UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

Advanced Reservoir Simulation for Carbon Capture, Utilization and Storage (CCUS) Projects

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Title

Tamla Springer

Name of Submitter

(Faculty or Staff Only)

Petroleum Engineering

Organization

Title: Advanced Reservoir Simulation for Carbon   Date: 15th July 2024
           Capture, Utilization and Storage (CCUS) Projects

Name (Contact Person):   Tamla Springer

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Department/College/Org: Petroleum Engineering

ABSTRACT (250 words or less):

The Advanced Reservoir Simulation for Carbon Capture, Utilization, and Storage (CCUS) project aims to enhance the educational experience of petroleum engineering students by integrating advanced simulation tools for CCUS projects. This initiative will provide students with practical skills in reservoir simulation, focusing on the latest carbon capture and storage techniques. The grant will fund the acquisition of simulation software, computational resources, and specialized training programs. This project will benefit the student body by improving their technical proficiency, fostering innovative research, and increasing their employability in the growing field of sustainable energy.

Proposal Description
This grant aims to establish an Advanced Reservoir Simulation Lab focusing on CCUS projects within the Department of Petroleum Engineering. The objectives are to:
- Provide students with hands-on experience using state-of-the-art reservoir simulation software for CCUS.
- Enhance students' understanding of carbon capture, utilization, and storage technologies.
- Foster innovative research in sustainable energy solutions.
- Improve students' competitiveness in the job market by equipping them with skills highly valued in the energy industry.

The impact on the student body includes:
- Access to cutting-edge simulation tools and techniques.
- Enhanced learning experiences through practical applications of CCUS technologies.
- Increased opportunities for research and development in sustainable energy.

Projected Lifetime of Enhancement

The projected lifetime of the enhancement is approximately 8-12 years. Regular updates and maintenance will ensure the software and computational resources remain current with industry advancements.

Person(s) Responsible

Implementation:
Dr. Fathi Boukadi, Professor of Petroleum Engineering
- Qualifications: PhD in Petroleum Engineering, expertise in reservoir simulation and CCUS technologies.

Installation & Maintenance:
Ms. Tamla Springer, Senior Instructor of Petroleum Engineering
- Qualifications in Petroleum Engineering and Data Science, expertise in reservoir simulation and Machine Learning.

Operation:
Dr. Olatunji Olayiwola, Lab Director
- Qualifications: PhD in Petroleum Engineering, experience in laboratory management.

Training:
Mr. Edward Evans, Training Coordinator
- Qualifications: Masters in Petroleum Engineering, Certified Instructor in reservoir simulation and CCUS technologies.

STEP Plan Alignment: This proposal aligns with the STEP Plan by:
- Enhancing technological resources available to students.
- Promoting innovative teaching and learning methods.
- Supporting the university's mission to provide high-quality education and research opportunities.

Narrative and Budget Proposal Justification
Purpose and Justification for Budget Items:
1. **Equipment ($50,000):**
   - High-performance computing resources necessary for processing large datasets and running complex simulation models efficiently.
2. **Software ($60,000):**
   - Reservoir simulation software licenses are essential for running advanced reservoir simulations with a focus on CCUS technologies.
3. **Supplies ($5,000**):
   - Includes miscellaneous supplies needed for the lab setup and operation, such as data storage devices and peripherals.
4. **Maintenance ($20,000):**
   - Ensures the lab remains functional and up to date over its projected lifetime, covering routine checks and repairs.
5. **Personnel ($40,000):**
   - Includes costs for hiring and training lab technicians and assistants to manage and support the lab operations.
6. **Other ($10,000):**
   - Covers unforeseen expenses related to the establishment and operation of the lab.

Total Budget: $185,000

Additional Information
The Advanced Reservoir Simulation for the CCUS project will position our petroleum engineering program at the forefront of sustainable energy education and research. By integrating advanced simulation tools into the curriculum, we are equipping our students with the skills necessary to tackle complex challenges in reservoir engineering and carbon management. This project will also foster interdisciplinary collaboration and research, attracting partnerships with industry leaders and funding agencies. Investing in this enhancement will ensure our students are well-prepared for successful careers in the evolving field of sustainable energy.

Budget Proposal

1. **Equipment**   **$ 50,000**

2. **Software**   **$60,000**

3. **Supplies**   **$5,000**

4. **Maintenance**   **$20,000**

5. **Personnel**   **$40,000**

6. **Other**   **$10,000**

TOTAL: **$185,000**