Carbon Capture Utilization and Storage - A Geological Perspective
Instructor: Stephen Sonnenberg, PhD

Students will discuss carbon capture utilization and storage (CCUS) from a geologic perspective. Examples from carbon capture utilization (CCU) including enhanced oil recovery (EOR) projects will be shown. Known and proposed carbon capture storage (CCS) examples will also be covered.

Carbon Capture Utilization and Storage - An Engineering Perspective
Instructors: Christine Ehlig-Economides, PhD and Dimitrios Hatzignatiou, PhD

Participants will learn about the following topics: methane leak avoidance and CO_2 emissions capture; CO_2 estimated oil recovery (EOR); Blue hydrogen and CO_2 transport and storage; Saline aquifer storage with Monitoring, Reporting and Verification (MRV); and Economics. The location of information essential to storage asset evaluation from digital publications and online data will also be addressed.

Energy Transition for Petroleum Professionals
Instructor: D. Nathan Meehan, PhD

This course is designed for energy professionals with an understanding of oil and gas operations and activities but not necessarily any background in climate change, energy transition, life cycle analysis, or alternative fuels. The course emphasizes the role of fossil fuels in a world with increasing drivers away from such fuels.

Fundamentals of CO_2 Sequestration: Mechanisms and Processes
Instructor: Dimitrios Hatzignatiou, PhD

Primary topics of discussion during this course are as follows: the impact of CO_2 injection on storage formation rock properties, CO_2 migration within the storage formation and potential leakage outside of the storage pore space, the impact of CO_2 injection on well injectivity, and CO_2 chemical interactions with formation rock.

Geomechanics Aspects of CCS Projects
Instructors: Ewerton Araujo, PhD, Fermin Fernandez-Ibañez, PhD, and Jorge Pastor, PhD

This course provides an overview of the most critical geomechanical aspects in Carbon Capture and Sequestration (CCS). Attendees will learn about geomechanics principles, concepts, required data, and workflows as they apply to the assessment of the key geomechanics risks in CCS projects.

Geomechanics for Geothermal Projects

This course provides an overview of the most critical geomechanical aspects in Geothermal Energy. Attendees will learn about geomechanics principles, concepts, and workflows as they apply to the assessment of the key aspects in Geothermal projects. The main geomechanical risks, how they may vary from project to project, and data requirements to effectively de-risk a project are discussed as well.

Geothermal Energy
Instructors: Silviu Livescu, PhD and Birol Dindoruk, PhD

Participants will review all geothermal systems (hydrothermal, enhanced, advanced) for geothermal power generation and direct use systems, while focusing on subsurface engineering (resource characterization, resource engineering, production, data science).

Navigating CCUS - Gulf Coast Region - Workshop
Instructor: PK Pande, PE

This technical course will accelerate and elevate understanding of the landscape, foundational elements and historical context of carbon capture and sequestration in the Gulf Coast Region. Students will learn about the wide range of issues encompassing the "CCUS Maze", providing grounding on both commercial and technical aspects of sequestration during this energy transition.

Open Hole and Cased Hole Petrophysical Inputs for Carbon Capture Projects
Instructor: Robert 'Bob' Barba

Open hole and cased hole petrophysical inputs play a crucial role in carbon capture projects, especially when dealing with subsurface storage of captured carbon dioxide (CO_2) in geological formations. Students will learn about what reservoir and geomechanical properties are needed for a successful CCUS project, which open hole and cased hole measurements are available, field procedures that can be used to confirm measurements, and calculations to predict storage capacity.