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| **Course** | ECE 58100 – Microwave Engineering |
| **Type of Course** | Graduate Course |
| **Catalog Description** | In this course, analysis of microwave components and circuits in terms of scattering parameters, determination of electrical characteristics of waveguides and transmission lines through electromagnetic field analysis, design basics of microwave amplifiers and based on stability, bandwidth, gain, and noise figure criteria, generating layouts and measurement of these devices, fundamentals of antennas, and use of CAD tools in RF/Microwave circuit design will be discussed. |
| **Credits** | 3 |
| **Contact Hours** | 1 |
| **Prerequisite Courses** | ECE 25500 & ECE 31100 (or equivalent courses) |
| **Textbook** | D.M. Pozar, Microwave Engineering, Wiley, 4rd edition, 2011 |
| **Course Objectives** | * Analyze microwave components and circuits in terms of scattering parameters. * Determine the electrical characteristics of waveguides and transmission lines through electromagnetic field analysis. * Design of microwave amplifiers based on stability, bandwidth, power gain and noise figure criteria * Understand the fundamentals of antennas * Learn the use of CAD tools in RF/Microwave circuit design. |
| **Course Outcomes** | Students who successfully complete this course will have demonstrated:   1. a basic knowledge of microwave circuits, components **[1]** 2. an understanding of waveguides and transmission lines **[1]** 3. an understanding of two port networks and S-parameters **[1]** 4. an understanding of RF power amplifiers **[1]** 5. an understanding of fundamentals of antennas **[1]** 6. an ability to use CAD tools in RF circuit design **[2]** |
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| **Lecture Topics** | * Microwave Components and Circuits * Two Port Networks * Scattering Parameters * Smith Chart and Its Applications * Transmission Lines * Waveguides * CAD Tools * Planar Circuits * Passive Circuits * Design basics of Amplifiers * Fundamentals of Antennas |
| **Computer Usage** | Medium |
| **Laboratory Experience** | Medium |
| **Design Experience** | Medium |
| **Coordinator** | Carlos Pomalaza-Ráez |
| **Date** | September 30, 2018 |