

# CLEN - COLLEGE OF ENGINEERING (CLEN)

## CLEN 001

Credits 0.

## CLEN 101 Engineering Approaches to Problems

**Credits 3. 3 Lecture Hours.** Basic characteristics of the engineering profession and the process by which technology is developed for real application; engineering thinking and problem-solving processes; common engineering concepts; engineering disciplines and project types.

## CLEN 181 Engineering Learning Community & Student Success Seminar

**Credits 0-1. 0-1 Other Hours.** Engineering Learning Community & Student Success Seminar. Welcoming seminar to the college of engineering to assist with transition to college; includes introduction to engineering majors, college and university resources; topics evolve as students advance through the engineering curriculum. **Prerequisite:** Must be enrolled in the College of Engineering; also taught at Galveston and Qatar campuses.

## CLEN 201 Tools for Engineering Analysis

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Introduction to prominent categories of engineering quantitative analysis; pattern finding in data; optimization; prediction of future states; modeling of physical systems; laboratory exercises to use computational tools as means of implementing mathematical concepts. **Prerequisites:** CLEN 101; MATH 131, MATH 142, MATH 147, MATH 151, or MATH 171.

## CLEN 261 The Engineering Profession

**Credit 1. 1 Lecture Hour.** Introduction to interdisciplinary aspects of engineering careers; work engineers perform in their field; engineering practice within realistic constraints, e.g., economic, environmental, ethical, health and safety, and sustainability; engineering design process; effective communication in engineering settings. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisite:** Enrollment in the college of engineering.

## CLEN 289 Special Topics In...

**Credits 0 to 4. 0 to 4 Other Hours.** Selected topics in an identified area of engineering.

## CLEN 301 Humanity and Materials

**Credits 3. 3 Lecture Hours.** Engineering processes for obtaining, shaping, fabricating and manufacturing materials for human use; changes in materials development and application through human history; important materials in contemporary society and their properties; emerging and future materials. **Prerequisite:** CLEN 201.

## CLEN 302 Survey of Nuclear Technology

**Credits 3. 3 Lecture Hours.** Overview of important discoveries in atomic and nuclear physics in 20th and 21st Centuries; basics of atomic and nuclear physics; radiation and its impact; nuclear reactors, fuel cycle, waste disposal and associated policy issues; nuclear safety, safeguards and security; applications of nuclear technology. **Prerequisite:** CLEN 201.

## CLEN 303 Renewable Energy and the Environment

**Credits 3. 3 Lecture Hours.** Overview of important renewable energy sources for human societies; role of thermodynamic principles in design of systems for capturing, storing, converting, delivering, and conserving energy; solar, wind, bioenergy, water, and geothermal energy sources; environmental effects of various energy sources; basic economics of energy systems. **Prerequisite:** CLEN 201.

## CLEN 304 Pushing the Limits of Construction - Taller, Stronger, Leaner

**Credits 3. 3 Lecture Hours.** Case studies in ambitious construction projects in contemporary society; project magnitude, unique challenges, environmental impact and innovations present in each case study; illustration of elementary structural design principles and life cycle cost analysis. **Prerequisite:** CLEN 201.