**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI**

**WORK INTEGRATED LEARNING PROGRAMMES**

**COURSE HANDOUT**

**Part A: Content Design**

| **Course Title** | Capstone Project |
| --- | --- |
| **Course No(s)** | PCAM ZC321 |
| **Credit Units** | 3 |
| **Course Authors** | Prof. N.L.Bhanu Murthy, Prof. Sugata Ghosal |
| **Version No** |  |
| **Date** |  |

**Course Description**

| The capstone is a culminating project which helps students to leverage the knowledge and skills that they have acquired during the study of various course modules of the PGP-AIML. It enables them to provide an optimal solution to one near real-world data science project. It is designed to encourage them to make use of various feature engineering techniques and build a wide number of models using different ML&AI techniques. The project is designed and mentored by experienced data science professionals so that student acquire first-hand experience in near real life data science project adopting best practices from the industry. |
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**Course Objectives**

| **No** | **Objective** |
| --- | --- |
| **CO1** | Provide experience in delivering solution to a near real world data science project |
| **CO2** | Enable students to apply different feature engineering techniques and build models using a variety of algorithms to solve the given data science project. |
| **CO3** | Enable students to handle technical and data related issues that are encountered in real world data science projects |

**Text Book(s) :** No prescribed text/reference books for this Capstone Project; students are advised to refer to the content of earlier courses as well as white-papers, case-studies and research papers in ML&AI.

**Delivery Model**

* There’s no specific video-lecture content tailored for this course.
* The capstone project is designed by experienced data science professionals. The project related documentation and data is provided by the SMEs of relevant industries.
* The capstone projects are mentored by the SMEs of relevant industry. For every group, there will be two mentoring sessions (each of 30 mins duration) every week wherein queries from students will also be addressed in these sessions. Apart from these meetings, students can put up their queries/questions in the Moodle (LMS) and these queries will also be answered with some lead time.
* There will be reviews/evaluations by faculty along with mentors conducted twice the project phase. The evaluation scheme is detailed in the Evaluation section.
* By default, all interactions and evaluation sessions with students happen in virtual mode—via Webex / Google Meet / Zoom etc.

| **Evaluation Component** | **Schedule** | **Marks** | **Type** |
| --- | --- | --- | --- |
| Mid Project Evaluation  Viva on understanding of the:  > Problem definition  > Domain  > Data Processing Techniques | Mid review session  (4 weeks after the start of the capstone project) | 30%  (Group – 20%)   * Presentation by group and viva * Progress of the project * Achieved objectives and accomplishments   (Individual – 10%)   * Project related viva (problems specific/ ML techniques) | Open |
| Active participation in weekly mentoring calls and weekly deliverables | Throughout the Project | 15%  (Awarded by mentors) | Open |
| Final Project Report | To be Submitted before the final viva | 15% | Open |
| Comprehensive Evaluation  Final Viva on the:  > Review of the progress  > AI-ML Modelling Pipeline & Techniques  > Validation, Visualization & Optimization Techniques  > Scalability & Model/Data Dynamics | Final review session  (8 weeks after the start of the capstone project) | 40%  (Group – 25%)   * Presentation by group and viva * Clarity of the proposed solution * Uniqueness of the solution * Reproducibility of the solution * Achieved objectives and accomplishments   (Individual – 15%)   * Individual Contribution to the project * Project related viva (problems specific/ ML techniques) | Open |

**Important Instructions**

* All team members of the Project-Group must be present during all the above evaluation sessions; absence of any team-member would entail losing of marks for the corresponding component. No makeup is entertained
* Under any circumstance, all evaluations for all students shall be completed by **20th April 2025**

**Submission Format/Guidelines**

* Ensure all Intellectual Property Rights (IPR—copyrights, trademarks, ideas/patents) of original contributors (individuals or organizations) are duly acknowledged wherever they are referenced in the report
* Plagiarism of any kind will be treated as serious violation of academic code-of-conduct and the decision of examiners will be final
* Ensure the content in your report is properly structured and readable by tech-savvy business decision makers

**Learning Outcomes**

| No | Learning Outcomes |
| --- | --- |
| LO1 | Demonstration of knowledge/skills in delivering solutions to near real life data science projects using ML&AI techniques |
| L02 | Capability to handle technical and data related issues that are encountered in real world data science projects |
| LO3 | Effective application of feature engineering techniques in the delivery of optimal solution to the data science project |