

## Lesson Plan & Work-done Diary for AY: 2026-27 (ODD Semester)

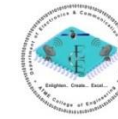
| Course with Code: Satellite and Optical Communication - BEC515D |                      |                                                                 |                | Faculty: Pushpalatha H P |                            |                                                                 | Semester & Section: 5th A |                          |
|-----------------------------------------------------------------|----------------------|-----------------------------------------------------------------|----------------|--------------------------|----------------------------|-----------------------------------------------------------------|---------------------------|--------------------------|
| Class No.                                                       | Date planned (DD/MM) | Topics Covered                                                  | TLP Planned    | Class No.                | Date of Conduction (DD/MM) | Topics Covered                                                  | TLP Executed              | Remarks if any deviation |
| <b>MODULE-1</b>                                                 |                      |                                                                 |                |                          |                            |                                                                 |                           |                          |
| 1                                                               |                      | Bridge Course                                                   | Chalk and Talk | 1                        |                            | Bridge Course                                                   |                           |                          |
| 2                                                               |                      | Bridge Course                                                   | Chalk and Talk | 2                        |                            | Bridge Course                                                   |                           |                          |
| 3                                                               |                      | Satellite Orbits and Trajectories: Definition, Basic Principles | Chalk and Talk | 3                        |                            | Satellite Orbits and Trajectories: Definition, Basic Principles |                           |                          |
| 4                                                               |                      | Orbital parameters, Injection velocity and satellite trajectory | Chalk and Talk | 4                        |                            | Orbital parameters, Injection velocity and satellite trajectory |                           |                          |
| 5                                                               |                      | Types of Satellite orbits                                       | Chalk and Talk | 5                        |                            | Types of Satellite orbits                                       |                           |                          |
| 6                                                               |                      | Orbital perturbations, Satellite stabilization,                 | Chalk and Talk | 6                        |                            | Orbital perturbations, Satellite stabilization,                 |                           |                          |
| 7                                                               |                      | Orbital effects on satellite's performance                      | Chalk and Talk | 7                        |                            | Orbital effects on satellite's performance                      |                           |                          |
| 8                                                               |                      | Eclipses, Look angles                                           | Chalk and Talk | 8                        |                            | Eclipses, Look angles                                           |                           |                          |
| 9                                                               |                      | Azimuth angle, Elevation angle                                  | Chalk and Talk | 9                        |                            | Azimuth angle, Elevation angle                                  |                           |                          |
| 10                                                              |                      | Revision and quiz on Module 1                                   | SRS            | 10                       |                            | Revision and quiz on Module 1                                   |                           |                          |

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| <b>MODULE-2</b>                                                 |                      |                                                    |                |                          |                            |                                                    |                           |                          |
| 11                                                              |                      | Satellite subsystem: Introduction                  | Chalk and Talk | 9                        |                            | Satellite subsystem: Introduction                  |                           |                          |
| 12                                                              |                      | Attitude and Orbit control                         | Chalk and Talk | 10                       |                            | Attitude and Orbit control                         |                           |                          |
| 13                                                              |                      | Attitude and Orbit control Cont.                   | Chalk and Talk | 11                       |                            | Attitude and Orbit control Cont.                   |                           |                          |
| 14                                                              |                      | Tracking, Telemetry and command subsystem, Payload | Chalk and Talk | 12                       |                            | Tracking, Telemetry and command subsystem, Payload |                           |                          |
| 15                                                              |                      | Earth Station: Types of earth station,             | Chalk and Talk | 13                       |                            | Earth Station: Types of earth station,             |                           |                          |
| 16                                                              |                      | Earth station Architecture                         | Chalk and Talk | 14                       |                            | Earth station Architecture                         |                           |                          |
| 17                                                              |                      | Design considerations, Testing                     | Chalk and Talk | 15                       |                            | Design considerations, Testing                     |                           |                          |
| 18                                                              |                      | Earth station Hardware                             | Chalk and Talk | 16                       |                            | Earth station Hardware                             |                           |                          |
| 19                                                              |                      | Satellite tracking                                 | Chalk and Talk |                          |                            | Satellite tracking                                 |                           |                          |
| 20                                                              |                      | Revision and quiz on Module 2                      | SRS            |                          |                            | Revision and quiz on Module 2                      |                           |                          |

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| <b>MODULE-3</b>                                                 |                      |                                                  |             |                          |                            |                                                  |                           |                          |
| 21                                                              |                      | Multiple Access Techniques: Introduction         | PPT         | 21                       |                            | Multiple Access Techniques: Introduction         |                           |                          |
| 22                                                              |                      | FDMA (No derivation), SCPC Systems               | PPT         | 22                       |                            | FDMA (No derivation), SCPC Systems               |                           |                          |
| 23                                                              |                      | SCPC Systems                                     | PPT         | 23                       |                            | SCPC Systems                                     |                           |                          |
| 24                                                              |                      | MCPC Systems                                     | PPT         | 24                       |                            | MCPC Systems                                     |                           |                          |
| 25                                                              |                      | TDMA, CDMA                                       | PPT         | 25                       |                            | TDMA, CDMA                                       |                           |                          |
| 26                                                              |                      | SDMA                                             | PPT         | 26                       |                            | SDMA                                             |                           |                          |
| 27                                                              |                      | Satellite Link Design Fundamentals:              | PPT         | 27                       |                            | Satellite Link Design Fundamentals:              |                           |                          |
| 28                                                              |                      | Transmission Equation, Satellite Link Parameters | PPT         | 28                       |                            | Transmission Equation, Satellite Link Parameters |                           |                          |
| 29                                                              |                      | Propagation considerations                       | PPT         | 29                       |                            | Propagation considerations                       |                           |                          |
| 30                                                              |                      | Revision and quiz on Module 3                    | SRS         | 30                       |                            | Revision and quiz on Module 3                    |                           |                          |

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| <b>MODULE-4</b>                                                 |                      |                                                  |             |                          |                            |                |                           |                          |
| 31                                                              |                      | <b>Optical Fiber Structures:</b><br>Introduction | PPT         | 31                       |                            |                |                           |                          |
| 32                                                              |                      | Optical Fiber Modes and Configurations           | PPT         | 32                       |                            |                |                           |                          |
| 33                                                              |                      | Mode theory for circular waveguides              | PPT         | 33                       |                            |                |                           |                          |
| 34                                                              |                      | Single mode fibers, Fiber materials              | PPT         | 34                       |                            |                |                           |                          |
| 35                                                              |                      | Attenuation and Dispersion: Attenuation          | PPT         | 35                       |                            |                |                           |                          |
| 36                                                              |                      | Absorption                                       | PPT         | 36                       |                            |                |                           |                          |
| 37                                                              |                      | Scattering Losses, Bending loss                  | PPT         | 37                       |                            |                |                           |                          |
| 38                                                              |                      | Signal Dispersion: Modal delay, Group delay      | PPT         | 38                       |                            |                |                           |                          |
| 39                                                              |                      | Material dispersion                              | PPT         | 39                       |                            |                |                           |                          |
| 40                                                              |                      | Revision and quiz on Module 4                    | SRS         | 40                       |                            |                |                           |                          |

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| <b>MODULE-5</b>                                                 |                      |                                                                                    |             |                          |                            |                |                           |                          |
| 41                                                              |                      | <b>Optical Sources and detectors:</b><br>Light Emitting Diode: LED Structures      | PPT         | 41                       |                            |                |                           |                          |
| 42                                                              |                      | Light source materials,                                                            | PPT         | 42                       |                            |                |                           |                          |
| 43                                                              |                      | Quantum efficiency and LED power                                                   | PPT         | 43                       |                            |                |                           |                          |
| 44                                                              |                      | Laser Diodes: Modes and threshold conditions                                       | PPT         | 44                       |                            |                |                           |                          |
| 45                                                              |                      | Rate equations, External quantum efficiency                                        | PPT         | 45                       |                            |                |                           |                          |
| 46                                                              |                      | Resonant frequencies, Photodetectors: The pin Photodetector, Avalanche Photodiodes | PPT         | 46                       |                            |                |                           |                          |
| 47                                                              |                      | <b>WDM Concepts:</b> Overview of WDM,                                              | PPT         | 47                       |                            |                |                           |                          |
| 48                                                              |                      | Isolators and Circulators, Fiber grating filters (No derivation),                  | PPT         | 48                       |                            |                |                           |                          |
| 49                                                              |                      | Dielectric thin-film filters, Diffraction Gratings.                                | PPT         | 49                       |                            |                |                           |                          |
| 50                                                              |                      | Revision and quiz on Module 5                                                      | SRS         | 50                       |                            |                |                           |                          |



|                    | Activity                                         | Planned | Actual             | Remarks |
|--------------------|--------------------------------------------------|---------|--------------------|---------|
| 1                  | Theory Classes                                   | 50      |                    | NIL     |
| 2                  | Assignments/ Quizzes/<br>Self-study              |         |                    | NIL     |
| 3                  | Tutorials/ Extra classes                         |         |                    | NIL     |
| 4                  | Internal Assessments                             |         |                    | NIL     |
| 5                  | ICT based Teaching<br>(% of usage in Curriculum) |         |                    | NIL     |
| <b>Planning</b>    |                                                  |         | <b>Execution</b>   |         |
| Faculty Signature: |                                                  |         | Faculty Signature: |         |
| HoD Signature:     |                                                  |         | HoD Signature:     |         |