MISSION

Integrate geoscience, engineering and other disciplines to collaborate with industry and others to advance research and education in petroleum studies
Petroleum Certificate Offering for M.S. and Ph.D. Students

- 18 credit hour graduate certificate
- Combination of Geology & Geophysics and Petroleum Engineering
  - Seismic Interpretation
  - Stratigraphy
  - Structural geology
  - Carbonate Reservoirs or Clastic Sedimentology
  - Basin Analysis
  - Petroleum Geoscience Seminar
  - Well Logging
  - Unconventional reservoirs
  - Reservoir Engineering
  - Formation Evaluation
  - Geostatistics
Three Core Research and Educational Programs

• Unconventional Reservoir Stratigraphy and Characterization

• Carbonate Reservoir Stratigraphy and Characterization

• Basin Modeling

All programs involve underlying geophysical disciplines, including seismic and controlled source electromagnetics acquisition, processing and interpretation.
Unconventional Resources Project

Integrating Geosciences, Petroleum Engineering and External Partners

INNOVATION

KNOWLEDGE

LEARNING

Increasing Energy Resources

Economics/Regulatory
Stratigraphy
Geophysics
Geomechanics
Carbonate & Mudstone Geochemistry
Petrophysics

Environmental (Water)
Completions & Stimulation
Simulation
Geologic Modeling

CRISMAN INSTITUTE FOR PETROLEUM RESEARCH

BERG-HUGHES CENTER
Lozier Canyon – Eagle Ford Natural Laboratory

Approx. 2000’

Approx. 175’
EAGLE FORD STUDIES

- Stratigraphic framework and high-resolution chronostratigraphy

- Chemo-stratigraphy: chemical interactions between in situ and injected fluids and reservoir rocks; mitigating flowback contamination

- Mechanical properties characterization of the Eagle Ford Shale for hydraulic fracture modeling and completion planning

- Identifying correlations between mechanical properties and geophysical measurements

- Determining new methods for geophysical characterization of fractures and their propagation

- High-resolution photogrammetry for constructing geologic model
Building a world-class unconventional reservoir data-base

**Oil & Gas**
- Geographic
  - Commercial
  - Public
  - Proprietary

**Data Integration**
- Unified Schema
- Storage & Indexing
- Search & Retrieval

**Federated Data Model**

**Operational**
- Business Intelligence
- Decision Support

**Analytical**
- Data Browsing & Visualization
- Data Analysis & Exploration

**Functional**
- GIS & G&G Platform Integration
- GIS & G&G Data Integration
Carbonate Reservoir Characterization

- Are field-scale ancient outcrops and modern carbonate depositional systems sufficiently detailed study to constrain dimensional and rock quality inputs to subsurface geologic models of reservoirs?

- What are the gradient of optimal petrophysical properties being affected by diagenesis and its controls?

- To what level of certainty and accuracy can an individual clinoforms be mapped (dimensions and rock properties) and how would that impact reservoir development.
Digital outcrop data can enhance reservoir characterization through understanding depositional systems in quantitative sense.
Chevron Basin Modeling Center of Excellence

- Multi-year graduate program to develop next generation basin modelers and advance research in basin modeling.

- Research focus is on the generation, retention and expulsion of hydrocarbons in variety of basin setting and play types.

- Uses industry-standard modeling software platforms (for example; Trinity, Petromod).

- Integrates petroleum engineering, geochemistry, organic & inorganic rock fluid interactions, fluid properties, sedimentology, geophysics, petrophysics, stratigraphy and data analysis.
Conventional/Unconventional Reservoir Production

I. Source Rock Model, composition and phases
II. Migration and Carrier Beds
III. Reservoir & Seal Quality (Flow Units)
IV. Field Size and Saturation = Volumes
V. Stimulation planning