

2022-2023 TTC Catalog - Engineering Technology (EGR)

EGR 001 - EGR 001

Lec: 0 **Lab:** 0 **Credit:** *

Indicates credit given for engineering technology course work transferred from another college for which there is no equivalent course at TTC. *Hours vary depending on external course.

Division: Engineering and Construction

EGR 104 - Engineering Technology Foundations

Lec: 2.0 **Lab:** 3.0 **Credit:** 3.0

Course Offered

Fall
Spring
Summer

This problem-based course introduces the student to fundamental concepts of electrical, mechanical, thermal, fluids, optical and material systems related to engineering technology. Workplace readiness skills such as laboratory safety, communications and teamwork are integrated into the course.

Prerequisite

MAT 033
or
appropriate test score

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 110 - Introduction to Computer Environment

Lec: 2.0 **Lab:** 3.0 **Credit:** 3.0

Course Offered

Fall
Spring

This course provides an overview of computer hardware, available software, operating systems and applications.

Prerequisite

MAT 033

or

appropriate placement

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 170 - Engineering Materials

Lec: 2.0 **Lab:** 3.0 **Credit:** 3.0

Course Offered

Spring

This course is a study of properties, material behaviors and applications.

Prerequisite

MAT 170

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 175 - Manufacturing Processes

Lec: 2.0 **Lab:** 3.0 **Credit:** 3.0

Course Offered

Spring

This course includes processes, alternatives and operations in the manufacturing environment. Key elements of manufacturing processes such as quality, materials management, personnel issues and industrial economics will be covered.

Prerequisite

ENG 101

and

MAT 170

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 194 - Statics and Strength of Materials

Lec: 4.0 **Lab:** 0 **Credit:** 4.0

Course Offered

Summer

This course covers external and internal forces in structures and/or machines, including conditions of equilibrium, systems of force, moments of inertia and friction. It also covers stress – strain relationships in materials.

Prerequisite

EGR 290

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 202 - Introduction to Engineering Programming

Lec: 2.0 **Lab:** 3.0 **Credit:** 3.0

Course Offered

Fall

Spring

Summer

This course is an introduction to algorithm development and the use of a high-level programming language to solve engineering problems.

Prerequisite

MAT 102

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 234 - Control Principles

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Summer

This course is a study of fundamental control process, analogous system of units, first and second order response, the fundamentals computer control systems, and applications of a typical process.

Prerequisite

EGR 290

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 255 - Engineering Technology Senior Systems Project

Lec: 2.0 **Lab:** 0 **Credit:** 2.0

Course Offered

Spring
Summer

This course includes an instructor-approved project which is designed, specified, constructed and tested.

Prerequisite

EET 131

and

EET 145

and

EGR 234

and

MET 237

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 260 - Engineering Statics

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Spring

This course introduces the principles of engineering mechanics as applied to forces and force systems. The techniques of vector mathematics are employed.

Prerequisite

MAT 140

and

PHY 221

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 262 - Engineering Dynamics

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Spring

This course introduces the principles of engineering as applied to kinematics and kinetics of particles and rigid bodies. The techniques of vector mathematics are employed.

Prerequisite

EGR 260

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 269 - Engineering Disciplines and Skills

Lec: 2.0 **Lab:** 0 **Credit:** 2.0

Course Offered

Fall

Spring

This course assists students in selecting an engineering field while studying professionalism, ethics, safety, communications, and career planning. Computers are used to study spreadsheets, obtain graphical solutions to problems, perform on-line tasks, and work on a team design project and report.

Prerequisite

MAT 102

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 273 - Problem Solving for Engineers

Lec: 1.0 **Lab:** 3.0 **Credit:** 2.0

Course Offered

Fall

Spring

Summer

This course covers basic problem-solving techniques as applied to the engineering profession.

Prerequisite

ECE 221

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 274 - Engineering Applications of Numerical Methods

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Fall

This course is a calculus-based study of the application of numerical methods to the solution of engineering problems. Techniques include iterative solution techniques, methods for solving systems of equations, numerical integration, differentiation and graphical analysis.

Prerequisite

EGR 269

and

ECE 221

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 275 - Introduction to Engineering/Computer Graphics

Lec: 2.0 **Lab:** 3.0 **Credit:** 3.0

Course Offered

Fall

Spring

Summer

This course is a study of basic graphical concepts needed for engineering applications.

Prerequisite or Corequisite

MAT 110

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 281 - Introduction to Algorithmic Design I

Lec: 3.5 **Lab:** 1.5 **Credit:** 4.0

Course Offered

Fall

This course integrates a presentation of concepts of object-oriented programming, including program structures, objects, code, and programming styles.

Prerequisite

MAT 102

with a "C" or better.

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 282 - Introduction to Civil Engineering

Lec: 2.0 **Lab:** 0 **Credit:** 2.0

Course Offered

Spring

This course covers the engineering process from problem formulation to creative design through practical solution of civil engineering problems.

Prerequisite

MAT 111

or

MAT 112

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 283 - Introduction to Algorithmic Design II

Lec: 3.5 **Lab:** 1.5 **Credit:** 4.0

Course Offered

Spring

This course is a study of rigorous development of algorithms and computer programs, including elementary data structures.

Prerequisite

EGR 281

with a "C" or better.

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 285 - Engineering Surveying I

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Fall

This course covers linear measurements, leveling, compass and transit/theodolite, theory of errors, areas, stadia, coordinate geometry, state plane coordinates and standard map projections. In addition, it covers latitudes and departures, construction field control, legal aspects of land surveying and public land surveys.

Prerequisite

EGR 275

and

EGR 282

and

MAT 140

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 286 - Engineering Surveying II

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Spring

This course covers land surveying and boundary laws, public land surveys, topographic mapping, horizontal and vertical curves, lot calculations, and engineering astronomy. In addition, it covers geospatial representation that includes topographic mapping, advanced adjustments using least squares procedures, map projection, state plan coordinator, astronomic control for mapping, Global Positioning Systems (GPS), Geographic Information Systems (GIS) and remote sensing.

Prerequisite

EGR 285

and

MAT 140

Corequisite

EGR 296

Grade Type: Letter Grade

Division:

EGR 290 - Numerical Applications in Engineering Technology

Lec: 3.0 **Lab:** 0 **Credit:** 3.0

Course Offered

Spring

This course provides the fundamental concepts of numerical problem solving for engineering technology. Techniques and methods are employed to develop a problem solving methodology using the principles of algebra and trigonometry.

Prerequisite

MAT 170

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 295 - Engineering Surveying Lab I

Lec: 0 **Lab:** 3.0 **Credit:** 1.0

Course Offered

Fall

This course covers horizontal control, including distance and angular measurements; traversing and preparation of a plat; and vertical control including the performance of a level loop. It includes application of principles introduced in EGR 285.

Corequisite

EGR 285

Grade Type: Letter Grade

Division: Engineering and Construction

EGR 296 - Engineering Surveying Lab II

Lec: 0 **Lab:** 3.0 **Credit:** 1.0

Course Offered

Spring

This course covers locating buildings and other objects within a boundary survey, performing a topographic survey, preparing a topographic map and staking out a horizontal curve. In addition, it covers Global Positioning Systems (GPS) mapping

controls, Geographic Information Systems (GIS) applications and application of principles introduced in EGR 286.

Corequisite

EGR 286

Grade Type: Letter Grade

Division: Engineering and Construction
