Portion of UA ECE Curriculum

MA-LO1: Use derivatives to analyze and graph algebraic and transcendental functions
MA-LO2: Select and apply models and differentiation techniques to applications involving, but not limited to, optimization and related rates
MA-LO3: Apply the Fundamental Theorem of Calculus to evaluate integrals
MA-LO4: Use estimation techniques to approximate rates of change, area, and total change
MA-LO5: techniques of analytical and numerical integration;
MA-LO6: apply the definite integral to problems arising in geometry and in either physics or probability
MA-LO7: work with the concept of infinite series and be able to calculate and use Taylor series;
MA-LO8: analyze first order differential equations from a graphical and algebraic point of view and model physical and biological situations by differential equations
MA-L9: Recognize and sketch surfaces in three-dimensional space
MA-L10: Recognize and apply the algebraic and geometric properties of vectors and vector functions in two and three dimensions
MA-LO11: Compute dot products and cross products and interpret their geometric meaning
MA-LO12: Compute partial derivatives of functions of several variables and explain their meaning
MA-LO13: Compute directional derivatives and gradients of scalar functions and explain their meaning
MA-LO14: Compute and classify the critical points;
MA-LO15: Parameterize curves in 2- and 3-space;
MA-LO16: Set up and evaluate double and triple integrals using a variety of coordinate systems
MA-LO17: Evaluate integrals through scalar or vector fields and explain some physical interpretation of these integrals
MA-LO18: Recognize and apply Fundamental theorem of line integrals, Green's theorem, Divergence Theorem, and Stokes' theorem

MA-LO19: Recognize the proper technique and solve initial value problems for first order equations
MA-LO20: Solve initial value problems for higher order linear homogeneous and inhomogeneous equations
MA-LO21: Solve linear homogeneous systems using eigenvalues and eigenvectors
MA-LO22: Use Laplace Transforms to solve first and second order linear equations and linear systems
MA-LO23: Solve linear, variable coefficient equations using infinite series

PH-LO1: Recognize the vocabulary and units of mechanics.
PH-LO2: Understand the concepts, laws, and principles used in mechanics and generate associations between the concepts and laws. Apply concepts and laws to both qualitative and quantitative problems.
PH-LO3: Work cooperatively within a group on problem solving.
PH-LO4: Use fundamental physical principles to understand how everyday objects work.
PH-LO5: Understand Coulomb's and Gauss' Laws
PH-LO6: Basic understanding of electric fields and potentials, electrical and magnetic properties of matter
PH-LO7: Use of Ampere's and Faraday's Laws to understand induced electromotive forces
PH-LO8: Ability to analyze elementary DC and AC circuits,
PH-LO9: Understand electromagnetic waves and Maxwell's equations.

EE-LO1: Understand ideal basic circuit elements, power, and energy
EE-LO2: Ability to construct basic electrical circuits, and apply Omh's law and Kirchhoff's laws
EE-LO3: Ability to analyze simple resistive circuits, voltage divider circuits, and current-divider circuits
EE-LO4: Understand various techniques of circuit analysis and Thevenin and Norton equivalent circuits
EE-LO5: Understand the functions of operational amplifiers, inductors, and capacitors
EE-LO6: Understand first-order RL and RC circuits, and the natural and step responses of RLC circuits
EE-LO7: Ability to perform sinusoidal steady-state circuit analysis