

# UNDERGRADUATE SUMMER RESEARCH PROGRAM PROPOSAL

- Project title  
**Numerical Study on Reciprocating Piston Compression for Underwater Energy Storage**
- Faculty advisor  
**Chris Qin**
- Project description  
Dive into sustainable energy with our summer project! Join us and implement MATLAB simulations to optimize heat transfer in piston compression, a key component of underwater compressed air energy storage. Explore reciprocating piston, applying thermodynamic principles to enhance efficiency. Contribute to renewable energy integration renewable energy systems like offshore wind and tidal energy. Unleash your potential, merging numerical skills with environmental impact for a greener future!
- Deliverables  
Reciprocating piston design, simulation results, project report, and showcase presentation.
- Time requirements  
240 hours, flexible Mon-Fri, 8am-5pm, May 16 thru Aug 5
- Constraints  
No additional constraints on the project.
- Required skills and knowledge  
Basic MATLAB programming skill and knowledge of thermodynamics and heat transfer.
- Preferred qualifications  
Advanced MATLAB and/or C++ programming skills and knowledge of numerical simulations.