**MICROWAVE ENGG.**

**SUBJECT CODE: 1621605E**

**SEM -VIth**

**FACULTY NAME: RANJEET SIR**

**COURSE OBJECTIVE**

**Students will be able to: -**

1. To explain requirement of EMI & EMC concept and impart knowledge on different units and standards used for Electromagnetic compatibility in electronic/electric system.
2. To develop an ability to analyze and evaluate the impact of shielding and grounding**.**
3. To develop an ability to understand microwave components.

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| **UNIT/Contents: Theory** | **Link** |
| **1.MICROWAVE TUBES**  \*Introduction.  \*Microwave frequency band spectrum.  \*Klystron.  \*Reflex Klystron.  \*Travelling Wave tubes. (TWT)  \*Magnetron. | [**https://www.youtube.com/watch?v=5Ab1ZXcEwRg**](https://www.youtube.com/watch?v=5Ab1ZXcEwRg)  <https://www.youtube.com/watch?v=_SNwJknISXA&list=PLgwJf8NK-2e6A4Mtxud6xPHE1UecxWsHW>  [**https://www.slideshare.net/abhikalmegh/two-cavity-klystron**](https://www.slideshare.net/abhikalmegh/two-cavity-klystron)  [**http://www.idconline.com/technical\_references/pdfs/electronic\_engineering/Klystron\_Amplifier.pdf**](http://www.idconline.com/technical_references/pdfs/electronic_engineering/Klystron_Amplifier.pdf)  [**https://nptel.ac.in/courses/108/103/108103141/**](https://nptel.ac.in/courses/108/103/108103141/) |
| **2.MICROWAVE SEMI CONDUCTOR DEVICES:**  \*Microwave Diodes.  \*Varactor Diodes.  \*Tunnel Diodes.  \*Gunn Diodes.  \*Avalanche effect diodes.  \*M A S E R. | **Already covered Unit -1 and 2.**  **Refer class notes.**  <https://www.youtube.com/watch?v=xgfq-qAS-4M> |
| **3**.MICROWAVE COMPONENTS AND ANTENNAS.  \*Coaxial lines  \*Waveguides  \*Rectangular &Circular waveguides  \*Waveguides corners and Tees  \*Directional couplers  \*Attenuators  \*Parabolic, Horn and Slot Antenna | [**https://uspas.fnal.gov/materials/18ODU/11L%20Waveguides.pdf**](https://uspas.fnal.gov/materials/18ODU/11L%20Waveguides.pdf)  [**http://www.crectirupati.com/sites/default/files/lecture\_notes/AWP%20Lecture%20Notes-final.pdf**](http://www.crectirupati.com/sites/default/files/lecture_notes/AWP%20Lecture%20Notes-final.pdf)  [**https://www.bharathuniv.ac.in/colleges1/downloads/courseware\_ece/notes/BEC703%20-%20Microwave%20engineering.pdf**](https://www.bharathuniv.ac.in/colleges1/downloads/courseware_ece/notes/BEC703%20-%20Microwave%20engineering.pdf) |
| **4.MICROWAVE TRANSMISSION**  **\***Maxwell equations.  \*Modes of propagation in rectangular and circular waveguides.  \*Transmission through rectangular waveguide.  \*cut off frequency and guide wavelength  \*phase and group velocity, and relation between them | [**http://www.iiserpune.ac.in/~santh/course/qmr/gvel.pdf**](http://www.iiserpune.ac.in/~santh/course/qmr/gvel.pdf)  [**http://ece.vnit.ac.in/people/jsengupta/wp-content/uploads/sites/13/2014/07/LECTURE-NOTES-ON-WAVEGUIDES.pdf**](http://ece.vnit.ac.in/people/jsengupta/wp-content/uploads/sites/13/2014/07/LECTURE-NOTES-ON-WAVEGUIDES.pdf)  [**https://www.youtube.com/watch?v=yW8QUzt78tI**](https://www.youtube.com/watch?v=yW8QUzt78tI) |
| 5.DETECTORS  \*Measurement of impedance  \*Measurement of frequency  \*Voltage standing wave ratio. (VSWR) and its measurement. | <https://www.bharathuniv.ac.in/colleges1/downloads/courseware_ece/notes/BEC7L3%20-mw%20lab.pdf> |

**Books Recommended:**

**1. Microwave communication. Angelkos &Everhar**

**2. Antenna and wave propagation K.D Prasad**

**3. Microwave and Radar Engineering M. Kulkarni**