Proposal for New Course under QIP PG Certification Program

1. Course Title:

Machine Learning

2. Course Objectives:

At the end of this course, faculty will be proficient in developing Machine Learning (ML)-based approaches to solving problems in their core domain, and will be able to guide multidisciplinary ML projects for undergraduate-level students in computing disciplines. They will also be able to lead labs for introductory undergraduate-level CS courses.

3. Rationale for the Course:

[Justify the need for the course. Include why it is relevant to current trends, emerging technologies, or industry requirements. Mention any gap in existing offerings and how the course addresses these gaps.]

4. Course Structure:

Course	Content (high-level) please elaborate	Credits	Details of Resource / Resource Person
CS Core 1	**Programming With Gen AI in Python**	**3**	• **Name: Viraj Kumar** • **Designation: Visiting Professor IISc** • **Experience in Years: 18**
Domain Core	**ML Fundamentals for Core Engineers**	**2 (theory) + 2(lab)**	**Name: Debraj Ghosh Designation: Professor IISc Experience in Years: 20**
CS Core 2	**Data Science for Engineers**	**3 (theory) +1(lab)**	**NPTEL course + exam conducted by IISc**
Domain specialized	**Mentoring and Evaluating Undergraduate ML Projects**	**3**	**-do-**

Project	**Hands-on Project**	**4**	**Multiple faculty**

6. Learning Outcomes:

At the end of this course, faculty will be able to:

1. Independently develop ML-based approaches to solving problems in their core domain
2. Guide multidisciplinary ML projects for undergraduate-level students in computing disciplines
3. Lead labs for introductory undergraduate-level CS courses

9. Infrastructure and Resources available:

One course will be via NPTEL (with an in-person IISc exam), rest will be in hybrid mode.

10. Expected Outcomes of the Course:

Expected participants: 50

14. Other Relevant Information:

Faculty will gain proficiency in leveraging Gen AI to create solutions, and will develop the ability to critique AI-generated code.

Submitted by:

- **Name of the Programme coordinator:** Dr Debraj Ghosh
- **Designation:** Professor, Department of Civil Engineering
- **Institution Name:** IISc Bangalore