative examples.

Unit II: Redistribution of moments

Analysis and design of RC two span continuous beam.

Hands on Illustrative examples.

Unit III:Design of Floor Systems
Serviceability criteria: Deflection and crack width. Design of grid slab and flat slabs

Hands on Illustrative examples.
Unit IV:Design of earth retaining structures
Introduction, Functions and types of retaining walls. Analysis and design of RCC cantilever type of retaining wall for various types of backfill conditions.
Hands on - Illustrative examples.
Unit V: Design of water retaining structures
Introduction, types, function of water tank. Codal provisions, Analysis and design of

circular and rectangular water tanks resting on ground.
Hands on Illustrative examples.
Unit VI:Design of Bunkers and Silos
Hands on Illustrative examples.

Text books:

1. Limit state theory and design of reinforced - Dr. V. L. Shah and Dr S. R. Karve - Structures Publications,Pune

Reference books:

1. Reinforced Concrete Design (Limit State) -A.K. Jain
2. Advanced Reinforced Concrete, Varghese A. V. , Prentice Hall of India
3. Design of design of reinforced Concrete structures- M. L. Gambhir –PHI
4. Advanced Design of Concrete Structures, Krishana Raju N. Tata Mc-Graw Hill, Delhi
5. Limit State Design of Reinforced Concrete, Jain A. K., Nemchand& Bros., Roorkee

IS codes

1. IS: 456-2000: Indian Standard code of practice for plain and reinforced concrete, BIS, New Delhi.
2. IS: 3370-Indian Standard code of practice for concrete structures for storage of liquids, BIS, New Delhi.

Open Elective A

Product Design Engineering (IOEP21182A)

Teaching Scheme
Credits: 3
Lectures: 3 Hrs/week

Examination Scheme
Formative Assessment: 50 Marks

Course objectives:

1. To understand basic techniques for particular phases of product development
2. Make and manage design teams for product development in a company.

Course Outcomes:

Upon completion of this course, the student will be able to:

1. Describe an engineering design and development process
2. Employ engineering, scientific, and mathematical principles to execute a design from concept to finished product
3. Create 3D solid models of mechanical components from the perspective of aesthetic, ergonomic and functional requirement using CAD software
4. Work collaboratively on a team.
5. Create new product based on mechanical design engineering.
6. Investigate contemporary issues and their impact on provided solution.

Unit 1 – Introduction to Product Design

Characteristics of Successful Product Development, Innovative Thinking, Challenges to Product Development, Product Development Process, Concept Development, Economics – Cost Vs Performance, Design Considerations

Unit 2 – Product Development Process

Product development process- Identification of customer needs- customer requirements, product development process flows. Product specifications and concept generation, concept selection, concept screening, concept testing, reverse engineering, product architecture

Unit 3 –Product Design Tools

Creativity and Problem Solving –Creativity methods-Theory of Inventive Problem Solving (TRIZ), Product function tree, Life cycle analysis, Quality Function Deployment, Competing Product Analysis, SWOT analysis, Failure Mode Effect Analysis.

Unit 4 – Design for Manufacture and Assembly

Design for assembly, design for disassembly, design for environment, design for graphics and packaging

Unit 5 – Rapid Prototyping

Understanding Prototypes, Principles of Prototyping, Prototyping Technologies, Planning for Prototypes

Unit-6:Product Testing and Validation

Time value of Money, Analytical technique, Product and Process, Evaluation of component, subassembly, assembly, Reliability Goals, Computer simulations and Bench test results, Comprehensive test plans and reports.

Text Books:

1. Product Design-Techniques in Reverse Engineering and New Product Development, Kevin Otto, Kristion Wood, Pearson Education, ISBN 978-81-7758-821-7.
2. Karl T.U. And Steven D.E., Product Design and Development, McGraw Hill, Ed 2000.

Reference Books :

1. Dieter GE, Engineering Design-Material and Processing Approach, McGraw Hill, Ed 2000

Open Elective B

Ethical Hacking (IOEP21182B)

Teaching Scheme
Credits : 3
Lectures : 3 Hrs/week

Examination Scheme
Formative Assessment : 50 Marks
Summative Assessment : NA

Course Objectives :

1. Understand basics of network security and hacking
2. Aware of legal perspective of cybercrime including Indian ITACT 2008
3. Learn techniques of gathering network information
4. Identify security tools including, but not limited to intrusion detection and firewallsoftware
5. Learn to perform different kind of attacks
6. Understand functioning of various protocols

Course Outcomes :

After completion of the course, student will be able to

1. Use basics knowledge of network security and hacking
2. Understand and use the IT Laws as and when required
3. Gather required information to perform a attack
4. Use various tools and methods for Vulnerability Assessment
5. Perform different attacks on Dummy scenario
6. Analyze the use of protocols studied

Unit I : Introduction to Network and security

Basics of Computer Networks: OSI Model, TCP/IP Model, Network

Open Elective C :
Project Planning and Management(IOEP21182C)

Teaching Scheme
Credits : 3 **Examination Scheme**
Lectures : 3Hrs/week Formative Assessment: 50

topology (Physical & logical), Network Hardware Components: Connectors, Repeaters, hubs, NICs, Bridges and Switches.

Basics of Computer Networks Security: Essential Terminology, Elements of Information Security, Types of Hackers, Steps for Ethical hacking, Types of Attacks.

Unit II : Legal Perspective

The Indian IT Act, Challenges to Indian law, Cybercrime scenario in India, 2008 amendments to Indian IT Act, Intellectual property in the cyberspace.

Unit III : Information Gathering Techniques

Active information gathering, passiveinformation gathering, Trace route,Interacting with DNS Servers, SNMP and SMTP attacks.

Unit IV : Port Scanning and Vulnerability Assessment

Target Enumeration and Port Scanning Techniques: Scanning for Open Ports and Services, Types of Port Scanning, Firewall/IDS Evading Techniques

Vulnerability Assessment: Vulnerability Scanners and How Do They Work, Pros and Cons of a Vulnerability Scanner, Vulnerability Assessment with Nmap, Nessus

Unit V : Network Sniffing

Introduction, Types of Sniffing, ARP Protocol Basics, ARP Attacks, Denial of Service Attacks, Man in the Middle Attacks.

Unit VI : Remote Exploitation

Understanding Network Protocols: TCP,UDP,ICMP, Server Protocols: FTP,HTTP,SMTP

Text Books :

1. Rafaybaloch, "Ethical hacking and Penetration Testing guide", CRC press, 2015, ISBN: 13: 978-1-4822-3162-5 (eBook - PDF)
2. Nina Godbole, SunitBelapure, "Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", WILEY Publications, 2015, ISBN:978-81-265-2179-1

Reference Books :

1. Behrouz Fourzon, " Data Communication and Computer Networks", Pearson Education,5th edition ISBN : 978-0070634145
2. Andrew S. Tanenbaum, *" Computer Networks",* International Economy Edition, 5th edition ISBN: 10: 9332518742

Marks

Course Objectives:

1. To impart knowledge of project life cycle.
2. To introduce students to Project Identification Process, Project Initiation
3. To understand studies related to Pre-Feasibility Study and Project feasibility Studies.
4. To construct CPM, PERT network for a project.
5. To introduce students to Steps in Risk Management, Risk Identification, Risk Analysis and Reducing Risks
6. To introduce students to process of project Performance Measurement, Evaluation and closeout.

Course Outcomes:

Upon the completion of the course, students will be able to

1. understand phases of project life cycle
2. understand the Project Identification Process, Project Initiation.
3. Understand Pre-Feasibility Study and Project feasibility Studies of a project.
4. construct CPM, PERT network for a project.
5. understand the concept of Risk Management
6. understand the process of project Performance Measurement, Evaluation and closeout.

Unit I: Basics of Project Management (PM)

Introduction, Need, Project Management Knowledge Areas and Processes, Concept of Organizational Structure and types, The Project Life Cycle (preferably with case study), Essentials PM.

Unit–II:ProjectIdentification and Selection

Introduction, Project Identification Process, Project Initiation, Pre-Feasibility Study, Feasibility Studies, Project Break-even point. Case study is preferred

Unit -III: Project Planning

Introduction, Need for Project Planning, Work Breakdown Structure (WBS), LOB, CPM and PERT, Network Cost System, Resource Allocation, Scheduling, Project Cost Estimate and Budgets.

Unit -IV: Project Risk Management and Quality Management

Introduction, Risk, Risk Management, Role of Risk Management in Overall Project Management, Steps in Risk Management, Risk Identification, Risk Analysis, Reducing Risks. Introduction to Quality, Quality Concepts, Value, Engineering.Case study is preferred.

Unit V: Project Performance Measurement, Evaluation and closeout

Introduction, Performance Measurement, Productivity, Project Performance Evaluation, Benefits and Challenges of Performance Measurement and Evaluation, Controlling the Projects. Project Close-out, Steps for Closing the Project, Project Termination, and Project Follow-up.Case study is preferred

Unit VI - Operation Research in Management

Introduction, Operation Research as tool forDecision Support System, Overview of OR ResearchTechniques, Formulation of Linear Programming Problem, Linear Programming Models, Assumptions of Linear Programming, Graphical Method and Simplex method for solving LP problem.

Students are encouraged to register for On-line course in the relevant above course approved by authority.

Text books:

1. Operations Research by Premkumar Gupta and D.S.Hira, S. Chand Publications (2014)
2. Project Management – K Nagrajan – New age International Ltd.
3. Project Management – Ahuja H.N. – John Wiely, New York.

Internship (CVPB21183)

Teaching Scheme
Credits :6
Practical : 12 Hrs/week

Examination Scheme
Formative Assessment: 100 Marks Summative Assessment (Oral): 100 Marks

Course Objective: Enable students to
1. Apply existing knowledge in similar or new situations
2. Acquire new engineering knowledge and skill
3. Understand importance of life learning processes through internship experiences.

Course Outcomes: Upon completion of an internship, students will be able to
1. Apply the existing engineering knowledge in similar or new situations
2. Have ability to identify when new engineering knowledge is required, and apply it
3. Understand the lifelong learning processes through critical reflection of internshipexperiences.

The preferred duration of an Engineering internship is 3 months, full-time placement with anrelated industry/organization/consultancy work etc.

Continuous Assessment of Performance During Internship:

During the internship semester, the organization with whom the student is undertaking the internship programme conducts periodic assessments of the intern's progress, performance and achievements.

Students are required to submit progress report of internship as per schedule and being in constant touch with the respective Guide. Atleast two presentations and report should be submitted to VIIT, Pune.

In order to ensure that the internship remains meaningful, Guide of the respective student from VIIT, Pune will maintains close contact with organizations/ Industry/Consultancy etc.

Summative Assessment :

After completion of the program, the student submits a detailed report of his internship experience and makes a presentation of the same at VIIT, Pune.

Guidelines for Internship report are mentioned in Annexure I.

Value added course (CVPB21183)

Teaching Scheme
Credits :6
Practical : 12 Hrs/week

Examination Scheme
Formative Assessment:100 Marks
Summative Assessment (Oral): 100 Marks

Course Objectives:

1. Study of new technology in the field of course
2. Understand importance of life learning processes through internship experiences.

Course Outcomes: Upon completion of an internship, students will have

1. Exposure to state of art technology in the respective field of course
2. Have an in-depth knowledge about the subject chosen as value added course.

Following are the list of Value Added Courses offered by VIIT. The duration of Value Added Course is 3 months.

1. **MATLAB: Introduction to MATLAB**
   Basics of MATLAB programming, script files, plotting, Good programming practices, Input and output statements, conditional statements, Loops, Arrays, Array functions, Application in WREE
2. **MIKE-11: Modeling fluid flow using MIKE-11**
   Basics of equations governing MIKE models, working with MIKE 11 user interface, Setting up simulation, Application of MIKE 11 in modeling fluid flow.
3. **HEC-RAS: Modeling fluid flow using HEC-RAS:**
   Basics of HEC-RAS, Building the conceptual model , Mapping the conceptual data to a hydraulic model representation , Running the simulation within HEC-RAS , Viewing results in WMS, Modelling fluid flow using HEC-RAS.
4. **Python Programming Course:** The course aims to teach students the basics of programming computers using Python. The major focus is on basics of how one constructs a program from a series of simple instructions in python.
5. **Analysis using FEA software:** ANSYS Element Selection & Loads: Element Type, 1D, 2D, 3D, Structural and Modal Analysis, Coupled Analysis, Dynamic Analysis.

Value added courses will be carried out in the college and will be done by student/s under the guidance of the Guide/ Course teacher

Continuous Assessment(CE):

Periodic assessment ofthe student progress, performance and achievements will be done through periodic presentations, Assignments, Tests etc. as instructed by the course teacher.

Summative Assessment (SA) :

After completion of the program, the student submits a detailed report of the value added course and its application in the chosen field and makes a presentation.

Guidelines for the report are as suggested in ANNEXURE I

In-house Project (CVPB21183)

Teaching Scheme	**Examination Scheme**
Credits :6	Formative Assessment:100 Marks
Practical : 12 Hrs/week	Summative Assessment (Oral): 100 Marks

Course Objective: Enable students to

1. Identify problem faced by society related to respective engineering field.
2. Collecting information related to the problem same through detailed review of literature.
3. To develop the methodology to solve the identified problem.

Course Outcomes: Upon completion of In house project students will be able to

1. Analyze the findings from the literature.
2. Demonstrate a solution to the problem selected.
3. Demonstrate an ability to present and defend their research work to a panel of experts

Students can take up problems in the field of respective branch of Engineering as In house Projects. It can be related to the solution to an engineering problem, verification and analysis of experimental data available, conducting experiments on various engineering subjects, material characterization, studying a software tool for the solution of an engineering problem etc.

Continuous Assessment (CE):

Periodic assessment ofthe student progress, performance and achievements will be done through periodic presentations, Assignments, Tests etc. as instructed by the course teacher/ Guide. Continuous assessment (CA): will be monitored by the respective Guide.

Summative Assessment (SA):

After completion of the program, the student submits a Project report of his/her In-house project and makes a presentation of the same at VIIT, Pune.

Guidelines for the report are as suggested in ANNEXURE I

Project Stage I (CVPB21184)

Teaching Scheme	**Examination Scheme**
Credits: 6	Formative Assessment:100 Marks
Lectures: --	Summative Assessment (Oral):
Laboratory Work: 8Hrs/week	100 Marks

Course Objectives:

1. To identify a specific problem for the current need of the society and collecting information related to the same through detailed review of literature.
2. To develop the methodology to solve the identified problem.
3. To train the students in preparing project reports and to face reviews and viva - voce examination.

Course Outcomes:

By the end of the course, students will be able to

1. Analyze the collected literature.
2. Define a methodology to arrive at a solution
4. Demonstrate the literature findings and methodology effectively through viva-voce examination.

The project work will start in semester III, and should preferably be a live problem in the industry or
macro-issue having a bearing on performance of industry and should involve scientific research, design, collection, and analysis of data, determining solutions and must preferably bring out the individuals contribution.

ıContinuousAssessment Method (CA):

Project stage I will have scheduled presentations and assessment. Continuous essment(CA): will be monitored by the respective Guide.

nmative Assessment (SA) :

The dissertation stage I report should be presented in a standard format, in a spiral bound hard copy,
preferably printed on both the sides of paper ,containing the following contents.
i. Introduction including objectives, limitations of study.
ii. Literature Survey, background to the research.
iii. Problem statement and methodology of work
iv. Theoretical contents associated with topic of research
v. Field Applications, case studies
vi. Data collection from field/organizations or details of experimental work/analytical work
vii. Part analysis / inferences
viii. Details of remaining work to be completed during the project work stage II
ix. References

Students should prepare a power point presentation to be delivered in 25 minutes and should be able to
answer questions asked in remaining five minutes

The student shall submit the report of project work completed partly in standard format discussed in Annexure II.

AP2: Audit course

Any one from the following audit courses can be taken by students for a minimum duration of 2 weeks. An approval of the course content should be taken from the Guide/PG Coordinator and HOD.

1. Cyber security
2. Value Engineering and human rights
3. Legislative procedures
4. Technical writing / Documentation
5. Languages
6. Online Certification Courses (minimum 2 weeks)
7. Cost Accountancy
8. Department Specific Audit Courses.

Semester – IV

Project Stage II (CVPB22181)

Teaching Scheme
Credits: 16
Lectures:
Laboratory Work: 32Hrs/week

Examination Scheme
Formative Assessment:100 MarksSummative Assessment (Oral): 100 Marks

Course Objectives:

1. Considerably more in-depth knowledge of the major subject/field of study, including deeper insight into current research and development work.
2. The capability to clearly present and discuss the conclusions as well as the knowledge and arguments that form the basis for these findings in written and spoken English.

Course Outcomes:
By the end of the course,

1. Demonstrate a depth of knowledge in the respective specialization.

2. Demonstrate an ability to present and defend their research work to a panel of experts.

Continuous Assessment Method (CA):

Project stage II will have scheduled presentations and assessment which will be assessed by jointly by the pair of internal and external examiners, along with oral examination of the same. Continuous assessment(CA): will be monitored by the respective Guide.

Summative Assessment (SA) :

The final dissertation should be submitted in black bound hard copy preferably typed on both the sides of paper as well as a soft copy on CD. The format for dissertation is attached in Annexure III and Annexure IV.

Refer guidelines for Thesis submission below.

(The due weight will be given for the paper(s) on topic of project presented in conference/s or published in referred journals.)

A viva –voce for Project Stage II will be the SA.

ANNEXURE I

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute Of Information Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of .....

(Internship/Value Added course/In House) Report on

(Title)

By:

(Name)----------

(Roll No)----------

Semester I/II/III

For the partial fulfillment of M.Tech. degree in (branch)

Of

Under guidance of

(Name of Guide/ Company)

20 - 20

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute Of Information Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of .....

CERTIFICATE

This is to certify that the Internship/Value added course/Inhouse Report entitled "_____ _____" is submitted by ----------

----- bearing Roll No ---------- for the partial fulfillment of M.Tech. (branch name) degree in (Specialization name) of Savitribai Phule Pune University, Pune.

Guide Guide

Head of Department **Director**

External Examiner

Guidelines for Internship reportwriting :

No. of copies required are **Three spiral bound.** (One each for guide, Department and student)

Insert page numbers: bottom center 11 Times New Roman

1. Use MS-word: for typing the paper in A-4 size paper
2. Margins: left, right, top, bottom 25 mm.
3. Spacing: single line spacing
4. Font type: Times new roman
5. Font size:
   - 14 for the title (Bold)
   - 12 for Author name (Bold, Title case)
   - 12 bold for caption of Figures and Tables
   - Main heading: Bold, all caps

Subheading: Bold, Title case
Lower level heading: Bold
10 for Abstract and abstract heading

6. Title page:

Title: all caps, bold and centered, Make sure the title is not more than 80 characters in length, including space between the words.

Abstract: should be between 100 to 150 words

7. Heading and Text:

Left justified bold,
No numbering of main and subheadings,
leave one line blank before and after heading
No underlines or foot notes
Each paragraph should be separated by one blank line

8. Equations:

Use equation editor
Typed and numbered in sequence
Write equation numbers in bracket, right justified

9. Figures and Tables:

Centered and numbered in sequence
The caption of Figure should be below and centered
The caption of Table should be above and centered

10. Reference:

Each reference should be cited in the text by the last name of the author(s) and year of publication of the reference
Reference should include year of publication, full title, name of source, volume, and page numbers. Format of reference should be IEEE/ASCE etc.

ANNEXURE II

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute Of Information Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of .....

A

PROJECT REPORT

On

(NAME OF PROJECT)

Submitted to

Savitribai Phule Pune University, Pune

For the partial fulfillment of M.Tech. degree in (branch)

By

(Name of candidate)

University seat No)

Under the Guidance of

(Name of Guide)

20 - 20

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute Of Information Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of .....

CERTIFICATE

This is to certify that the Project Report entitled "_____ _____" is submitted by ---------- bearing Roll No ---------- for

the partial fulfillment of M.Tech. (branch name) degree in (Specialization name) of Savitribai Phule Pune University, Pune.

Guide Guide

Head of Department **Director**

External Examiner

Guidelines for Project report writing:

GUIDELINES FOR THESIS SUBMISSION

Vishwakarma Institute of Information Technology, Pune

1. INTRODUCTION

Purpose:

This document, herein after referred to as the Thesis Guide, lists the general and specific requirements governing thesis preparation including guidelines for structuring the contents.

2. Specifications for thesis format:

2.1 Preparation of Manuscript and Copies:

The thesis needs to be prepared using a standard text processing software and must be printed in black text (color for images, if necessary)

The thesis must be printed or photocopied on both sides of white paper. All copies of thesis pages must be clear, sharp and even, with uniform size and uniformly spaced characters, lines and margins on every page

Thesis should be free from typographical errors.

2.2 Sizes and Margins:

A-4 size paper should be used
Margins: left, right, top, bottom 25 mm.
Content should not extend beyond the bottom margin except for completing a footnote, last line of chapter/subdivision, or figure/table caption.
A sub-head at the bottom of the page should have at least two full lines of content below it. If the sub-head is too short to allow this, it should begin on the next page.

2.3 Page Numbering:

Beginning with the first page of the text in the thesis (chapter 1), all pages should be numbered consecutively and consistently.
Page numbers prior to Chapter 1 should be in lower case Roman numerals. The title page is considered to be page (i) but the number is not printed.
Insert page numbers: bottom center 11 Times New Roman

2.4 Line Spacing

Line spacing in the text should be single and double spacing in Abstract.

2.5 Font:

For the thesis the font should be Times new roman with
Font size:

14 for the chapter title (Bold)
12 Times new roman for text in thesis
12 bold for caption of Figures and Tables
Main headinge.g 1.1 : Bold, all caps, 12 Times new Roman
Subheadinge.g 1.1.1 : Bold, Title case, 12 Times new Roman
Lower level heading e.g 1.1.1.1: 12 Times new Roman
12 for Abstract and abstract heading

3.TITLE PAGE

Title: all caps, bold and centered, Make sure the title is not more than 80 characters in length, including space between the words. Refer Annexure I for the format

4. TABLES, FIGURES AND EQUATIONS

All tables (tabulated data) and figures (charts, graphs, maps, images, diagrams, etc.) should be prepared, wherever possible, on the same paper used to type the text and conform to the specifications as specified here:

The caption of Figure should be below and centered, Times New Roman, 12, bold.

The caption of Table should be above and centered, Times New Roman, 12, bold.

Figures used in the report should not be blur.Candidate should try to draw the figures on their own. 8.All the figures and tables should be mentioned/referred/explained in the adjoining paragraphs.

Tables, figures and equations should be numbered sequentially either throughout the thesis or chapter-wise. They are referred to in the body of the text capitalizing the first letter of the word and number, as for instance, Table 17, Figure 24, Equation (33), or Table 5.3, Figure 3.11, Equation (4.16), etc.

Use equation editor

Good quality Line Drawings/figures must be drawn

5. GUIDELINES FOR STRUCTURING CONTENTS:

5.1 Sequence of Contents:

The following sequence for the thesis organization should be followed:

(i) Preliminaries Title Page) As per the format given in Annexure I
Certificate) at the end of the Thesis in Annexure II
Abstract/Synopsis) Guide
Acknowledgement and/ or Dedication (where included)
Table of Contents
List of Figures, Tables, Illustrations, Symbols, etc. (wherever applicable)

(ii) Text of Thesis Introduction
The body of the thesis, summary and conclusions

(iii) Reference Material List of References, Bibliography (where included)

(iv) Appendices where included

(v) Index where included

6. SYNOPSIS/ABSTRACT

An M Tech. thesis should contain an abstract not exceeding 300 words. A synopsis/abstract shall be printed in double space with the heading "SYNOPSIS/ABSTRACT" in uppercase followed by certain preliminary information and the text.

Synopsis/Abstract should be self-complete and contain no citations.

7. TABLE OF CONTENTS

The table of contents lists all material that follows it. Chapter titles, sections, first and second order sub-divisions, etc must be listed in it.

Tables, figures, nomenclature, if used in the thesis, are listed under separate headings.

8. THE TEXT OF THE THESIS

Introduction

Introduction: the first chapter may be the first chapter or its first major division. In either case, it should contain a brief statement of the problem investigated. It should outline the scope, aim, general character of the work carried out.

The body of Thesis

This is the substance of the dissertation inclusive of all divisions, subdivisions, tables, figures, etc.

Summary and conclusions

If required, these are given as the last major division (chapter) of the text. A further and final subdivision titled "*Scope* for Further Work" may follow.

9. REFERENCE

For referencing an article in a scientific journal the following information should be present in a decided format: authors, title, name of journal, volume number, page numbers and year.

For referencing an article published in a book, the decided referencing format should contain authors, the title of the book, editors, publisher, year, page number of the article in the book being referred to.

For referencing a thesis the decided format should contain, author, the title of thesis, where thesis

was submitted or awarded, year.

Each reference should be cited in the text by the last name of the author(s) and year of publication of the reference

Reference should include year of publication, full title, name of source, volume, and page numbers.

Format of reference should be IEEE/ASCE etc.

All the mentioned references should be cited in the report compulsorily

10. APPENDIX OR APPENDICES

Supplementary illustrative material, original data, and quotations too lengthy for inclusion in the text or which is not immediately essential to an understanding of the subject can be presented in Appendix or Appendices (as Appendix A , Appendix B, etc.)

Each appendix with its title should be listed separately in the table of contents. Likewise,tables and figures contained in the Appendices are to be included in the lists of tables and figures, respectively.

11.BINDING

The student should submit the copies of the thesis in partially bound form (coiled wire binding, clamping, or filing) for M.Tech (pre thesis), respectively. Once thethesis is accepted, it is the student's responsibility to get it properly bound before depositing therequired number of copies with the Department concerned. The frontcover of the bound copy should be the same as the title page of the thesis.

The front cover shouldhave printing on the side to include the author's name, abbreviated thesis title (optional), degree,department, and the year.**The thesis should be bound in BLACK colored hard cover (Final Thesis) and golden print (engrossed) with written materials in black script on the title page of the report.**

12.PLAGIARISM REPORT

A plagiarism report (generated through the plagiarism check software) should be submitted with the Project thesis/report with similarity not more than 20..%.

13.THESIS SUBMISSION

To have the thesis examined, the number of thesis copies to be submitted to the Dean Academic
should correspond to the number of examiners, Guide, Department and Student. Hard copy of the report is to be submitted to the Department after corrections done as suggested by external examiner/ Guide/Department at any time when report submission is called by Guide/Department.

14.REQUIREMENTS OF THESIS SUBMISSION

A student should submit the following documents during submission of Thesis

1. Thesis hard copy and soft copy (in CD) with related documents
2. Plagiarism Report (Generated through plagiarism check software)
3. No Objection Certificate
4. List of examiners – To be submitted by Guide
5. Duly signed Students Checklist

Statement of Thesis Preparation

1. Thesis title: .....
2. Degree for which the thesis is submitted: .....
3. Thesis Guide was referred to for preparing the thesis.
4. Specifications regarding thesis format have been closely followed.
5. The contents of the thesis have been organized based on the guidelines.
6. The thesis has been prepared without resorting to plagiarism.
7. All sources used have been cited appropriately.
8. The thesis has not been submitted elsewhere for a degree.

(Signature of the student)

Name:

Roll No.:

Department/IDP:

ANNEXURE III

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute Of Information Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of .....

A

PROJECT REPORT

On

(NAME OF PROJECT)

Submitted to

Savitribai Phule Pune University, Pune

For the partial fulfillment of M.Tech. degree in (branch)

By

(Name of candidate)

University seat No)

Under the Guidance of

(Name of Guide)

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ANNEXURE IV

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute Of Information Technology
(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Department of .....

CERTIFICATE

This is to certify that the Project Report entitled "_____ _____" is submitted by ---------- bearing Roll No ---------- for the partial fulfillment of M.Tech. (branch name) degree in (Specialization name) of Savitribai Phule Pune University, Pune.

Guide Guide

Head of Department **Director**

External Examiner