Objective: To acquaint students with recent research activity, ideas, designs and results in applied electromagnetics.

Course Description
Topics covered include: plane-wave propagation, wave reflection and transmission, electromagnetic interferences, transmission lines and waveguides, radiation and antennas, satellite communication systems, computational electromagnetics: FDTD (Finite Difference Time Domain), electromagnetic device design: filters, diplexers, phase shifters, RF amplifiers, antennas, and electromagnetic measurements.

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPICS</th>
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<tbody>
<tr>
<td>1</td>
<td>Intro to Electromagnetics</td>
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<td>2</td>
<td>Plane-Wave Propagation: Mathematics for Electromagnetics, Maxwell’s Equations, Wave Equations</td>
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<td>3</td>
<td>Wave Reflection and Transmission, Electromagnetic Interferences</td>
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<td>4</td>
<td>Transmission Lines, Quarter and Half Waves, Microstrip Antennas</td>
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<td>5</td>
<td>Radiation I: Matching Matrices, Fresnel Lens</td>
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<td>6</td>
<td>Radiation II: Single Dielectric Slab, Reflectionless Slab, Antireflection Coating, Radomes</td>
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<td>7</td>
<td>Radiation III: Multiple Structures, Antireflection Coating Dielectric Mirrors</td>
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<td>8</td>
<td>Midterm Exam (Take Home)</td>
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<td>9</td>
<td>Satellite Communication Systems</td>
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<td>10</td>
<td>Satellite Microwave Links</td>
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<td>11</td>
<td>EM Device Design I: Waveguides</td>
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<tr>
<td>12</td>
<td>EM Device Design II: Horn Antennas, Reflector Antennas</td>
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<tr>
<td>13</td>
<td>Smith Chart Impedance Matching, Electromagnetic Measurements</td>
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<tr>
<td>14</td>
<td>Intro to Finite-Difference Time-Domain (FDTD)</td>
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<tr>
<td>15</td>
<td>Project Presentation</td>
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<tr>
<td>16</td>
<td>Project Presentation/ Final Exam (in class on 05/02/18)</td>
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</tbody>
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Grading Policies:
1. Midterm 30%
2. Final 20%
3. Project 20%
4. HW 20%
5. Quiz and Class Participation 10%

The grades for this course will be assigned according to the following scale:

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<tr>
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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
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<tbody>
<tr>
<td>&gt;=</td>
<td>80</td>
<td>70-79</td>
<td>60-69</td>
<td>50-59</td>
<td>&lt;50</td>
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Suggested Textbooks:

Calendar of Activities
- **January 16**: First day of classes
- **January 19**: Last day to add a course or register for spring 2018
- **March 12 – 17**: SPRING BREAK – NO classes
- **March 30 – 31**: EASTER HOLIDAY – NO classes
- **April 12**: Last day to drop a course; will count toward the 6-drop rule
- **May 2**: Last day of classes
- **May 3**: Study Day – NO class
- **May 4 – 10**: Spring 2018 Final Exams
- **May 11 - 12**: Commencement Ceremonies
UTRGV Policy Statement

The UTRGV disability accommodation, mandatory course evaluation statement and sexual harassment statement are required on all syllabi. Additional policy statements are optional, such as those covering attendance, academic integrity, and course drop policies.

STUDENTS WITH DISABILITIES:
Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD:
Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:
- Spring 2018 Module 1 February 14 – February 20
- Spring 2018 Module 2 April 11 – April 17
- Spring 2018 (full semester) April 11 – May 2

ATTENDANCE:
Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY:
As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.
SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:
In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

COURSE DROPS:
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

STUDENT SERVICES:
Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.
Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

- Learning center: BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- Writing center: BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- Advising center: BMAIN 1400 (Brownsville) or ESWKH 101 (Edinburg)
- Career center: BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)