

## SIXTH SEMESTER

Course Code	ITC601
Course Name	Minor Project
Number of Credits	0-0-4-2

This minor project work will involve detailed literature survey, implementation, and experimentation plan. At the end of the 6th semester, the project work should have been demonstrated and work done will be evaluated.

Course Code	ITC602
Course Title	Machine Learning
Number of Credits	3-0-0-3

### Course Objectives

- This course objective is to provide an overview of Machine Learning and its application in real life. The primary objective is to introduce student to the fundamental principles and methodologies of Machine Learning

### Course Contents

#### Unit-I Introduction to Machine Learning Pipeline

Introduction to Machine learning Pipeline, Problem definition, Data ingestion, Data preparation, Data segregation, Candidate model selection Model deployment, Performance monitoring.

#### Unit-II Basics of Feature Engineering

Feature Selection and Feature Engineering- Univariate selection, Correlation heatmaps, Wrapper-based methods, Filter-based methods, Embedded methods, Feature engineering-Imputation, Outlier management, One-hot encoding, Log transform, Scaling, Data manipulation

### **Unit-III Supervised Learning**

Supervised versus unsupervised learning, classification, Preprocessing data, Binarization, Mean removal, Scaling, Normalization, Label encoding, Logistic regression classifiers, k- Nearest Neighbour (kNN), The Naïve Bayes classifier, Confusion matrixes, Support Vector Machines.

Decision tree, Building a decision tree classifier, Building a decision tree classifier, random forests, Regression- Simple, Multiple linear regressions, Problems in Regression Analysis.

### **Unit-IV Unsupervised Learning**

Introduction, Applications, Clustering as a machine Learning task, clustering types, partitioning methods, k-medoids, hierarchical clustering, and density based methods, Association rules, apriori algorithm for association rule learning

### **Unit-V ML Evaluation Technique**

Classification metrics- Accuracy, confusion matrix, Per-class accuracy, log-loss, AUC, Ranking Metrics-Precision-Recall, Precision-Recall Curve and the F1 Score, NDCG Regression Metrics-RMSE, Quantiles of Error, difference between Training metrics and Evaluation Metrics. Offline Evaluation Mechanisms: Hold-Out Validation, Cross Validation, and Bootstrapping

### **Course Outcomes**

- Ability to understand the principles of Machine Learning..

### **Text Books**

1. Saikat Dut, Subramanian chandramouli, Amit Kumar Das, “Machine Learning, 2020 *Edition*”, Pearson, 2020.
2. Tom, Mitchell, “Machine Learning”, McGraw-Hill, 2017.

### **Reference Books**

1. Ethem, Alpaydin, “Introduction to Machine Learning”, PHI, 2005.
2. 2. H. Witten and E. Frank, “Data Mining: Practical Machine Learning Tools and Techniques”, Morgan Kaufmann, 2000.

<b>Course Code</b>	<b>ITC604</b>
<b>Course Name</b>	<b>Machine Learning Lab</b>
<b>Number of Credits</b>	<b>0-0-2-1</b>

#### Lab Objective

- To Implement various Machine Learning Models using Python/R

#### List of Experiments

1. Implement Feature Selection methods such as- feature importance, correlation, heat maps
2. Implement feature engineering methods such as - Imputation, One-hot encoding.
3. Implement Scaling methods such as Normalization, Standardization.
4. Implement pre-processing techniques such as – Binarization, mean removal, scaling.
5. Implement label Encoding for any dummy dataset.
6. Implement logistic regression classifier.
7. Implement naïve Bayes classifier.
8. Implement Support Vector machine.
9. Implement decision Trees classifier
10. Implement Random forest
11. Implement k mean algorithm for unsupervised learning.

<b>Course Code</b>	<b>ITC603</b>
<b>Course Title</b>	<b>Advance Software Engineering</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

#### Course Objective

To enable the students to understand Advance Software Engineering principles specially the principles of software testing and Project deployment in detail. By the end of this course student will be able to design both manual as well as automated software testing strategies and have command on Project testing and Containerizing software Applications

### **Unit-1 Introduction**

Introduction to software design Principles, testing misconceptions, Objectives, Debugging, Quality Assurance, management and Control and testing, Error defects and failures, Defect root causes and effects analysis, testing principles, Test Planning, monitoring, control, activities and Test Analysis, Traceability Matrix

### **Unit-2 Test Techniques**

Black-box vs. White-box Test Techniques Introduction and need, examples, - boundary value Analysis, Decision, cause Effect Graphing techniques, Decision and Branch coverages table Test Organization.

Test Estimation Techniques. Cost Estimation techniques Functional Point Analysis.

### **Unit-3 Software Reviews**

Review of SDLC Models, Reviews Techniques - Key terms, Static Testing Basics, Work Products Static Testing, Benefits of Static Testing, Static vs. Dynamic Testing, Review Process, Work Product Review Process, Roles and responsibilities in a formal review, Review Types, Applying Review Techniques, Success Factors for Reviews.

### **Unit-4 Introduction to Automation Tool**

Basic introduction to Selenium, Understanding the core concept of Browser driver classes and Webdriver Interface, running test cases in browser, basic Selenium WebDriver methods, locators in Selenium WebDriver- id, Xpath, CSS Selectors, Name, ClassName, TagName, Link Text, Identifying the Web elements using locators. Techniques to automate Web elements such as checkbox, dropdown, Synchronization in Selenium etc.

### **Unit-5 Introduction Docker & Containerizing Applications**

Introduction to Docker- Traditional Workflow vs, Industry Need, Docker Architecture and Docker Hub OS level Virtualization, Advantages, Disadvantages, DockerFiles and Container creation, Volumes and their Sharing. Docker port expose and publish.

Importing images from docker hub, Containerizing- creation, removing, operations on containers, images.

### **Course Outcomes**

1. Understanding of Testing techniques
2. Automation Testing using Selenium
3. Project Deployment and Containerizing software Applications concepts

#### **Text Books**

1. Pressman, R. S., "Software Engineering: A Practitioners Approach, 7 th edition", McGraw Hill, 2010.
2. Docker Demystified: Learn How to Develop and Deploy Applications Using Docker by Saibal Ghosh Publisher BPB Publications
3. Selenium with Java – A Beginner's Guide: Web Browser Automation for Testing using Selenium with Java by Pallavi Sharma , Publisher : BPB Publications

#### **Reference Books**

1. Sommerville, Ian, "Software Engineering", Addison-Wesley 9 th Edition, 2011.
2. Jalote Pankaj, "Software Project Management in practice", Pearson Education, New Delhi, 2002

<b>Course Code</b>	<b>ITC605</b>
<b>Course Title</b>	<b>Advance Software Engineering Lab</b>
<b>Number of Credits</b>	<b>0-0-2-1</b>

#### **Lab Objective**

To get familiarize with advanced topics of the Software engineering specially - Software Testing using selenium as open-source tool and Containerizing software applications.

#### **List of Experiments**

1. Understanding manual testing through excel
2. Understanding the core concept of Browser driver classes and Webdriver Interface
3. Run tests in Browser like - Google Chrome, Microsoft Edge
4. Getting Started with basic Selenium WebDriver methods
5. Identifying the Web elements using following Locators (with Live examples)
  - id
  - Xpath
  - Css Selectors
  - Name
  - ClassName

- TagName
- Link Text

6. Techniques to identify objects using Regular Expressions.
7. Explore functional testing using selenium.
8. Docker Installation- windows/ubuntu/EC2
9. Operations on images –
  - Pull a centos/ubuntu image from dock hub
  - Create a container for the pulled images.
10. Finding number of images, containers running on Host Machine and various relevant operations such as
  - Finding number of Processes running on host machine vs process running inside container.
  - Existing containers, renaming containers, collecting container statistics, removing container history, inspect
11. Pulling, Removing, zipping, tagging various docker images.
12. Creating a Docker image without Dockerfile
13. Practice Basic Dockerfile Directives
14. Practice Containerizing using DockerFiles

## List of Electives – 6<sup>th</sup> Semester

Course Code	ITC651
Course Title	Artificial Intelligence
Number of Credits	3-0-0-3

### Course Objective

To enable the students to understand Artificial Intelligence principles in Depth. By the end of this course, Student will be able to Implement various AI based concepts and algorithms.

### Unit – I Introduction to Artificial Intelligence

Basic concept of artificial intelligence (AI), history of AI, AI and consciousness, weak and strong AI, physical symbol ,system hypothesis, comparison of computer and human skills, practical systems based on AI, development of logic, components of AI.

### Unit -II Problem Solving Agents

Introduction to Intelligent Agents, Nature of Environment, Structure of Intelligent Agent- Reflex based agents and goal based.

Problem Solving Agents - The structure, Algorithm for Problem Solving Agent, Various examples of problem solving Agents.

### Unit -III Search Strategies

Acting Under Uncertainty, Bayes Theorem, Uninformed Search Strategies- Breadth First Search, Uniform Cost Search, and Depth First Search. Informed Search Strategies- Introduction, A\* Search Algorithm and example, HeuristicFunction -Admissibility and Consistency, Memory Bound Search Strategies. Local Search Strategies- Introduction, Simulated Annealing, Local Beam Search Algorithms, Global Search

### Unit-IV Intelligent Agents

Introduction to Game playing Agents, Alpha Beta Pruning and Move Ordering, Min Max Algorithm

Imperfect Real Time Decisions, Cutting off search, Forward pruning, and Alternate approaches for developing Artificial Intelligence based Game programs.

### **Unit – V Prolog**

Basic concept of programming languages related to artificial intelligence problems, concept of programming in Logic, basic prolog constructs, Applications of Prolog, Relations in Prolog Family Relationship in Prolog, Data Objects - Introduction, Data Objects - Atoms and Numbers, Variables, Structures, Representation of Lists. List Operations Membership, Length Calculation, Concatenation, Union of two Lists, operations on Lists such as Intersection of Two Lists. Types of Operators- Comparison, Arithmetic Operators, Structures and Matching in Prolog, Built in Predicates- Identifying Terms, Decomposing Structures, Inbuilt Mathematical Predicates

### **Text books**

1. Russel and Norvig, Artificial intelligence A Modern Approach, 2<sup>nd</sup> Edition, Pearson Printice Hall Publication, 2010

### **Reference Books**

1. Kevin Knight , Elaine Ric, Artificial Intelligence, Tata mcgraw Hill publishing house, 2017
2. Winston, Artificial Intelligence, PHI publication, 2006.



<b>Course Code</b>	<b>ITL662</b>
<b>Course Name</b>	<b>Artificial Intelligence Lab</b>
<b>Number of Credits</b>	<b>0-0-2-1</b>

### **Lab Objective**

- To get familiarize with advanced topics of the Artificial Intelligence using Prolog..

### **List of Experiments**

Implement following problems using Prolog-

1. Check if a given element is present in the List or not
2. Find total number of elements in a list
3. Check if a list is sorted or not.
4. Represents facts in Prolog
5. Implement Tower of Hanoi
6. Implement chess quiz challenge puzzle
7. Implement Water Jug problem
8. Implement A Puzzle of 8 Blocks Movement
9. Implement Monkey and Banana Problem
10. Implement Farmer Crosses River Puzzle

<b>Course Code</b>	<b>ITC691</b>
<b>Course Title</b>	Organizational Behavior
<b>Number of Credits</b>	<b>3-0-0-3</b>

## **Objectives**

- To develop an insight into the nature and meaning of Organizational Behaviour.
- To provide the learner with conceptual and theoretical foundations of Organizational Behaviour.
- To enhance learner efficacy by raising their understanding of basic concepts in Organizational Behaviour - stress, conflict, group dynamics etc.

## **Unit – I: Introduction to OB**

Definition and Nature of OB, Diversity, Ethics, Culture. Reward systems and Organizational Behaviour. Behavioural performance management: reinforcement and punishment as principles of Learning – Process of Behavioural modification.

## **UNIT-II: Theoretical Perspective**

PERSONALITY: Meaning & Definition, Determinants of Personality, Personality Traits. PERCEPTION and VISUAL COMMUNICATION: Theories of visual communication: Gestalt, Constructivism, Ecological, Semiotics, Cognitive. MOTIVATION: Theories of motivation: Herzberg's Two Factor theory, Maslow's Need Hierarchy theory.

## **UNIT-III: Dynamics of OB I**

COMMUNICATION: communication and its Types, Barriers to communication. GROUPS IN ORGANISATION: Nature, Types, Group Cohesiveness, Effective Team Building, Stress and Conflict: Meaning and types of stress.

## **Unit – IV :Dynamics of OB II**

LEADERSHIP: Leadership & management, Theories of leadership- Trait theory, Behavioural Theory, Contingency Theory, Groups Vs. Teams, Nature of groups – group dynamics.

## **Course Outcomes**

After the completion of the course the learner should be able to:

- Understand the nature and meaning of Organizational Behaviour.

- Appreciate the conceptual and theoretical foundations of Organizational Behaviour.
- Raise awareness and knowledge of basic concepts in Organizational Behaviour and their significance for groups and organization.

#### **Text books:**

1. Banerjee, Mrityunjy (1995 ). *Organization Behaviour* . Allied Publication: New Delhi.
2. Newstorn, John W and keita, Davis (1999). *Organization Behaviour*. Tata McGraw Hill: NewDelhi.
3. Pareek, Udai and Khanna, Sushama (2016). *Understanding Organizational Behaviour*. 4th ed.,Oxford University Press: New Delhi.

#### **Reference books:**

4. Etizioni, Amtai (1995). *Modern Organizations*. Prentice Hall: New Delhi.
5. Luthans, Fred (1998). *Organization Behaviour*. McGraw Hill: Boston 1998
6. Prasad, L.M (2003). *Organizational Behaviour*. S. Chand & Sons: New Delhi.
7. Robins, Stephen P . (1999). *Organization Behaviour*. Tata McGraw Hill: New Delhi.

<b>Course Code</b>	<b>ITC692</b>
<b>Course Title</b>	<b>Professional Ethics</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

#### **Course Objective**

- To enable the students to create on awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and loyalty and to appreciate the rights of others.

#### **Course Contents**

**Unit-I Human Values:** Morals, values and Ethics, Integrity, Work ethic, Service learning, Civic virtue, Respect for others, living peacefully, Caring, Sharing, Honesty, Courage, Valuing time, Cooperation, Commitment, Empathy, Self-confidence, Character, Spirituality, Introduction to Yoga and meditation for professional excellence and stress management.

**Unit-II Engineering Ethics:** Senses of ‘Engineering Ethics’, Variety of moral issues, Types of inquiry, Moral dilemmas, Moral Autonomy, Kohlberg’s theory, Gilligan’s theory, Consensus and Controversy, Models of professional roles, Theories about right action, Self-interest, Customs and Religion, Uses of Ethical Theories.

**Unit-III Engineering as Social Experimentation:** Engineering as Experimentation, Engineers as responsible Experimenters, Codes of Ethics, A Balanced Outlook on Law.

**Unit-IV Safety, Responsibilities and Rights:** Safety and Risk, Assessment of Safety and Risk, Risk Benefit Analysis and Reducing Risk, Respect for Authority, Collective Bargaining, Confidentiality, Conflicts of Interest, Occupational Crime, Professional Rights, Employee Rights, Intellectual Property Rights (IPR), Plagiarism, Discrimination.

**Unit-V Global Issues:** Multinational Corporations, Environmental Ethics, Computer Ethics, Weapons Development, Engineers as Managers, Consulting Engineers, Engineers as Expert Witnesses and Advisors, Moral Leadership, Code of Conduct, Corporate Social Responsibility.

#### **Course Outcome**

- Students will be able to apply ethics in society, discuss the ethical issues related to engineering and realise the responsibilities and rights in the society.

#### **Text Books**

1. Martin Mike W., Schinzinger Roland, "*Ethics in engineering*", Tata Mc Graw Hill, 4<sup>th</sup> Editin, 2005.
2. Govindarajan M., Natarajan S., Senthilkumar V.S., "*Engineering Ethics*", Prentice Hall of India, 2013.

<b>Course Code</b>	<b>ITC661</b>
<b>Course Name</b>	<b>Internet of Things</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

### Course Objectives

The Internet is evolving to connect people to physical things and also physical things to other physical things all in real time. It is becoming the Internet of Things (IoT). The course enables student to understand the basics of Internet of things and protocols. It introduces some of the application areas where Internet of Things can be applied. Students will learn about the middleware for Internet of Things. To understand the concepts of Web of Things

### Course content

**Unit I IOT** – What is the IoT and why is it important? Elements of an IoT ecosystem, Technology drivers, Business drivers, Trends and implications, Overview of Governance, Privacy and Security Issues.

**Unit II IOT PROTOCOLS** - Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols – Issues with IoT Standardization – Unified Data Standards – Protocols – IEEE802.15.4–BACNet Protocol– Modbus – KNX – Zigbee– Network layer – APS layer  
– Security

**Unit III IOT ARCHITECTURE** - IoT Open source architecture (OIC)- OIC Architecture & Design principles- IoT Devices and deployment models- IoTivity : An Open source IoT stack - Overview- IoTivity stack architecture- Resource model and Abstraction.

**Unit IV WEB OF THINGS** - Web of Things versus Internet of Things – Two Pillars of the Web Architecture Standardization for WoT– Platform Middleware for WoT – Unified Multitier WoT Architecture – WoT Portals and Business Intelligence

**Unit V IOT APPLICATIONS** - IoT applications for industry: Future Factory Concepts, Brownfield IoT, Smart Objects, Smart Applications. Study of existing IoT platforms /middleware, IoT- A, Hydra etc.

### Course Outcomes

- Understand the application of IoT.
- Use of Devices, Gateways and Data Management in IoT.

### Text Books

- Honbo Zhou, “The Internet of Things in the Cloud: A Middleware Perspective”, CRC Press, 2012.
- Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), “Architecting the Internet of Things”, Springer, 2011.
- David Easley and Jon Kleinberg, “Networks, Crowds, and Markets: Reasoning About a Highly Connected World”, Cambridge University Press, 2010.
- Olivier Hersent, David Boswarthick, Omar Elloumi, “The Internet of Things – Key applications and Protocols”, Wiley, 2012.

### Reference Books

- Vijay Madisetti and ArshdeepBahga, “Internet of Things (A Hands-on-Approach)”,1st Edition, VPT, 2014
- Francis daCosta, “Rethinking the Internet of Things: A Scalable Approach Connecting Everything”, 1st Edition, Apress Publications, 2013
- CunoPfister, Getting Started with the Internet of Things, O’Reilly Media, 2011, ISBN: 978-1-4493-9357-1

<b>Course Code</b>	<b>ITL661</b>
<b>Course Name</b>	<b>Internet of Things Lab</b>
<b>Number of Credits</b>	<b>0-0-2-1</b>

### **Lab Objectives**

- The lab course provides the complete description about inner working of a IOT.
- Market forecast for IoT devices with a focus on sensors

### **List of Experiments**

- Study and Install Python in Eclipse and WAP in Data Types in Python
- A program for arithmetic operation in Python
- A program Looping Statement in Python
- Study and Install IDE of Arduino and Different Types of Arduino
- Define and Explain Eclipse IoT Project.
- List and summarize few Eclipse IoT Projects.
- Sketch the architecture of IoT Toolkit and explain each entity in brief.
- Describe gateway-as-a-service deployment in IoT toolkit.
- Explain application framework and embedded software agents for IoT toolkit.
- Study and Configure Raspberry Pi.

--**Note** The Instructor may add /tune experiments, wherever he/she feels in a justified manner

### **Course Outcomes**

- To understand Python Scripting Language which is used in many IoT devices
- Ability to Understand Raspberry PI platform, that is widely used in IoT applications

## Syllabus for 7<sup>th</sup> & 8<sup>th</sup> Semester

<b>Course Code</b>	<b>ITC701/ITC801, ITL802</b>
<b>Course Name</b>	<b>Industry Internship Project/Inhouse Internship</b>
<b>Number of Credits</b>	<b>0-0-42-21</b>

Detailed Guidelines regarding Industry internship and in House are attached in Appendix -1

<b>Course Code</b>	<b>ITC702/ITC 802</b>
<b>Course Name</b>	<b>Major Project/ Major Project</b>
<b>Number of Credits</b>	<b>0-0-10-5</b>

The major project work is a major project designed and developed under the guidance faculty mentor. This could be an extension of mini project or a fresh project equivalent to its credits. This aims to perform detailed learning of latest technologies in industry/ research and implement it by the end of semester.

At the end of semester, the Major project work should have been demonstrated and work done will be evaluated.

## List of Electives

<b>Course Code</b>	<b>ITC751/ ITC851</b>
<b>Course Title</b>	<b>Soft Computing</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

This course concentrates on a sub-branch of AI, namely Computational Intelligence (CI) – the study of adaptive mechanisms to enable or facilitate intelligent behaviour in complex and changing environments. These mechanisms include those AI paradigms that exhibit an ability to learn or adapt to new situations, to generalize, abstract, discover and associate.

**Course content:**

**Unit-1 Introduction** - The Case for Imprecision, An Historical Perspective, The Utility of Fuzzy Systems, Limitations of Fuzzy Systems, Statistics and Random Processes, Uncertainty and Information, Fuzzy Sets and Membership, Chance versus Fuzziness, Sets as Points in Hypercubes Soft Computing, Fuzzy System, Genetic Algorithm, Particle Swarm optimization introduction.

**Unit-2 Fuzzy Sets** – Basic concepts of Crisp Set, Operations on Sets, Properties of sets, Fuzziness, vagueness and Inexactness, Set Membership, Features of Fuzzy sets- Normality, height, Support, Core, cardinality, Fuzzy Membership Functions like Triangular function, Trapezoidal function, Gaussian function and S- function, transformations to membership functions. Linguistic variables. Operations on Fuzzy Sets, Fuzzy relations and Operations on fuzzy Relations.

**Unit-3 Fuzzy Logic**- Fuzzy logic Basics, Fuzzy Rules- Fuzzy if-then, Fuzzy if-then else, Fuzzy Reasoning- Quantifiers, Fuzzification of Input Variables, Evaluation of Fuzzy Rules, Aggregation, Defuzzification methods- Centroid Method, Centre-of-Sum (CoS) method, Mean- of- Maxima( MoM) method, Practical implications of Fuzzy logic, fuzzy controller system, fuzzy decision support system.

**Unit-4- Genetic Algorithm** -Introduction to evolutionary algorithms, Optimization problems, Chromosome, Chromosome encoding/decoding, Selection, GA Operators - Crossover, Mutation, Genetic Algorithm (GA)- fitness function, Population, parameters, GA Convergence, Single Objective vs. Multi objective GA, The Pareto-optimal Front.

**Unit-5- Particle Swarm Optimization Introduction** -Optimization problems with single objective function, PSO with bounding velocity, constraint optimization, discrete optimization, multi-objective PSO.

**TEXT BOOKS**

- 1 Sivanandam, S. N., and S. N. Deepa., , 2007. *PRINCIPLES OF SOFT COMPUTING*. John Wiley & Sons
2. Mohan, C., 2015. *An introduction to fuzzy set theory and fuzzy logic*. MV Learning.

**REFERENCES:**

1. Engelbrecht, A.P., 2007. *Computational Intelligence: An Introduction*.
2. Davis E.Goldberg, “Genetic Algorithms: Search, Optimization and Machine Learning”, Addison Wesley, N.Y., 1989.

<b>Course Code</b>	<b>ITC761/ITC861</b>
<b>Course Title</b>	<b>Full Stack Development</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

**Course Objectives:**

This course covers all the emerging Web Technologies which are used by major private and public organization. The main objectives of the course are:



- To provide knowledge of Front-End Technologies like Advance JavaScript concepts, JQuery and React js to enable students to build user friendly websites.
- To provide the required skills and project-based experience needed for entry into web design and development careers.
- To provide knowledge of variety of strategies and tools to create well-designed websites.

#### **Course Contents:**

##### **Unit 1: React**

Introduction to React.js, Building single page applications with react, render HTML, JSX, Components, Class, Props, events, conditionals, lists, forms, router, memo, Error handling

##### **Unit 2: React Hooks**

Introduction to hook, useState, useEffect, useContext, useRef, useReducer, useCallback, useMemo, Custom Hooks

##### **Unit 3: Nodejs**

Introduction, HTTP Module, Console, File System, URL Module, NPM, Events

##### **Unit 4: Nodejs Database Access**

MySQL, MongoDB, How to create and manage a database in MongoDB, Migration of data into MongoDB, Insert, Find, Query, Sort, Delete, Drop, Update, Limit, Join

##### **Unit 5: API and Advance Concepts**

Session Management, Cookies, Authentication, Error Handling, Asynchronous Request Handling

#### **Course Outcomes:**

After completion of the course, students will be able to do the following:

- To make students ready for building full stack end applications using Nodejs, React and MongoDB.
- To understand the concept of Full stack development and API's.
- Apply different attributes to change the layout and position of elements on web pages.
- Analyse the dynamic changes and responses using advanced web concepts.

#### **Text Book:**

1. 'React JS Fundamental: Learn fundamental React JS Single Page Application with Fetching Data from API and useContext', Onesinus Saut Parulian, 2019.
2. 'React. Js Book: Learning React JavaScript Library from Scratch' by Sidelnikov, Greg., Independently Published, 2017.
3. Beginning Node.js by Basarat Syed, 2014, Apress publisher
4. Web Development with MongoDB and Node by Bruno Joseph D'mello, Mithun Satheesh, Jason Krol, 2017, Packt Publishing Limited

**Reference Books:**

<https://nodejs.org/en/>

<https://docs.mongodb.com/>

<https://www.javascript.com/>

<https://reactjs.org/>

<b>Course Code</b>	<b>ITL761/ITL861</b>
<b>Course Title</b>	<b>Full Stack Development LAB</b>
<b>Number of Credits</b>	<b>0-0-2-1</b>

**Lab Objectives:**

The lab provides a wide scope of learning & understanding of the subject and the main objectives of the lab are:

- To turn students into a Full stack developer.
- To understand the concept of Nodejs, MongoDB & React to get their first job as a Full stack developer.

- To provide the required skills and project-based experience needed for entry into web design and development careers.
- Prepare students with the strategies to crack the interviews.

#### **List of Experiments:**

1. To create React Component.
2. Implement State and Props in React.
3. Implement Hooks (useState and useEffect) in React
4. Build a single page application in React
5. How to handle form elements in React
6. Implement node.js events
7. Create Database in MySQL and implement operations on it.
8. To create and Manage database in MongoDB
9. To Fetch data from MongoDB
10. Pass UserId to frontend

#### **Lab Outcomes:**

After completion of the course, students will be able to do the following:

- To make students ready for building full stack end applications using Nodejs, React and MongoDB.
- To understand the concept of Full stack development and API's.
- Learn debugging issues and end to end testing
- Analyse the dynamic changes and responses using advanced web concepts.

<b>Course Code</b>	<b>ITL771/ITL871</b>
<b>Course Title</b>	<b>Computer Forensic</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

#### **UNIT I**

Introduction :Introduction to Cyber World, Types of cyber-attacks, Cyber Crime and Digital Fraud, Cyber-attacks and cyber security , Information warfare and cyber terrorism, Overview of Types of computer forensics i.e. Media Forensics, Network forensics (internet forensics),Machine forensic, Email forensic (e-mail tracing and investigations)

#### **UNIT II**

Under Standing Computer Investigations : Preparing a Computer Investigations, Taking a systematic approach, Understanding Data recovery workstations and software, Conducting an Investigation, Completing the case. ,

Processing Crime and Incident Response: Identifying Digital evidences, Collecting evidence, Preparing for a search, Seizing and Storing Digital evidences, Digital Hashing.

#### UNIT III

Windows and DOS systems based Investigations: File Systems, Examining File systems, Disk Encryption, Windows registry, startup tasks, Linux Boot processes and File systems, Digital signature and time stamping, cryptography, cell phone and mobile device forensics, Email investigations, Network Forensics, SQL Injections, Steganography.

#### UNIT IV

Computer Forensics Tools and Software: Helix, DTsearch, S-tools, Camouflage, Recovery of Deleted files in windows and Unix ,

#### UNIT V

Hardware forensic tools like Port scanning and vulnerability assessment tools like *Nmap* , *Netscan* etc . Password recovery e.g. Passware, Mobile forensic tools , DOS file systems and Forensic tools, Password encryption analyzer

#### Text Books:

1. Computer Forensics and Investigations, 2nd edition, Nelson, Phillips, Enfinger, Stuart , Cengage Learning 2008
2. *Incident Response & Computer Forensics*. Mandia, k., Proise, c., Pepe, m. 2<sup>nd</sup> edition. Tata-McGraw Hill, 2003.

#### Reference Books:

1. Digital Evidence and Computer Crime, 2nd Edition , Eoghan Casey , academic Press
- File System Forensic Analysis by Brian Carrier , addition Wesley
2. Windows Forensic Analysis DVD Toolkit (Book with DVD-ROM), Harlan Carvey, syngress Publication
3. EnCE: The Official EnCase Certified Examiner Study Guide, 2nd Edition , Steve Bunting , sybex Publication

<b>Course Code</b>	<b>ITC781/ITC881</b>
<b>Course Title</b>	<b>Optimization Techniques</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

#### Course Objectives

- To provide quantitative insight and understanding of fundamental methods of linear programming problems.
- To demonstrate the powerful capabilities of optimization theory to enable reducing costs, improving efficiency, optimal usage of resources and providing benefits in many other key dimensions in engineering / industry / managerial / decision making problems.
- To have flavor of both sound theoretical foundation of various methods and their actual

implementations in problems solving.

**Course outcomes:**

- Understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
- Build and solve Transportation and Assignment Models.
- Design new simple models, like: CPM, PERT to improve decision-making and develop critical thinking and objective analysis of decision problems.

**Course content:**

**Unit I-Introduction:** Hyperplane and hyper spheres, Convex sets and their properties, Convex functions, Linear Programming Problems; Formulation through examples, Basic feasible and optimal solutions, Extreme points, Graphical Method, Simplex Method, Big-M Method, Degeneracy, Duality and Dual LPP and its properties, Dual simplex Algorithm and sensitivity analysis.

**Unit II -Transportation Problem:** Mathematical formulation, basic feasible solution, North-West Corner Method, Least Cost Method, Vogel's approximation Method, Optimal solution by U-V Method, Stepping Stone Method, Degeneracy in Transportation problem.

**Unit III Assignment Problem:** mathematical formulation, solution by Hungarian Method, unbalanced problem, Traveling Salesman problem and its solution.

**Unit IV- Dynamic Programming :** Basic Concepts, Bellman's optimality principles, Dynamics programming approach in decision making problems, optimal subdivision problem.

**Unit V-Network Analysis:** PERT: Background, development, networking, estimating activity time, Determination of earliest expected and allowable times, determination of critical path, PERT cost, scheduling of a project, CPM method, Applications of these methods

**Books:**

**Text:**

1. Operations Research by V.K. Kapoor, Sultan Chand & Sons.
2. Operations Research by K.Swarup, P.K.Gupta and Man Mohan, Sultan Chand and Sons.

**References**

1. Introduction to Operations Research by F.S. Hillier and G.J. Libermann, McGraw Hill.
2. Linear Programming by V. Chvatal, W.H. Freeman publishers.
3. Mathematical Programming: Theory and Methods by S.M. Sinha, Elsevier Publications.
4. Linear programming by G. Hadley, Narosa Publishing House.
5. Operation Research: An Introduction by H. A. Taha, Prentice Hall of India.
6. Operation Research by S.D.Sharma, Kedar Nath & Co

<b>Course Code</b>	<b>ITC782/ITC882</b>
<b>Course Title</b>	<b>Research Methodology</b>
<b>Number of Credits</b>	<b>3-0-0-3</b>

**Course contents:****Unit-1 Introduction-**

Nature and Purpose of Research: Meaning of research, aim, Nature and scope of research, Prerequisites of research, Types of research: Exploratory, Descriptive and Experimental. Research Problem: Types of research problems, Characteristics of a good research problem, Hypothesis: Meaning and types of hypotheses, Research proposal or synopsis. Research Methods: Qualitative and Quantitative

**Unit-2 Data Collection and Analysis**

Types of data, Methods of data collection, Sample and Population, Sampling Techniques, Characteristics of a good sample, Tools of Data Collection: Observation method, Interview, Questionnaire, various rating scales, Characteristics of good research tools

**Unit-3- Descriptive Statistics**

Tabulation, Organization, and Tabulation and Graphical Representation of Quantitative data, Measures of Central Tendencies: Mean, Median, Mode Measures of Variability: Range, Quartile Deviation, Standard Deviation, and Coefficient of variation, Correlation analysis, regression analysis. Multiple Correlation-testing of Hypothesis-Tests based on t-P, Z and Chi-square.

**Unit-4 -Algorithm research & Report**

Algorithmic research problems, types of algorithmic research, types of solution procedure, steps of development of algorithm, steps of algorithmic research, design of experiments.

Research Report: Structure and Components of Research Report, Types of Report, Characteristics of Good Research Report, Bibliographical Entries, Research Ethics.

**Books and References**

1. Research Methodologies, R. Panneerselvam, Prentice Hall, 2007.
2. Research in Education, Best John V. and James V Kahn, Wiley eastern, 2005.
3. Elements of Educational Research, Sukhia, S.P., P.V. Mehrotra, and R.N. Mehrotra, PHI publication, 2003.
4. Methodology of Research Education, K. Setia, IEEE publication, 2004.
5. Research methodology, Methods and Techniques, Kothari, C.R., 2000.

<b>Course Code</b>	<b>ITC791/ ITC891</b>
<b>Course Title</b>	Data Analytics & Visualization
<b>Number of Credits</b>	<b>3-0-0-3</b>

**Course Objective:** To elaborate the basics of data science and provide a foundation for understanding the challenges and applications.

**Unit-I: Introduction to Data Analytics:** Sources and nature of data, classification of data (structured, semi-structured, unstructured), characteristics of data, introduction to Big Data platform, need of data analytics, evolution of analytic scalability, analytic process and tools, analysis vs reporting, modern data analytic tools, applications of data analytics.

**Data Analytics Lifecycle:** Need, key roles for successful analytic projects, various phases of data analytics lifecycle – discovery, data preparation, model planning, model building, communicating results, operationalization.

#### **Unit-II: Data Preprocessing:**

Data Cleaning and Data Integration: Missing Values, Noisy Data, Entity Identification Problem, Redundancy and Correlation Analysis, Tuple Duplication, Data Value Conflict Detection and Resolution

**Unit-III: Data Reduction and Data Transformation:** Overview of Data Reduction Strategies, Wavelet Transforms, Principal Components Analysis, Attribute Subset Selection, Regression and Log-Linear Models: Parametric Data Reduction, Histograms, Clustering, Sampling, Data Cube Aggregation, Data Transformation by Normalization, Discretization by Binning, Discretization by Histogram Analysis, Discretization by Cluster, Decision Tree, and Correlation Analyses, Concept Hierarchy Generation for Nominal Data.

**Unit-IV: Data Visualization:** Visualizing Data Distribution- Distribution Function, Histograms, Percentiles, Box Plots, Stratification, Heat Map, Correlation Statistics, ANOVA, Data Visualization Practices- Scatter plots, Faceting, Data Transformation, Visualizing Multimodal Distributions, Data Visualization Principles.

**Unit-V: Analysis Techniques:** Basic analysis techniques, Statistical hypothesis generation and testing, Chi-Square test, t-Test, Analysis of variance, Correlation analysis, Maximum likelihood test, Practice and analysis with R/Python.

**Analysis of time series:** linear systems analysis & nonlinear dynamics, rule induction, neural networks: learning and generalization, competitive learning, principal component analysis and neural networks, fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, stochastic search methods.

#### **Course Outcomes :**

1. Ability to manage, manipulate, clean, and analyze different types of data.
2. Ability to visualize data using different visualization techniques.
3. Ability to develop dashboards for real-time data sets.
4. Ability to understand data correlation, reduction, prediction, and summarization.

#### **Text Books:**

1. Jiawei Han, Micheline Kamber, Jian Pei, Data Mining Concepts and Techniques, (3rd Ed.), Morgan Kaufmann.
2. Rafael A. Irizarry, "Introduction to Data Science", CRC Press, 2019.
3. Roger D. Peng R Programming for Data Science Reference Books: Trevor Hastie Robert, Tibshirani Jerome Friedman, The Elements of Statistical Learning, Springer

## **Appendix-1**



**Indian Institute of Information Technology,  
Sonepat  
Industry Internship Project/ InHouse Internship**



**Department of Information Technology**

**This manual is intended only for use by students, TnP/ IRC members/industry mentors for planning, facilitating and implementing Internship course. It is a useful resource that provides guidelines to all stakeholders who are involved in this course**

**Introduction**

Internship is an educational endeavor at IIIT Sonepat linking holistically the industry experience with university instruction. It is an effort to enable students to develop learning in unacquainted work life situations and understand the rapidly changing needs and challenges of a professional workplace. In the present day

scenario, it bears an economic relevance to the society by creating a sound base for experiential and cooperative learning thus promoting innovation and research in the country.

The Internship course provides students with the opportunity to intern in the professional setting of a company, and help develop their abilities as a professional. Internship is a course with twenty (21) credit units and all Academic Regulations that apply to on-campus courses shall also apply to Internship. The duration of Internship is of **16 to 20** weeks and it's offered during the seventh semester after the students have completed three years of course, which consists of a judicious mix of Foundation, Skill, Perspective, Core and Elective courses. Internship is an integral part of the curriculum. The student is awarded letter grades, and the grades are included in the CGPA calculations. This ensures the minimum requirement for encouraging learning and maintaining academic rigor. Internship provides a comprehensive exposure to the professional workplace, to understand real-time industry scenarios, to learn organization structure and function, to develop personality traits, and to enhance communication and presentation skills.

## **Course Outcome**

After completion of this semester long course the student trained in his specialized area of operation

- Will be able to critically think, observe and communicate
- Will acquire the work experience through advance learning (in terms of depth, complexity and engagement) in an industrial environment
- Will be able to apply, extend and test the knowledge gained from class room experience to understand and mitigate complex issues and address real industry challenges
- Will be able to assimilate technical and administrative or managerial skills from his interactions with a variety of individuals, systems and practices

## Evaluation Scheme

Evaluation Component	Weightage	Due Date
Mid Semester Marks as Submitted through TnP	20	As Per Academic Calendar
End Sem Project Report Assessment	30	
Endsem Seminar Presentation (Departmental Review by IRC/faculty Mentor, IIIT Sonapat)	50	
TOTAL	100	

\*Midsem grading for Industry Internship will be submitted by TnP cell by following standard benchmarks/bifurcation/Performa for 20 Marks such as feedback from industry/ Mid sem report/ppt/ etc., whereas for InHouse Students it will be carried out by the IRC/faculty Mentor.

The Records of Evaluation will be submitted to Exam office (Internship Evaluation Sheet + Statement of marks (refer Annexure -1) + (one Industry Internship Report Hard bound copy for Library Purpose).

## Role and responsibility of student

- Student should be proactive in finalizing the project titles in consultation with the industry mentor.
- Once the project titles are finalized, student should immediately inform the faculty mentor of the same. Students should ensure that project title is finalized by the end of first month of commencement of Internship.
- The student should opt for **PROJECT TITLES** that are in line with the course outcomes. The project goals must have appropriate academic rigor and industry relevance. The outcomes/deliverables should be useful for the industry in terms of productivity, quality and performance.
- Students need to prepare a **MID-SEMESTER PROJECT REPORT** to be submitted electronically to TnP keeping the Industry Mentor in CC. A copy of the report should be uploaded in the **GOOGLE LINK** that will be sent to you through TnP. This report along with feedback from industry will form the basis of mid-sem evaluation along with presentation and viva-voice, if required. The format for Project Reports can be found in Appendix. The Performa for the Mid Semester is attached here.
- Students need to prepare a **FINAL ENDSEM PROJECT REPORT** to be submitted in **Hard Copy format** to Internship Review Committee(IRC) at IIIT Sonapat during their end-sem presentation. **Two Hard Bound copies** of the Internship project report should be carried by the student during the end-sem presentation. This report will form the basis of final project evaluation along with presentation and viva-voice. The format for Project Reports can be found in Appendix.

- During Internship, if a student miss a day(s) due to bad weather or illness, then he/she must inform over Email to the Industry Mentor while keeping the TnP in CC. Absence from Internship continuously for a duration not exceeding 3-days, will require the approval of the TnP cell. In such cases, the TnP will approve your leave over email by keeping the Industry Mentor in CC.
- The student will act as a bridge between the Industry Mentor and TnP/IRC/Faculty Mentor. This is only possible, if the student timely completes and meets the evaluation scheme stated above and actively engaging with all stakeholders. Always remember that attendance and promptness are expected.
- Student is expected to facilitate conversation or exchange of information between the TnP and Industry Mentor.
- TnP may make surprise visits (or calls) to Industry Mentor following proper channel; if a student does not update performing well or not sincere in his/her work.
- Any violation of Code of Conduct during the Internship program will be liable to disciplinary action from the Institute.

**Note- In case a student score Letter “F” grade in Internship course then he/she has to repeat the internship.**

## **Role and responsibility of TnP**

Following are the roles and responsibilities of the TnP

<b>Activities</b>	<b>Due Date</b>	<b>Quality Check to ensure</b>
Moderating and handholding the student in the selection of Industry and guiding regarding all guidelines/ rules of Internship with due consultation with Industry Mentor	First week of Start of Internship	To ensure that Rules are shared by student to respective faculty mentor.
Conducting Midsem Evaluation by TnP, Viva Voce, evaluating Mid-sem Project Report and submission of Midsem grading	To be completed between As per academic calendar	<ol style="list-style-type: none"> <li>1. Ensure that student submits his Midsem project report to TnP keeping Industry Mentor in CC.</li> <li>2. Submit Midsem marks and Internship completion certificate to the office IIIT as per academic calendar</li> <li>3. Submit database of Student interns across various industries/organization.</li> </ol>

Conducting Endsem Seminar, Viva Voce, evaluating Final Project Report (In presence of IRC)	As per academic calendar	Ensure that student prepares his Endsem project report as per the guidelines given in the handout and submit hardcopy to department.  Finalize all marks leading upto End-sem
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## Role and responsibility of Industry Mentor

Following are the key facilitation requirements from the Industry Mentor to successfully conduct Internship course leading to awarding grades to those students who fulfill all the requirements of the course:

Activities	Source of Information Flow	Due Date
Help extended to student during Induction to Internship	Student will directly contact the industry mentor after allocation to concerned department by company HR	1 <sup>st</sup> Week of Internship
Sharing Email ID and contact information with TnP.	Student will submit the details through a GOOGLE FORM sent to them through TnP.	2 <sup>nd</sup> week of Internship
Allocation of project title to student, the project titles should meet the course outcomes outlined above	Student will discuss with Industry Mentor and share the Project Title with TnP and CC to Faculty Mentor/IRC members.	3 <sup>rd</sup> Week of Internship
Moderating the goals and key specific objectives of the Project.	The deliverables of the Project (Improvement in Quality, Cost and Productivity) will be decided by the Industry Mentor	4 <sup>th</sup> Week of Internship
Handholding the student in preparing an action plan to achieve the deliverables	TnP and Industry Mentor will collaborate to address the specific goals of the Project and the student will <u>document</u> the action plan	4 <sup>th</sup> Week of Internship
Quick Interaction and Feedback of student	If possible, please spare some time (preferably in person) to share student feedback and his progress with the TnP	Once each during the middle and end

performance with Industry Mentor	cell during the one-to-one interaction/through electronic media.	of the Internship Period
Moderating and approving the <b><u>Final Project Report</u></b> to be submitted to the Institute	<ul style="list-style-type: none"> <li>• Please check, verify and sign the Final Project Report</li> <li>• Please guide the student to adhere to copyright violations/policies (if any) while documenting his work in the report</li> </ul>	
Taking time out to fill <b>Midsem feedback</b>	<p>The document will be personally shared by the TnP cell (either in hard or soft copy format, based on your convenience).</p> <p>Please kindly fill and return the form over TnP email.</p>	<p>Once during the middle of the Internship Period.</p> <p>Mid Term Evaluation to be done as per academic calendar</p>

## **Appendix-1: GUIDELINES FOR THE PREPARATION OF A PROJECT REPORT**

### **1.1 INTRODUCTION TO PROJECT REPORT**

A project report is one of the main components of evaluation in Internship. After the completion of a project, a student submits a report on the project carried out by him. This report is usually termed as project report. The weightage given to this component of evaluation is can be found in the evaluation scheme detailed above. This report will be scrutinized by a faculty coordinator/ IRC committee for subsequent grading.

Writing a report is no less than an art. It is a written exposition of your work, which tells about the project, methodology adopted, reporting results and discussion, testing theories and validation. Please note that it is not just some documentary evidence showcasing the quality of your work, but also an useful source of information to other fellow students and teachers alike. It is a valuable record, which is often referred to by persons working in that area. It is written to inform the reader and acquaint him/her with the results arrived at and the conclusions reached. It is therefore essential that the report is written and organized in such a manner that a reader has no difficulty in understanding it.

Here in this note we present a format with appropriate guidelines on writing a report on a Internship project. It is therefore expected that all the reports submitted by the intern students should conform to the suggested format and structure.

### **1.2 PAGE SET-UP & NUMBER OF COPIES**

The size of the report should be such that it is easy to use, handle, and preserve the report. Also, the writing should be such that a reader is able to read it with ease.

For this purpose, please note the following:

- (a) Size 9" x 11", which is called the quarto size and is usually known as the "thesis size"(A4).
- (b) Writing of the report: The report should be written or typed in double space on one side of the sheet and the pages should be numbered serially.
- (c) Margin: About 1" on all the four sides of the sheet.
- (d) No. of copies: 4 hard bound copies ( One for Industry mentor, one for student, one for Faculty Mentor and One for Departmental record)

### **1.3 CONTENTS OF PROJECT REPORT**

Apart from the top cover, the report should contain the following:

- (a) Cover page
- (b) Certificate
- (c) Joining Report
- (d) Acknowledgements
- (e) Abstract Sheet
- (f) Table of Contents

- (g) A brief introduction of the organization's business sector
- (h) Overview of the organization
- (i) Plan of your internship program
- (j) Introduction
- (k) Main Text
- (l) Outcomes
- (m) Conclusions and/or Recommendations
- (n) Appendices(if necessary)
- (o) References

We now elaborate these items in some detail.

(a) Cover page

These are the first pages of the report. It should contain the title of the report, name(s) of the author(s), name of the organization and the name of the institute. The format of these pages should adhere to the specifications. Title should not exceed 100 characters including blanks, etc.

(b) Certificate

Prescribed format of certificate to be issued by the supervisor from industry must be mandatorily part of your final project report. The template for the same is given in Appendix.

(c) Joining Report

Please see Appendix for the Joining Report Format.



(d) *Acknowledgements*

There are many persons who may have helped a student during the work carried out by him in his project.

It is one's duty to acknowledge it and thank them for their help.

Customarily, thanks are due to the following in the order given below:

- (i) Head of the organization (Director/ Dean/HoD. Etc)
- (ii) Co-ordinator of the Internship programme at the organization.
- (iii) Professional expert in charge of the project
- (iv) Faculty of the Institute
- (v) Other persons(form the organization and/or outside the organization, etc)

(e) *Abstract*

This is the third page of the report. It is one of the important pages. A reader, on going through it, should be able to know what the project is, who wrote it and under whose supervision, what has been done (in brief), how it has been done, what the main results are, etc. A format of this page is given. Student should give two extra copies of this page duly filled.

This page contains the abstract. Every report must have it. The abstract is written to allow the reader to determine what kind of information is given in the report and to point out its key features. It is never intended as a substitute for the original document, but is meant to contain sufficient information to allow the reader to ascertain his interest. The abstract should be concise. Only in unusual case should it contain more than 200 words. The nomenclatures used should be meaningful, that is, only standard terminology should be used.

(f) *Table of Contents*

The table of contents is in the same form as it is found in any book. The main divisions as well as the subdivisions should be listed together with the number of the first page on which it appears.

For example:

CONTENTS	Page no.
Introduction	5
1.1 ...	5
1.2 ...	6

*(g) A brief introduction of the organization's business sector (Note: 1 Page maximum)*

Provide an overview of the main area or business sector in which the organization falls into, i.e., telecommunications, manufacturing, financial service etc. Here you should discuss the main business sector and NOT the organization under consideration. For example, if the organization is in the telecommunication sector, then you should briefly describe all aspects of this sector in Indian context. You should NOT include an introduction of your Internship Company here as this would be covered in the next section.

*(h) Overview of the organization (Note: 3 Pages maximum)*

- Brief history
- Business size (Total number of stocks, commodities, number of employees etc)
- Product lines (list complete range of products/services)
- Competitors
- Brief summary of all departments

*(i) Plan of your internship program*

- A brief introduction of the branch/department when you performed your internship
- Start and end dates of your internship
- The names of the departments you visited and the duration of stay
- Duties and responsibilities performed (Provide a detailed description of your duties and responsibilities, describe the project you were assigned)

*(j) Background and description of the problem*

In this the problem is introduced. So, the introduction should contain the purpose of the report, sufficient background material, including literature survey to present the reader a clear picture of the work. An outline of the work should also form a part of the introduction.

The purpose of writing the introduction is to arouse the curiosity of the reader in the report. Therefore, a proper and interesting introduction should include a brief history of the topic coupled with the statement of the immediate problem, the reasons for interest in it and a discussion of the method of attack or treatment. Generally, an introduction is not more than one page. Therefore, a proper and interesting introduction should include a brief history of the topic coupled with the statement of the immediate problem, the reasons for interest in it and a discussion of the method of attack or treatment.

*(k) Main Text*

In this the work, the method of treatment and the results are presented. It may run into ***one or more than one chapters/section under different headings and sub-headings.***

It should ideally contain the following

- Assumptions made,
- Experimental work/data collection,
- The survey done, or algorithm presented
- A description of activities or programs or case studies outlined,
- The results obtained/illustrations,
- The discussion and interpretations, etc.

Significant discrepancies in results should be called to the reader's attention, even when it is admitted that no reasonable explanation can be offered.

*(l) Outcomes*

The principal outcomes as identified from the results of your analysis are to be highlighted in this section preferably in bulleted form.

*(m) Conclusions and/or Recommendations (if any)*

The conclusions and recommendations are based on the discussions and interpretations of the results obtained. It would be helpful to the reader if other possibilities pertaining to the stated conclusions and recommendations are discussed.

*(n) Appendices (if necessary)*

The contents of an appendix are essentially those that support or elaborate the matter in the main text. divert the attention of the reader from the main problem, is generally put into the Appendix. We give below some broad items, which normally form part of the appendix. These are:

- Calculation Sheets/ Lengthy derivations of mathematical formulae (if that is not the project itself)/ Supplementary details of instructions/ Flow charts/ Computer programs/ Questionnaires/ Large maps/ Nomenclature, etc.

**NOTE for CSE/IT students:** If the project itself is to make a computer program of some problem, then flow charts and the computer program have to be in the main body. One is expected to decide according to ones own needs.

*(o) References*

All the references should be given in the section called *References*. We cite below two examples of writing references.

Suppose we have to refer to a paper entitled *An Integral Equation Satisfied by the Square of Webers' Parabolic Cylindrical Function*, whose author is S.C. Mitra and which appeared in the Journal of the London Mathematical Society whose volume is 11, the year of publication 1936, and the article is published on pages 252 to 256. We shall write it as follows:

1. Mitra, S. C., “ An Integral Equation Satisfied by the Square of Webers' Parabolic Cylindrical Function” *Jour. Lond. Math. Soc.*, 11 (1936), pp. 252-256.

Suppose we have to refer to a book called *An Introduction to Linear Algebra* by Dr. V. Krishnamurty and others which was published by Affiliated East West Press Pvt. Ltd., New Delhi in the year 1976. This we shall write as:

1. Krishnamurty, V. & others, *An Introduction to Linear Algebra* Ist edition, Affiliated East West Press, New Delhi (1976).

[Specimen Outer cover]

## **A REPORT**

**ON**

**(Title of the Project in Capital Letters)**

**By**

Name (s) of the student ( s)

Enrolment/Registration No.

-----

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**Prepared in the partial fulfillment of the**  
Internship Course

**AT**

**(Station Name and Address)**



Indian Institute of information Technology, Sonapat

**(Month, Year)**

## Certificate of authenticity

This is to certify that Internship Project of \_\_\_\_\_ Name of Student \_\_\_\_\_ titled \_\_\_\_\_ Title of project \_\_\_\_\_ is an original work and that this work has not been submitted anywhere in any form. Indebtedness to other works/publications has been duly acknowledged at relevant places. The project work was carried during \_\_\_\_\_ Start date \_\_\_\_\_ to \_\_\_\_\_ End Date \_\_\_\_\_ in \_\_\_\_\_ Name of Organization \_\_\_\_\_

<b>Signature Internship IRC member/TnP officer</b>	<b>Signature of industry mentor/Supervisor</b>
<b>Name:</b>	<b>Name:</b>
<b>Designation:</b>	<b>Designation:</b>
<i>(Seal of the organization with Date)</i>	<i>(Seal of the organization with Date)</i>

# Format of Joining Report

Indian Institute of information Technology, Sonapat

## Internship

### JOINING REPORT (to be Submitted to TnP)

Date of Joining the Internship Station \_\_\_\_\_

Period of Internship	From	To	Total Months	
Student Information	Name		Roll No	Branch
	<i>Student's Signature with Date</i>			
Name and Address of the Internship Station				
Location of the Project				
Name and Designation of the Industry Guide/ Industry Mentor for the Project				

	Signature of Industry Mentor
Industry Mentor Contact No.	
Industry Mentor E-mail Address	

Sample for Mid Semester Evaluation (To be Submitted by TnP) for each student  
Please find below the rubrics for all Internship assessments. Casual attitude to deadlines, not communicating in time and no rigor in work done are the most important parameters to look for during assessment.

**MEANING OF RUBRICS FOR MIDSEM SEMINAR (Maximum: 40 Mark)**  
**MIDSEM SEMINAR: EVALUATION ( to filled by industry mentor/ Shared by TnP Cell)**

Criteria	Max marks	Inadequate Marks		Average Marks		Good Marks		Marks awarded
Background content	6	Material not clearly related to topic OR background dominated seminar	1 to 2	Material sufficient for clear understanding but not clearly presented	3 to 4	Material sufficient for clear understanding AND effectively presented	>5	
Motivation for study	4	Objective and motivation of the project are not clear or described.	<2	Major research questions and context of literature are framed but not adequate	2 to 3	Major research questions and context of literature are framed and discussed. Critical background is mastered	4	
Objectives of the work	14	Not clearly defined/Yet to be defined/No scope of project work/	5 to 6	Objectives are defined but not critical or complex in nature and not equivalent to credits of work/	6 to 10	Objectives are defined/ critical and equivalent to credits of work	10 to 14	
Milestones (Methods) identified	8	Main points of the work under discussion not identified. Only learning and training with no scope for research questions	3	Methods too brief. less complex, less significant, less exhaustive/ less imaginative and less impactful on organization	4 to 6	Interesting, exhaustive and complex methods planned, time consuming analysis, significant and impactful to organization	6 to 8	



Individual contribution & Knowledge of subject	4	Significance not mentioned or just hinted/ Does not have grasp of information/ answered only rudimentary questions	1	Significance mentioned/ answered all questions but failed to elaborate	2 to 3	Significance exceptionally well explained/ Demonstrated full knowledge/ answered all questions with elaboration	4	
Communication & presentation skills	4	Low	<2	Medium	2 to 3	High	5	
Expected Total	40		1 to 16		19 to 29		29 to 40	

(Signature of Industry Mentor)

Guidelines for Inhouse Internship

**Annexure – II**

**Code- ITL802**

## Indian Institute of Information Technology, Sonapat – Institute’s InHouse Plan Document

In House INTERNSHIP PLAN			
NAME OF THE PROGRAMME	B. TECH. (CSE/IT)		
PROGRAMME TITLE	Inhouse INTERNSHIP		
NAME OF FACULTY		DEPARTMENT	
E-MAIL		MOBILE NO.	
<b>Internship Overview</b>			
Internships are important as they help the student in developing professional aptitude, strengthen skills, and provide a greater door to opportunity.			
<b>INTERNSHIP OUTCOMES</b>			
<ul style="list-style-type: none"> <li>✓ To explore the domain of interest thoroughly.</li> <li>✓ To review the state-of-the-art methods, tools, and technologies in the chosen domain.</li> <li>✓ To formulate a problem statement for solving any real-time problem.</li> <li>✓ To learn skills required to solve the chosen problem.</li> <li>✓ To implement the proposed solution.</li> <li>✓ To compare the proposed solution with currently available solutions</li> </ul>			
<b>TEACHING AND LEARNING ACTIVITIES</b>			
<b>Week and Date</b>	<b>Discussion Objectives</b>	<b>Remarks</b>	
As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Motivation</li> <li>✓ Need of Internship</li> <li>✓ Schedule of Intern</li> <li>✓ Need of discipline and punctuality</li> <li>✓ Searching the domain of interest</li> <li>✓ Outcomes of internship</li> <li>✓ Problem formulation</li> <li>✓ Problem Objectives</li> <li>✓ Specifying the reason and relevance of solving the problem</li> <li>✓ Impact/ contribution in research after solving the problem</li> <li>✓ Tools/Framework requirement</li> <li>✓ Submitting internship plan</li> </ul>	Through online meetings, PowerPoint Presentations & discussions.	
As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Registration of program (NPTEL/ Udemy/Coursera) for learning tools/framework for solving the problems</li> <li>✓ Attending workshops</li> <li>✓ Discussion of modules in the program</li> </ul>	Through online meetings, PowerPoint Presentations & discussions.	

	<ul style="list-style-type: none"> <li>✓ Approval of internship plan</li> </ul>	
	<ul style="list-style-type: none"> <li>✓ Weekly Progress Monitoring of the following tasks:</li> <li>✓ Modules covered</li> <li>✓ Webinar attended</li> <li>✓ One research paper reading related to the application of domain</li> </ul>	Through online meetings, Power Point Presentations & Discussion.
<p style="text-align: center;"><b>MILESTONE 1</b></p> <ul style="list-style-type: none"> <li>✓ The domain is fixed.</li> <li>✓ Problem is formulated.</li> <li>✓ Internship objectives and plans of students for the next three months are approved.</li> <li>✓ Course for learning required tools/framework is registered.</li> </ul>		
As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Weekly Progress Monitoring of the following tasks:</li> <li>✓ Project Work Implementation</li> <li>✓ Number of objectives covered.</li> </ul>	Through online meetings, Power Point Presentations & Discussion.
<p style="text-align: center;"><b>MILESTONE 2</b></p> <ul style="list-style-type: none"> <li>✓ Completion of training course</li> <li>✓ Assessment of tools/framework learnt during the course with one presentation</li> <li>✓ Completion of 40% of the project</li> <li>✓ Mid Sem Presentations Completed.</li> </ul>		
As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Weekly Progress Monitoring of the following tasks:</li> <li>✓ Project Work Implementation</li> <li>✓ Number of objectives covered.</li> </ul>	Through online meetings, Power Point Presentations & Discussion.
<p style="text-align: center;"><b>MILESTONE 3</b></p> <ul style="list-style-type: none"> <li>✓ Completion of training course</li> <li>✓ Assessment of tools/framework learnt during the course</li> <li>✓ Project Work Implementation</li> </ul>		
As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Weekly Progress Monitoring of the following tasks:</li> <li>✓ Modules covered</li> <li>✓ Webinar attended</li> <li>✓ One research paper reading related to application of domain</li> </ul>	Through online meetings, Power Point Presentations & Discussion.
<p style="text-align: center;"><b>MILESTONE 4</b></p> <ul style="list-style-type: none"> <li>✓ Comparative Analysis of proposed solution with state-of-the-art methods</li> </ul>		

As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Installation of Latex</li> <li>✓ Learning to write a research paper</li> <li>✓ Organization of paper</li> <li>✓ Literature review</li> <li>✓ Writing the review</li> <li>✓ Writing of result section</li> <li>✓ Submission of first draft of the paper</li> <li>✓ Revisions of the research paper</li> <li>✓ Submission of final paper</li> </ul>	Through online meetings, Power Point Presentations & Discussion
<b>MILESTONE 5</b>		
Submission of one research paper to a journal/conference of repute		
As per Academic calendar	<ul style="list-style-type: none"> <li>✓ Submission of final report</li> <li>✓ Project Demonstration</li> <li>✓ Viva- Voce</li> </ul>	Through online meetings, Power Point Presentations & Discussion
<b>MILESTONE 6</b>		
<ul style="list-style-type: none"> <li>✓ Complete Demonstration of Project as per academic calendar</li> <li>✓ Submission of project Report</li> <li>✓ Submission of research paper</li> <li>✓ Writing one-page write-up of the learning during internship.</li> <li>✓ Final presentation and viva</li> </ul>		

#### **Assessment Criteria**

S.no	Evaluation Component	Weightage (%)	Due Date
1.	Mid Semester Evaluation	20	As Per Academic calendar
2.	End Semester Report	30	
3.	End Semester Viva/Demonstration	50	

## **Appendix-1: GUIDELINES FOR THE PREPARATION OF A INHOUSE PROJECT REPORT**

### **1.1 INTRODUCTION TO PROJECT REPORT**

A project report is one of the main components of evaluation in Internship. After the completion of a project, a student submits a report on the project carried out by him. This report is usually termed as project report. The weightage given to this component of evaluation is can be found in the evaluation scheme detailed above. This report will be scrutinized by a faculty coordinator/ IRC committee for subsequent grading. Writing a report is no less than an art. It is a written exposition of your work, which tells about the project, methodology adopted, reporting results and discussion, testing theories and validation. Please note that it is not just some documentary evidence showcasing the quality of your work, but also an useful source of information to other fellow students and teachers alike. It is a valuable record, which is often referred to by persons working in that area. It is written to inform the reader and acquaint him/her with the results arrived at and the conclusions reached. It is therefore essential that the report is written and organized in such a manner that a reader has no difficulty in understanding it. Here in this note we present a format with appropriate guidelines on writing a report on a Internship project. It is therefore expected that all the reports submitted by the intern students should conform to the suggested format and structure.

### **1.2 PAGE SET-UP & NUMBER OF COPIES**

The size of the report should be such that it is easy to use, handle, and preserve the report. Also, the writing should be such that a reader is able to read it with ease.

For this purpose, please note the following:

- (e) *Size* 9" x 11", which is called the quarto size and is usually known as the "thesis size"(A4).
- (f) *Writing of the report*: The report should be written or typed in double space on one side of the sheet and the pages should be numbered serially.
- (g) *Margin*: About 1" on all the four sides of the sheet.
- (h) *No. of copies*: 3 hard bound copies ( One for Industry mentor, one for student, one for Faculty Mentor and One for Departmental record)

### **1.3 CONTENTS OF PROJECT REPORT**

Apart from the top cover, the report should contain the following:

- (p) Cover page
- (q) Certificate
- (r) Joining Report
- (s) Acknowledgements
- (t) Abstract Sheet
- (u) Table of Contents

- (v) A brief introduction of the organization's business sector
- (w) Overview of the organization
- (x) Plan of your internship program
- (y) Introduction
- (z) Main Text
- (aa) Outcomes
- (bb) Conclusions and/or Recommendations
- (cc) Appendices(if necessary)
- (dd) References

We now elaborate these items in some detail.

*(a) Cover page*

These are the first pages of the report. It should contain the title of the report, name(s) of the author(s), name of the organization and the name of the institute. The format of these pages should adhere to the specifications. Title should not exceed 100 characters including blanks, etc.

*(b) Certificate*

Prescribed format of certificate to be issued by the supervisor from industry must be **mandatorily** part of your final project report. The template for the same is given in Appendix.

*(c) Joining Report*

Please see Appendix for the Joining Report Format.

(d) *Acknowledgements*

There are many persons who may have helped a student during the work carried out by him in his project.

It is one's duty to acknowledge it and thank them for their help.

Customarily, thanks are due to the following in the order given below:

- (vi) Head of the organization (Director/ Dean/HoD. Etc)
- (vii) Co-ordinator of the Internship programme at the organization.
- (viii) Professional expert in charge of the project
- (ix) Faculty of the Institute
- (x) Other persons(form the organization and/or outside the organization, etc)

(e) *Abstract*

This is the third page of the report. It is one of the important pages. A reader, on going through it, should be able to know what the project is, who wrote it and under whose supervision, what has been done (in brief), how it has been done, what the main results are, etc. A format of this page is given. Student should give two extra copies of this page duly filled.

This page contains the abstract. Every report must have it. The abstract is written to allow the reader to determine what kind of information is given in the report and to point out its key features. It is never intended as a substitute for the original document, but is meant to contain sufficient information to allow the reader to ascertain his interest. The abstract should be concise. Only in unusual case should it contain more than 200 words. The nomenclatures used should be meaningful, that is, only standard terminology should be used.

(f) *Table of Contents*

The table of contents is in the same form as it is found in any book. The main divisions as well as the subdivisions should be listed together with the number of the first page on which it appears.



For example:

<b>CONTENTS</b>	<b>Page no.</b>
Introduction	5
1.3 ...	5
1.4 ...	6

*(g) A brief introduction of the organization's business sector (Note: 1 Page maximum)*

Provide an overview of the main area or business sector in which the organization falls into, i.e., telecommunications, manufacturing, financial service etc. Here you should discuss the main business sector and NOT the organization under consideration. For example, if the organization is in the telecommunication sector, then you should briefly describe all aspects of this sector in Indian context. You should NOT include an introduction of your Internship Company here as this would be covered in the next section.

*(h) Overview of the organization (Note: 3 Pages maximum)*

- Brief history
- Business size (Total number of stocks, commodities, number of employees etc)
- Product lines (list complete range of products/services)
- Competitors
- Brief summary of all departments

*(i) Plan of your internship program*

- A brief introduction of the branch/department when you performed your internship
- Start and end dates of your internship
- The names of the departments you visited and the duration of stay
- Duties and responsibilities performed (Provide a detailed description of your duties and responsibilities, describe the project you were assigned)

*(j) Background and description of the problem*

In this the problem is introduced. So, the introduction should contain the purpose of the report, sufficient background material, including literature survey to present the reader a clear picture of the work. An outline of the work should also form a part of the introduction.

The purpose of writing the introduction is to arouse the curiosity of the reader in the report. Therefore, a proper and interesting introduction should include a brief history of the topic coupled with the statement of the immediate problem, the reasons for interest in it and a discussion of the method of attack or treatment. Generally, an introduction is not more than one page. Therefore, a proper and interesting introduction should include a brief history of the topic coupled with the statement of the immediate problem, the reasons for interest in it and a discussion of the method of attack or treatment.

*(k) Main Text*

In this the work, the method of treatment and the results are presented. It may run into *one or more than one chapters/section under different headings and sub-headings*.

It should ideally contain the following

- Assumptions made,
- Experimental work/data collection,
- The survey done, or algorithm presented
- A description of activities or programs or case studies outlined,
- The results obtained/illustrations,
- The discussion and interpretations, etc.

Significant discrepancies in results should be called to the reader's attention, even when it is admitted that no reasonable explanation can be offered.

(l) *Outcomes*

The principal outcomes as identified from the results of your analysis are to be highlighted in this section preferably in bulleted form.

(m) *Conclusions and/or Recommendations (if any)*

The conclusions and recommendations are based on the discussions and interpretations of the results obtained. It would be helpful to the reader if other possibilities pertaining to the stated conclusions and recommendations are discussed.

*(n) Appendices (if necessary)*

The contents of an appendix are essentially those that support or elaborate the matter in the main text. divert the attention of the reader from the main problem, is generally put into the Appendix. We give below some broad items, which normally form part of the appendix. These are:

- **Calculation Sheets/ Lengthy derivations of mathematical formulae (if that is not the project itself)/ Supplementary details of instructions/ Flow charts/ Computer programs/ Questionnaires/ Large maps/ Nomenclature, etc.**

**NOTE for CSE/IT students:** If the project itself is to make a computer program of some problem, then flow charts and the computer program have to be in the main body. One is expected to decide according to ones own needs.

*(o) References*

All the references should be given in the section called *References*. We cite below two examples of writing references.

Suppose we have to refer to a paper entitled *An Integral Equation Satisfied by the Square of Webers' Parabolic Cylindrical Function*, whose author is S.C. Mitra and which appeared in the Journal of the London Mathematical Society whose volume is 11, the year of publication 1936, and the article is published on pages 252 to 256. We shall write it as follows:

2. Mitra, S. C., “ An Integral Equation Satisfied by the Square of Webers' Parabolic Cylindrical Function” *Jour. Lond. Math. Soc.*, 11 (1936), pp. 252-256.

Suppose we have to refer to a book called *An Introduction to Linear Algebra* by Dr. V. Krishnamurty and others which was published by Affiliated East West Press Pvt. Ltd., New Delhi in the year 1976. This we shall write as:

2. Krishnamurty, V. & others, *An Introduction to Linear Algebra* Ist edition, Affiliated East West Press, New Delhi (1976).

[Specimen Outer cover]

## **A REPORT**

**ON**

**(Title of the Project in Capital Letters)**

**By**

Name of the student (s)

Enrolment/Registration No.

-----

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**Prepared in the partial fulfillment of the**  
Internship Course

**AT**

**(Station Name and Address)**



Indian Institute of information Technology, Sonapat

**(Month, Year)**

Format of Certificate

Certificate of authenticity

## CERTIFICATE

This is to certify that Internship Project of \_\_\_\_\_ Name of Student \_\_\_\_\_ titled \_\_\_\_\_ Title of project \_\_\_\_\_ is an original work and that this work has not been submitted anywhere in any form. Indebtedness to other works/publications has been duly acknowledged at relevant places. The project work was carried during \_\_\_\_\_ Start date \_\_\_\_\_ to \_\_\_\_\_ End Date \_\_\_\_\_ in \_\_\_\_\_ Name of Organization \_\_\_\_\_

Signature Mentor faculty	
Name:	
Designation:	
<i>Seal of the organization with Date)</i>	

# Format of Joining Report

Indian Institute of information Technology, Sonapat

## INHOUSE Internship JOINING REPORT

Date of Joining The Internship Station \_\_\_\_\_

Period of Internship	From	To	Total Months
Student Information	Name	Roll No	Branch
	<i>Student's Signature with Date</i>		
Name and Address of the Internship Station			
Name and Designation of the Mentor faculty for the Project			
	<i>Signature of Faculty Mentor</i>		
Faculty Mentor E-mail Address			



**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY SONEPAT**  
भारतीय सूचना प्रौद्योगिकी संस्थान सोनीपत  
(An Autonomous Institute of National Importance under Act of Parliament)  
Phone: +91 1744 233189, Email: sonepatiit@gmail.com, website: www.iiitsonepat.ac.in

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**Internship Evaluation Sheet**  
**SECTION-A**

Name of Student: - \_\_\_\_\_ Name of Company: - \_\_\_\_\_  
Roll No: \_\_\_\_\_ Project Location: - \_\_\_\_\_  
Faculty Mentor: - \_\_\_\_\_ Duration: - \_\_\_\_\_  
Project Title: - \_\_\_\_\_

---

**Contact Details of Industry Mentor** \_\_\_\_\_

**Student Signature:-** \_\_\_\_\_

### SECTION-B (To be completed by IRC/Faculty Mentor)

Please provide your assessment of the student based on your interaction/observations. Please tick the appropriate box for each parameter ( \* IRC- Institute Review Committee)

A		B(30)						C
Assessment Parameter	Mid Sem (20)	1	2	3	4	5	NA	Report/manuscript (30)
		Very Poor	Poor	Avg.	Good	Very Good	Not Accessible	
A. Understanding of the organizational situation & the need for the Project								
B. Clarity of project objective & deliverable								
C. Planning undertaken for the project								
D. Methodology used for the project								
E. Execution of the project								
F. Skills & Attitude of the Student								
Total (B)[90]{X}								
Scaled(B)[50]	Round(1.66* X )							=
A {20}+ Scaled(B)[50]+C {30}=100								=



G. Please provide the grade that you would award to the student based upon his/her performance:  
(Faculty may Map the above scale of 1 to 5 into 50 marks).

S.no	Component	Marks Obtained
1.	Mid Sem (20)	
2.	Faculty Mentor (50)	
3.	Report (30)	
4.	Total(100)	

\*Midsem grading for Industry Internship will be submitted by TnP cell by following standard benchmarks/bifurcation/Performa for 20 Marks such as feedback from industry/ Mid sem report/ppt/ etc. , whereas for InHouse Students it will be carried out by the concerned faculty mentor/IRC **The Records of Evaluation will be submitted to Exam office (Internship Evaluation Sheet + Statement of marks (refer Annexure -1) + (one Industry Internship Report Hard bound copy for Library Purpose).**

<sup>1</sup>Incomplete-I, Withdrawal-W, Grade Awaited-GA, Project-S (Satisfactory) / X (Unsatisfactory)

**Signature (Faculty Mentor)**

**Date**\_\_\_\_

**Annexure for Marks Submission for Industry Internship Project/ Inhouse internship  
Format of Marks Submission to the Exam Office**

<b>Indian Institute of Information Technology Sonapat</b>								
<b>SEMESTER- RESULT, Batch -</b>								
<b>Subject:</b>	<b>Industry Internship Project/ Inhouse internship</b>		<b>Session:</b>	<b>May/June, year</b>				
Faculty Mentor/ End Semester Viva C1 (50)								
						<b>C3(30): Report</b>		
<b>S. No</b>	<b>Roll No.</b>	<b>Name</b>	<b>Faculty Mentor// End Semester Viva C1 ( 50)</b>	<b>Mid Sem C2(20)</b>	<b>Report C3 (20)</b>	<b>Total Theory (100)</b>	<b>Grade Theory (100)</b>	<b>Remark</b>