Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS121	**Semester** Odd **(specify Odd/Even)**	**Semester** III **Session** 2022 -2023 **Month** August to December 2022
Course Name	Project Based Learning-II (Software Development Automation)		
Credits	4	**Contact Hours**	0-0-8
Faculty (Names)	**Coordinator(s)**	Dr. Vivek Kumar Singh	
	Teacher(s) (Alphabetically)	Dr. Archana Purwar, Dr. Shikha Jain, Dr. Vivek Kumar Singh	

	COURSE OUTCOMES At the completion of the course, Students will be able to	**COGNITIVE LEVELS**
C210.1	Develop a project on live problems by applying automated software development process.	Create Level (C6)
C210.2	Confront the issues related to development of project which includes team work, test driven design, data collections etc.	Analyze Level (C4)
C210.3	Develop oral communication skill and prepare technical report.	Apply Level (C3)
C210.4	Critically review the projects developed by peers.	Evaluate Level (C5)

CO-PO Mapping:

COs	PO1	PO2	PO3	PSO1	PSO2
C210.1	3	1	3	2	3
C210.2	3	1	2	2	2
C210.3	2	3	2`	2	2
C210.4	2	1	3	1	3
Avg.	3	2	3	2	3

		Lab Plan ODD 2022	
SN	**Activity**	**Details**	**Date**
1	Group Allocation and Literature Survey	a) 3 – 6 students in a batch and a maximum of 5 – 6 batches b) average CGPA of the batches should be roughly same	**1 Aug - 6 Aug**
2	Literature Survey & Problem Identification	a) Automation Problems (live problem relevant to the Indian society) b) Economic considerations c) Aim d) Scope e) Open Source Automation Building & Testing Tools: E.g.: JUnit is an open source unit testing tool for Java programming language	**8 - 13 Aug**
3	Reviews-1		**15 - 20 Aug**
4	Problem Formulation and Gantt Chart	a) Design and Implementation Constraints b) Assumptions and Dependencies c) Functional Requirements d) Non-functional Requirements	**22 – 27 Aug**
5	Reviews -2		**29 Aug-3 Sep**
6	Lab Class	Implementation, Testing and Analysis	**5 – 10 Sep**
7	Reviews -3		**19-24 Sep**
8	Lab Class	Implementation, Testing and Analysis	**26 Sep-1 Oct**
9	Mid Term Viva	a) Presentation by Students b) Viva	**3 Oct- 8 Oct**
10	Lab Class	Implementation, Testing and Analysis	**10-15 Oct**
11	Reviews -4		**17- 22 Oct**
12	Lab Class	Implementation, Testing and Analysis	**24 -29 Oct**
13	Reviews -5		**7-12 Nov**

14	Lab Class	Testing, Analysis, and Report Preparation	**14 -19 Nov**
15	Reviews -6		**21 Nov-26 Nov**
16	End Term	a) Presentation by Students b) Viva c) Report Submission d) Self-Assessment Report Submission e) Peer Evaluation	**28 Nov-3 Dec**

Evaluation Scheme:

Parameters	Marks
6-Reviews (8 Marks each)	48
Report	10
Presentation	10
Viva	16
Peer Assessment	8
Self-Assessment	8

Total Marks	**100**

ORDINANCE

3.3A **Project Based Learning**

(a) In PBL (Project Based Learning) Courses, students will learn a new subject through execution of project(s).

(b) Students will be divided into batches ranging from **3 – 6 students in a batch** and a **maximum of 5 – 6 batches** for the whole class. The students in batches will be decided by the instructor. Choice of batch formation shall not be given to the students. The **average CGPA of the batches should be roughly same** meaning thereby that each batch will consist of students with high average and low CGPA.

(c) The projects to be given shall be decided by the instructor in such a manner that it involves gaining knowledge of the subject and additionally forces students to demonstrate skill acquisition at least in the following areas:

(i) Problem solving
(ii) Team working
(iii) Communication skills (both oral and written)
(iv) Economic considerations
(v) Acquisition of knowledge in allied areas as required by the Project

The Project should preferably be a **live problem relevant to Indian society**.

(d) The instructor shall help the students in developing the project by giving hints and suggestions, but normally should refrain from giving ready-made solutions. If need be, the instructor may deliver short lectures.

(e) In order to force the students to work consistently throughout the semester, an assessment-cum-assistance session should be carried out on a fortnightly basis or more frequently, if felt necessary by the instructor.

(f) The evaluation scheme for Project Based Learning courses shall be as under:

(i) Each fortnightly assessment - 8%
(First assessment should be at the end of 3rd week from the beginning of the semester and thereafter fortnightly assessment. A total of six assessments giving a total percentage 6 x 8 = 48%) - 48%
(ii) Report at the end of the semester - 10%
(iii) Semester end presentation by the students - 10%
(iv) Viva-voce at the end of the semester - 16%
(v) Peer group evaluation (i.e. evaluation by the fellow - 8% students not belonging to the same batch)
(vi) Self-assessment by the student concerned (can be - 8% moderated by the instructor by discussing with the student concerned)

RUBRICS for Evaluation

Assessment-1	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Literature Survey	Insightful and in-depth background information is provided to illuminate the issues through inclusion of history relevant to the presentation, the "big picture" and a succinct description of the significance of the project.	Background information is provided, including references to the work of others and an explanation of why the project was undertaken, to help put the presentation in context.	Little or no background information is presented to help the audience understand the history and significance of the project.
Problem Identification	The problem has been shown (not just stated) to exist with supporting factual evidence.	The problem has stated but has weak support.	Problem has not been stated clearly and lacks supporting evidence.

Assessment-2	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Literature Survey	Existing solutions to the problem, including their good and bad points, have been stated.	Existing solutions have been stated. Additional discussion may be warranted in places.	Connection between references and what is written is not clear. Little investigation has been done.
Problem Formulation	The project's objectives are clearly stated. Motivation for pursuing the project and its relevance are clearly established. There are clear expectations of the specific outputs or deliverables for the project. A set of measurable performance requirements has been created.	The project's objectives are presented. The motivation for pursuing the project and its relevance are addressed. Expectations have been stated. Some objectives may not be measurable.	The project's objectives are missing or incomplete. There is little or no discussion of motivation or relevance. Expectations have been stated but needs clarity. Most objectives are not measurable.
Gantt Chart	A plan stating the completion date, and required resources has been presented. Gantt chart has been generated.	Some aspects of the plan have not been fully developed.	Lack of planning is evident.

Assessment-3	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Methodology	A system block diagram has been developed to assist the team in solving the design. All blocks have been broken down to a manageable level. ***For web/ mobile applications:*** Pages are attractive and consistent in style throughout the site. Site is well organized and is easily navigated from any page. Graphic elements are appropriate, of high quality, and are creatively used to enhance content.	A system block diagram has been developed to assist the team in solving the design. Not all blocks have been broken down to a manageable level. ***For web/ mobile applications:*** Pages are attractive, but not consistent in style throughout the site. Site is well organized. Graphic elements are appropriate and are of acceptable quality to enhance content.	A system block diagram has not been fully developed. Problem has not been broken down to manageable tasks and blocks. ***For web/ mobile applications:*** Pages are unattractive Site is not organized or consists of a single page. Graphic elements are not appropriate or not used, or are of such poor quality that they detract from content.
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.

Assessment-4	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.

Assessment-5	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.
Presentation	Clearly heard and polished. Attitude indicates confidence and enthusiasm and audience attention is constantly maintained. Presenters demonstrate full knowledge of the material and can explain and elaborate on expected questions.	Clearly heard but not polished. Attitude indicates confidence but not enthusiasm and audience attention are mostly maintained. Presenters have sufficient knowledge of the material to answer expected questions.	Difficult to hear and/or moments of awkwardness. Attitude indicates some lack of confidence and/or disinterest in subject and audience attention is minimally maintained. Presenters cannot answer expected questions.
Peer Evaluation	To greatest extent	To great extent	To some extent or no contribution

Assessment-6	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.

End Term Assessment	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Viva	Answers the questions to greatest extent	Answers the questions to a great extent	Answers the questions to some extent
Report	Addresses all specified content areas. Material abundantly supports the topic. All items are labelled in accordance with engineering standards and are referred to in the text. Prior work is acknowledged by referring to sources for theories, assumptions, quotations, and findings. References are in IEEE format.	Addresses most of the specified content areas. Material minimally supports the topic. Use of engineering terms and jargon with some minor exceptions, references are in IEEE format.	Addresses few of the content areas. Material does not support the topic. There is no corresponding explanatory text for included items. Little attempt is made to acknowledge the work of others. Most references that are included are inaccurate or unclear.
Presentation	Clearly heard and polished. Attitude indicates confidence and enthusiasm and audience attention is constantly maintained. Presenters demonstrate full knowledge of the material and can explain and elaborate on expected questions.	Clearly heard but not polished. Attitude indicates confidence but not enthusiasm and audience attention are mostly maintained. Presenters have sufficient knowledge of the material to answer expected questions.	Difficult to hear and/or moments of awkwardness. Attitude indicates some lack of confidence and/or disinterest in subject and audience attention is minimally maintained. Presenters cannot answer expected questions.
Peer Evaluation	To greatest extent.	To great extent.	To some extent or no contribution.

Software development automation

The automated software development process is characterized by the following characteristics:

1. **A single common code repository** is put in place. All developers place the code they write in the repository. Currently, Git is the most popular version control system. The code in the repository is the sole source of software in the project.
2. **There is the so-called "build process"** in place. The build process is a standardized method for creating

and building subsequent software copies. Every developer, tester, testing script and mechanism uses the exact same process.

3. **The build process is automated**. Obtaining the current version of the software does not require anybody to perform a large number of manual actions. In an ideal situation, the build process is another script or a piece of software, which is also versioned in the code repository. A developer downloads the latest code from the repository, starts the build process (for example by starting a script) and obtains the current state of the application. The same script should be used by all the testing tools and testing environments, as well as for building demo versions.
4. **The build process is fast**. Building the software package does not last too long. This allows for testing results and implementing fixes multiple times.
5. The team commits changes often, every day or several times per day at best. The working code is pushed to the master branch in the version control system on an ongoing basis.
6. **The testing environment should resemble the production** environment as closely as possible. In an ideal situation, it would be a direct copy of a production environment.
7. **The process of pushing software to production is automated.** In a best-case scenario, pushing new changes to production should be done by clicking a single button or running a single script.

Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS212	**Semester Odd 2022 (specify Odd/Even)**	**Semester 3rd Session** 2022 -2023 **Month from July, 2022 to Dec., 2022**
Course Name	Seminar and Term Paper		
Credits	4	**Contact Hours**	

Faculty (Names)	**Coordinator(s)**	Kavita Pandey
	Teacher(s) (Alphabetically)	Kavita Pandey

COURSE OUTCOMES		**COGNITIVE LEVELS**
C212.1	Identify the relevant research problem and its associated literature in the field of computer science.	Understand (level 2)
C212.2	Examine the research gaps by analyzing the research articles.	Analyze (level 4)
C212.3	Improve the communication and writing skills by compiling the findings in the form of report and seminar	Evaluate (level 5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	…	…	…
2.	…	…	…
3.	…	…	…
4.	…	…	…
5.	…	…	…
6.	…	…	…
7.	…	…	…
...	…	…	…
***n*.**	…	…	…
			…

Evaluation Criteria

Components	**Maximum Marks**
Day to day work prior to Midterm	20
Mid term Seminar and Report	20
Day to day work after Midterm	20
End term Seminar	20
Term Paper	20
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books,

Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	…
2.	…
3.	…
4.	…
...	…
***m*.**	…

Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS213	**Semester ODD (specify Odd/Even)**	**Semester** III **(ODD) Session** 2022 - 2023 **Month from** August,2022 to Dec., 2022
Course Name	Dissertation (NBA Code: C213)		
Credits	4	**Contact Hours**	8

Faculty (Names)	**Coordinator(s)**	Dr. Shikha Jain
	Teacher(s) (Alphabetically)	Dr. Shikha Jain

COURSE OUTCOMES		**COGNITIVE LEVELS**
C213.1	Identify and refine a research problem after critical analysis of relevant literature.	Analyze (Level-4)
C213.2	Apply appropriate research methodology to design and implement the solution of research problem	Apply (Level-3)
C213.3	Critically analyse and evaluate the proposed solution with respect to state-of-art	Evaluate (Level-5)
C213.4	Report the research findings clearly and effectively both in written and oral form while following the research ethics.	Create (Level-6)
C213.5	Demonstrate significant research contribution in relation to employability and higher studies.	Create (Level-6)

Evaluation Criteria :

Day to day work to be awarded by Supervisor - 40 Marks

End Semester Evaluation by a panel of Examiners - 50 Marks

Special Contribution, if any -10 Marks

Total **100 Marks**

COs	PO 1	PO 2	PO 3	PSO1	PSO2
C213.1	**2**		**1**	**1**	**1**
C213.2	**3**	**1**	**2**	**3**	**2**
C213.3	**2**	**2**	**3**	**3**	**2**
C213.4		**3**	**3**		**3**
C213.5		**2**	**3**		**2**
Avg.	**2**	**2**	**2**	**2**	**2**

Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS214	**Semester ODD (specify Odd/Even)**	**Semester** III **Session** 2022 -2023 **Month from** August,2022 to Dec., 2022
Course Name	Industrial Project (CSE) (NBA Code: C214)		
Credits	4	**Contact Hours**	8

Faculty (Names)	**Coordinator(s)**	Dr. Shikha Jain
	Teacher(s) (Alphabetically)	Dr.Shikha Jain

COURSE OUTCOMES		**COGNITIVE LEVELS**
C214.1	Identify the real world problems after critical analysis of existing solutions and tools in relevant industry	Analyze (Level-4)
C214.2	Apply engineering knowledge to design and implement the solution	Apply (Level-3)
C214.3	Critically analyse and evaluate the proposed solution with respect to alternatives	Evaluate (Level-5)
C214.4	Report the project findings clearly and effectively both in written and oral form in relation to employability while following the research ethics	Create (Level-6)

Evaluation Scheme

To be awarded by Supervisor from Industry
(i) Problems statements and identification of work plan - 10 Marks
(ii) Execution of work plan and progress made - 40 Marks

Total (a) : 50 Marks

To be awarded by Supervisor from JIIT
(iii) Interaction with Internal Supervisor upto mid semester - 10 Marks
(iv) Interaction with Internal Supervisor from mid to end semester - 10 Marks
(v) Report, Presentation and Viva-Voce at the end of semester - 30 Marks
by a panel of examiners consisting of Internal Supervisor,
a nominee of HoD and a nominee of Dean A & R /RID as
approved by VC

Total (b): 50 Marks
Grand Total (a+b) : 100 Marks

COs	PO 1	PO 2	PO 3	PSO1	PSO2
C213.1	**2**		**1**	**1**	**1**
C213.2	**3**	**1**	**2**	**3**	**2**
C213.3	**2**	**2**	**3**	**3**	**2**
C213.4		**3**	**3**		**3**
Avg.	**2**	**2**	**2**	**2**	**2**

Detailed Syllabus
Lecture-wise Breakup

Course Code	**19M13HS211**	Semester: Odd	Semester: M.Tech III and M.Tech Integrated X Session: 2022 -2023 Month: August 2022-January 2023
Course Name	**Constitution of India**		
Credits	2-0-0	Contact Hours	2

Faculty (Names)	Coordinator(s)	Dr. Chandrima Chaudhuri
	Teacher(s) (Alphabetically)	Dr. Chandrima Chaudhuri

COURSE OUTCOMES		**COGNITIVE LEVELS**
C202.1	Demonstrate an understanding of the historical inheritances and institutional legacies of Indian Constitution	Understand (C2)
C202.2	Assess the nature of the Indian constitution and its applicability in the study of politics in India.	Evaluate (C5)
C202.3	Assess the devolution of powers and authority of governance of the Union government and the local government.	Evaluate (C5)
C202.4	Demonstrate an understanding of the powers and functions of the Indian executive, legislature and judiciary	Understand (C2)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	History of Making of the Indian Constitution	• History • Drafting Committee-Composition & Working	2

2.	Philosophy of the India Constitution	• Preamble • Salient Features • Federalism	2
3.	Fundamental Rights and Directive Principles	• Right to Equality • Right to Freedom • Right against Exploitation • Right to Freedom of Religion • Cultural and Educational Rights • Right to Constitutional Remedies • Directive Principles of State Policy • Conflict between DPSP and FR • Fundamental Duties	5
4.	Organs of Governance	• Parliament-Composition, Qualifications & and Disqualification, Powers and Functions • Executive- President, Governor Council of Ministers • Judiciary-Appointment and Transfer of Judges, Qualifications, Power and Functions	8
5.	Local Administration	• District's Administration head: Role and Importance • Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation • Panchayati raj: Introduction, PRI: Zila Panchayat. • Elected officials and their roles, CEO Zila Panchayat: Position and role • Block level: Organizational Hierarchy (Different departments) • Village level: Role of Elected and Appointed officials • Importance of Grass root democracy	8
6.	Election Commission	• Election Commission: Role and Functioning	3
Total number of Lectures			**28**

Evaluation Criteria	
Components	**Maximum Marks**
Mid Term:	30
End Semester Examination	40
TA	30 (Attendance,Quiz, Project)
Total	**100**

Project: Projects based on the different aspects of the Indian Constitution have to be submitted by the students as a part of the project-based learning. This would help the students learn about the nitty gritty of the Constitution, their rights and duties which would later on help them not only in their work place but in their general life.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	Austin, G. (1996). *The Indian Constitution: Corner Stone of a Nation*. Oxford: Oxford University Press
2.	Bakshi, P.M.(2015). *The Constitution of India*. Delhi: Universal Law Pub. Co. Pvt. Ltd
3.	Bhuyan, D. (2016). *Constitutional Government and Democracy in India*. Cuttack:Kitab Mahal..
4.	Busi, S.N. (2016). *Dr. B. R. Ambedkar framing of Indian Constitution*. Hyderabad*:*Ava Publishers
5.	Basu, D.D. (2018). *Introduction to the Constitution of India*. Nagpur: Lexis Nexis
6.	Jayal, N.G. & Mehta, P.B. (eds.)(2010). *The Oxford Companion to Politics in India*. New Delhi: Oxford University Press.
7.	Constitution series by Rajya Sabha Television and discussion on Indian Constitution by Rajya Sabha Television

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Faculty (Names)	**Coordinator(s)**	Dr. Vivek Kumar Singh	
	Teacher(s) (Alphabetically)	Dr. Archana Purwar, Dr. Shikha Jain, Dr. Vivek Kumar Singh	

	COURSE OUTCOMES At the completion of the course, Students will be able to	**COGNITIVE LEVELS**
C210.1	Develop a project on live problems by applying automated software development process.	Create Level (C6)
C210.2	Confront the issues related to development of project which includes team work, test driven design, data collections etc.	Analyze Level (C4)
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11	Reviews -4		**17- 22 Oct**
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(c) The projects to be given shall be decided by the instructor in such a manner that it involves gaining knowledge of the subject and additionally forces students to demonstrate skill acquisition at least in the following areas:

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(ii) Team working
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(v) Acquisition of knowledge in allied areas as required by the Project

The Project should preferably be a **live problem relevant to Indian society**.

(d) The instructor shall help the students in developing the project by giving hints and suggestions, but normally should refrain from giving ready-made solutions. If need be, the instructor may deliver short lectures.

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RUBRICS for Evaluation

Assessment-1	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Literature Survey	Insightful and in-depth background information is provided to illuminate the issues through inclusion of history relevant to the presentation, the "big picture" and a succinct description of the significance of the project.	Background information is provided, including references to the work of others and an explanation of why the project was undertaken, to help put the presentation in context.	Little or no background information is presented to help the audience understand the history and significance of the project.
Problem Identification	The problem has been shown (not just stated) to exist with supporting factual evidence.	The problem has stated but has weak support.	Problem has not been stated clearly and lacks supporting evidence.

Assessment-2	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Literature Survey	Existing solutions to the problem, including their good and bad points, have been stated.	Existing solutions have been stated. Additional discussion may be warranted in places.	Connection between references and what is written is not clear. Little investigation has been done.
Problem Formulation	The project's objectives are clearly stated. Motivation for pursuing the project and its relevance are clearly established. There are clear expectations of the specific outputs or deliverables for the project. A set of measurable performance requirements has been created.	The project's objectives are presented. The motivation for pursuing the project and its relevance are addressed. Expectations have been stated. Some objectives may not be measurable.	The project's objectives are missing or incomplete. There is little or no discussion of motivation or relevance. Expectations have been stated but needs clarity. Most objectives are not measurable.
Gantt Chart	A plan stating the completion date, and required resources has been presented. Gantt chart has been generated.	Some aspects of the plan have not been fully developed.	Lack of planning is evident.

Assessment-3	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Methodology	A system block diagram has been developed to assist the team in solving the design. All blocks have been broken down to a manageable level. ***For web/ mobile applications:*** Pages are attractive and consistent in style throughout the site. Site is well organized and is easily navigated from any page. Graphic elements are appropriate, of high quality, and are creatively used to enhance content.	A system block diagram has been developed to assist the team in solving the design. Not all blocks have been broken down to a manageable level. ***For web/ mobile applications:*** Pages are attractive, but not consistent in style throughout the site. Site is well organized. Graphic elements are appropriate and are of acceptable quality to enhance content.	A system block diagram has not been fully developed. Problem has not been broken down to manageable tasks and blocks. ***For web/ mobile applications:*** Pages are unattractive Site is not organized or consists of a single page. Graphic elements are not appropriate or not used, or are of such poor quality that they detract from content.
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.

Assessment-4	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.

Assessment-5	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.
Presentation	Clearly heard and polished. Attitude indicates confidence and enthusiasm and audience attention is constantly maintained. Presenters demonstrate full knowledge of the material and can explain and elaborate on expected questions.	Clearly heard but not polished. Attitude indicates confidence but not enthusiasm and audience attention are mostly maintained. Presenters have sufficient knowledge of the material to answer expected questions.	Difficult to hear and/or moments of awkwardness. Attitude indicates some lack of confidence and/or disinterest in subject and audience attention is minimally maintained. Presenters cannot answer expected questions.
Peer Evaluation	To greatest extent	To great extent	To some extent or no contribution

Assessment-6	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Coding/ Implementation	All major points of the project were completed as per planning.	Most points of the project were completed as per planning.	Little or none of the project was completed as per planning.

End Term Assessment	Exemplary (>=80%)	Competent (>=50% & <80%)	Unsatisfactory (<50%)
Viva	Answers the questions to greatest extent	Answers the questions to a great extent	Answers the questions to some extent
Report	Addresses all specified content areas. Material abundantly supports the topic. All items are labelled in accordance with engineering standards and are referred to in the text. Prior work is acknowledged by referring to sources for theories, assumptions, quotations, and findings. References are in IEEE format.	Addresses most of the specified content areas. Material minimally supports the topic. Use of engineering terms and jargon with some minor exceptions, references are in IEEE format.	Addresses few of the content areas. Material does not support the topic. There is no corresponding explanatory text for included items. Little attempt is made to acknowledge the work of others. Most references that are included are inaccurate or unclear.
Presentation	Clearly heard and polished. Attitude indicates confidence and enthusiasm and audience attention is constantly maintained. Presenters demonstrate full knowledge of the material and can explain and elaborate on expected questions.	Clearly heard but not polished. Attitude indicates confidence but not enthusiasm and audience attention are mostly maintained. Presenters have sufficient knowledge of the material to answer expected questions.	Difficult to hear and/or moments of awkwardness. Attitude indicates some lack of confidence and/or disinterest in subject and audience attention is minimally maintained. Presenters cannot answer expected questions.
Peer Evaluation	To greatest extent.	To great extent.	To some extent or no contribution.

Software development automation

The automated software development process is characterized by the following characteristics:

1. **A single common code repository** is put in place. All developers place the code they write in the repository. Currently, Git is the most popular version control system. The code in the repository is the sole source of software in the project.
2. **There is the so-called "build process"** in place. The build process is a standardized method for creating

and building subsequent software copies. Every developer, tester, testing script and mechanism uses the exact same process.

3. **The build process is automated**. Obtaining the current version of the software does not require anybody to perform a large number of manual actions. In an ideal situation, the build process is another script or a piece of software, which is also versioned in the code repository. A developer downloads the latest code from the repository, starts the build process (for example by starting a script) and obtains the current state of the application. The same script should be used by all the testing tools and testing environments, as well as for building demo versions.
4. **The build process is fast**. Building the software package does not last too long. This allows for testing results and implementing fixes multiple times.
5. The team commits changes often, every day or several times per day at best. The working code is pushed to the master branch in the version control system on an ongoing basis.
6. **The testing environment should resemble the production** environment as closely as possible. In an ideal situation, it would be a direct copy of a production environment.
7. **The process of pushing software to production is automated.** In a best-case scenario, pushing new changes to production should be done by clicking a single button or running a single script.

Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS212	**Semester Odd 2022 (specify Odd/Even)**	**Semester 3rd Session** 2022 -2023 **Month from July, 2022 to Dec., 2022**
Course Name	Seminar and Term Paper		
Credits	4	**Contact Hours**	

Faculty (Names)	**Coordinator(s)**	Kavita Pandey
	Teacher(s) (Alphabetically)	Kavita Pandey

COURSE OUTCOMES		**COGNITIVE LEVELS**
C212.1	Identify the relevant research problem and its associated literature in the field of computer science.	Understand (level 2)
C212.2	Examine the research gaps by analyzing the research articles.	Analyze (level 4)
C212.3	Improve the communication and writing skills by compiling the findings in the form of report and seminar	Evaluate (level 5)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	…	…	…
2.	…	…	…
3.	…	…	…
4.	…	…	…
5.	…	…	…
6.	…	…	…
7.	…	…	…
...	…	…	…
***n*.**	…	…	…
			…

Evaluation Criteria

Components	**Maximum Marks**
Day to day work prior to Midterm	20
Mid term Seminar and Report	20
Day to day work after Midterm	20
End term Seminar	20
Term Paper	20
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books,

Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	…
2.	…
3.	…
4.	…
...	…
***m*.**	…

Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS213	**Semester ODD (specify Odd/Even)**	**Semester** III **(ODD) Session** 2022 - 2023 **Month from** August,2022 to Dec., 2022
Course Name	Dissertation (NBA Code: C213)		
Credits	4	**Contact Hours**	8

Faculty (Names)	**Coordinator(s)**	Dr. Shikha Jain
	Teacher(s) (Alphabetically)	Dr. Shikha Jain

COURSE OUTCOMES		**COGNITIVE LEVELS**
C213.1	Identify and refine a research problem after critical analysis of relevant literature.	Analyze (Level-4)
C213.2	Apply appropriate research methodology to design and implement the solution of research problem	Apply (Level-3)
C213.3	Critically analyse and evaluate the proposed solution with respect to state-of-art	Evaluate (Level-5)
C213.4	Report the research findings clearly and effectively both in written and oral form while following the research ethics.	Create (Level-6)
C213.5	Demonstrate significant research contribution in relation to employability and higher studies.	Create (Level-6)

Evaluation Criteria :

Day to day work to be awarded by Supervisor - 40 Marks

End Semester Evaluation by a panel of Examiners - 50 Marks

Special Contribution, if any -10 Marks

Total **100 Marks**

COs	PO 1	PO 2	PO 3	PSO1	PSO2
C213.1	**2**		**1**	**1**	**1**
C213.2	**3**	**1**	**2**	**3**	**2**
C213.3	**2**	**2**	**3**	**3**	**2**
C213.4		**3**	**3**		**3**
C213.5		**2**	**3**		**2**
Avg.	**2**	**2**	**2**	**2**	**2**

Detailed Syllabus
Lecture-wise Breakup

Course Code	17M17CS214	**Semester ODD (specify Odd/Even)**	**Semester** III **Session** 2022 -2023 **Month from** August,2022 to Dec., 2022
Course Name	Industrial Project (CSE) (NBA Code: C214)		
Credits	4	**Contact Hours**	8

Faculty (Names)	**Coordinator(s)**	Dr. Shikha Jain
	Teacher(s) (Alphabetically)	Dr.Shikha Jain

COURSE OUTCOMES		**COGNITIVE LEVELS**
C214.1	Identify the real world problems after critical analysis of existing solutions and tools in relevant industry	Analyze (Level-4)
C214.2	Apply engineering knowledge to design and implement the solution	Apply (Level-3)
C214.3	Critically analyse and evaluate the proposed solution with respect to alternatives	Evaluate (Level-5)
C214.4	Report the project findings clearly and effectively both in written and oral form in relation to employability while following the research ethics	Create (Level-6)

Evaluation Scheme

To be awarded by Supervisor from Industry
(i) Problems statements and identification of work plan - 10 Marks
(ii) Execution of work plan and progress made - 40 Marks

Total (a) : 50 Marks

To be awarded by Supervisor from JIIT
(iii) Interaction with Internal Supervisor upto mid semester - 10 Marks
(iv) Interaction with Internal Supervisor from mid to end semester - 10 Marks
(v) Report, Presentation and Viva-Voce at the end of semester - 30 Marks
by a panel of examiners consisting of Internal Supervisor,
a nominee of HoD and a nominee of Dean A & R /RID as
approved by VC

Total (b): 50 Marks
Grand Total (a+b) : 100 Marks

COs	PO 1	PO 2	PO 3	PSO1	PSO2
C213.1	**2**		**1**	**1**	**1**
C213.2	**3**	**1**	**2**	**3**	**2**
C213.3	**2**	**2**	**3**	**3**	**2**
C213.4		**3**	**3**		**3**
Avg.	**2**	**2**	**2**	**2**	**2**

Detailed Syllabus
Lecture-wise Breakup

Course Code	**19M13HS211**	Semester: Odd	Semester: M.Tech III and M.Tech Integrated X Session: 2022 -2023 Month: August 2022-January 2023
Course Name	**Constitution of India**		
Credits	2-0-0	Contact Hours	2

Faculty (Names)	Coordinator(s)	Dr. Chandrima Chaudhuri
	Teacher(s) (Alphabetically)	Dr. Chandrima Chaudhuri

COURSE OUTCOMES		**COGNITIVE LEVELS**
C202.1	Demonstrate an understanding of the historical inheritances and institutional legacies of Indian Constitution	Understand (C2)
C202.2	Assess the nature of the Indian constitution and its applicability in the study of politics in India.	Evaluate (C5)
C202.3	Assess the devolution of powers and authority of governance of the Union government and the local government.	Evaluate (C5)
C202.4	Demonstrate an understanding of the powers and functions of the Indian executive, legislature and judiciary	Understand (C2)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	History of Making of the Indian Constitution	• History • Drafting Committee-Composition & Working	2

2.	Philosophy of the India Constitution	• Preamble • Salient Features • Federalism	2
3.	Fundamental Rights and Directive Principles	• Right to Equality • Right to Freedom • Right against Exploitation • Right to Freedom of Religion • Cultural and Educational Rights • Right to Constitutional Remedies • Directive Principles of State Policy • Conflict between DPSP and FR • Fundamental Duties	5
4.	Organs of Governance	• Parliament-Composition, Qualifications & and Disqualification, Powers and Functions • Executive- President, Governor Council of Ministers • Judiciary-Appointment and Transfer of Judges, Qualifications, Power and Functions	8
5.	Local Administration	• District's Administration head: Role and Importance • Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation • Panchayati raj: Introduction, PRI: Zila Panchayat. • Elected officials and their roles, CEO Zila Panchayat: Position and role • Block level: Organizational Hierarchy (Different departments) • Village level: Role of Elected and Appointed officials • Importance of Grass root democracy	8
6.	Election Commission	• Election Commission: Role and Functioning	3
Total number of Lectures			**28**

Evaluation Criteria	
Components	**Maximum Marks**
Mid Term:	30
End Semester Examination	40
TA	30 (Attendance,Quiz, Project)
Total	**100**

Project: Projects based on the different aspects of the Indian Constitution have to be submitted by the students as a part of the project-based learning. This would help the students learn about the nitty gritty of the Constitution, their rights and duties which would later on help them not only in their work place but in their general life.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)	
1.	Austin, G. (1996). *The Indian Constitution: Corner Stone of a Nation*. Oxford: Oxford University Press
2.	Bakshi, P.M.(2015). *The Constitution of India*. Delhi: Universal Law Pub. Co. Pvt. Ltd
3.	Bhuyan, D. (2016). *Constitutional Government and Democracy in India*. Cuttack:Kitab Mahal..
4.	Busi, S.N. (2016). *Dr. B. R. Ambedkar framing of Indian Constitution*. Hyderabad*:*Ava Publishers
5.	Basu, D.D. (2018). *Introduction to the Constitution of India*. Nagpur: Lexis Nexis
6.	Jayal, N.G. & Mehta, P.B. (eds.)(2010). *The Oxford Companion to Politics in India*. New Delhi: Oxford University Press.
7.	Constitution series by Rajya Sabha Television and discussion on Indian Constitution by Rajya Sabha Television

Advanced Operations Research (18M12MA111)

Review of linear programming problems and duality, simplex method and its variants, revised simplex method, dual simplex method, parametric and sensitivity analysis, inventory, network analysis, project planning using PERT/CPM, simulation techniques, games and strategies, multi-objective programming problems, nonlinear programming problems, Kuhn-Tucker theory, convex quadratic programming, separable convex programming.

Course Description

Course Code	**18M12MA111**	**Semester Odd**	**Semester III Session** 2022-23 **Month from** Aug - Dec 2022
Course Name	Advanced Operations Research		
Credits	3	**Contact Hours**	3-0-0
Faculty (Names)	**Coordinator(s)**	Dr. Shruti	
	Teacher(s) (Alphabetically)	Dr. Shruti	

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C203.1	construct and solve linear programming problems and analyze their optimal solution using parametric and sensitivity analysis	Analyzing Level (C4)
C203.2	identify and solve the inventory models with and without shortages.	Applying Level (C3)
C203.3	construct the network diagram and analyze the critical activities using PERT/CPM for project planning.	Analyzing Level (C4)
C203.4	identify pure and mixed strategy games and solve and analyze them using graphical and linear programming techniques.	Analyzing Level (C4)
C203.5	solve multi-objective programming problems by graphical and simplex method.	Analyzing Level (C4)
C203.6	demonstrate Kuhn-Tucker conditions and apply them to solve non-linear programming problems, quadratic and separable programming problems.	Analyzing Level (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	**Review of Linear Programming Problems and Duality**	Convex sets, graphical and simplex method, artificial variable techniques, revised simplex method, duality theory, dual simplex method, revised dual simplex method.	**5**
2.	**Parametric and Sensitivity Analysis**	Sensitivity analysis, parametric linear programming, parametric sensitivity analysis.	**5**
3.	**Inventory**	Introduction, inventory models, economic order quantity (EOQ), deterministic and probabilistic inventory models, inventory control.	**7**
4.	**Network Analysis**	Network diagram, project planning using critical path method (CPM) and program evaluation	**7**

		review technique (PERT), crashing of network, simulation techniques.	
5.	**Games and Strategies**	Pure and mixed strategies, minimax (maximin) criterion of optimality, solution of various models in game theory by graphical and linear programming technique, rules of dominance.	**6**
6.	**Multi-objective Programming Problems**	Solution of multi-objective programming problems by graphical and simplex method.	**4**
7.	**Nonlinear Programming Problems**	Convex functions and their properties, Kuhn Tucker theory, convex quadratic programming, Wolfe's and Beale's algorithm, Separable convex programming.	**8**
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz, Assignments)
Total	**100**

Project based learning: Students will be divided in a group of 4-5 to conduct literature survey, case study on inventory models, project planning, multi-objective linear programming and nonlinear programming problems in real life. The students will solve the problems with the help of MATLAB and submit a detailed report and present their important outcomes also.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	**Taha, H. A.**, Operations Research - An Introduction, Tenth Edition, Pearson Education, 2017.
2.	**Rao, S. S.**, Engineering Optimization, Theory and Practice, Fourth Edition, John Wiley, 2009.
3.	**Deb**, K., Optimization for Engineering Design, Algorithms and Principles, PHI, 2010.

CO-PO and CO-PSO Mapping:

COs	**PO1**	**PO2**	**PO3**	**PSO1**
C203.1	**2**	**2**	**-**	**2**
C203.2	**3**	**3**	**-**	**2**
C203.3	**3**	**3**	**-**	**3**
C203.4	**3**	**3**	**-**	**3**
C203.5	**3**	**3**		**3**
C203.6	**3**	**3**		**3**

Advanced Operations Research (18M12MA111)

Review of linear programming problems and duality, simplex method and its variants, revised simplex method, dual simplex method, parametric and sensitivity analysis, inventory, network analysis, project planning using PERT/CPM, simulation techniques, games and strategies, multi-objective programming problems, nonlinear programming problems, Kuhn-Tucker theory, convex quadratic programming, separable convex programming.

Course Description

Course Code	**18M12MA111**	**Semester Odd**	**Semester III Session** 2022-23 **Month from** Aug - Dec 2022
Course Name	Advanced Operations Research		
Credits	3	**Contact Hours**	3-0-0
Faculty (Names)	**Coordinator(s)**	Dr. Shruti	
	Teacher(s) (Alphabetically)	Dr. Shruti	

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C203.1	construct and solve linear programming problems and analyze their optimal solution using parametric and sensitivity analysis	Analyzing Level (C4)
C203.2	identify and solve the inventory models with and without shortages.	Applying Level (C3)
C203.3	construct the network diagram and analyze the critical activities using PERT/CPM for project planning.	Analyzing Level (C4)
C203.4	identify pure and mixed strategy games and solve and analyze them using graphical and linear programming techniques.	Analyzing Level (C4)
C203.5	solve multi-objective programming problems by graphical and simplex method.	Analyzing Level (C4)
C203.6	demonstrate Kuhn-Tucker conditions and apply them to solve non-linear programming problems, quadratic and separable programming problems.	Analyzing Level (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	**Review of Linear Programming Problems and Duality**	Convex sets, graphical and simplex method, artificial variable techniques, revised simplex method, duality theory, dual simplex method, revised dual simplex method.	**5**
2.	**Parametric and Sensitivity Analysis**	Sensitivity analysis, parametric linear programming, parametric sensitivity analysis.	**5**
3.	**Inventory**	Introduction, inventory models, economic order quantity (EOQ), deterministic and probabilistic inventory models, inventory control.	**7**
4.	**Network Analysis**	Network diagram, project planning using critical path method (CPM) and program evaluation	**7**

		review technique (PERT), crashing of network, simulation techniques.	
5.	**Games and Strategies**	Pure and mixed strategies, minimax (maximin) criterion of optimality, solution of various models in game theory by graphical and linear programming technique, rules of dominance.	**6**
6.	**Multi-objective Programming Problems**	Solution of multi-objective programming problems by graphical and simplex method.	**4**
7.	**Nonlinear Programming Problems**	Convex functions and their properties, Kuhn Tucker theory, convex quadratic programming, Wolfe's and Beale's algorithm, Separable convex programming.	**8**
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz, Assignments)
Total	**100**

Project based learning: Students will be divided in a group of 4-5 to conduct literature survey, case study on inventory models, project planning, multi-objective linear programming and nonlinear programming problems in real life. The students will solve the problems with the help of MATLAB and submit a detailed report and present their important outcomes also.

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2.	**Rao, S. S.**, Engineering Optimization, Theory and Practice, Fourth Edition, John Wiley, 2009.
3.	**Deb**, K., Optimization for Engineering Design, Algorithms and Principles, PHI, 2010.

CO-PO and CO-PSO Mapping:

COs	**PO1**	**PO2**	**PO3**	**PSO1**
C203.1	**2**	**2**	**-**	**2**
C203.2	**3**	**3**	**-**	**2**
C203.3	**3**	**3**	**-**	**3**
C203.4	**3**	**3**	**-**	**3**
C203.5	**3**	**3**		**3**
C203.6	**3**	**3**		**3**