



TEXAS A&M UNIVERSITY
CORPUS CHRISTI

Type B Civil & Industrial Engineering Update

TEXAS A&M UNIVERSITY-CORPUS CHRISTI



A New Era of Innovation

Texas A&M University-Corpus Christi launched new College of Engineering in fall 2022 welcoming Dr. David Ma as its inaugural dean.

Infrastructure

- 5 labs to be used across 12 different Civil and Industrial Engineering courses
- Will provide hands-on opportunities to undergraduate students when pursuing research experience
- Will be used by faculty when pursuing externally funded research, for example, in areas of coastal resilience.



Educational Activities

1. **Construction Materials Laboratory**

- Concrete and soil testing equipment was used for laboratory instruction for the first time in the fall 2022 semester for the courses CEEN 3320 Geotechnical Engineering I and CEEN 4304 Civil and Construction Materials. These activities will be expanded in the fall 2023 semester as discipline-specific laboratory experiments are added to ENGR 4420 Engineering Lab Measurements.

2. **Human Factors Laboratory**

- The 3dMD full-body scanner was used for instructional purposes in the course IEEN 3320 Human-Computer Interface in the spring 2023 semester (supporting software for the scanner was purchased with Type B Board funds). Further such experiments will be conducted in the fall 2023 semester with the addition of discipline-specific laboratory activities to ENGR 4420 Engineering Lab Measurements.

Research Accomplishments

1. Structural Dynamics Laboratory

- “Sequential aero-structural optimization for efficient bridge design” was accepted for publication in *Computer-Aided Civil and Infrastructure Engineering*, a top journal in the field.
- Three papers were presented at national and international conferences. Four papers have been accepted for presentation at international conferences.
- These works were produced using the nodes purchased using Type B Board funds for the TAMU-CC High-Performance Computing cluster.

2. Augmented Reality Laboratory

- A student under the direction of Dr. Jangwoon Park presented a poster at the 2022 Spring Student Research Symposium at TAMU-CC.

3. Hydraulics and Hydrology Laboratory

- A journal article on aerial characterization of surface depressions in urban watersheds has been submitted for publication.
- Students working in the lab have made three different academic presentations.

4. Note: Due to the level and complexity of the equipment purchased, other labs are still under development.

Breakdown of Funds

<u>Laboratory</u>	<u>Cost</u>
1. Construction Materials Testing Laboratory	\$1,332,912.98
2. Structure Dynamics Laboratory	\$68,166.36
3. Hydraulics and Hydrology Laboratory	\$89,037.87
4. Augmented Reality Laboratory	\$7,000.00
5. Human Factors Laboratory	\$69,794.90
TOTAL	\$1,566,912.11

Remaining Funds

<u>Fund Amount</u>	<u>Usage</u>
\$433,087.89	Remaining funds will be used for additional Civil and Industrial Engineering laboratory equipment.



Completion Date

The laboratory set up will be completed by December 31, 2023.

New Faculty Addition



Dr. Ning Luo
Assistant Professor, Civil Engineering
(began August 2022)

**An assistant professor in Industrial Engineering,
will be hired to start in Fall 2023.*



Curriculum and Course Development

1. 12 new courses for Civil Engineering
 - Construction Materials Testing Laboratory
 - Structure Dynamics Laboratory
 - Hydraulics and Hydrology Laboratory
2. 14 new courses for Industrial Engineering
 - Augmented Reality Laboratory
 - Human Factors Laboratory

Enrollment Data

	Fall 2021	Fall 2022
Pre-Engineering	95	137
Mechanical Engineering	216	177
Mechanical Engineering Technology	53	88
Electrical Engineering	64	60
Civil Engineering	31	32
Industrial Engineering	3	7
TOTAL	462	501

Graduate Data

1. 29.7% of Mechanical Engineering and 22.7% of Electrical Engineering graduates started their first jobs or currently work in the Coastal Bend.*
2. 53.3% of Mechanical Engineering and 45.5% of Electrical Engineering graduates started their first jobs or currently work in the state outside the Coastal Bend.*
3. No graduates for Industrial or Civil Engineering yet.
4. *Percentages are based on the number of graduates for whom placement data are available: 53.3% of all MEEN graduates and 37.3% of all EEEN graduates through spring of 2022



Matching Funds (or External Funding)

Sponsored
Research
Funding:

FY21 - \$1.14M

FY22 - \$2.49M

State
Legislative
Appropriations:

FY21 - \$1.15M

FY22 - \$1.1M