INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITDM) KANCHEEPURAM

<table>
<tr><td>Course Title</td><td>Microwave Integrated Circuits</td><td>Course No</td><td colspan="3">To be allotted later on by the office</td></tr>
<tr><td>Specialization</td><td>Electronics Engineering</td><td>Structure (IPC)</td><td></td><td>3003</td><td></td></tr>
<tr><td>Offered for</td><td>B. Tech. (EDM, COE) DD (ESD)
M. Des. (CDS)</td><td>Status</td><td colspan="2">Core ☐</td><td>Elective ▬</td></tr>
<tr><td>Pre-requisite</td><td>Field Theory, RF and Microwave Circuit Design</td><td>To take effect from</td><td colspan="3">Jan.-May 2016</td></tr>
<tr><td>Objectives</td><td colspan="5">To enable the student familiar with active and passive microwave integrated circuits/components used in microwave communication systems.</td></tr>
<tr><td>Course Outcomes</td><td colspan="5">Students can able to design and analysis various transmission line structures available for microwave integrated circuits.
They can also understand the design and application of microwave integrated circuits and monolithic integrated circuits.</td></tr>
<tr><td>Contents of the course

(With approximate break up of hours)</td><td colspan="5">Microstrip Lines Design and Analysis
Introduction, types of MICs and their technology, Propagating models, Analysis of MIC by conformal transformation, Numerical analysis, Hybrid mode analysis. losses in Microstrip, Introduction to slot line and coplanar wave guide. (9)

Coupled Microstrip line and its Applications, Introduction to coupled Microstrip, Even and odd mode analysis, Directional couplers, branch line couplers, Design and Fabrication of Lumped elements for MICs, Comparison with distributed circuits. (8)

Non-Reciprocal Components and Active Devices for MICS
Ferromagnetic substrates and inserts, Microstrip circulators, Phase shifters, Microwave Transistors, Parametric diodes and Amplifiers, PIN diodes, Transferred electron devices, IMPATT, BARITT, Avalanche diodes, Microwave transistors circuits. (9)

Microstrip Circuit Design and Applications
Introduction, Impedance transformers, Filters, High power circuits, Low power circuits, MICs in satellite and Radar. (8)

MMIC Technology
Fabrication process of MMIC, Hybrid MICs, Configuration, Dielectric substances, thick and thin film technology, Testing methods, Encapsulation and mounting of Devices. (8)</td></tr>
<tr><td>Text and References</td><td colspan="5">Text Book:
1. Bharathi Bhat, Shiban K. Koul “Stripline-Like Transmission Lines for Microwave Integrated Circuits”, Blackie Academic & Professional, 1989.
Reference Books:
1. Hoffman R.K." Hand Book of Microwave Integrated Circuits ", Artech House, Boston, 1987.
2. Gupta .K.C and Amarjit Singh, "Microwave Integrated circuits" John Wiley, New York, 1975.</td></tr>
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