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**UNIVERSITY OF PETROLEUM & ENERGY STUDIES**

**College of Engineering Studies**

**Dehradun**

**COURSE PLAN**

Programme : B.Tech (CSE) + Big Data

Course : Agile Practices

Subject Code : CSDV3002

No. of credits : 3

Semester : VI

Session : January - May 2020

Batch : 2017 - 2021

Prepared by : Mr. Ravi Prakash

Email : rprakash@ddn.upes.ac.in

**Approved By**

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Faculty HOD

UPES Campus Tel : +91-135-2770137

“Energy Acres” Fax : +91 135- 27760904

P.O. Bidholi, Via Prem Nagar, Dehradun Website : [www.upes.ac.in](http://www.upes.ac.in)

**COURSE PLAN**

1. **PREREQUISITE:**
   1. Basic Knowledge of Software Project Management and Software Models.
   2. Good knowledge of Software Engineering Practices.

1. **PROGRAM OUTCOMES (POs) and PROGRAM SPECIFIC OUTCOMES (PSOs) for Agile Practices:**

**B1. PROGRAM OUTCOMES (POs)**

Engineering Graduates will be able to:

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering

fundamentals, and an engineering specialization to the solution of complex engineering

problems.

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

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

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

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

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

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

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

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

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

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

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

**B2. Program Specific Outcomes (PSOs)**

Computer Science Engineering with specialization in Big Data Graduates will be able to:

**B2. Program Specific Outcomes (PSOs)**

1. Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques,
2. Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms.
3. Design solutions to challenging and ever growing real world data engineering problems and examine it to uncover hidden patterns, correlations, insights and make better data driven decisions.
4. **COURSE OUTCOMES FOR Agile Practices: At the end of this course student should be able to**

On completion of this course, the students will be able to

CO1. Explore and classify various Agile practices.

CO2. Apply Agile concepts in self-organizing and create various industry based solutions.

CO3. Carry out and deploy techniques such as Scrum and Kanban.

CO4. Design and develop Scrum and Kanban solutions of higher order.

CO5. Apply different concepts defined in agile project management in order to effectively perform and provide the deliverables.

**Table: Correlation of POs and PSOs v/s COs**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PO/CO | PO  1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO  9 | PO  10 | PO  11 | PO  12 | PSO  1 | PSO  2 | PSO  3 |
| CO1 | 1 | 2 | 2 | 2 |  |  |  |  |  |  |  |  | 2 | 1 | 3 |
| CO2 | 1 | 1 | 2 |  |  |  |  |  |  |  |  |  | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 |  | 3 |  |  | 2 | 3 |  |  |  | 1 | 1 | 3 |
| CO4 | 1 | 2 | 2 |  | 2 |  |  |  | 3 |  |  |  | 1 | 1 | 3 |
| CO5 | 1 | 2 | 2 |  | 2 |  |  |  |  |  |  |  | 2 | 1 | 3 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Engineering Knowledge | Problem analysis | Design/development of solutions | Conduct investigations of complex problems | Modern tool usage | The engineer and society | Environment and sustainability | Ethics | Individual or team work | Communication | Project management and finance | Life-long Learning | Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques | Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. | Ability to understand and apply graphical tools and modeling algorithms to design Agile and Kanban |
| Course Code | Course Title | PO1 | PO2 | PO3 | PO 4 | PO 5 | PO6 | PO 7 | PO8 | PO9 | PO 10 | PO 11 | PO12 | PSO1 | PSO2 | PSO3 |
| CSDV 3002 | Agile Practices | 1 | 3 | 2 | 2 | 2 |  |  |  | 1 |  |  |  | **2** |  | **3** |

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

1. **PEDAGOGY**

* **Blackboard**
* **Presentation,**
* **Voiceover Presentation & Video lectures,**
* **NPTEL videos,**
* **YouTube videos.**

1. **COURSE COMPLETION PLAN**

|  |  |
| --- | --- |
| **Total Class room sessions** | 36 |
| **Total Quizzes** | 02 |
| **Total Tests** | 02 |
| **Total Assignments** | 02 |

One Session =60 minutes

1. **EVALUATION & GRADING**

Students will be evaluated based on the following 3 stages.

* 1. Internal Assessment - 30%

5.2 Mid-term Examination - 20%

* 1. End term Examination - 50%

**H1. INTERNAL ASSESSMENT: WEIGHTAGE – 30%**

Internal Assessment shall be done based on the following:

|  |  |  |
| --- | --- | --- |
| Sl. No. | Description | % of Weightage out of 30% |
| 1 | Class Tests and Quizzes | 40% |
| 2 | Assignments (Problems/Presentations) | 50% |
| 3 | Attendance and conduct in the class and concept diary | 10% |

**H2*. Internal Assessment Record Sheet (including Mid Term Examination marks)*** *will be displayed online at the end of semester i.e. last week of regular classroom teaching.*

**H3. CLASS TESTS/QUIZZES:** One class test based on descriptive type theoretical & numerical questions and one Quiz based on objective type questions will be held; one class test or one quiz at least ten days before the Mid Term Examination and second class test or second quiz at least ten days before the End Term Examination. Those who do not appear in test and quiz examinations shall lose their marks.

*The marks obtained by the students will be displayed on LMS a week before the start of Mid Term and End Term Examinations respectively.*

**H4. ASSIGNMENTS:** After completion of each unit or in the mid of the unit, there will be home assignments based on theory and numerical problems. Those who fail to submit the assignments by the due date shall lose their marks.

**H5. GENERAL DISCIPLINE:** Based on student’s regularity, punctuality, sincerity and behavior in the class.

*The marks obtained by the students will be displayed on LMS at the end of semester.*

**H6. MID TERM EXAMINATION: WEIGHTAGE – 20%**

Mid Term examination shall be Two Hours duration and shall be a combination ofShort and Long theory Questions.

***Date of showing Mid Term Examination Answer Sheets: Within a week after completion of mid Sem examination.***

**H7. END TERM EXAMINATION: WEIGHTAGE – 50%**

End Term Examination shall be Three Hours duration and shall be a combination of Short and Long theory/numerical Questions.

**H8. GRADING:**

The overall marks obtained at the end of the semester comprising all the above three mentioned shall be converted to a grade.

1. **DETAILED SESSION PLAN**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SESSION** | **TOPIC** | **Course Outcomes Addressed** | **Required Learning Resources**  **(including media)** | **Pedagogy/**  **Discussion(s)/ Postings** | **Assessment** |
| **[11 Sessions]** | **UNIT -1**  **Understanding Common Agile Practices in DevOps**  Automated Testing, Integrated Configuration Management, Continuous Integration, Integrated Deployment Planning, Scrum, Kanban | **CO1, CO2** |  | **Class Room** |  |
| **L1,1** | Introduction to Agile |
| **L1,2** | Agile Project Management |
| **L1,3** | Agile Method Vs Traditional Approaches |
| **L1,4** | Agile in the Organization |
| **L1,5** | Scrum and Agile |  |  |  |  |
| **L1,6** | Agile Software Development |  |  |  |
| **L1,7** | Problems in implementing Agile |  |  |  |
| **L1,8** | Agile Manifesto and Principles |  |  |  |
| **L1,9** | Agile Software Methodology |  |  |  |
| **L1,10** | Agile Basic Strategy |  |  |  |
| **L1,11** | Step by Step Agile Implementation |  |  |  |
| **[8 Sessions]** | Unit 2:  **Extreme Programming**  Designing, Testing and Refractoring | 1. Agile Project Management with Kanban-Eric Brechner  2. Agile Project Management with Scrum-Alex Campbell |  | **Assignment-I** |
| **L2,12** | Extreme Programming and Agile |  |  |  |
| **L2,13** | Areas of Extreme Programming |  |  |  |  |
| **L2,14** | Advantages of Extreme Programming |  |
| **L2,15** | Extreme Programming Roles |
| **L2,16** | Scrum and Extreme Programming |  |
| **L2,17** | Extreme Programming Tools |  |
| **L2,18** | Extreme Programming Practices |  |
| **L2,19** | Designing and Testing |  |
| **Unit 3:**  **[5 Sessions]** | **Pair Programming**  Designing , testing and Refactoring | **Test /Quiz-1** |
| **L3,20** | Adapting to Pair Programming |  | 1. Agile Project Management with Kanban-Eric Brechner  2. Agile Project Management with Scrum-Alex Campbell |  |  |
| **L3,21** | Advantages to Pair Programming |  |  |  |  |
| **L3,22** | Designing , testing |  |  |  |  |
| **L3,23** | Refactoring Pair Programming |  |  |  |  |
| **L3,24** | Fundamental Approach the Do’s and Don’ts |  |  |  |  |
| **Unit 4:**  **[4 Sessions]** | **UNIT-4:**  **Test Driven Development** | CO1,C03 |  |  | **Assignment-II** |
| **L4,25** | How much Agile is too Agile |  |  |  |  |
| **L4,26** | Agile Transformation |  |  |  |  |
| **L4,27** | Planning and execution |  |  |  |  |
| **L4,28** | Review and Retrospect |  |  |  |  |
| **Unit5*:***  **[8 Sessions]** | **Agile Marketing** | .**CO2,CO4,CO5** | 1. Agile Project Management with Kanban-Eric Brechner  2. Agile Project Management with Scrum-Alex Campbell |  | **Test/ Quiz-2** |
| **L5,29** | Adapting Agile Marketing |  |  |  |
| **L5,30** | Key Concepts with Agile Marketing |  |  |  |  |
| **L5,31** | Overcome blindness with Agile Marketing |  |  |  |  |
| **L5,32** | Examples of Agile Marketing |  |  |  |  |
| **L5,33** | Preparation and Opportunity |  |  |  |  |
| **L5,34** | Preparation and Readiness |  |  |  |  |
| **L6,35** | Benefits of Agile Marketing |  |  |  |  |
| **L6,36** | Liquid and Linked Strategy |  |  |  |

**GUIDELINES**

***Cell Phones and other Electronic Communication Devices*:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.

***E-Mail and online learning tool:*** Each student in the class should have an e-mail id and a pass word to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments preferably should be uploaded on online learning tool. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.

***Attendance:*** Students are required to have **minimum attendance of 75%** in each subject. Students with less than said percentage shall **NOT** be allowed to appear in the end semester examination.

Course outcome assessment: To assess the fulfilment of course outcomes two different approaches have been decided. Degree of fulfillment of course outcomes will be assessed in different ways through direct assessment and indirect assessment. In Direct Assessment, it is measured through quizzes, tests, assignment, Mid-term and/or End-term examinations. It is suggested that each examination is designed in such a way that it can address one or two outcomes (depending upon the course completion). Indirect assessment is done through the student survey which needs to be designed by the faculty (sample format is given below) and it shall be conducted towards the end of course completion. The evaluation of the achievement of the Course Outcomes shall be done by analyzing the inputs received through Direct and Indirect Assessments and then corrective actions suggested for further improvement.

***Passing criterion:*** Student has to secure minimum 30%/40% marks of the “highest marks in the class scored by a student in that subject (in that class/group class)” individually in both the ‘End-Semester examination’ and ‘Total Marks’ in order to pass in that paper.

* Passing Criterion for B. Tech: Minimum 30% and 40% of the highest marks in the class applicable to the students admitted before July 2015 and onwards July 2015 respectively
* Passing Criterion for M. Tech: minimum 40% of the highest marks in the class

**Sample format for Indirect Assessment of Course outcomes**

|  |
| --- |
| NAME: |
| ENROLLMENT NO: |
| SAP ID: |
| COURSE: |
| PROGRAM: |

Please rate the following aspects of course outcomes of Agile Practices.

Use the scale 1-4\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sl. No. |  | 1 | 2 | 3 | 4 |
| 1 | CO1. Explore and classify various Agile practices. |  |  |  |  |
| 2 | CO2. Apply Agile concepts in self-organizing and create various industry based solutions. |  |  |  |  |
| 3 | CO3. Carry out and deploy techniques such as Scrum and Kanban. |  |  |  |  |
| 4 | CO4. Design and develop Scrum and Kanban solutions of higher order. |  |  |  |  |
| 5 | CO5. Apply different concepts defined in agile project management in order to effectively perform and provide the deliverables. |  |  |  |  |

3

Below Average

Good

1

**\***

Very Good

Average

4

2