Engineering Research at the University of South Alabama

The USA College of Engineering is part of a growing research university of over 16,000 students located on the Gulf Coast, in a region experiencing robust economic growth. The University of South Alabama has Carnegie Classification “Doctoral University: Higher Research Activity” and is recognized as a National University by USNews.com and by “Washington Monthly”. There are around three Engineering graduate students for each faculty member, and graduate students number over 5% of the total Engineering student population of around 1300. As well as a Doctoral degree in Systems Engineering, the College offers research-oriented Masters’ degrees. Current research income in the College is well over $2M annually. Shelby Hall, a 165,000ft$^2$ state-of-the-art computing and engineering building completed in 2012, provides an outstanding research and education facility for the College. Mobile and the eight surrounding counties received one of 12 U.S. Department of Commerce designations as a “Manufacturing Community.” This geographic area contains 1.2 million people within a 60 mile radius, the 11th largest port in the U.S.A., the Mobile Aeroplex at Brookley capable of handling aircraft as large as a C-5A Galaxy heavy transport airplane, the largest combined student population between New Orleans, LA and Tallahassee, FL, and over $5B in private investment in recent years from Airbus, Thyssen-Krupp & Austal.

Major research facilities

- Keysight 5500 Atomic Force Microscope – Scanning Probe Microscope
- Tecnai G2 20 Transmission Electron Microscope
- FEI Quanta 250 scanning electron microscope with ESEM and heated stages to 1400°C
- 20’ × 30’ Wave basin
- 85’ Wave-current flume
- Jet ski for hydrographic data collection
- Gravimetric analyzer
Faculty expertise

- Advanced manufacturing
- Aircraft flight dynamics & control
- Cardiovascular engineering
- Cell mechanics and signaling
- Energy harvesting
- Ergonomics and human comfort
- Fracture analysis
- Geotechnical engineering
- Image analysis
- Internet-of-things (IoT)
- Machine learning and Pattern recognition
- Microelectronics and nanotechnology

- Nano-particle and polymer composites
- Operational research and analysis
- Physical electronics
- Power electronics
- Risk and decision analysis
- Smart grid and energy storage
- Space science
- Spectral imaging and microscopy
- Structural/infrastructure resiliency
- Systems thinking and engineering
- Thermoelectric materials
- Transportation
- Unmanned aerial vehicles (UAVs)

Research laboratories

- Biomechanics
- Biomedical sensors
- Cardiovascular mechanics
- Composite materials
- Construction materials, including load testing
- Environmental engineering
- Flight dynamics
- Geotechnical engineering
- Ionic liquids
- Materials characterization
- Traffic and driving