Department of ENGINEERING

Mission Statement

The engineering program prepares graduates to be engineering leaders who are able to coordinate multidisciplinary teams to research, design, and implement solutions with consideration of standard procedures, ethical practices, contemporary technologies, and the impact on creation for God-honoring service to the profession, community, and world.

Engineering Major Bachelor of Science

Students in the Engineering major learn to apply fundamental knowledge of mathematics, science, and engineering to the creative development of solutions to complex technical problems. The core curriculum provides students with an understanding of ideas that have shaped human thinking in engineering and the humanities, arts, and sciences. This broad perspective gives students the context to comprehend the intentions of God's plan for human activity and realize the environmental, economic, ethical, sustainable, social, and safety impact of their engineering designs on creation and mankind. Graduates are well prepared to pursue employment in industry and to pursue graduate studies in engineering and related fields. The degree is granted upon completion of credits specified on pages 48–49 (40 credits must be successfully completed in 3000- or 4000-level courses).

The Bachelor of Science in Engineering program is accredited by the Engineering Accreditation Commission of ABET (https://www.abet.org).

- **Scientific & Quantitative Literacy** courses in core curriculum: mathematics course MAT2122; natural science course PHY1201/1201L.
- Engineering students must have a laptop computer capable of running applications in Windows (see department-specific recommendations at myUNW and viewing the Information Technology Services page).

Engineering Core . . . . . 50 cr

CHE1021/1021L Principles of Chemistry I 4
MAT2121 Calculus and Analytic Geometry I 4
MAT2122 Calculus and Analytic Geometry II
(SEE SCIENTIFIC & QUANTITATIVE LITERACY REQUIREMENT ABOVE)
MAT3223 Calculus and Analytic Geometry III 4
MAT3252 Calculus-based Statistics 4
MAT3335 Differential Equations with Applied Linear Algebra . . 4
PHY1202/1202L Engineering Physics I
(SEE SCIENTIFIC & QUANTITATIVE LITERACY REQUIREMENT ABOVE)
PHY1202/1202L Engineering Physics II 4
EGR1005 Introduction to Engineering 4
EGR2105 Statics and Dynamics 4
EGR2206 MATLAB 2
EGR2207 Thermodynamics 4
EGR3115 Materials Science 4
EGR4311 Engineering Design I **[WCE]** 4
EGR4312 Engineering Design II **[OCE]** 4

Concentration . . . . . 34 cr

Select a concentration. Requirements are listed below.

Civil Engineering Concentration (34 cr)

EGR2145 Surveying Fundamentals 2
EGR2205 Mechanics of Materials 4
EGR3225 Fluid Mechanics. 4
EGR3245 Structural Analysis 4
EGR3246 Materials Laboratory for Civil Engineering 2
EGR3347 Geotechnical Engineering 4
EGR3348 Soils Testing Laboratory 2
SCI1010/1010L Environmental Science 4
Technical Electives 8
Select from EGR-prefix courses at the 3000 or 4000 level. Students may not receive credit toward the major for both EGR3246 and EGR3326. A maximum combined 4 credits allowed from EGR4841 and EGR4995.

Electrical Engineering Concentration (34 cr)

COS3001 C Programming 2
EGR2107 Introduction to Electronics and Electrical Circuits . 3
EGR2108 Electronics and Electrical Circuits Laboratory 1
EGR3215 Control Systems 4
EGR3235 Electronic Devices 4
EGR3236 Digital Electronics Laboratory 2
EGR3335 Microcontrollers. 2
EGR3337 Signals & Systems 4
EGR3338 Communication Systems Laboratory 2
MAT3226 Applications in Digital Logic 2
Technical Electives 8
Select from EGR-prefix courses at the 3000 or 4000 level. Students may not receive credit toward the major for both EGR3246 and EGR3326. A maximum combined 4 credits allowed from EGR4841 and EGR4995.

Mechanical Engineering Concentration (34 cr)

EGR2107 Introduction to Electronics and Electrical Circuits . 3
EGR2108 Electronics and Electrical Circuits Laboratory 1
EGR2125/2125L Design and Manufacturing Laboratory 2
EGR2205 Mechanics of Materials 4
EGR3215 Control Systems 4
EGR3225 Fluid Mechanics. 4
EGR3326 Materials Laboratory for Mechanical Engineering . . 2
EGR3327 Heat and Mass Transfer. 4
EGR3328 Thermal-Fluids Laboratory. 2
Technical Electives 8
Select from EGR-prefix courses at the 3000 or 4000 level or EGR4339. Students may not receive credit toward the major for both EGR3246 and EGR3326. A maximum combined 4 credits allowed from EGR4841 and EGR4995.

General Engineering Concentration (34 cr)

EGR2107 Introduction to Electronics and Electrical Circuits . 3
EGR2108 Electronics and Electrical Circuits Laboratory 1
EGR2205 Mechanics of Materials 4
EGR3215 Control Systems 4
Select one of the following:
COS3001 C Programming 2
EGR2125/2125L Design and Manufacturing Laboratory 2
EGR2145 Surveying Fundamentals 2
Technical Electives 20
Select from EGR-prefix courses at the 3000 or 4000 level or EGR4339. Students may not receive credit toward the major for both EGR3246 and EGR3326. A maximum combined 4 credits allowed from EGR4841 and EGR4995.