

# Microwave Physics and Techniques

IU/USPAS P671D

University of California Santa Barbara

June 16 -20, 2003

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Argonne National Laboratory



# Course Syllabus

Instructor: Ali Nassiri – Argonne National Laboratory

Class Time: M, T, W, TH ,F: 9:00 AM – Noon  
&  
2:00 PM – 5:00 PM

Prerequisites: College Physics, E&M and Calculus

Course Objectives: Provide essential background and training in microwave physics and its applications in synchrotron facilities

Grading:

Homework	40%
Mid-week Exam (Take Home)	20%
Final Exam	40%

Textbook: Foundations For Microwave Engineering  
Robert E. Collin



# Schedule

<b>Monday 6/16</b>	<b>Tuesday 6/17</b>	<b>Wednesday 6/18</b>	<b>Thursday 6/19</b>	<b>Friday 6/20</b>
<b>9:00 – 10:30 AM</b> <b>Lecture 1</b>	<b>9:00 – 10:30 AM</b> <b>Lecture 5</b>	<b>9:00 – 10:30 AM</b> <b>Lecture 9</b>	<b>9:00 – 10:30 AM</b> <b>Lecture 13</b>	<b>9:00 – 10:30 AM</b> <b>Lecture 17</b>
<b>10:30 -10:45 AM</b> <b>Break</b>	<b>10:30 -10:45 AM</b> <b>Break</b>	<b>10:30 -10:45 AM</b> <b>Break</b>	<b>10:30 -10:45 AM</b> <b>Break</b>	<b>10:30 -10:45 AM</b> <b>Break</b>
<b>10:45 – Noon</b> <b>Lecture 2</b>	<b>10:45 – Noon</b> <b>Lecture 6</b>	<b>10:45 – Noon</b> <b>Lecture 10</b>	<b>10:45 – Noon</b> <b>Lecture 14</b>	<b>10:45 – Noon</b> <b>Lecture 18</b>
<b>12:00 – 2:00 PM</b> <b>Lunch</b>	<b>12:00 – 2:00 PM</b> <b>Lunch</b>			
<b>2:00 – 3:30 PM</b> <b>Lecture 3</b>	<b>2:00 – 3:30 PM</b> <b>Lecture 7</b>	<b>2:00 – 3:30 PM</b> <b>Lecture 11</b>	<b>2:00 – 3:30 PM</b> <b>Lecture 15</b>	<b>2:00 – 4:00 PM</b>  <b>FINAL EXAM</b>
<b>3:30 -3:45 PM</b> <b>Break</b>	<b>3:30 -3:45 PM</b> <b>Break</b>	<b>3:30 -3:45 PM</b> <b>Break</b>	<b>3:30 -3:45 PM</b> <b>Break</b>	
<b>3:45-5:00 PM</b> <b>Lecture 4</b>	<b>3:45-5:00 PM</b> <b>Lecture 8</b>	<b>3:45-5:00 PM</b> <b>Lecture 12</b>	<b>3:45-5:00 PM</b> <b>Lecture 16</b>	



# Topics

	<b>9:00 – 10:30 AM</b>	<b>10:45AM – 12:00 PM</b>	<b>2:00 -3:30 PM</b>	<b>3:45 – 5:00 PM</b>
<b>Mon</b>	<b>Mathematics Review</b>	<b>Math/E&amp;M Review</b>	<b>E&amp;M Review</b>	<b>Transmission Lines</b>
<b>Tue</b>	<b>Transmission Lines</b>	<b>Waveguides</b>	<b>Waveguides</b>	<b>Microwave Network Analysis</b>
<b>Wed</b>	<b>Microwave Network Analysis</b>	<b>Impedance Matching</b>	<b>Impedance Matching</b>	<b>Microwave Resonator</b>
<b>Thu</b>	<b>Power Dividers and Couplers</b>	<b>RF Breakdown and Ferrite Materials</b>	<b>Filters</b>	<b>Measurements And Simulations</b>
<b>Fri</b>	<b>RF Systems for Synchrotron SR</b>	<b>RF Systems for Synchrotron SR</b>	<b>Final Exam 2:00 – 4:00 PM</b>	