

# 2023-2024 TTC Catalog - Engineering Technology (EGR)

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## **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

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## **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

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## **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

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## **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

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## **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

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## **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

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## **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

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## **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

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## **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  
EGR 234  
and  
MET 237

**Grade Type:** Letter Grade

**Division:** Engineering and Construction

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## **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

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## **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

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## **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

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## **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

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## **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**

ECE 221

and

MAT 141

or

PHY 221

**Grade Type:** Letter Grade

**Division:** Engineering and Construction

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## **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

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## **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**

EGR 269

and

### **Corequisite**

MAT 141

with a "C" or better. and

### **Prerequisite or Corequisite**

PHY 221

**Grade Type:** Letter Grade

**Division:** Engineering and Construction

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## **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

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## **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

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## **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

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## **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:**

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**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

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**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

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## **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

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