Jeannette Herring Russ (2002). Professor of Engineering and Department Chair. B.S., Mississippi State University; M.B.A., Colorado State University; Ph.D., Vanderbilt University; P.E.

Don Van (2001). Professor of Engineering and Director of Accreditation. B.S. and M.S., University of Illinois in Chicago; M.S. and Ph.D., New Jersey Institute of Technology; P.E., CEM.

Jay Bernheisel (2006). Professor of Engineering. B.S.M.E. and M.S.M.E., Rose-Hulman Institute of Technology; Ph.D., Northwestern University; P.E.

Georg Pingen (2010). Professor of Engineering. B.A., Samford University; B.S. and M.S., Washington University; Ph.D., University of Colorado at Boulder; P.E.

Randal S. Schwindt (2004). Professor of Engineering. B.S., Hardin-Simmons University; M.S., Texas A&M University; Ph.D., University of Illinois at Urbana-Champaign; P.E.

Christine Rowland (2006). Academic Secretary–Engineering, Physics, Math, and Computer Science.

Ethan Wilding (2015). Lab Systems Engineer. B.S., University of Memphis; B.S.E., Union University; M.S., University of Tennessee.

1. Graduates will make contributions through engineering practice, graduate school, or other professional pursuits.
2. Graduates will solve problems through inventive thinking.
3. Graduates will participate in continuing education.
4. Graduates will exemplify Christian principles and ethical standards.

Union offers the Bachelor of Science in Engineering, BSE, with concentrations in electrical and mechanical engineering. The curriculum is designed to expose students to a broad base of engineering knowledge and the basic science and math upon which that knowledge rests. In addition, the curriculum at Union includes a strong general education component that provides a greater understanding of the world in which engineering products will ultimately be used.

Because engineering courses build upon one another, the prerequisite sequences that exist in the curriculum must be closely followed. Incoming freshmen will ideally be ready to begin the calculus sequence in their first semester in order to satisfy the various prerequisites and complete the degree in four years.

The engineering major must complete all General Core Requirements to include CHE 111 and MAT 211. The major must also complete the BSE Specific Core comprised of MAT

disciplines nofered at Union.

The minor in computational engineering science will benefit science, engineering, and mathematics students who are interested in the intersection of these three fields. It combines Union's existing strengths in these disciplines to offer innovative program of study that introduces students t field of computational modeling and simulations.

The Union BSE program is accredited by the EAC Accreditation Commission of ABET, *www.abet.org*. Accreditation is a consideration for professional licensure in many states and for admission to some engineering graduate schools. ABET does not accredit minors.

I. Major in Engineering–61 hours
   A. Major core requirements–47 hours + a Concentration
      1. EGR 101, 105, 109, 210, 240, 250, 261, 262
      2. EGR 330, 342, 360, 375, 391
      3. EGR 475, 491, 492, 498
   B. Mechanical Engineering Concentration–14 hours
      1. EGR 320, 352, 355
      2. EGR 455, 456
   C. Electrical Engineering Concentration–14 hours
      1. EGR 361, 365
      2. EGR 405, UL EEC Elective

II. Minor in Engineering – 18 hours
   EGR coursework to exclude EGR 391, 491, 492, and 498 (must include 6 upper level hours).

III. Minor in Computational Engineering Science–18 hours
   A. EGR 109, 209, 325
   B. CSC 255, 329
   C. MAT 315, 360
   D. If a student has taken all required courses but needs additional credits for the minor as the courses above count toward other degrees, students can (with advisor approval) count any other math, science, computer science, or engineering course that does not already fulfill a major/minor degree requirement.

The discipline-specific honors program in engineering offers students an opportunity to go beyond the basic curriculum through taking engineering contract courses with expanded requirements, completing an original honors project, and attending colloquia sponsored by the Honors Community. Specific program requirements are outlined below, and additional details can be found on the engineering website.

240. Mechanical Engineering Fundamentals I: Mechanics (3) F
Prerequisites: MAT 212; PHY 231.
Introduces vector analysis of forces and torques. Examines rigid bodies and determinate structures at equilibrium. Covers kinematics of a particle and of a rigid body. Presents kinetic analysis using force-acceleration, work-energy, and impulse-momentum techniques.

250. Mechanical Engineering Fundamentals II: Thermo-fluid Dynamics I (4) S
Prerequisite: PHY 232; Pre- or Corequisites: EGR 109; MAT 314.
Introduces macroscopic concepts of thermodynamics, including first and second laws, properties of a pure substance, and energy analysis; also introduces hydrostatics and fluid dynamics, including pressure distribution, relations for fluid particles, and development of conservation theorems. Includes weekly lab.

261. Electrical Engineering Fundamentals I: Fs(r CoB-0.6 (dB-0.)BT0 Tc -0 g3CoB-0.6 -0.)BT0 9(pa)-0..(d)-/TT1 1 T((3(f)F)TjI: Fs(r CoB-0.

391. Major Project Design Preparation (1) S
Prerequisite: 24 EGR credit hours
Provides a review of the engineering design process and allows