Carbon Capture & Storage (CCS) Training

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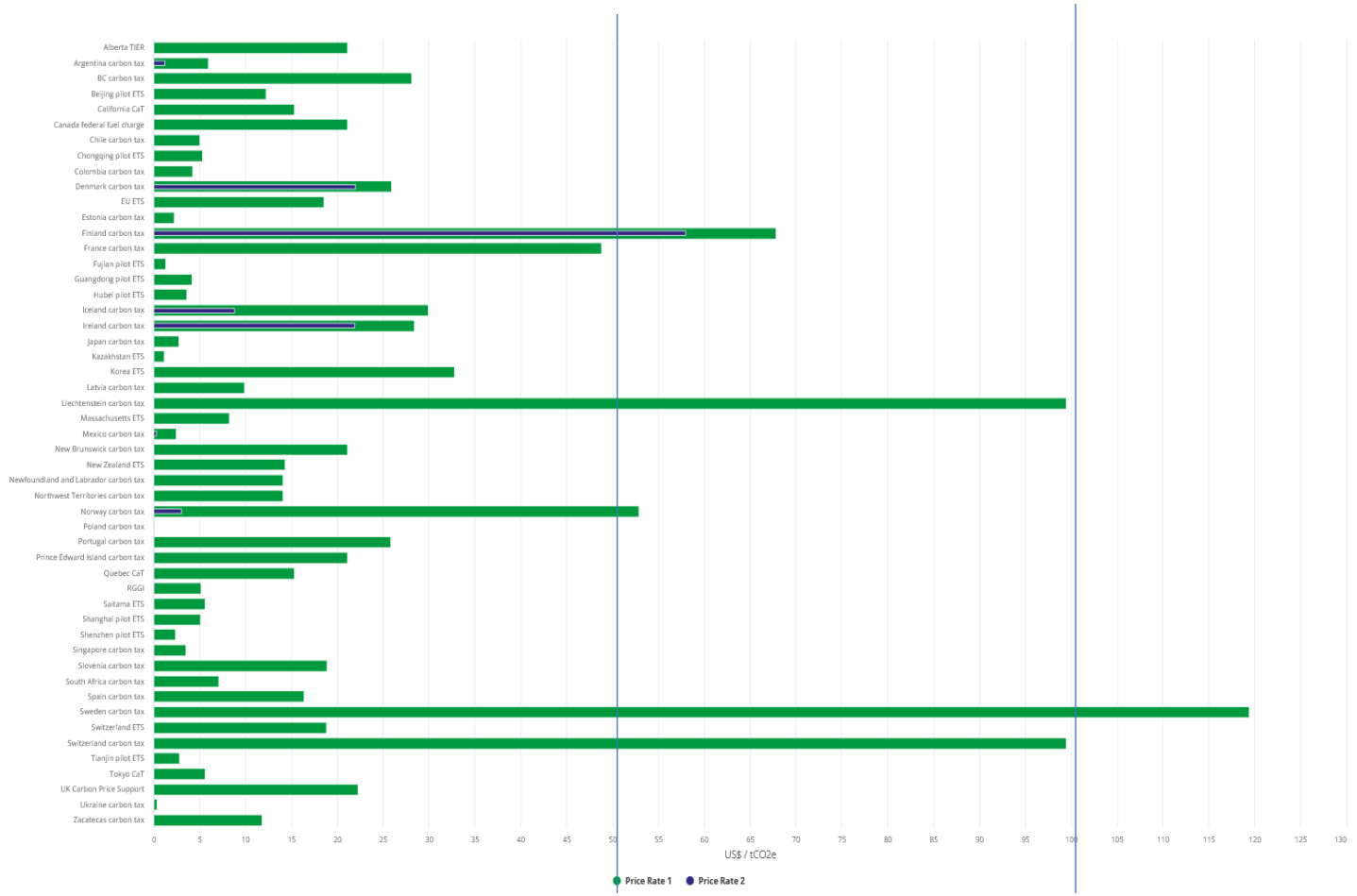
2020 Global Carbon Prices



$50/ton

$100/ton

World Bank Carbon Pricing Dashboard

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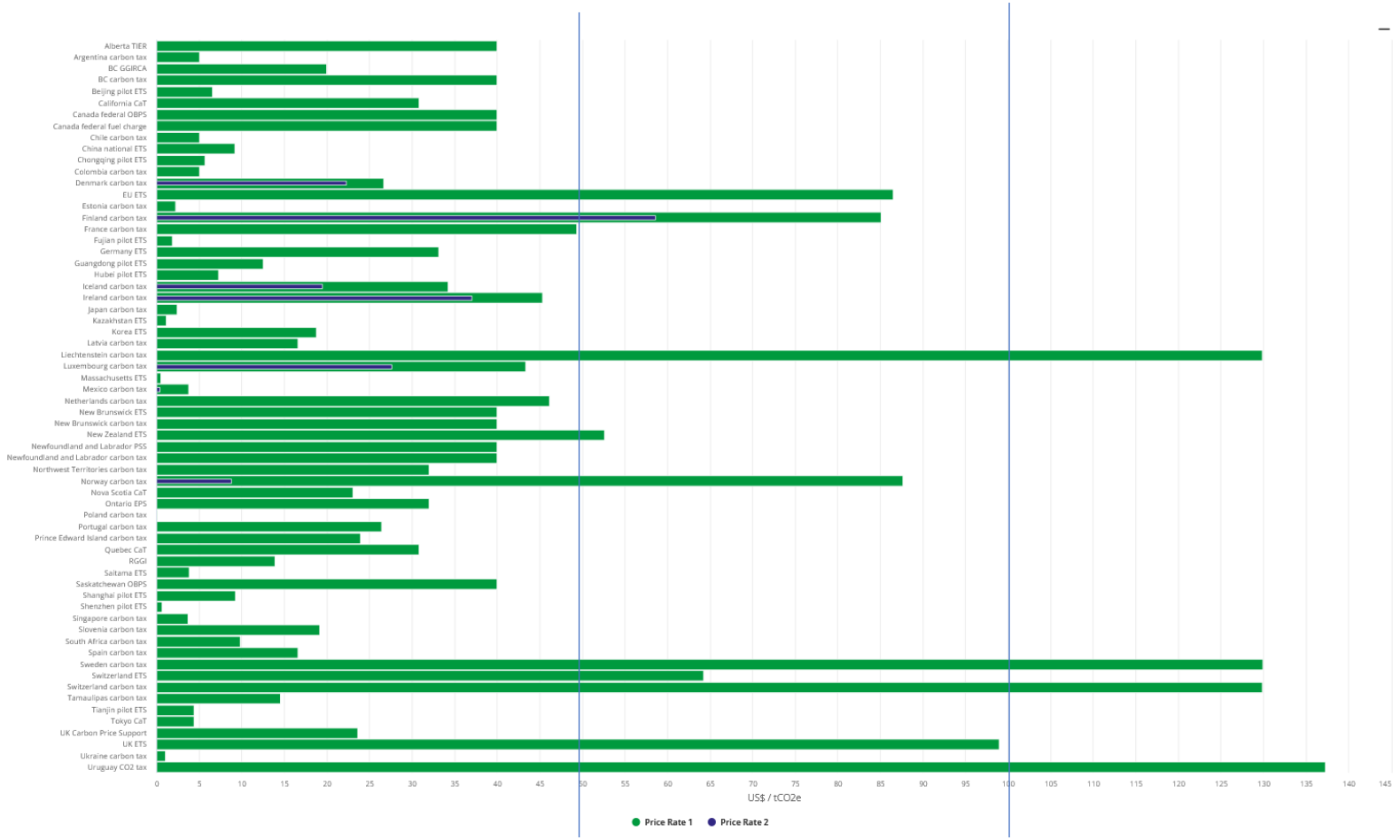
2022 Global Carbon Prices



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World Bank Carbon Pricing Dashboard

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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

<u>For JSG students</u>

- Graduate course, offered yearly

<u>For Professionals</u>

- 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

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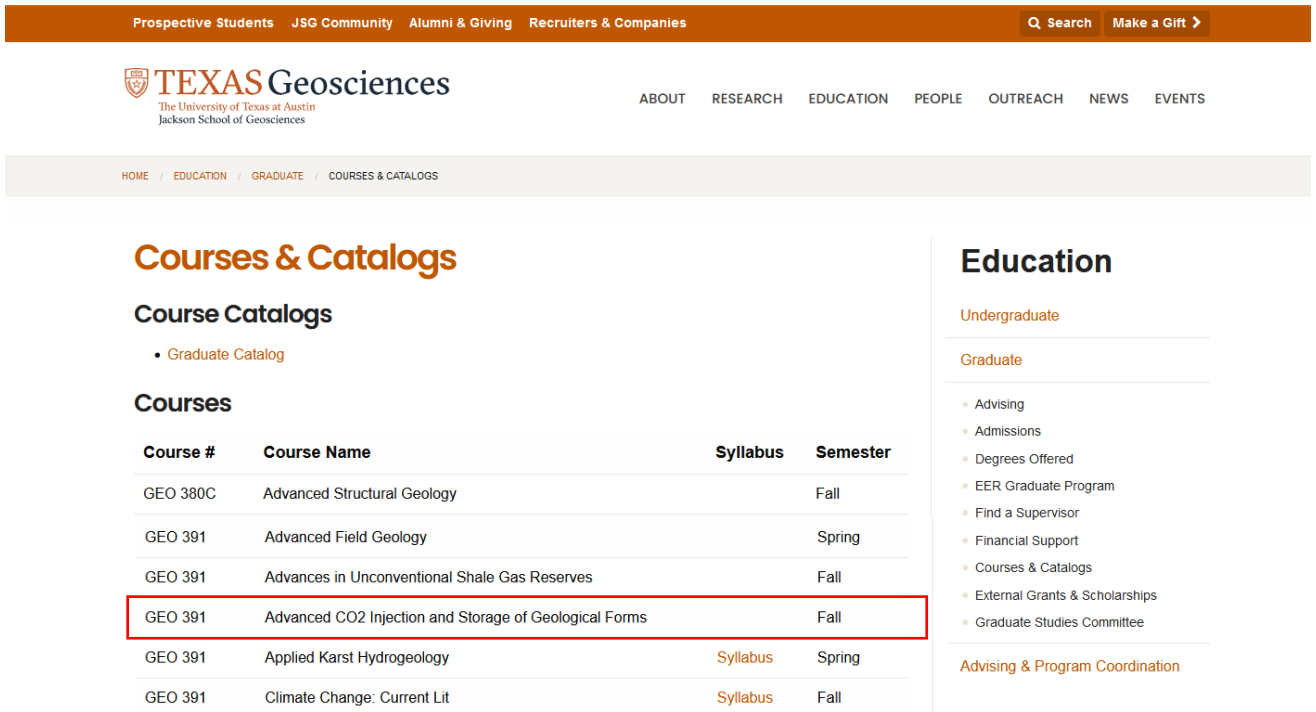
UT Course



- 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

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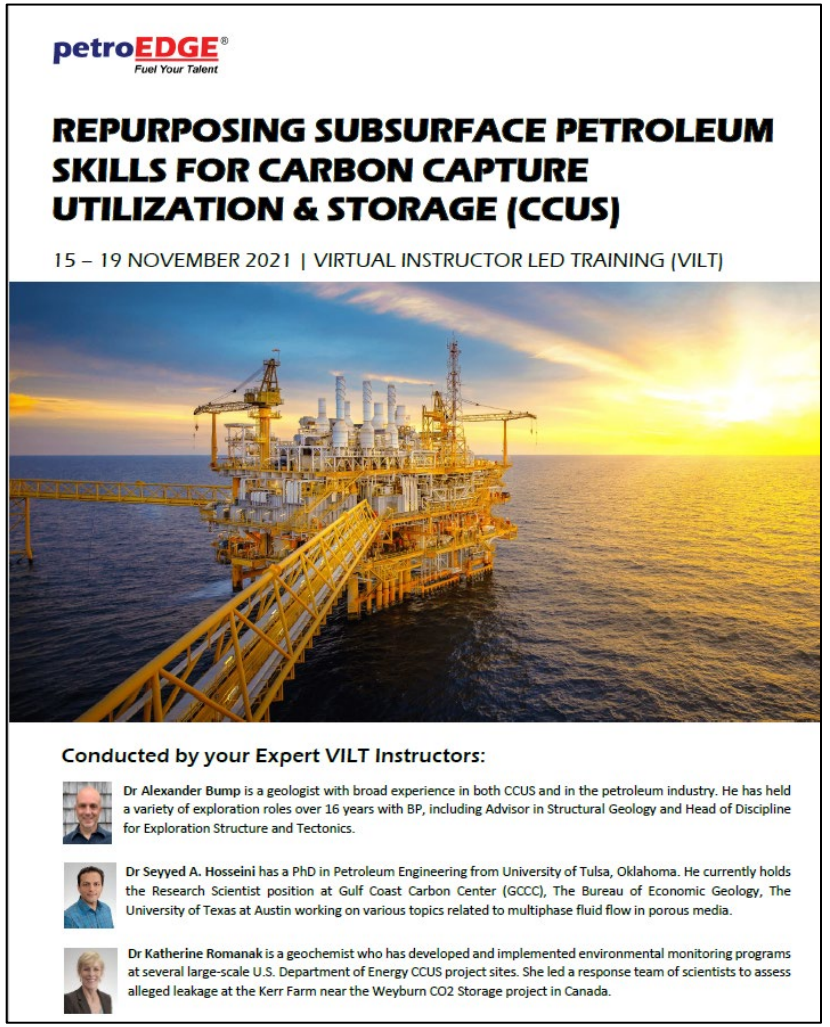
Training for Subsurface Professionals

- 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.

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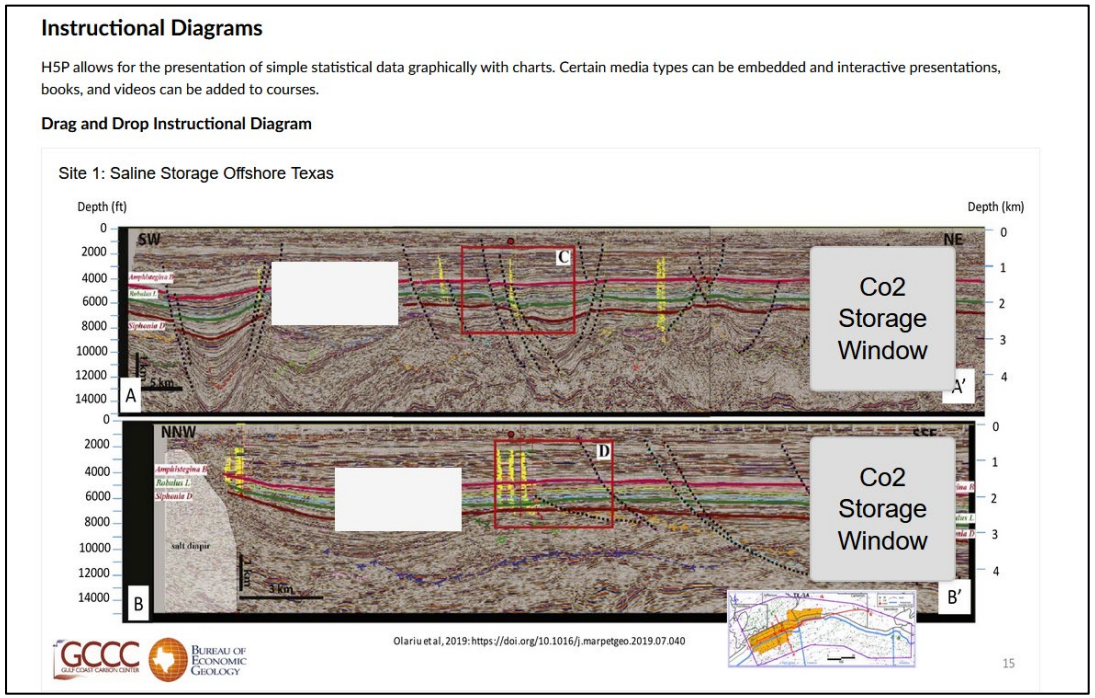
Online Course in Development

- 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



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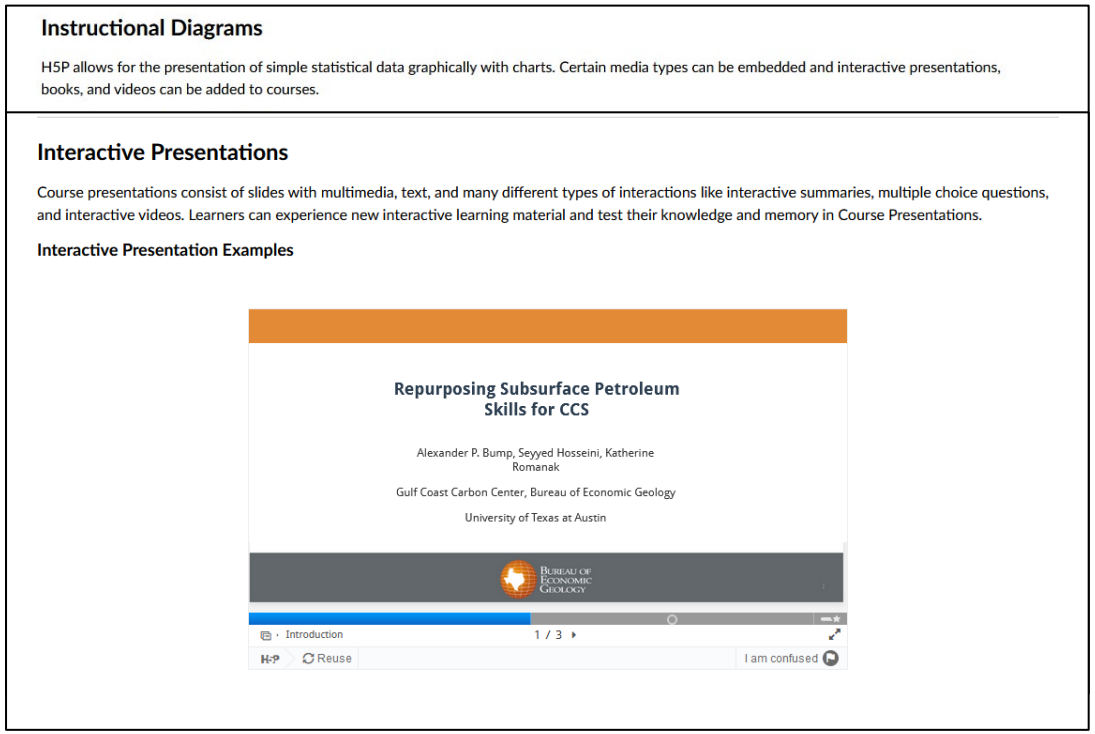

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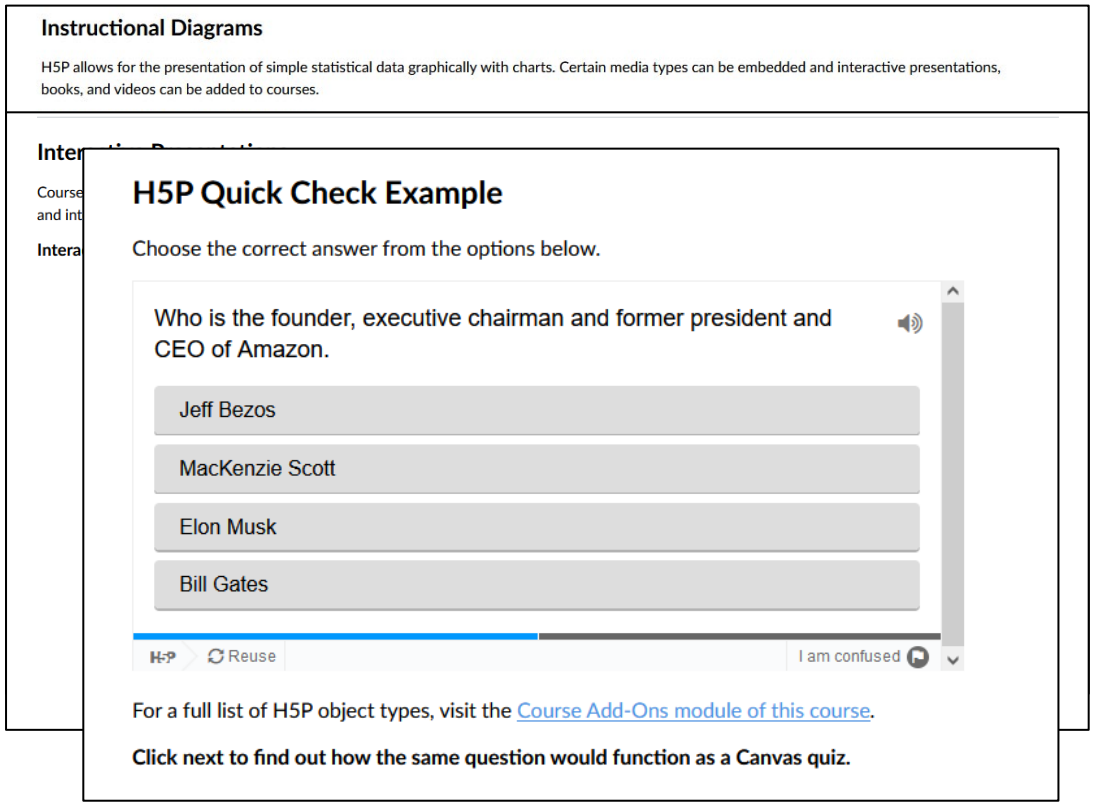

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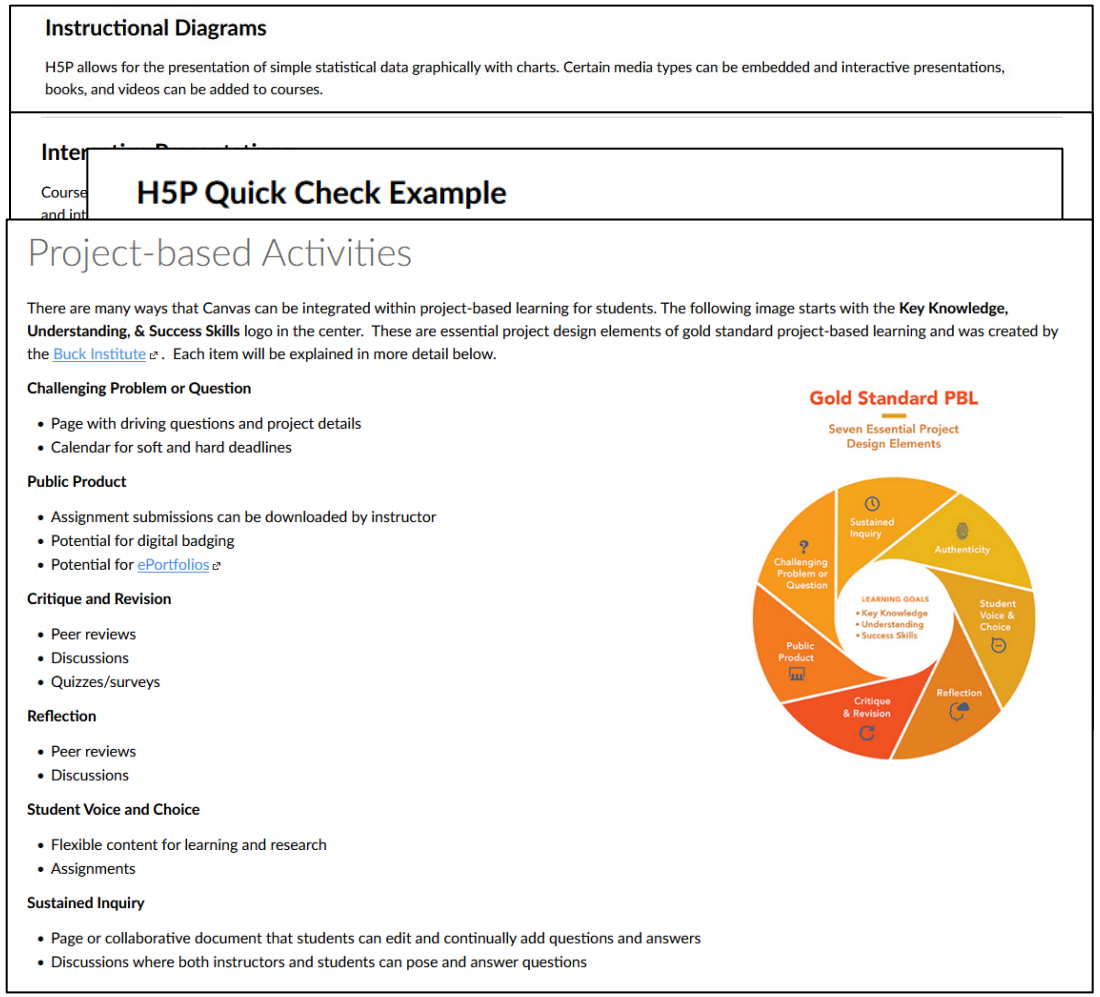

Instructional Diagrams

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.

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

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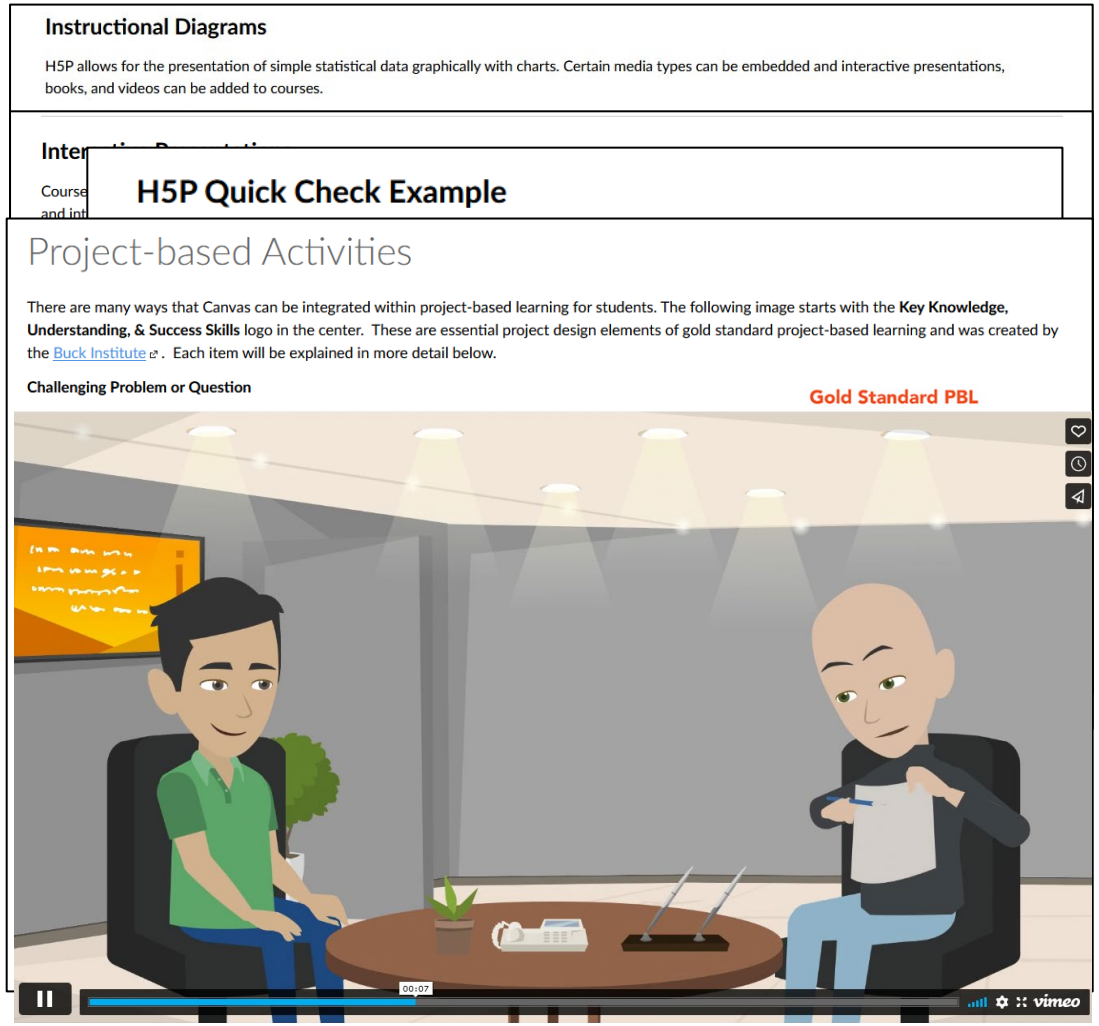

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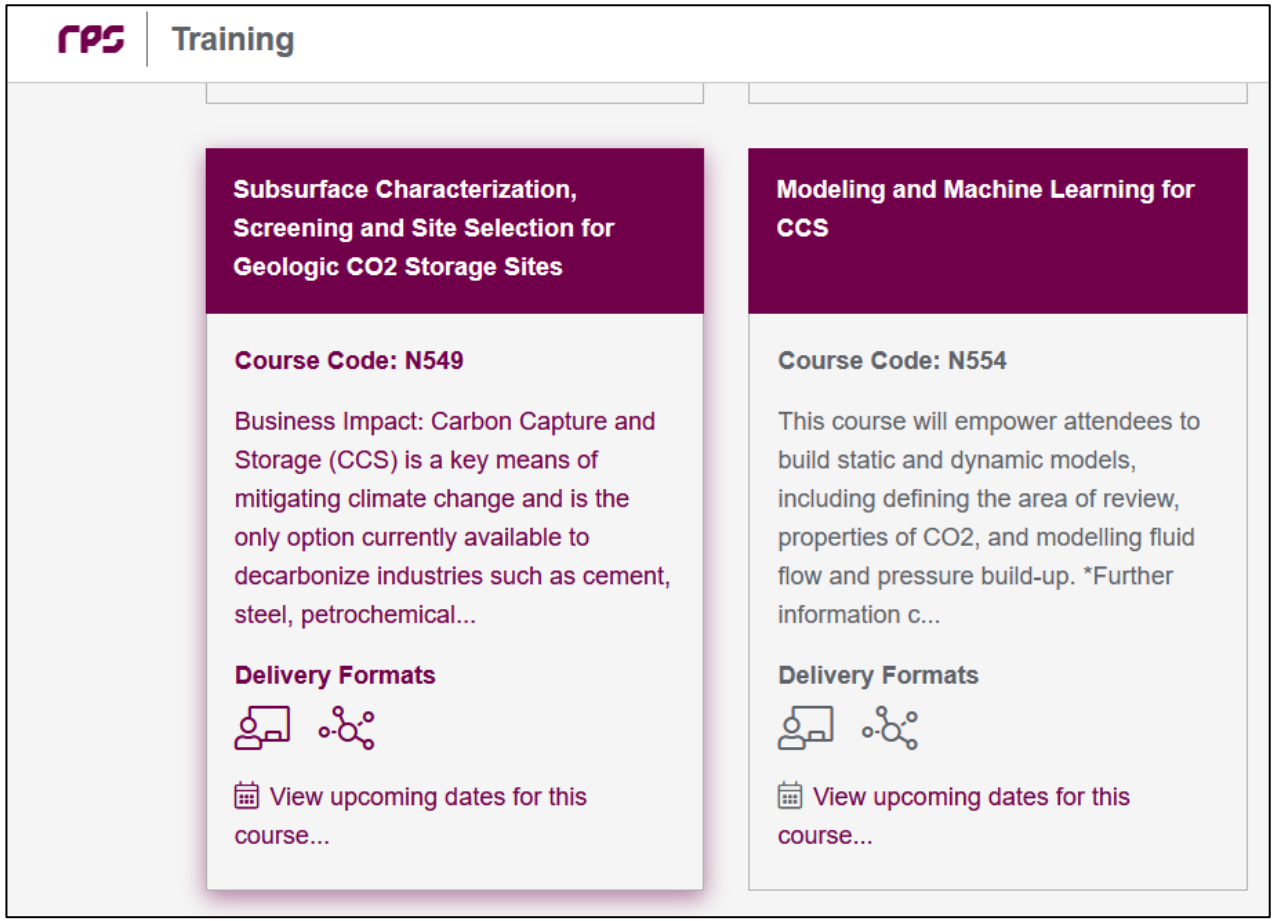
Deeper Dives

- 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



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