ELECTROMAGNETIC FIELDS AND MICROWAVE CIRCUIT DESIGN - CERTIFICATE

The certificate program in Electromagnetic Fields and Microwave Circuit Design offers students a comprehensive education in electromagnetic theory, microwave integrated circuit design, antenna design, and relevant numerical techniques. The curriculum begins with a thorough exploration of electromagnetic theory, covering essential topics such as Maxwell's equations, Poynting's theorem, Green's functions, and Helmholtz's equations. Students will gain proficiency in the theory and application of phased array antennas, radiators, adaptive arrays, and synthesis array antennas tailored for radar, imaging, and biomedical applications. Furthermore, the program provides instruction in numerical methods for engineering electromagnetics, including finite differencing and finite element methods. Students will also learn techniques for high-frequency circuit design, S-parameters, Smith charts, and the utilization of CAD software tools for microwave circuit analysis and optimization. Upon successful completion of the program, students will be equipped with the knowledge and skills necessary to pursue careers in the wireless industry.

This program is also approved for delivery via asynchronous or synchronous distance education technology.

Program Requirements

Code	Title	Semester Credit Hours
ECEN 635	Electromagnetic Theory	3
ECEN 638	Antennas and Propagation	3
ECEN 641	Microwave Solid-State Integrated Circuits	3
Select from the following:		6
ECEN 636	Phased Arrays	
ECEN 637	Numerical Methods in Electromagnetics	
ECEN 648	Principles of Magnetic Resonance Imaging	
ECEN 735	Electromagnetic Field Theory	
Total Semester Credit Hours		**15**