ENGINEERING-GENERAL (ENGR)

ENGR 105 Engineering Graphics (2 credits)
Freehand and computer aided drawing in pictorial and orthographic projection; section and auxiliary views; descriptive geometry; graphical presentation of data; scales, dimensioning, and measurements. Two lectures and one 2-hour lab per week.

ENGR 123 First Year Engineering (2 credits)
Introduction to critical thinking and engineering problem solving, writing in the professional context, oral communication skills, teamwork and leadership, professionalism and work ethic. Focuses on career exploration, best practices in completing STEM homework assignments, development of a professional identity, immersion in a team-based design project with a campus client, and cultivation of life-long learning to ensure workforce success. Typically Offered: Fall.
Prereqs: None
Coreqs: MATH 108 (or higher)

ENGR 204 (s) Special Topics (1-16 credits)
Credit arranged

ENGR 205 Near Space Engineering (1 credit, max 6)
Idaho RISE (Research Involving Student Engineers and Educators) is the NASA Idaho Space Grant Consortium student high-altitude scientific balloon program at the University of Idaho. RISE is a multidisciplinary program involving students from all departments in the College of Engineering, as well as Physics, Chemistry, Life Sciences, Education, and many other departments. Students in ENGR 205 will participate in the design, development, testing, flight and flight operations, recovery, and data analysis of balloon-borne science and engineering instrumentation flown to altitudes of 100,000 feet and higher. Recommended Preparation: Interest in space, aerospace science and engineering.

ENGR 206 Near Space Engineering II (1 credit, max 6)
Idaho RISE (Research Involving Student Engineers and Educators) is the NASA Idaho Space Grant Consortium student high-altitude scientific balloon program at the University of Idaho. RISE is a multidisciplinary program involving students from all departments in the College of Engineering, as well as Physics, Chemistry, Life Sciences, Education, and many other departments. Students in ENGR 206 will participate in the design, development, testing, flight and flight operations, recovery, and data analysis of balloon-borne science and engineering instrumentation flown to altitudes of 100,000 feet and higher. Recommended Preparation: Interest in engineering, space, and aerospace sciences. (Spring only)

ENGR 210 Engineering Statics (3 credits)
Principles of statics with engineering applications; addition and resolution of forces, vector algebra, moments and couples, resultants and static equilibrium, equivalent force systems, centroids, center of gravity, free body method of analysis, two and three dimensional equilibrium, trusses, frames, and friction. Cooperative: open to WSU degree-seeking students.
Prereqs: MATH 170.

ENGR 220 Engineering Dynamics (3 credits)
Particle and rigid body kinematics and kinetics; rectilinear, curvilinear, and relative motion, equations of motion, work and energy, impulse and momentum, systems of particles, rotation, rotating axes, rigid body analysis, angular momentum, vibration, and time response. Cooperative: open to WSU degree-seeking students.
Prereqs: ENGR 210 and MATH 175

ENGR 240 Introduction to Electrical Circuits (3 credits)
Not open for credit to electrical engineering majors. Circuit analysis, transient and steady state behavior, resonant systems, system analysis, and power and energy concepts; elementary differential equations will be introduced to solve basic transient problems.
Prereqs: MATH 175 and PHYS 211/PHYS 211L

ENGR 320 Engineering Thermodynamics and Heat Transfer (3 credits)
First and second laws of thermodynamics; thermodynamic processes; thermodynamic properties; flow processes; conversion of heat into work; conduction, convection, radiation, and heat exchangers. Recommended Preparation: ENGR 210 and MATH 310. Cooperative: open to WSU degree-seeking students.

ENGR 335 Engineering Fluid Mechanics (3 credits)
Physical properties of fluids; fluid statics; continuity, energy, momentum relationships; laminar and turbulent flow; boundary layer effects; flow in pipes, open channels, and around objects. Cooperative: open to WSU degree-seeking students.
Prereqs: ENGR 210, MATH 275

ENGR 350 Engineering Mechanics of Materials (3 credits)
Elasticity, strength, and modes of failure of engineering materials; theory of stresses and strains for ties, shafts, beams, and columns. Cooperative: open to WSU degree-seeking students.
Prereqs: ENGR 210, MATH 175
Coreqs: MATH 310

ENGR 360 Engineering Economy (2 credits)
Economic analysis and comparison of engineering alternatives. This class meets for 3 lectures per week for the first 10 weeks of the semester.
Prereqs: Junior standing

ENGR 398 (s) Internship (1-16 credits)
Credit arranged

ENGR 404 (s) Special Topics (1-16 credits)
Credit arranged

ENGR 428 Numerical Methods (3 credits)
Cross-listed with MATH 428 and PHYS 428
Joint-listed with MATH 529 and PHYS 528
Systems of equations, root finding, error analysis, numerical solution to differential equations, interpolation and data fitting, numerical integration, related topics and applications.
Prereqs: MATH 310.

ENGR 499 (s) Directed Study (1-16 credits)
Credit arranged

ENGR 504 (s) Special Topics (1-16 credits)
Credit arranged