Engineering	14-15	15-16	16-17	17-18	18-19	19-20
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.	X					
• 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.		X				
• Upon completion the student will be able to:Design circuits for desired output values based on selection of components selection.		X		X		
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.		X		X		
• Read circuit schematics and construct linear circuits using resistors, capacitors, inductors, and op amps.		X		X		
• Measure resistance, DC and AC voltages, current, and power, and experimentally verify the results for a variety of electrical circuits.				X		
• Test circuits, critically analyze data and compare measured performance to theory.				X		
• Use a circuit simulation program and other computer applications to predict or describe circuit behavior.				X	X	
• Using critical and logical methods, troubleshoot and repair simple electric circuits.				X		X
• Record and document results of lab work using text and graphs.				X		X
ENGRB19C - Introduction to Programming Concepts and Methodologies for Engineers						
• Upon completion the student will be able to: Describe the basics of the architecture of a computer and its components.		X				
• Describe the principles of structured programming.		X				
• Describe, design, implement, and test structured programs using currently accepted methodology, and in particular to be able to do so for programs that control or otherwise interface with hardware by means of software.					X	
• Explain what an algorithm is and its importance in computer programming.					X	
• Apply numerical techniques to analyze and solve engineering-related problems.						X
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.				X		
• 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.				X		
• Upon completion the student will be able to:Explain and apply numeric techniques and computer simulations to analyze and solve engineering related problems.				X	X	
• Upon completion the student will be able to:Demonstrate the ability to use MATLAB effectively to analyze and visualize data.				X	X	
• Upon completion the student will be able to:Demonstrate knowledge, understanding, and the ability to use standard data structures.				X		X
ENGRB24 - Engineering Graphics and Descriptive Geometry						
• Upon completion the student will be able to: Apply rules of orthographic projection to create multiview drawings		X				
• Create pictorials from orthographic views.					X	
• Use CAD software to create 2D engineering drawings and 3D models and assemblies.					X	
• Create auxiliary and section views of an object following correct conventions.					X	
• Apply standards of dimensioning and tolerancing to engineering drawings.						X
• Apply the engineering design process to a design project.						X

Engineering	14-15	15-16	16-17	17-18	18-19	19-20
ENGRB36 - Engineering Mechanics-Statics						
• Upon completion the student will be able to:Effectively communicate legible problem solutions to be understood by engineers in and out of their specific discipline					X	
• Upon completion the student will be able to: Determine the forces that act on rigid bodies including external forces, weight, normal, distributed loads, friction and reactions at supports.						X
• Upon completion the student will be able to: Calculate internal forces in members and create shear and bending moment diagrams for beams.		X				
• Upon completion the student will be able to: Perform vector analysis methods addressing forces acting on rigid bodies, trusses, frames, and machines.				X		
• Upon completion the student will be able to: Analyze two- and three-dimensional force systems on rigid bodies in static equilibrium.				X		
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.	X					
• 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.					X	
• 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..					X	
• 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.						X
• 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.					X	
• Upon completion the student will be able to: Describe and analyze the motion of a particle relative to a rotating frame.					X	
• Upon completion the student will be able to: Apply the principle of impulse and momentum to impact problems.					X	
• Upon completion the student will be able to: Communicate legible and understandable engineering solutions.						X
ENGRB40 - Surveying						
• Upon completion 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.					X	
• Operate survey equipment: tape, level, transit, theodolite, compass, total station, GPS.					X	
• Reduce field notes using various mathematical techniques to generate meaningful records describing horizontal and vertical control of landforms.						X
• Plot plans and maps from field work data using manual and computer-aided drafting.		X				
• Work effectively in groups during field surveying and engineering design project which involve problem solving, report writing, and oral presentations.					X	
ENGRB45 - Properties of Materials						
• Upon completion the student will be able to: 1. Analyze the connection between atomic structure and macroscopic behavior in materials.				X		
• 2.Calculate or estimate material performance based on reference properties or measured values.				X		
• 3. Evaluate, design and select proper materials for given applications.					X	

Engineering	14-15	15-16	16-17	17-18	18-19	19-20
ENGRB47 - Introduction to Engineering and Design						
• Upon completion the student will be able to: Describe the role of engineers in society and classify the different engineering branches, the functions of an engineer, and industries in which they work.						X
• Identify and describe academic pathways to a bachelor's degree.		X			X	
• Develop and apply effective strategies to succeed academically.		X				
• Explain engineering ethical principles and standards.		X				
• Demonstrate knowledge of effective practices for writing technical engineering documents and making oral presentations.				X		
• Analyze engineering problems using the engineering design process.				X		
• Demonstrate teamwork skills in working on an engineering design team.					X	