

**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
**(AUTONOMOUS)**  
**L.B.REDDY NAGAR, MYLAVARAM – 521 230**  
**Department of Aerospace Engineering**

**Lesson Plan**

SUBJECT : Principles of Management and Ethics

Branch& Year: ASE 4<sup>Th</sup> year

Semester: VIII SEM

FACULTY : N.SAMBASIVARAO

Designation : Asst. Professor

| S No.                       | Tentative Date | Topics to be covered                                         | Actual Date | NO. of classes | Content Delivery Methods |
|-----------------------------|----------------|--------------------------------------------------------------|-------------|----------------|--------------------------|
| <b>UNIT- I :Management</b>  |                |                                                              |             |                |                          |
| 1.                          | 03-12-2015     | An overview of principles of management and ethics           |             | 1              | DM1                      |
| 2.                          | 03-12-2015     | An overview of principles of management and ethics           |             | 1              | DM1                      |
| 3.                          | 04-12-2015     | Syllabus orientation                                         |             | 1              | DM1                      |
| 4.                          | 07-12-2015     | Introduction to management concept.                          |             | 1              | DM1                      |
| 5.                          | 08-12-2015     | Tutorial-1                                                   |             |                | DM2                      |
| 6.                          | 08-12-2015     | <b>Management:</b> Definition and nature;                    |             | 1              | DM1                      |
| 7.                          | 09-12-2015     | Goals and Levels of management                               |             | 1              | DM1                      |
| 8.                          | 09-12-2015     | Goals and Levels of management                               |             | 1              | DM1                      |
| 9.                          | 10-12-2015     | Managerial functions                                         |             | 1              | DM1                      |
| 10                          | 10-12-2015     | Managing people for competitive advantage.                   |             | 1              | DM1                      |
| 11                          | 11-12-2015     | Review of the chapter                                        |             | 1              | DM6                      |
| 12                          | 14-12-2015     | Tutorial -2                                                  |             |                | DM2                      |
| 13                          | 15-12-2015     | <b>Planning:</b> Nature and Importance                       |             | 1              | DM1                      |
| 14                          | 15-12-2015     | Types of planning, Planning Process                          |             | 1              | DM1                      |
| 15                          | 16-12-2015     | MBO: Process – Advantages and Disadvantages                  |             | 1              | DM1                      |
| 16                          | 16-12-2015     | MBO: Process – Advantages and Disadvantages                  |             |                |                          |
| 17                          | 17-12-2015     | Decision making and its Significance.                        |             | 1              | DM1                      |
| 18                          | 17-12-2015     | Review of the unit                                           |             | 1              | DM6                      |
| 19                          | 18-12-2015     | Case studies                                                 |             | 1              | DM1                      |
| 20                          | 21-12-2015     | Case studies                                                 |             | 1              | DM1                      |
| 21                          | 22-12-2015     | Tutorial-3                                                   |             |                | DM2                      |
| <b>UNIT- II: Organizing</b> |                |                                                              |             |                |                          |
| 22                          | 22-12-2015     | <b>An introduction to organising</b>                         |             | 1              | DM1                      |
| 23                          | 23-12-2015     | <b>Organizing:</b> Nature, Formal and Informal Organisations |             | 1              | DM1                      |
| 24                          | 23-12-2015     | <b>Organizing:</b> Nature, Formal and Informal Organisations |             | 1              | DM1                      |
| 25                          | 24-12-2015     | Organization levels and span of management                   |             | 1              | DM1                      |
| 26                          | 24-12-2015     | Organization levels and span of management                   |             | 1              |                          |
| 27                          | 28-12-2015     | Review of the chapter                                        |             |                | DM6                      |
| 28                          | 29-12-2015     | Tutorial-4                                                   |             |                | DM2                      |

|                                            |                                |                                                                      |  |   |     |
|--------------------------------------------|--------------------------------|----------------------------------------------------------------------|--|---|-----|
| 29                                         | 29-12-2015                     | Departmentation                                                      |  | 1 | DM1 |
| 30                                         | 30-12-2015                     | Departmentation – Modern Organisational Structures                   |  | 1 | DM1 |
| 31                                         | 30-12-2015                     | Departmentation - Modern Organisational Structures – Characteristics |  | 1 | DM1 |
| 32                                         | 31-12-2015                     | Line and Staff concepts                                              |  | 1 | DM1 |
| 33                                         | 31-12-2015                     | Line and Staff concepts                                              |  |   | DM1 |
| 34                                         | 04-01-2016                     | Delegation, Centralization and Decentralization of authority;        |  | 1 | DM1 |
| 35                                         | 05-01-2016                     | Delegation, Centralization and Decentralization of authority;        |  | 1 | DM1 |
| 36                                         | 05-01-2016                     | Introduction to staffing                                             |  | 1 | DM1 |
| 37                                         | 06-01-2016                     | Introduction to staffing                                             |  |   | DM1 |
| 38                                         | 06-01-2016                     | Review of the chapter                                                |  |   | DM6 |
| 39                                         | 07-01-2016                     | Tutorial-5                                                           |  |   | DM2 |
| 40                                         | 07-01-2016                     | <b>Staffing:</b> Definition                                          |  | 1 | DM1 |
| 41                                         | 08-01-2016                     | Recruitment: sources                                                 |  |   | DM1 |
| 42                                         | 18-01-2016                     | Selection: Process – Performance Appraisal.                          |  | 1 | DM1 |
| 43                                         | 19-01-2016                     | Selection: Process – Performance Appraisal.                          |  | 1 | DM1 |
| 44                                         | 19-01-2016                     | Review the chapter.                                                  |  | 1 | DM6 |
| 45                                         | 20-01-2016                     | Tutorial -6                                                          |  |   | DM2 |
| 46                                         | 21-01-2016                     | Review of the unit                                                   |  | 1 | DM6 |
| 47                                         | 01-02-2016<br>to<br>03-02-2016 | I MID EXAMINATIONS                                                   |  |   |     |
| <b>UNIT- III Directing and controlling</b> |                                |                                                                      |  |   |     |
| 48                                         | 04-02-2016                     | Introduction to the concept directing                                |  | 1 | DM1 |
| 49                                         | 04-02-2016                     | <b>Directing:</b> Meaning                                            |  |   | DM1 |
| 50                                         | 05-02-2016                     | Assumptions of Human Behaviour                                       |  | 1 | DM1 |
| 51                                         | 08-02-2016                     | Theory X & Theory Y                                                  |  | 1 | DM1 |
| 52                                         | 09-02-2016                     | Leadership: Definition, Leadership behaviour and styles,             |  | 1 | DM1 |
| 53                                         | 09-02-2016                     | Leadership: Definition, Leadership behaviour and styles,             |  | 1 | DM1 |
| 54                                         | 10-02-2016                     | Recent approaches to leadership                                      |  |   |     |
| 55                                         | 10-02-2016                     | Managerial Grid                                                      |  | 1 | DM1 |
| 56                                         | 11-02-2016                     | Communication: Process, Methods;                                     |  | 1 | DM1 |
| 57                                         | 11-02-2016                     | Communication: Process, Methods;                                     |  | 1 | DM1 |
| 58                                         | 12-02-2016                     | Review of the chapter                                                |  | 1 | DM6 |
| 59                                         | 15-02-2016                     | Tutorial-6                                                           |  |   | DM2 |
| 60                                         | 16-02-2016                     | <b>Controlling:</b> Nature and importance                            |  | 1 | DM1 |
| 61                                         | 16-02-2016                     | Process – Feedback system                                            |  | 1 | DM1 |
| 62                                         | 17-02-2016                     | Requirements for effective control                                   |  | 1 | DM1 |
| 63                                         | 17-02-2016                     | Control techniques                                                   |  | 1 | DM1 |
| 64                                         | 18-02-2016                     | Review the unit                                                      |  | 1 | DM6 |
| 65                                         | 18-02-2016                     | Tutorial-7                                                           |  |   | DM2 |
| 66                                         | 19-02-2016                     | Case studies                                                         |  | 1 | DM1 |
| 67                                         | 22-02-2016                     | Case studies                                                         |  | 1 | DM1 |

| Unit – IV Engineering Ethics<br>and<br>Human Values                        |                                |                                                     |  |   |     |
|----------------------------------------------------------------------------|--------------------------------|-----------------------------------------------------|--|---|-----|
| 68                                                                         | 22-02-2016                     | Introduction to Engineering Ethics and Human Values |  | 1 | DM1 |
| 69                                                                         | 23-02-2016                     | Senses of 'Engineering Ethics                       |  | 1 | DM1 |
| 70                                                                         | 23-02-2016                     | variety of moral issues                             |  | 1 | DM1 |
| 71                                                                         | 24-02-2016                     | Moral dilemma and moral autonomy                    |  | 1 | DM1 |
| 72                                                                         | 24-02-2016                     | Moral dilemma and moral autonomy                    |  | 1 | DM1 |
| 73                                                                         | 25-02-2016                     | Tutorial-8                                          |  |   | DM2 |
| 74                                                                         | 25-02-2016                     | About Integrity                                     |  | 1 | DM1 |
| 75                                                                         | 26-02-2016                     | About work Ethics                                   |  | 1 | DM1 |
| 76                                                                         | 29-02-2016                     | About Respect for others                            |  | 1 | DM1 |
| 77                                                                         | 01-03-2016                     | About caring & sharing                              |  | 1 | DM1 |
| 78                                                                         | 01-03-2016                     | About Empathy and Service learning                  |  | 1 |     |
| 79                                                                         | 02-03-2016                     | Character and spirituality                          |  | 1 | DM1 |
| 80                                                                         | 02-03-2016                     | collegiality & loyalty                              |  | 1 | DM1 |
| 81                                                                         | 03-03-2016                     | Collective bargaining.                              |  | 1 | DM1 |
| 82                                                                         | 03-03-2016                     | Review the chapter                                  |  | 1 | DM6 |
| 83                                                                         | 04-03-2016                     | Case studies                                        |  | 1 | DM1 |
| 84                                                                         | 08-03-2016                     | Case studies                                        |  | 1 | DM1 |
| 85                                                                         | 08-03-2016                     | Tutorial -9                                         |  |   | DM2 |
| Unit –V : Engineer as a social Experimenter and<br>Safety & Responsibility |                                |                                                     |  |   |     |
| 86                                                                         | 09-03-2016                     | Introduction to the chapter                         |  | 1 | DM1 |
| 87                                                                         | 09-03-2016                     | Engineering as Experimentation                      |  | 1 | DM1 |
| 88                                                                         | 10-03-2016                     | Engineers as responsible experimenters              |  | 1 | DM1 |
| 89                                                                         | 10-03-2016                     | code of ethics                                      |  | 1 | DM1 |
| 90                                                                         | 11-03-2016                     | Engineers as expert witnesses & advisors            |  | 1 | DM1 |
| 91                                                                         | 14-03-2016                     | Introduction to Safety & Responsibility             |  | 1 | DM1 |
| 92                                                                         | 15-03-2016                     | Tutorial-10                                         |  |   | DM2 |
| 93                                                                         | 15-03-2016                     | Safety, Risk                                        |  |   | DM1 |
| 94                                                                         | 16-03-2016                     | assessment of risk,                                 |  | 1 | DM1 |
| 95                                                                         | 16-03-2016                     | risk benefit analysis,                              |  | 1 | DM1 |
| 96                                                                         | 17-03-2016                     | risk benefit analysis,                              |  |   |     |
| 97                                                                         | 18-03-2016                     | confidentiality                                     |  | 1 | DM1 |
| 98                                                                         | 21-03-2016                     | Case study: The Challenger                          |  | 1 | DM1 |
| 99                                                                         | 22-03-2016                     | Case study: The Three Mile Island                   |  | 1 | DM1 |
| 10                                                                         | 24-03-2016                     | Case study: Chernobyl                               |  | 1 | DM1 |
| 10                                                                         | 28-03-2016                     | Case study: Bhopal gas tragedy                      |  | 1 | DM1 |
| 10                                                                         | 29-03-2016                     | Review the chapter                                  |  | 1 | DM6 |
| 10                                                                         | 30-03-2016                     | Tutorial-11                                         |  | 1 | DM2 |
| 10                                                                         | 30-03-2016                     | Advanced topics                                     |  | 1 | DM1 |
| 10                                                                         | 31-03-2016                     | Advanced topics                                     |  | 1 | DM1 |
| 10                                                                         | 31-03-2016                     | Advanced topics                                     |  | 1 | DM1 |
|                                                                            | 07-04-2016<br>To<br>09-04-2016 | II MID EXAMINATIONS                                 |  |   |     |
|                                                                            | 11-04-2016                     | PREPARATION AND PRACTICALS                          |  |   |     |

|                                                           |                  |  |  |  |     |
|-----------------------------------------------------------|------------------|--|--|--|-----|
|                                                           | To<br>20-04-2016 |  |  |  |     |
| TOTAL NUMBER OF CLASSES REQUIRED TO COMPLETE THE SYLLABUS |                  |  |  |  | 106 |
| TOTAL NUMBER OF CLASSES AVAILABLE AS PER SCHEDULE         |                  |  |  |  | 106 |

### TEXT BOOKS

1. Meeenakshi Gupta: “***Principles of Management***”, PHI Private Limited, New Delhi, 2009.
2. S. Natarajan, “***Professional ethics and human values***”, New Age International, 2007.

### REFERENCES

1. John F. Wilson, “***The Making of Modern Manaement***”, Oxford University Press.
2. Stoner, Free man and Gilbert: “***Management***”, Pearson Education, New Delhi, 2002
3. Prasad L M, “***Principles and Practices of Management***”, Sultan Chand & Sons, New Delhi.
4. Govindarajan M., Natarajan S. and Senthil Kumar V.S, “***Engineering Ethics***”, Prentice Hall of India, 2004.

Faculty Signature

Hod signature



## LESSON PLAN

**Course Name:** Aero engine repair & maintenance  
**Programme:** B.Tech

**SEM:** VIII  
**Department:** ASE

| S No.                                                     | Tentative Date | Topics to be covered                             | Actual Date | No. of classes | Content Delivery Methods |
|-----------------------------------------------------------|----------------|--------------------------------------------------|-------------|----------------|--------------------------|
| <b>UNIT-I: CLASSIFICATION OF PISTON ENGINE COMPONENTS</b> |                |                                                  |             |                |                          |
| 1                                                         | 03/12/2015     | Types of piston engines                          |             | 2              | DM1/DM6                  |
| 2                                                         | 04/12/2015     | Principles of operation                          |             | 2              | DM1                      |
| 3                                                         | 07/12/2015     | Function of components                           |             | 2              | DM1                      |
| 4                                                         | 08/12/2015     | Materials used                                   |             | 1              | DM1/DM6                  |
| 5                                                         | 09/12/2015     | Tutorial-1                                       |             | 2              | DM2/ DM5                 |
| 6                                                         | 10/12/2015     | Details of starting the engines                  |             | 2              | DM1                      |
| 7                                                         | 11/12/2015     | Details of carburetion                           |             | 2              | DM1/DM6                  |
| 8                                                         | 14/12/2015     | injection systems                                |             | 1              | DM1/DM6                  |
| 9                                                         | 15/12/2015     | small and large engines                          |             | 1              | DM1/DM6                  |
| 10                                                        | 16/12/2015     | Ignition system components                       |             | 2              | DM2/ DM5                 |
| 11                                                        | 17/12/2015     | Tutorial-2                                       |             | 2              | DM1/DM6                  |
| 12                                                        | 18/12/2015     | Spark plug details                               |             | 2              | DM1/DM6-                 |
| 13                                                        | 21/12/2015     | Engine operating conditions at various altitudes |             | 1              | DM1/DM6                  |
| 14                                                        | 22/12/2015     | Maintenance check                                |             | 1              | DM1/DM6                  |
| 15                                                        | 23/12/2015     | inspection check to be carried out               |             | 2              | DM2/ DM5                 |
| 16                                                        | 28/12/2015     | Tutorial-3                                       |             | 2              | DM1/DM6                  |
| 17                                                        | 29/12/2015     | Revision Unit-I                                  |             |                |                          |
| <b>Unit II INSPECTIONS OF PISTON ENGINES:</b>             |                |                                                  |             |                |                          |
| 18                                                        | 30/12/2015     | Inspection and maintenance                       |             | 1              | DM1/DM6                  |
| 19                                                        | 31/12/2015     | trouble shooting                                 |             | 1              | DM1/DM6                  |
| 20                                                        | 04/01/2016     | Inspection of all engine components              |             | 2              | DM1/DM6                  |
| 21                                                        | 05/01/2016     | Daily and routine checks                         |             | 2              | DM1/DM6                  |
| 22                                                        | 06/01/2016     | Tutorial-4                                       |             | 1              | DM1/DM6                  |
| 23                                                        | 07/01/2016     | Overhaul procedures                              |             | 1              | DM2/ DM5                 |
| 24                                                        | 08/01/2016     | Compression testing of cylinders                 |             | 2              | DM1/DM6                  |



## LESSON PLAN

**Course Name: Aero engine repair & maintenance**  
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|                                                 |            |                                                                |  |   |          |
|-------------------------------------------------|------------|----------------------------------------------------------------|--|---|----------|
| 25                                              | 18/01/2016 | Special inspection schedules                                   |  | 2 | DM1/DM6  |
| 26                                              | 19/01/2016 | Tutorial-5                                                     |  | 2 | DM1/DM6  |
| 27                                              | 20/01/2016 | Engine fuel                                                    |  | 2 | DM1/DM6  |
| 28                                              | 21/01/2016 | control and exhaust systems                                    |  | 2 | DM2/ DM5 |
| 29                                              | 22/01/2016 | Engine mount and super charger                                 |  | 1 | DM1/DM6  |
| 30                                              | 25/01/2016 | Checks and inspection procedures                               |  | 1 | DM1/DM6  |
| 31                                              | 27/01/2016 | Tutorial-6                                                     |  | 2 | DM1/DM6  |
| 32                                              | 28/01/2016 | Revision unit-2                                                |  | 2 | DM1/DM6  |
| <b>Unit – III OVERHAULING OF PISTON ENGINES</b> |            |                                                                |  |   |          |
| 32                                              | 29/01/2016 | Symptoms of failure                                            |  | 1 | DM1/DM6  |
| 33                                              | 4/02/2016  | Fault diagnostics                                              |  | 2 | DM1/DM6  |
| 34                                              | 5/02/2016  | Case studies of different engine systems                       |  | 2 | DM1/DM6  |
| 35                                              | 08/02/2016 | Tools and equipment requirements for various checks            |  | 1 | DM2/ DM5 |
| 36                                              | 09/02/2016 | Tutorial-7                                                     |  | 1 | DM1/DM6  |
| 37                                              | 10/02/2016 | alignment during overhauling                                   |  | 2 | DM1/DM6  |
| 38                                              | 11/02/2016 | Tools for inspection                                           |  | 2 | DM2/ DM5 |
| 39                                              | 12/02/2016 | Tools for safety and for visual inspection                     |  | 2 | DM1/DM6  |
| 40                                              | 15/02/2016 | Methods and instruments for non destructive testing techniques |  | 2 | DM1/DM6  |
| 41                                              | 16/02/2016 | Tutorial-8                                                     |  | 2 | DM1/DM6  |
| 42                                              | 17/02/2016 | Equipment for replacement of part and their repair             |  | 1 | DM1/DM6  |
| 43                                              | 18/02/2016 | Engine testing                                                 |  | 1 | DM2/ DM5 |
| 44                                              | 19/02/2016 | Engine testing procedures                                      |  | 2 | DM1/DM6  |
| 45                                              | 20/02/2016 | schedule preparation                                           |  | 2 | DM2/ DM5 |
| 46                                              | 21/02/2016 | Online maintenance                                             |  | 2 | DM1/DM6  |
| 47                                              | 23/02/2016 | Tutorial-9                                                     |  | 1 | DM1/DM6  |



## LESSON PLAN

**Course Name:** Aero engine repair & maintenance  
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### Unit –IV CLASSIFICATION OF JET ENGINE COMPONENTS

|    |            |                                                                                  |  |   |          |
|----|------------|----------------------------------------------------------------------------------|--|---|----------|
| 48 | 24/02/2016 | Types of jet engines – Principles of operation                                   |  | 1 | DM1/DM6  |
| 49 | 25/02/2016 | Functions of components – Materials used                                         |  | 2 | DM2/ DM5 |
| 50 | 26/02/201  | Details of starting and operating procedures                                     |  | 2 | DM1/DM6  |
| 51 | 27/02/2016 | Gas turbine engine inspection & checks                                           |  | 1 | DM1/DM6  |
| 52 | 02/03/2016 | Use of instruments for online maintenance                                        |  | 1 | DM1/DM6  |
| 53 | 3/03/2016  | Tutorial-10                                                                      |  | 2 | DM1      |
| 54 | 4/03/2016  | Special inspection procedures : Foreign Object Damage                            |  | 2 | DM2/ DM5 |
| 55 | 6/03/2016  | Blade damage – etc. Maintenance procedures of gas turbine engines                |  | 2 | DM1      |
| 56 | 9/03/2016  | Trouble shooting and rectification procedures – Component maintenance procedures |  | 1 | DM1/DM6  |
| 57 | 10/03/2016 | Systems maintenance procedures. Gas turbine testing procedures                   |  | 1 | DM1      |
| 58 | 11/03/2016 | Tutorial-11                                                                      |  | 2 | DM2/ DM5 |
| 59 | 14/03/2016 | Storage of Engines –Preservation and de-preservation procedures                  |  | 2 | DM1/DM6  |

### Unit – V OVERHAUL PROCEDURES

|    |            |                                        |  |   |          |
|----|------------|----------------------------------------|--|---|----------|
| 60 | 15/03/2016 | Engine Overhaul procedures             |  | 1 |          |
| 61 | 16/03/2016 | Inspections and cleaning of components |  | 1 | DM1      |
| 62 | 17/03/2016 | Repairs schedules for overhaul         |  | 2 | DM1      |
| 63 | 18/03/2016 | Balancing of Gas turbine components    |  | 2 | DM1      |
| 64 | 21/03/2016 | Trouble Shooting                       |  | 2 | DM2/ DM5 |
| 65 | 24/03/2016 | Tutorial-12                            |  | 1 | DM1      |
| 66 | 25/03/2016 | Procedures for rectification           |  | 2 | DM1/DM6  |
| 67 | 26/03/2016 | Condition monitoring of the engine     |  | 2 | DM1/DM6  |



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|                                                                  |            |                                                 |  |            |          |
|------------------------------------------------------------------|------------|-------------------------------------------------|--|------------|----------|
|                                                                  |            | on ground and at altitude                       |  |            |          |
| 68                                                               | 27/03/2016 | engine health monitoring and corrective methods |  | 1          | DM2/ DM5 |
| 69                                                               | 30/03/2016 | Advanced topics                                 |  | 1          | DM1      |
| 70                                                               | 31/03/2016 | Advanced topics                                 |  | 2          | DM1/DM6  |
| 71                                                               | 1/04/2016  | Revision                                        |  | 2          | DM1/DM6  |
| 72                                                               | 04/04/2016 | Revision                                        |  | 2          | DM1/DM6  |
|                                                                  |            | <b>Total</b>                                    |  |            |          |
| <b>Total number of classes required to complete the syllabus</b> |            |                                                 |  | <b>100</b> |          |
| <b>Total number of classes available as per Schedule</b>         |            |                                                 |  | <b>117</b> |          |

**NOTE: DELIVERY METHODS (DM):**

**DM1:** Lecture interspersed with discussions/BB

**DM2:** Tutorial

**DM3:** Lecture with a quiz

**DM4:** Assignment/Test

**DM5:** Demonstration (laboratory, field visit)

**DM6:** Presentations/PPT

**Course Outcomes:**

**CO1:** To analyze the performance of piston engine components

**CO2:** To inspect and troubleshoot the piston engines components

**CO3:** To prepare the piston engine testing procedures

**CO4:** To analyze the performance of jet engine components

**CO5:** To prepare overhaul procedures for jet engine components

|                  |                            |                                    |            |
|------------------|----------------------------|------------------------------------|------------|
| <b>Signature</b> |                            |                                    |            |
|                  | <b>Name of the Faculty</b> | <b>Name of Course Co-ordinator</b> | <b>HOD</b> |
|                  |                            |                                    |            |



## LESSON PLAN

**Course Name: Advanced Propulsion Systems**  
**Programme: B.Tech**

**SEM: VIII**  
**Department: ASE**

| S No.                                     | Tentative Date | Topics to be covered                                                      | Actual Date | No. of classes | Content Delivery Methods |
|-------------------------------------------|----------------|---------------------------------------------------------------------------|-------------|----------------|--------------------------|
| <b>UNIT-I: NUCLEAR PROPULSION SYSTEMS</b> |                |                                                                           |             |                |                          |
| 1                                         | 03-12-2015     | Over View                                                                 |             | 2              | DM1/DM 6                 |
| 2                                         | 04-12-2015     | Fission propulsion                                                        |             | 3              | DM1                      |
| 3                                         | 07-12-2015     | Sizing of Nuclear Reactor                                                 |             | 2              | DM1                      |
| 4                                         | 08-12-2015     | Types of Core                                                             |             | 2              | DM1/DM 6                 |
| 5                                         | 08-12-2015     | Tutorial                                                                  |             | 2              | DM2/ DM5                 |
| 6                                         | 09-12-2015     | Radioisotope Nuclear Rocket, Criticality                                  |             | 2              | DM1                      |
| 7                                         | 10-12-2015     | Inertial Fission Propulsion                                               |             | 3              | DM1/DM 6                 |
| 8                                         | 10-12-2015     | Magnetic Fission Propulsion                                               |             | 3              | DM1/DM 6                 |
| 9                                         | 11-12-2015     | Inertial Electrostatic Confinement                                        |             |                | DM1/DM 6                 |
| 10                                        | 14-12-2015     | Tutorial                                                                  |             | 3              | DM2/ DM5                 |
| 11                                        | 15-12-2015     | Antimatter, Nuclear Rocket Engine design                                  |             | 3              | DM1/DM 6                 |
| 12                                        | 16-12-2015     | Nuclear rocket nozzles                                                    |             | 4              | DM1/DM 6-                |
| 13                                        | 16-12-2015     | Nuclear rocket engine control                                             |             | 2              | DM1/DM 6                 |
| 14                                        | 17-12-2015     | Thruster technology                                                       |             | 3              | DM1/DM 6                 |
| 15                                        | 18-12-2015     | Tutorial                                                                  |             | 2              | DM2/ DM5                 |
| 16                                        | 22-12-2015     | Nozzle development, Nozzle performance of radioisotope propulsion systems |             | 2              | DM1/DM 6                 |
| <b>Unit II Electric Propulsion</b>        |                |                                                                           |             |                | <b>21-12-2015</b>        |
| 17                                        | 23-12-2015     | Basic concepts                                                            |             | 3              | DM1/DM 6                 |
| 18                                        | 24-12-2015     | Power requirements and thruster efficiency                                |             | 3              | DM1/DM 6                 |
| 19                                        | 24-12-2015     | Electro thermal propulsion                                                |             | 2              | DM1/DM 6                 |
| 20                                        | 28-12-2015     | Tutorial                                                                  |             | 3              | DM2/ DM5                 |
| 21                                        | 29-12-2015     | Resisto jet                                                               |             | 3              | DM1/DM 6                 |
| 22                                        | 29-12-2015     | Arc Jet                                                                   |             | 3              | DM1/DM 6                 |



## LESSON PLAN

**Course Name: Advanced Propulsion Systems**  
**Programme: B.Tech**

**SEM: VIII**  
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|                   |            |                                             |  |   |          |
|-------------------|------------|---------------------------------------------|--|---|----------|
| 23                | 30-12-2015 | Solar propulsion                            |  | 3 | DM1/DM 6 |
| 24                | 31-12-2015 | Laser propulsion                            |  | 3 | DM1/DM 6 |
| 25                | 04-01-2016 | Tutorial                                    |  | 3 | DM2/DM5  |
| 26                | 05-01-2016 | Microwave Thermal propulsion                |  | 4 | DM1/DM 6 |
| 27                | 05-01-2016 | Non-electro thermal thrusters               |  | 4 | DM1/DM 6 |
| 28                | 06-01-2016 | Electrostatic propulsion                    |  | 4 | DM1/DM 6 |
| 29                | 06-01-2016 | Ion Propulsion                              |  | 4 | DM1/DM 6 |
| 30                | 07-01-2016 | Tutorial                                    |  | 4 | DM2/DM5  |
| 31                | 08-01-2016 | Hall Effect, Field Emission Thruster        |  | 4 | DM1/DM 6 |
| 32                | 18-01-2016 | Colloid thruster                            |  | 4 | DM1/DM 6 |
| 33                | 19-01-2016 | Laser accelerated Plasma                    |  | 4 | DM1/DM 6 |
| 34                | 19-01-2016 | Electro Magnetic                            |  | 3 | DM1/DM 6 |
| 35                | 20-01-2016 | Tutorial                                    |  |   | DM2/DM5  |
| 36                | 21-01-2016 | MPD, Pulsed plasma thruster                 |  |   | DM1/DM 6 |
| <b>Unit – III</b> |            |                                             |  |   |          |
| 37                | 04-02-2016 | Chemical Propulsion                         |  |   | DM1/DM 6 |
| 38                | 05-02-2016 | Solid Micro thrusters                       |  |   | DM1/DM 6 |
| 39                | 08-02-2016 | Tutorial                                    |  |   | DM2/DM5  |
| 40                | 09-02-2016 | Micro Mono, Micro Bipropellant thruster     |  |   | DM1/DM 6 |
| 41                | 10-02-2016 | Cold gas thruster                           |  |   | DM1/DM 6 |
| 42                | 10-02-2016 | Electric Propulsion                         |  |   | DM1/DM 6 |
| 43                | 11-02-2016 | Micro Ion Thruster                          |  |   | DM1/DM 6 |
| 44                | 17-02-2016 | Tutorial                                    |  |   | DM2/DM5  |
| 45                | 18-02-2016 | Low Power Hall Thruster ,Micro PPT Thruster |  |   | DM1/DM 6 |
| 46                | 19-02-2016 | MEMS                                        |  |   | DM1/DM 6 |
| 47                | 19-02-2016 | FEED/Colloid Thruster                       |  |   | DM1/DM 6 |
| 48                | 22-02-2016 | Microchip laser thruster                    |  |   | DM1/DM 6 |



## LESSON PLAN

**Course Name: Advanced Propulsion Systems**  
**Programme: B.Tech**

**SEM: VIII**  
**Department: ASE**

| Unit –IV |            |                                                                                               |  |  |             |
|----------|------------|-----------------------------------------------------------------------------------------------|--|--|-------------|
| 49       | 22-02-2016 | Tutorial                                                                                      |  |  | DM2/<br>DM5 |
| 50       | 23-02-2016 | Propellant-less Propulsion ,Tethers                                                           |  |  | DM1/DM<br>6 |
| 51       | 24-02-2016 | Momentum Exchange tether                                                                      |  |  | DM1/DM<br>6 |
| 52       | 25-02-2016 | Electrodynamic tether                                                                         |  |  | DM1/DM<br>6 |
| 53       | 25-02-2016 | Propellant-less Electric/Nuclear propulsion                                                   |  |  | DM1         |
| 54       | 26-02-2016 | Tutorial                                                                                      |  |  | DM2/<br>DM5 |
| 55       | 29-02-2016 | Photons Rocket                                                                                |  |  | DM1         |
| 56       | 03-03-2016 | Beamed Energy Earth to Orbit Propulsion                                                       |  |  | DM1/DM<br>6 |
| 57       | 04-03-2016 | Solar, Magnetic Sails                                                                         |  |  | DM1         |
| 58       | 08-03-2016 | Tutorial                                                                                      |  |  | DM2/<br>DM5 |
| Unit – V |            |                                                                                               |  |  |             |
| 59       | 09-03-2016 | SCRAMJET PROPULSION                                                                           |  |  | DM1/DM<br>6 |
| 60       | 10-03-2016 | Fundamental considerations of Hypersonic air breathing vehicles                               |  |  | DM1         |
| 61       | 11-03-2016 | Preliminary concepts in engine airframe integration                                           |  |  | DM1         |
| 62       | 14-03-2016 | Calculation of propulsion flow path                                                           |  |  | DM1         |
| 63       | 15-03-2016 | Tutorial                                                                                      |  |  | DM2/<br>DM5 |
| 64       | 16-03-2016 | Flow path integration Various types of supersonic combustors                                  |  |  | DM1         |
| 65       | 17-03-2016 | Fundamental requirements of supersonic combustors                                             |  |  | DM1/DM<br>6 |
| 66       | 18-03-2016 | Shock boundary layer interaction                                                              |  |  | DM1/DM<br>6 |
| 67       | 21-03-2016 | Tutorial                                                                                      |  |  | DM2/<br>DM5 |
| 68       | 22-03-2016 | Mixing of fuel jets in supersonic cross flow ,Performance estimation of supersonic combustors |  |  | DM1         |
| 69       | 30-03-2016 | Advance Topics                                                                                |  |  | DM1/DM<br>6 |
| 70       | 31-03-2016 | Revision                                                                                      |  |  | DM1/DM<br>6 |



## LESSON PLAN

**Course Name: Advanced Propulsion Systems**  
**Programme: B.Tech**

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**Department: ASE**

### **NOTE: DELIVERY METHODS (DM):**

**DM1:** Lecture interspersed with discussions/BB

**DM2:** Tutorial

**DM3:** Lecture with a quiz

**DM4:** Assignment/Test

**DM5:** Demonstration (laboratory, field visit)

**DM6:** Presentations/PPT

At the End of the course, students attained the **Course Outcomes: CO1, CO2, CO3, CO4** & sample proofs are enclosed in Course file.

**CO1:** Knowing the different types of engines in aerospace industry

**CO2:** Understanding the concepts of working of advanced engines

**CO3:** Studying about various types of engines and their applications

**CO4:** Visualising the purpose and the usage of these different types of system

|                  |                            |                                    |               |
|------------------|----------------------------|------------------------------------|---------------|
| <b>Signature</b> |                            |                                    |               |
|                  | <b>Name of the Faculty</b> | <b>Name of Course Co-ordinator</b> | <b>HOD</b>    |
|                  | P.SANDEEP                  | Dr.P. LOVARAJU                     | Dr.P.LOVARAJU |