भारतीय प्रौद्योगिकी संस्थान
(भारतीय खनि विद्यापीठ)
धनबाद

IIT ISM

INDIAN INSTITUTE OF TECHNOLOGY
(INDIAN SCHOOL OF MINES)
DHANBAD

GPC510 - Well logging

Semester - Winter 2023; Lecture-1

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Department of Applied Geophysics
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INSTRUCTOR

- **Name:** Partha Pratim Mandal
- **HDR:** PhD, Curtin University
- **Background:** Geophysics, Rock-physics, Reservoir Geomechanics & Petroleum Engineering
- **Industry Experience:** 8+ years in oil & gas industry
- **Research Focus:** Petrophysics, Geomechanics, rock physics, CCUS, and green hydrogen
- **Interests:** Scientific adventure, STEM, mentoring, start-up development
- Visiting scientist (CSIRO), External consultant, Vice-president ASEG WA branch, ARMA social media coordinator
- Webpage: https://parthapmandal.com/

INTRODUCE YOURSELF

- **Name:**
- **Background:**
- **Interests:**
- **Motivation:**

TEACHING OUTLINE

Week 1

Tutorial 1 – Introduction, teaching overview, and assessment

Tutorial 2 – Well log definition, history, log format, types, units

Tutorial 3 – Borehole effects, environmental impacts

AGENDA

- Introduction
- Objectives
- Assessment
- Case study
- Python installation
- Reference books

INTRODUCTION

- Study of rocks – Outcrop, surface geophysics, and drilling data

OBJECTIVES

- Learn different types of well logging tools, tool design, borehole effects and application
- Aware of usability of each particular tool's function in resource characterization (hydrocarbon, mineral exploration, geothermal, groundwater, etc)

ASSESSMENT

- Group based case study work & presentation – 20 marks
- One quiz – 5 marks
- Mid semester – 30 marks
- End semester – 45 marks

CASE STUDY

- Instructor will create group with 4 members
- Do the case study and make a group presentation for 15 minutes + 5 minutes Q & A
- Schedule – 1st week of April
- Case study – Available week 2 with instruction and log data

PYTHON PACKAGE

- Installation of anaconda [https://www.anaconda.com/products/distribution]
- Pathways to start basic python learning – Software carpentry [https://software-carpentry.org/lessons/]
- Python for Everybody [https://www.py4e.com/lessons]. Complete lessons 3 to 8
- Introduction to Python in Earth Science Data Analysis – Maurizio Petrelli

REFERENCE BOOKS

- Bateman, R, M., Open Hole Log Analysis and Formation Evaluation
- Serra, O., Fundamentals of Well Log Interpretation

END OF LECTURE