Engineering Assessment Plan
Rev. 12/14/2020

Engineering	16-17	17-18	18-19	19-20	20-21	21-22
ENGRB17 - Introduction to Electric Circuits						
• Upon completion the student will be able to:Formulate efficient strategies to find unknown voltage, current and power values through circuits based on component arrangement.			C	C	P	
• Upon completion the student will be able to:Calculate voltage, current and power values at any part of a circuit through simplification and application of basic laws.						P
• Upon completion the student will be able to:Design circuits for desired output values based on selection of components selection.		C				P
ENGRB17L - Electric Circuit Laboratory						
• Upon completion the student will be able to: use the most basic functions of electrical test and measurement equipment including oscilloscopes, multimeters, function generators and power supplies.		C				P
• Read circuit schematics and construct linear circuits using resistors, capacitors, inductors, and op amps.		C				P
• Measure resistance, DC and AC voltages, current, and power, and experimentally verify the results for a variety of electrical circuits.		C				
• Test circuits, critically analyze data and compare measured performance to theory.		C				
• Use a circuit simulation program and other computer applications to predict or describe circuit behavior.		C	C			
• Using critical and logical methods, troubleshoot and repair simple electric circuits.		C		C		
• Record and document results of lab work using text and graphs.		C		C		
ENGRB19C - Introduction to Programming Concepts and Methodologies for Engineers						
• 1. Upon successful completion of the course, the student will be able to apply the principles of structured programming.			C			P
• 2. Upon successful completion of the course, the student will be able to apply numerical techniques to analyze and solve engineering-related problems			C	C		
• 3. Upon successful completion of the course, the student will be able to compare computer algorithms and software/hardware interfaces in developing efficient programming code			C			
ENGRB20 - Programming and Problem-Solving in MATLAB						
• Upon completion the student will be able to:Demonstrate the ability to apply a top down design methodology to develop computer algorithms.		C				
• Upon completion the student will be able to:Demonstrate the ability to create, test, and debug sequential MATLAB programs, as well as programs that use object-orientated techniques, in order to achieve computational objectives.		C				
• Upon completion the student will be able to:Explain and apply numeric techniques and computer simulations to analyze and solve engineering related problems.		C	C			
• Upon completion the student will be able to:Demonstrate the ability to use MATLAB effectively to analyze and visualize data.		C	C			
• Upon completion the student will be able to:Demonstrate knowledge, understanding, and the ability to use standard data structures.		C		C		
ENGRB24 - Engineering Graphics and Descriptive Geometry						
• 1. Upon successful completion of the course, the student will be able to calculate precision fit tolerances			C	C		
• 2. Upon successful completion of the course, the student will be able to develop processed for creating 3-dimensional part models and assembly models.			C			
• 3. Upon successful completion of the course, the student will prepare detailed and assembly drawings for the portfolio					P	
• 4. Upon successful completion of the course, the student will be able to revise 3-dimensional models based on engineering change orders.						P
• 5. Upon successful completion of the course, the student will be able to interpret industrial drawing dimensions and symbols according to the ASME industry standard.			C	C		

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ENGRB36 - Engineering Mechanics-Statics						
• 1. Upon completion the student will be able to: Analyze two- and three-dimensional force systems on rigid bodies in static equilibrium.				C		
• 2. Upon completion of the course the student will be able to: Solve for unknown force or moment reactions on a single, rigid body in equilibrium.					P	
• 3. Upon completion of the course a student will be able to: Solve for the centroid of a uniform area or volume.					P	
• 4. Upon completion of the course a student will be able to: Solve for unknown forces in a system containing multiple rigid bodies (such as trusses).						P
ENGRB37 - Engineering Mechanics-Dynamics						
• Upon completion the student will be able to:Derive and apply the relationships between position, velocity, and acceleration of a particle in motion.			C		P	
• Upon completion the student will be able to: Derive relations defining the velocity and acceleration of a particle on a rigid body for translation, rotation, and general plane motion.					P	
• Upon completion the student will be able to: Apply Newton's second law to analyze the motion of a particle acted upon by forces or a rigid body acted upon by forces and moments..					P	
• Upon completion the student will be able to: Apply the method of work and energy to problems modeled as a single particle, system of particles, or a rigid body.						P
• Upon completion the student will be able to: Apply the method of impulse and momentum to problems modeled as a single particle, system of particles, or a rigid body.						P
• Upon completion the student will be able to: Describe and analyze the motion of a particle relative to a rotating frame.						P
• Upon completion the student will be able to: Apply the principle of impulse and momentum to impact problems.						P
• Upon completion the student will be able to: Communicate legible and understandable engineering solutions.						P
ENGRB38 - Strength of Materials						
• 1. Upon successful completion of the course, the student will be able to calculate internal stress and maximum displacement of a structural element.						P
• 2. Upon successful completion of the course, the student will be able to determine failure modes from a given structural system loading condition.					P	
• 3. Upon successful completion of the course, the student will be able to calculate internal forces and couples throughout a structural system given loading conditions.						P
ENGRB40 - Surveying						
• 1. Upon successful completion of the course, the student will perform office computations and design for differential leveling; traversing; area calculations; property/boundary surveys; topographic surveys/mapping; volume/earthwork; horizontal and vertical curves; and error analysis.					P	
• 2. Upon successful completion of the course, the student will operate survey equipment: tape, level, transit, theodolite, compass, total station, GPS.					P	
• 3. Upon successful completion of the course, the student will reduce field notes using various mathematical techniques to generate meaningful records describing horizontal and vertical control of landforms.						P
• 4. Upon successful completion of the course, the student will plot plans and maps from field work data using manual and computer-aided drafting.						P
• 5. Upon successful completion of the course, the student will work effectively in groups during field surveying and engineering design project which involve problem solving, report writing, and oral presentations.						P
ENGRB45 - Properties of Materials						
• 1. Upon successful completion of the course the student will be able to analyze the connection between atomic structure and macroscopic behavior in materials.				C		
• 2. Upon successful completion of the course the student will be able to evaluate stress-strain data, appraise mechanical properties of a material and apply these findings to engineering design.					P	
• 3. Upon successful completion of the course the student will be able to relate the principles of material processing to measured properties.						P

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ENGRB47 - Introduction to Engineering and Design						
• 1. Upon successful completion of this course the student will be able to leverage software assets to solve engineering problems and formulate engineering designs.				C		
• 2. Upon successful completion of this course the student will be able to design and construct a physical device as part of a team.					P	
• 3. Upon successful completion of this course the student will be able execute each of the steps necessary to complete a BS degree in engineering and apply for an entry-level engineering position.						P
• 4. Upon completion of this course a student will be able to demonstrate the oral and written communication skills that are critical for practicing engineers.						P
ENGRB70 - Surveying for Professionals						
• 1. Upon successful completion of the course, the student will be able to perform office computations and design for differential leveling; traversing; area calculations; property/boundary surveys; topographic surveys/mapping; volume/earthwork; horizontal and vertical curves; and error analysis.						P
• 2. Upon successful completion of the course, the student will be able to operate survey equipment: tape, level, transit, theodolite, compass, total station, GPS.					P	
• 3. Upon successful completion of the course, the student will be able to reduce field notes using various mathematical techniques to generate meaningful records describing horizontal and vertical control of landforms.					P	
• 4. Upon successful completion of the course, the student will be able to plot plans and maps from field work data using manual and computer-aided drafting.						P
• 5. Upon successful completion of the course, the student will be able to work effectively in groups during field surveying and engineering design project which involve problem solving, report writing, and oral presentations.						P