



Carbon Capture & Storage (CCS) Training

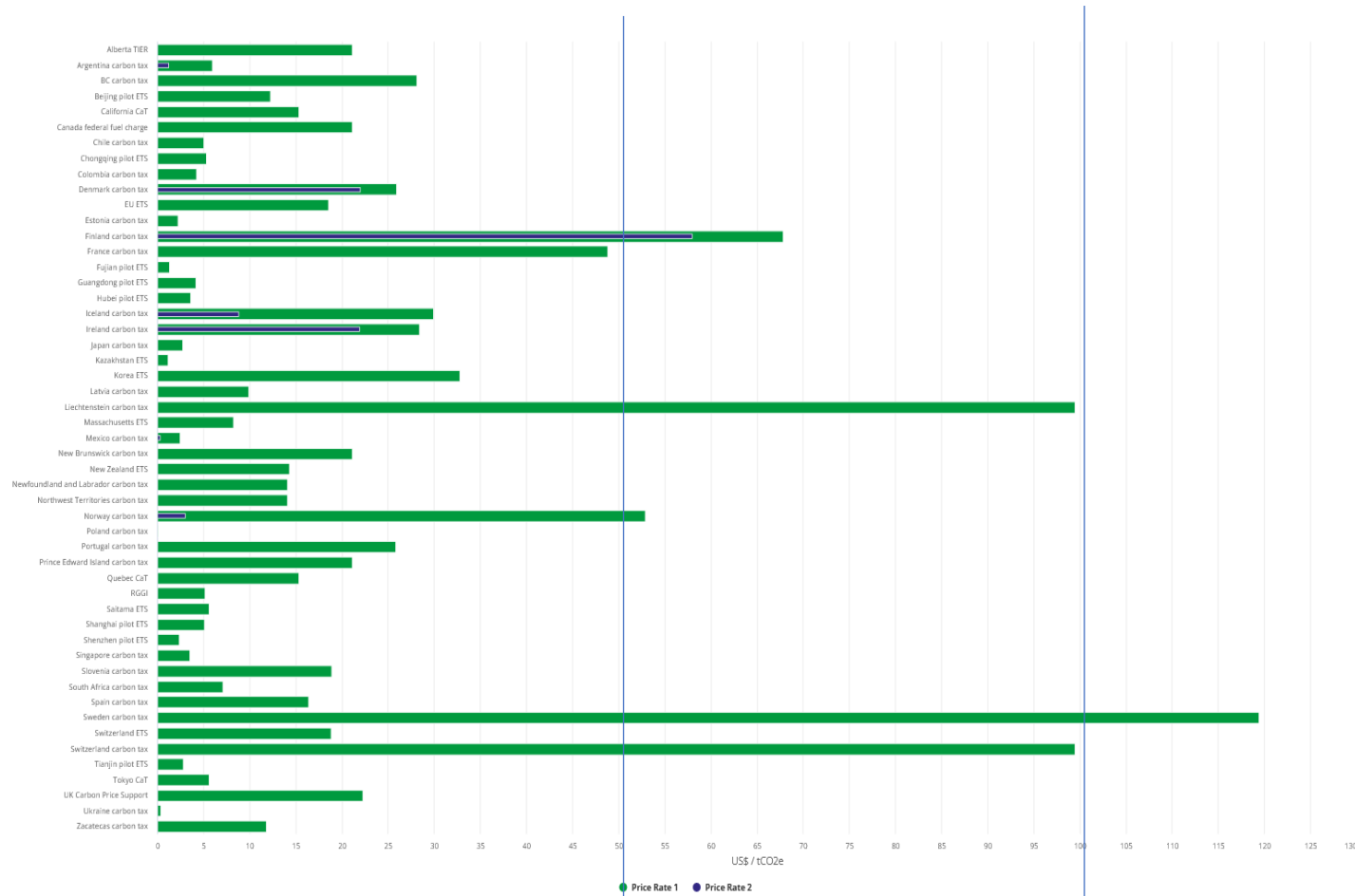
Alex Bump (alex.bump@beg.utexas.edu),

Seyyed Hosseini (seyyed.hosseini@beg.utexas.edu), and

Katherine Romanak (katherine.romanak@beg.utexas.edu)



2020 Global Carbon Prices



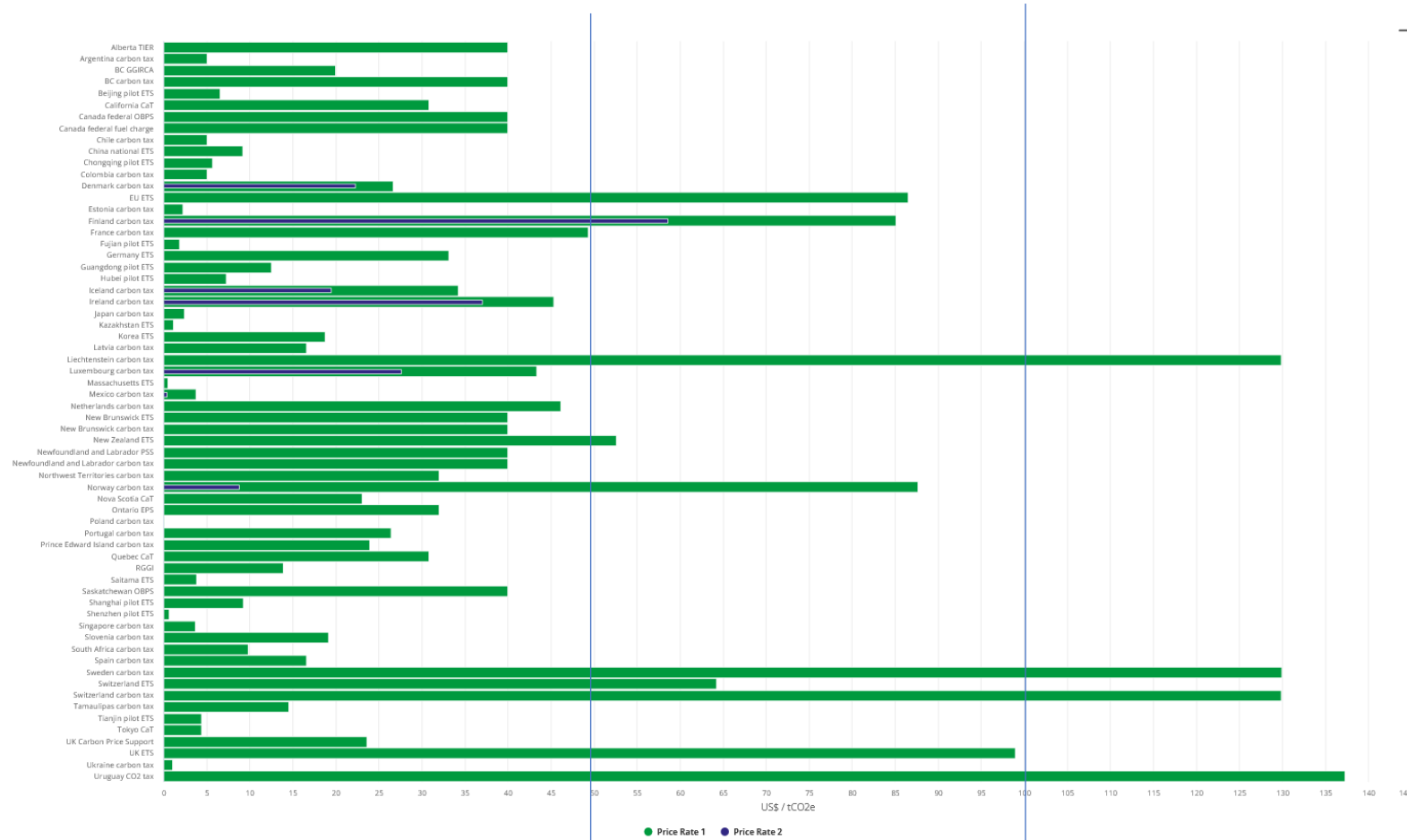
\$50/ton

\$100/ton

World Bank Carbon Pricing Dashboard



2022 Global Carbon Prices



\$50/ton

\$100/ton

World Bank Carbon Pricing Dashboard

Growing Need for New Expertise

- Climate change is ever more apparent--Rapidly growing sense of urgency
- Companies shifting expertise from exploration to new low-carbon teams
- Widespread need for new expertise—CCS is not just petroleum geology with a different fluid!
- GCCC has expertise
 - The challenge is knowledge transfer
 - The prize is the skilled workforce needed to rapidly deploy CCS at scale
- Progress
 - January 2021: outlined a vision
 - June 2021: committed to development
 - October 2021: Delivered first course
 - Now delivered 16 times!
 - Already getting requests for next year and for follow-on courses

Current Courses

For JSG students

- Graduate course, offered yearly


For Professionals

- 20 hour technical course
 - Publicly available through PetroEdge, RPS, Geologica
 - Available to sponsors at cost
 - Now delivered 15 times and continuously improved
- Modeling
- New courses
 - Subsurface characterization
 - Monitoring
 - CCS for regulators

The image displays three overlapping screenshots of course websites. The top screenshot is from RPS Training, showing a navigation bar with 'Find a Course', 'Login', and 'Register' options, and a header image with various icons representing energy and technology. The middle screenshot is from PetroEdge, featuring a course titled 'Repurposing Subsurface Petroleum Skills for Carbon Capture Utilization & Storage (CCUS) – Virtual Instructor Led Training (VILT)'. The bottom screenshot is from Geologica, showing a grid of three course cards. Each card includes a 'VIRTUAL' badge, a date range, a title, an instructor's name, a price, and a brief description of the course content. The first card is 'Geologic Carbon Storage for Geoscientists and Engineers (E551a22EUR)' by Alex Bump, Seyyed Hosseini, and Katherine Romaneik, priced at USD \$1,625.00. The second card is 'Ocean and Cryosphere Responses to a Changing Climate: Past, Present and Future (E523a22EUR)' by Chris Stokes, priced at GBP £585.00 excl VAT. The third card is 'Applied Concepts in Fractured Reservoirs with Discussions on Production, EOR, CO2 Sequestration and Geothermal Energy (V039a22USA)' by John Lorenz and Scott Cooper, priced at USD \$1,950.00. Each card has a 'REGISTER' button and a 'MORE INFO' link.

UT Course

Prospective Students JSG Community Alumni & Giving Recruiters & Companies [Q Search](#) [Make a Gift >](#)

 **TEXAS Geosciences**
The University of Texas at Austin
Jackson School of Geosciences

ABOUT RESEARCH EDUCATION PEOPLE OUTREACH NEWS EVENTS

HOME / EDUCATION / GRADUATE / COURSES & CATALOGS

Courses & Catalogs

Course Catalogs

- Graduate Catalog

Courses

Course #	Course Name	Syllabus	Semester
GEO 380C	Advanced Structural Geology		Fall
GEO 391	Advanced Field Geology		Spring
GEO 391	Advances in Unconventional Shale Gas Reserves		Fall
GEO 391	Advanced CO2 Injection and Storage of Geological Forms		Fall
GEO 391	Applied Karst Hydrogeology	Syllabus	Spring
GEO 391	Climate Change: Current Lit	Syllabus	Fall

Education

[Undergraduate](#)

[Graduate](#)

- Advising
- Admissions
- Degrees Offered
- EER Graduate Program
- Find a Supervisor
- Financial Support
- Courses & Catalogs
- External Grants & Scholarships
- Graduate Studies Committee

[Advising & Program Coordination](#)

- Target audience: Grad students and upper-level undergrads
- Project-based course—Characterizing a site, predicting performance, writing permit
- Instructors: Dana Thomas (EER), Alex, Sahar, Hailun, Tip, Sue


Training for Subsurface Professionals

- Title: Repurposing Subsurface Petroleum Skills for CCUS
- Instructor(s): Alex Bump / Seyyed Hossieni / Katherine Romanak
- Virtual Course: 5 half Days, 4 hours each
- Competence Level: Skilled
- Delivery: online
- Format: Mix of lecture, discussion, questions, exercises and break-outs with occasional computer use
- Designed to promote engagement and retention
- Flexible to accommodate different platforms, audiences, different abilities to run software, etc


petroEDGE®
Fuel Your Talent


REPURPOSING SUBSURFACE PETROLEUM SKILLS FOR CARBON CAPTURE UTILIZATION & STORAGE (CCUS)


15 – 19 NOVEMBER 2021 | VIRTUAL INSTRUCTOR LED TRAINING (VILT)



Conducted by your Expert VILT Instructors:

 Dr Alexander Bump is a geologist with broad experience in both CCUS and in the petroleum industry. He has held a variety of exploration roles over 16 years with BP, including Advisor in Structural Geology and Head of Discipline for Exploration Structure and Tectonics.

 Dr Seyyed A. Hosseini has a PhD in Petroleum Engineering from University of Tulsa, Oklahoma. He currently holds the Research Scientist position at Gulf Coast Carbon Center (GCCC), The Bureau of Economic Geology, The University of Texas at Austin working on various topics related to multiphase fluid flow in porous media.

 Dr Katherine Romanak is a geochemist who has developed and implemented environmental monitoring programs at several large-scale U.S. Department of Energy CCUS project sites. She led a response team of scientists to assess alleged leakage at the Kerr Farm near the Weyburn CO2 Storage project in Canada.

Online Course in Development

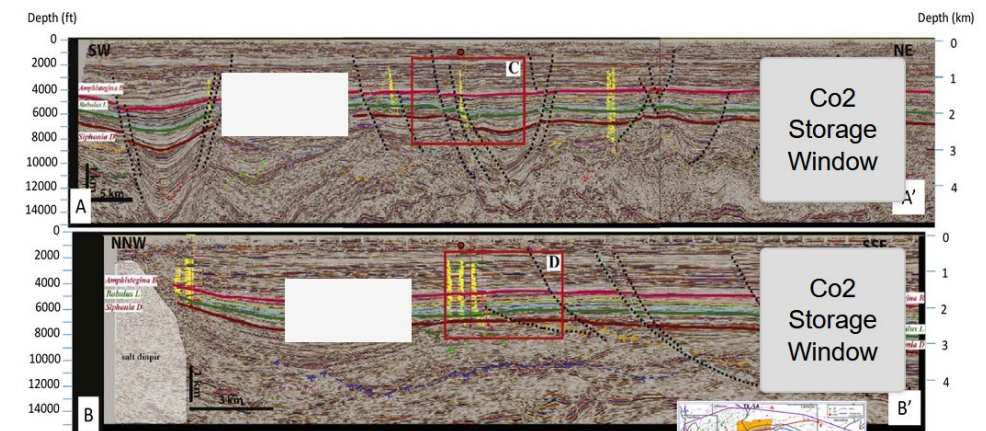
- Development funded by the JSG
- Working with UT Extended Campus
- Stand-alone, available anytime, anywhere
- Short, interactive modules
- Multi-modal delivery
- Customizable for different audiences
- Modest fee for base course; certificate and/or personal interaction available for extra fee
- Broadens our reach and frees us to focus on research and higher-value interaction
- Expect to be operational early next year

Instructional Diagrams

H5P allows for the presentation of simple statistical data graphically with charts. Certain media types can be embedded and interactive presentations, books, and videos can be added to courses.

Drag and Drop Instructional Diagram

Site 1: Saline Storage Offshore Texas



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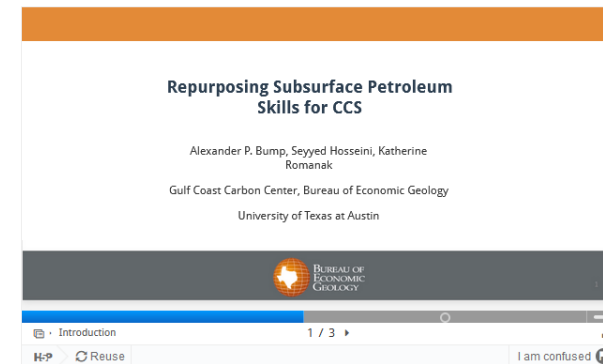
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Interactive Presentations

Course presentations consist of slides with multimedia, text, and many different types of interactions like interactive summaries, multiple choice questions, and interactive videos. Learners can experience new interactive learning material and test their knowledge and memory in Course Presentations.

Interactive Presentation Examples



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Interactive Presentations

Course and interactive presentations

H5P Quick Check Example

Choose the correct answer from the options below.



Who is the founder, executive chairman and former president and CEO of Amazon. 

Jeff Bezos

MacKenzie Scott

Elon Musk

Bill Gates

H5P  Reuse I am confused 

For a full list of H5P object types, visit the [Course Add-Ons module of this course](#).

Click next to find out how the same question would function as a Canvas quiz.

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Course
and int

H5P Quick Check Example

Project-based Activities

There are many ways that Canvas can be integrated within project-based learning for students. The following image starts with the **Key Knowledge, Understanding, & Success Skills** logo in the center. These are essential project design elements of gold standard project-based learning and was created by the [Buck Institute](#). Each item will be explained in more detail below.

Challenging Problem or Question

- Page with driving questions and project details
- Calendar for soft and hard deadlines

Public Product

- Assignment submissions can be downloaded by instructor
- Potential for digital badging
- Potential for [ePortfolios](#)

Critique and Revision

- Peer reviews
- Discussions
- Quizzes/surveys

Reflection

- Peer reviews
- Discussions

Student Voice and Choice

- Flexible content for learning and research
- Assignments

Sustained Inquiry

- Page or collaborative document that students can edit and continually add questions and answers
- Discussions where both instructors and students can pose and answer questions

Gold Standard PBL

Seven Essential Project Design Elements



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Interactive Presentations

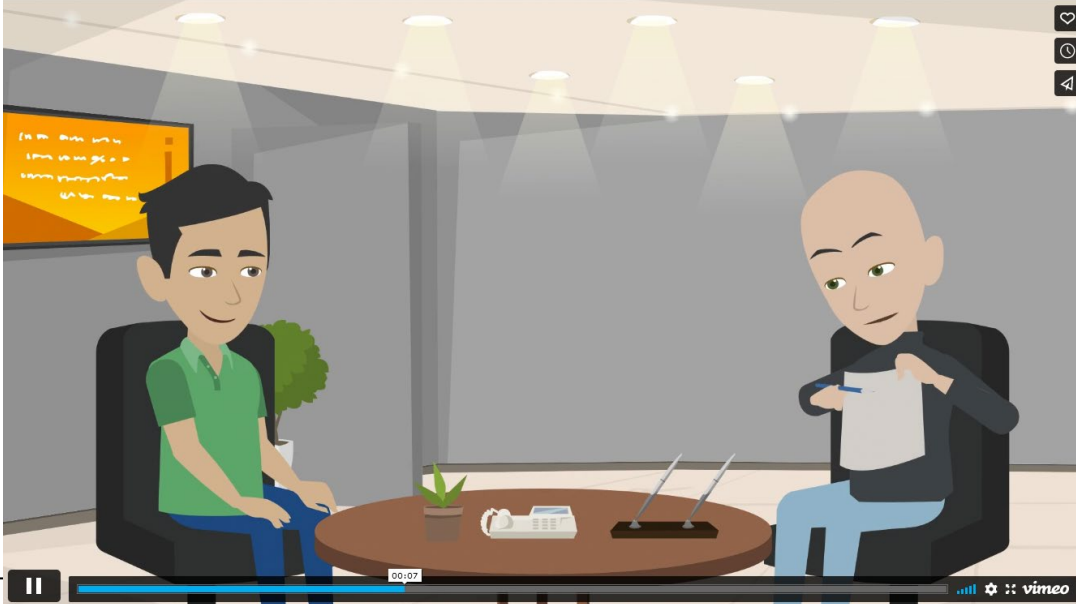
Course and interactive content

H5P Quick Check Example

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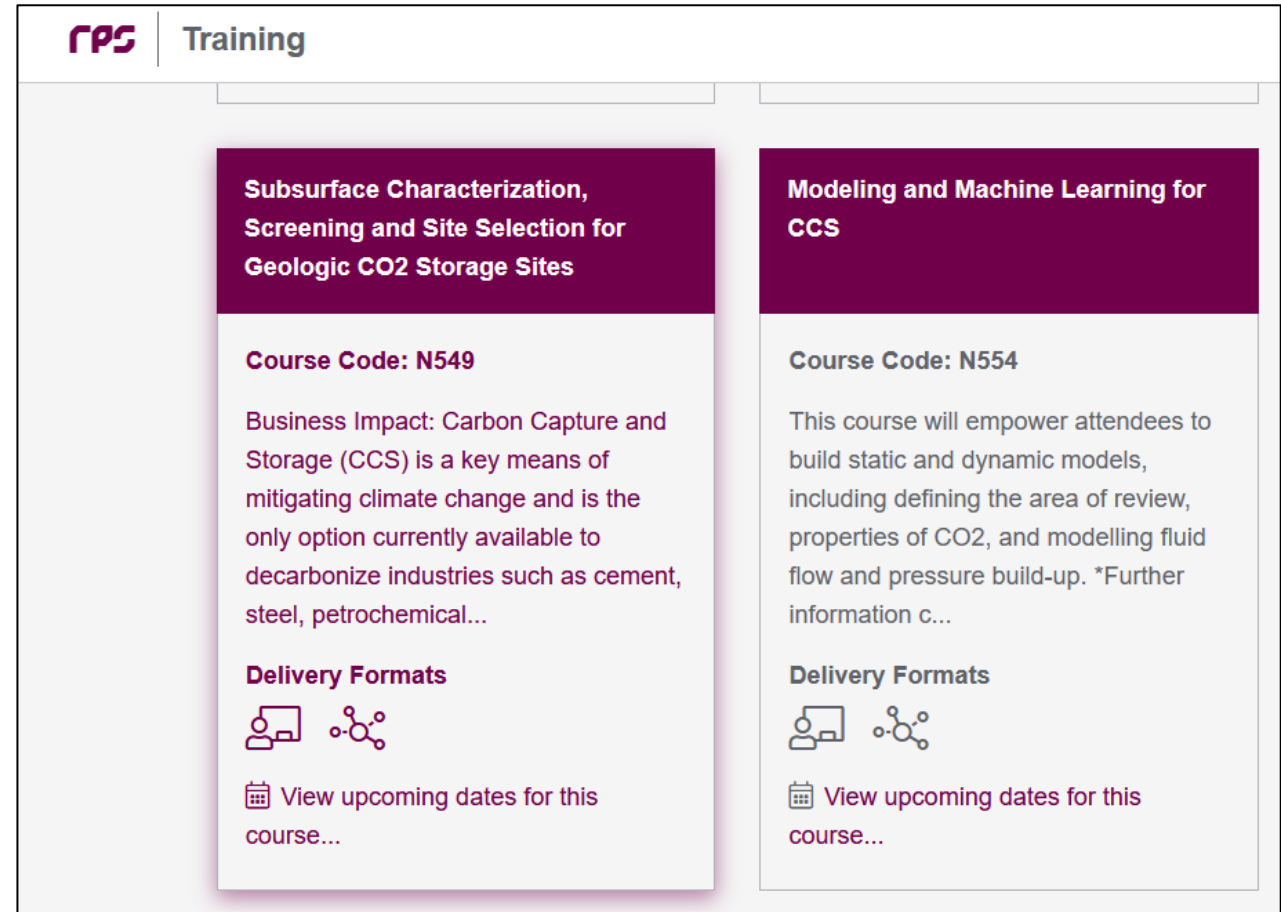
Challenging Problem or Question **Gold Standard PBL**



The video player shows a scene with two men in a meeting. One man is sitting in a chair, and the other is standing and holding a document. The video player has a progress bar at the bottom showing 00:07 and the Vimeo logo.

Deeper Dives

- Follow-on Courses
 - Subsurface characterization
 - Monitoring
 - Modeling and machine learning
- Deeper dives
 - 2-3 half days each
 - Bring in more instructors
 - Add to our library



The screenshot shows a webpage titled "RPS Training". It features two course cards side-by-side. The first card is for "Subsurface Characterization, Screening and Site Selection for Geologic CO2 Storage Sites" (Course Code: N549). The second card is for "Modeling and Machine Learning for CCS" (Course Code: N554). Both cards include a description of the course, delivery formats (represented by icons for a person at a computer and a network diagram), and a link to view upcoming dates.



RPS Training


Subsurface Characterization, Screening and Site Selection for Geologic CO2 Storage Sites

Course Code: N549

Business Impact: Carbon Capture and Storage (CCS) is a key means of mitigating climate change and is the only option currently available to decarbonize industries such as cement, steel, petrochemical...

Delivery Formats



 View upcoming dates for this course...


Modeling and Machine Learning for CCS

Course Code: N554

This course will empower attendees to build static and dynamic models, including defining the area of review, properties of CO2, and modelling fluid flow and pressure build-up. *Further information c...

Delivery Formats

 View upcoming dates for this course...