

Building a Community: Bringing Business Students to Energy Literacy and Careers

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Summary

The Southern Alberta Institute of Technology (SAIT) offers a four-year Bachelor of Business Administration (BBA) degree in which students can extend their degree with an optional minor in Energy, Oil and Gas. To graduate with a minor in Energy means that non-science students will complete four post-secondary courses heavy in technical terminology and concepts, with learning outcomes from disciplines including geoscience, engineering, and business.

Success for these students is achieved in two principle ways: by leveraging SAIT's technical expertise, facilities, and geographic position as well as in the courses' design and execution. Active learning techniques common to geoscience like field trips and hands-on labs have been integrated into the courses' design and learning outcomes. Students move from limited science background through complex analysis of industry relevant problems and data.

Theory / Method / Workflow

The learning outcomes for the Energy, Oil and Gas Minor were designed in conjunction with educational guidelines and industry input. Course materials were created on-site with learning designs and classroom activities focused on bringing technical concepts to non-science students. SAIT's focus as an institution includes small class sizes, and activity or project-based learning, facilitated by technical experts, while using Brightspace as a learning management system.

The primary methodologies employed in class include: leveraging students existing business background to solve applied, science-based problems, building a learning community by creating classroom interaction between students while working to solve problems, and providing relevant real-world scenarios in which to apply their learning and observations. Courses are updated to reflect current events with each offering. Weekly assessments encourage students to complete tasks and perform background reading and activities outside of the classrooms, as does utilization of Brightspace, thereby optimizing classroom time.

Examples of learning outcomes from the Energy, Oil and Gas minor include:

- Appraise exploration techniques used in the evaluation of hydrocarbon resources in Western Canada,
- Explain the mechanisms by which structural and stratigraphic traps are formed,
- Predict the relative potential and geographic extent of different reservoirs based on their origins

SAIT is located in Calgary, Alberta and has strong ties to Canada's oil and gas industry. Facilities on campus include an oil battery, a fractionation tower, renewable facilities including solar energy labs and green buildings, two drilling simulators, and specialized labs for geology, production engineering, drilling, and reservoir engineering. This has been integral to the program's success as we can leverage facilities to optimize learning with on-campus tours and selection of classroom locations.

Results, Observations, Conclusions

Establishing baseline knowledge has been primary with each new cohort of students. Using interactive technologies like Kahoot! allows us to poll student knowledge prior to introducing concepts. Recognizing that students may not understand what oil and gas are, or what they are used for, guides early activities. For example, leveraging a business concept like benchmarking in conjunction with a suite of oil samples ranging in API gravity, can lead students to consider factors affecting oil prices and price forecasts for different oil products.

Group activities both inside and outside of class help build a learning community. Groups are sometimes self-selected but may also be random, furthering interaction. Activities and assessments have been designed to include small group work completed weekly. Weekly assessments force students to “keep up” with classroom materials, allowing each class to move to new materials and build on concepts. Classroom activities may include reviewing hand samples of rocks for classification and properties, interpreting and creating maps, or creating and analyzing production decline curves. Because the community is established, students feel comfortable with working with a lack of initial knowledge and leveraging each other’s skill sets to achieve objectives. Relevant or “real world” projects facilitate engagement, for example, understanding rock properties in hand sample, core, or with core analysis allows us to estimate reserves, predict future well locations, and assign economic value. The relevance of the material is furthered by using current industry events and companies as examples. Student interaction with industry is further encouraged with the option of engagement in activities associated with SAIT’s Student Petroleum Society which include regular networking and technical events.

Novel/Additive Information

One of the more successful techniques employed has been leveraging student interests to achieve learning outcomes, that is, allowing students to complete optional activities outside of the mandatory assessments for bonus marks. For example, the introductory course offers an online glossary tool that can be added to by students as they learn new terminology in class. More advanced classes have included bonus marks for photographing and describing geologic features in a fluvial environment. These marks were then applied to a student assessment on the relative risk and reward associated with exploration and development in different clastic sedimentary depositional environments.

Acknowledgements

Alan Jack, Academic Chair Petroleum Engineering programs,
Dale Hansen, Associate Dean, MacPhail School of Engineering
Amir Fard, Geology Instructor, Petroleum Instructor
Gursher Pannu, Academic Chair, School of Business, BBA Management
Janet Segato, Dean, School of Business