Sant Dnyaneshwar Shikshan Sanstha's
Annasaheb Dange College of Engineering and Technology, Ashta
(An Empowered Autonomous Institute)
Office of Dean Academics

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Course Details:

Class	B.Tech., Sem. - IV
Course Code and Course Name	**2AEST201 - Introduction to Space Technology**
Prerequisite	Engineering Physics, Engineering Mathematics
Teaching Scheme: Lecture/Tutorial/Practical	02/00/00
Credits	02
Evaluation Scheme : ISE/ESE	40/30/30

Course Objectives:

1. Concepts of launch vehicle design and missiles
2. Various Parameters required for mission trajectory design and launch
3. Space data products and services
4. Space technology concepts and laws

Course Outcomes (COs): After successful completion of this course, the student will be able to,

2AEST201_1	Discuss concepts of launch vehicle design and missiles
2AEST201_2	Determine various parameters required for mission trajectory design and launch
2AEST201_3	Use Space data products and services
2AEST201_4	Explain Space technology concerts and laws

Course Contents:

Unit 1	**Basics of Launch Vehicle Design and Missiles**	**04**
GNC and Satellite Systems Engineering design. Fundamentals of structure and mechanisms. Introduction to launch facilities, launch vehicle assembly, integration and launch readiness. Communication with the ground stations and ground tracking in collaboration with foreign space centers		
Unit 2	**Fundamentals of mission trajectory design**	**04**
Coordinate reference frames, space flight mechanics, satellite orbits, Kepler's laws; lunar and interplanetary missions. Attitude dynamics, Attitude parameterization: direction cosine matrix, Euler axis and angles, quaternions, Euler angles; attitude rates; attitude determination; Euler equations of motion and attitude dynamics		
Unit 3	**Fundamentals of Remote Sensing Systems and Electromagnetic Radiation**	**05**
Definition and Overview of Remote Sensing and Remote Sensing Systems: Electromagnetic Radiation, Laws of Radiation, EM Spectrum, Sources of EMR, Interaction between EM Radiation and matter, Reflection, Absorption and Transmission, Interactions between EM Radiation and Atmosphere, Atmospheric windows. Platforms: Types of platforms (Ground, Airborne and Space borne); Satellites for earth observation; Geostationary and UAV platforms.		

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Unit 4	Platforms for Remote Sensing and Space Data Services	05
Types of Remote Sensing Platforms: (Ground, Airborne and Space borne); Earth Observation Satellites (EOS): Types and examples; Geostationary and Polar-orbiting satellite systems; UAV Platforms and their applications in remote sensing; Introduction to space data services: Overview of data products (imaging, mapping, analysis), Role of Artificial Intelligence (AI) and Machine Learning (ML) in satellite data processing (brief introduction)		
Unit 5	**Space Technology**	**04**
Fundamentals of Digital Image Processing, Fundamentals of Photogrammetry, Cartography, space materials processing; Global Navigation Satellite System (GNSS)		
Unit 6	**Space Law and Policy**	**04**
Introduction to the need and overview of Space Laws and its interface with Introduction to Conventions and Treaties, Introduction and Basic Principles of International Laws, Indian Space Bill and Space policy 2022, Space-enabled Communication and Services Regulation, Space tourism		

Text Books:

Sl.No	Title	Authors	Publisher	Edition	Year
1	Aerodynamics of the Helicopter	A. Gessow and G.C.Meyers	Macmillan and Co	-	1982
2	Fundamentals of Helicopter Dynamics	C. Venkatesan	CRC Press	1st	2017
3	Helicopter Aerodynamics	E. Rathakrishnan	PHI Learning Pvt. Ltd.	1st	2019
4	Helicopter Maintenance	Jeppesen	Jeppesen and Sons Inc	-	2000

Reference Books:

Sl.No	Title	Author	Publisher	Edition	Year
1	Basic Helicopter Aerodynamics	J. Seddon	Blackwell scientific publications	AIAA Education series	1990
2	Helicopter Engineering	Lalit Gupta	Himalayan Books, New Delhi	-	1996

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Assessment Modes:

Sl. No	Method/ Technique	Course Outcomes					Marks		Weightage
		1	2	3	4	5	Max	Min	
1	ISE : ABA	☑	☑	☑	☑	☑	40	16	40 %
2	MSE	☑	☑	☑	☐	☐	30	24	60 %
3	ESE	☐	☐	☑	☑	☑	30		

- ISE - In-Semester Examination, MSE - Mid-Semester Examination, ESE - End-Semester Examination
- ABA - Activity Based Assessment, TA - Tutorial Assessment, PA - Practical Assessment

CO's - PO's & PSO's Mapping: (Low - 1, Medium - 2, High -3, No Correlation - "-")

CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	2	-	-	-	2	1	-	-	-	-	-	-	-	-
2	2	-	-	-	2	-	-	-	-	3	-	-	-	-
3	2	-	-	-	-	-	-	1	-	3	-	-	-	-
4	2	-	-	-	-	1	-	2	-	-	-	-	-	-
Avg	2.00	-	-	-	2.00	1.00	-	1.5	-	3.00	-	-	-	-

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Course Details:

Class	B.Tech., Sem. - V
Course Code and Course Name	**2AEST301 - Launching Vehicle Systems and Technologies**
Prerequisite	Engineering Physics, Engineering Mathematics
Teaching Scheme: Lecture/Tutorial/Practical	03/00/00
Credits	03
Evaluation Scheme : ISE/ESE	40/30/30

Course Objectives:

1. Understand the architecture and functioning of launch vehicles, missiles, and their subsystems including propulsion and structures.
2. Learn the fundamentals of launch vehicle dynamics, including trajectory modeling, slosh dynamics, and aerodynamic considerations.
3. Gain knowledge of inertial sensors, actuation systems, and the design of Guidance, Navigation, and Control (GNC) loops.
4. Explore the principles of simulation validation, onboard testing systems, and ground systems involved in descent and landing phases.

Course Outcomes (COs): After successful completion of this course, the student will be able to,

2AEST301_1	Explain the key components of launch vehicles and missiles, including propulsion systems and structural dynamics.
2AEST301_2	Describe simulation testbeds, validation procedures, and the key aspects of descent, landing, and ground operations.
2AEST301_3	Apply principles of inertial sensing, actuation, and GNC system design for autonomous vehicle control.
2AEST301_4	Analyze launch vehicle dynamics and develop trajectory and slosh models for mission design.

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Course Contents:

Unit 1	**Launch Vehicles and Missiles and their subsystems**	**06**
Launch Vehicles and Missiles and their subsystems, Fundamentals and Types of Propulsion system: Solid / Liquid / Cryogenic / Semi-Cryogenic /Mono-propellent, Bi-propellent and Electric propulsion systems (including green propulsion) Fundamentals of Structures and Mechanisms: Structural Dynamics /Vibration modes for Dynamics modeling		
Unit 2	**Launch Vehicle Dynamics**	**06**
Gravity model, Point mass dynamics, Aerodynamics: Multi-strap-on Vehicles, its aerosurfaces, Fundamentals of Trajectories (Mission Design): Equations of Motion: short period / long period Model development, Slosh Dynamics analysis.		
Unit 3	**Inertial Sensors and Vehicle Actuation**	**07**
Basic principles of inertial measurement units: Gyros, Fiber optic/ Laser Gyros and others, accelerometers, Actuators: Electrohydraulic, Electromechanical, Reaction Control Systems		
Unit 4	**Fundamentals of GNC loop, design problem and algorithms**	**06**
Basics of Guidance: Open Loop / Closed Loop: Implicit / Explicit Guidance schemes, Basics of Navigation: Nav algorithm, compensation schemes, multiple sensor fusion, Basics of Control (Autopilot): Linear / nonlinear design Techniques		
Unit 5	**Validation Testbeds/ Simulation setups**	**07**
On-board computer in the loop simulations (OILS), Hardware in the loop Simulations (HLS), Actuators in Loop Simulations (ALS), Flight Software in Loop Simulations (SILS), reliability analysis, Satellite interface and satellite deployment with separation dynamics		
Unit 6	**Descent and landing**	**07**
Descent and landing of jettisoned stages, communication with ground stations, the ground tracking in collaboration with foreign space centers. Ground System Interfaces and Mission Operations Considerations		

Text Books:

Sl.No	Title	Authors	Publisher	Edition	Year
1	Design of Rockets and Space Launch Vehicles	Edberg, D., and Costa, W.,	AIAA Education Series	-	2020
2	Practical Design of Flight Control Systems for Launch Vehicles and Missiles	Kadam, N. V.,	Allied Publishers	1st	2009

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Reference Books:

Sl.No	Title	Author	Publisher	Edition	Year
1	Spacecraft Dynamics	Wiesel, W. E.,	McGraw-Hill	2nd ed	1997
2	Spacecraft Navigation and Guidance	Noton, M.,	Springer	-	1998

Assessment Modes:

Sl. No	Method/ Technique	Course Outcomes					Marks		Weightage
		1	2	3	4	5	Max	Min	
1	ISE : ABA	☑	☑	☑	☑	☑	40	16	40 %
2	MSE	☑	☑	☑	☐	☐	30	24	60 %
3	ESE	☐	☐	☑	☑	☑	30		

- ISE - In-Semester Examination, MSE - Mid-Semester Examination, ESE - End-Semester Examination
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CO's - PO's & PSO's Mapping: (Low - 1, Medium - 2, High -3, No Correlation - "-")

CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	2	-	1	-	-	-	-	-	-	3	-	-	-	-
2	2	-	-	-	-	-	-	-	-	1	-	-	-	-
3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
4	2	1	-	-	1	-	-	-	-	1	-	-	-	-
Avg	2.00	1	1	-	1	-	-	-	-	1	-	-	-	-

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Course Details:

Class	B.Tech., Sem. - VI
Course Code and Course Name	**2AEST302 - Space Mechanics and Altitude Dynamics**
Prerequisite	Engineering Physics, Engineering Mathematics
Teaching Scheme: Lecture/Tutorial/Practical	03/00/00
Credits	03
Evaluation Scheme : ISE/ESE	40/30/30

Course Objectives:

1. To provide foundational knowledge of spaceflight mechanics including orbital dynamics, orbital parameters, orbit manoeuvres, and proximity operations.
2. To develop understanding of spacecraft attitude dynamics and control, including parameterization methods, control actuators, and stability concepts.
3. To introduce satellite remote sensing concepts and familiarize students with earth observation and propulsion systems used in spacecraft.
4. To explore flight mechanics for re-entry and interplanetary missions, and to understand the fundamentals of missile guidance and space-based navigation.

Course Outcomes (COs): After successful completion of this course, the student will be able to,

2AEST302_1	Describe and analyze satellite orbits and orbital maneuvers using classical orbital mechanics principles.
2AEST302_2	Explain spacecraft attitude dynamics and apply control strategies using various stabilization and actuation methods.
2AEST302_3	Identify and compare types of remote sensing satellites and propulsion systems used in different space missions.
2AEST302_4	Discuss re-entry flight mechanics, lunar/interplanetary missions, and missile guidance techniques with application examples.

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Course Contents:

Unit 1	**Spaceflight Mechanics**	**06**
ECİ frame, Two-body Orbital dynamics, Integrals of motion, Classical Orbital parameters, Satellite Orbit perturbations, sun-synchronous satellites, geo-synchronous, orbital manoeuvres, orbit determination, orbit corrections and maintenance, relative motion in orbits, proximity operations		
Unit 3	**Orbital Maneuvering and Proximity Operations**	**06**
Orbital manoeuvres: Types of orbital manoeuvres and Delta-V Budget, Orbit determination, Orbit corrections and maintenance, Relative motion in orbits: Clohessy-Wiltshire (CW) and Hill's Equations, Proximity operations		
Unit 3	**Spacecraft Attitude Dynamics**	**08**
Attitude parameterization: direction cosine matrix, Euler axis and angles, Quaternions, attitude rates, Euler equations of rigid body attitude dynamics. Liquid propellant slosh effects. Aattitude stabilization, spin stabilization of a rigid spacecraft and an energy-dissipating Spacecraft, active nutation control, momentum bias satellites, passive and active nutation damping, control with Thrusters		
Unit 4	**Spacecraft Attitude Controlmat**	**06**
Attitude control with three-axis reaction wheels, thrusters and magnets; Three-Axis Stabilization, Disturbing torques, effect of structural flexibility, antenna beam pointing accuracy. Various types of attitude sensors, attitude determination		
Unit 5	**Remote Sensing and Propulsion Systems**	**06**
Earth coverage by low-earth orbit and high-earth orbit remote sensing satellites; infrared and radar remote sensing from space, Propulsion Systems, Liquid Propellant Thrusters, Electric Propulsion		
Unit 6	**Flight Mechanics and Missile Guidance**	**07**
Re-entry Flight Mechanics, guided re-entry, feedback guidance, Lunar and interplanetary flights: Chandrayan and Mars missions. Missile guidance: Lambert, midcourse and endgame guidance; Tactical and strategic interceptors, zero-effort-miss guidance; Cruise missiles, Fundamentals of Space-based Navigation (GNSS)		

Text Books:

Sl.No	Title	Authors	Publisher	Edition	Year
1	Spacecraft Dynamics and Control: An Introduction	De Ruiter, A. H. J., Damaren, C. J., and Forbes, J. R.,	Wiley	-	2013

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Sl.No	Title	Authors	Publisher	Edition	Year
2	Satellite Orbits: Models, Methods, Applications	Montenbruck, O., and Gill, E.,	Springer		2000
3	Spacecraft Dynamics and Control	Sidi, M. J.,	Cambridge University Press		1997
4	Space Vehicle Dynamics and Control	Wie, B.,	AIAA Education Series	2nd ed.	2008

Reference Books:

Sl.No	Title	Author	Publisher	Edition	Year
1	Orbital Mechanics	Chobotov, V. A., (Ed.),	AIAA Education Series	3rd ed	2002
2	Spacecraft Dynamics	Wiesel, W. E.,	McGraw-Hill	2nd ed,	1997
3	Spacecraft Navigation and Guidance	Noton, M.,	Springer		1998
4	Aided Navigation: GPS with High Rate Sensor,	Farrell, J. A.,	McGraw-Hill		2008
5	Fundamentals of Remote Sensing	Joseph, G.,	Universities Press,		2003
6	Missile Design and System Engineering	Fleeman, E. L.,	AIAA Education Series,		2012
7	Tactical and Strategic Missile Guidance,	Zarchan, P.,	Progress in Astronautics and Aeronautics,	6th ed	2007

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Assessment Modes:

Sl. No	Method/ Technique	Course Outcomes					Marks		Weightage
		1	2	3	4	5	Max	Min	
1	ISE : ABA	☑	☑	☑	☑	☑	40	16	40 %
2	MSE	☑	☑	☑	☐	☐	30	24	60 %
3	ESE	☐	☐	☑	☑	☑	30		

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CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	2	1		-	-	-	-	-	-	3	-	1	-	-
2	2	1	-	-	-	-	-	-	-	1	-	1	-	-
3	2	1	-	-	-	-	-	-	-	1	-	1	-	-
4	2	1	-	-	-	-	-	-	-	1	-	1	-	-
Avg	2	1	-	-	-	-	-	-	-	1.25	-	1	-	-

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Course Details:

Class	B.Tech., Sem. - VII
Course Code and Course Name	**2AEST401 - Spacecraft System and Engineering**
Prerequisite	Engineering Physics, Engineering Mathematics
Teaching Scheme: Lecture/Tutorial/Practical	03/00/00
Credits	03
Evaluation Scheme : ISE/ESE	40/30/30

Course Objectives:

1. To provide an understanding of spacecraft mission design and the influence of the space environment on satellite operations.
2. To introduce various spacecraft subsystems including propulsion, power, telemetry, and onboard electronics.
3. To develop knowledge of spacecraft structural design, thermal control, and associated analysis methods.
4. To familiarize students with space-based payloads, remote sensing concepts, ground segment operations, and system verification techniques.

Course Outcomes (COs): After successful completion of this course, the student will be able to,

2AEST401_1	Explain the basics of spacecraft mission planning, onboard electronics, and the impact of the space environment on satellites.
2AEST401_2	Identify and describe the key spacecraft subsystems such as propulsion, power, telemetry, and mechanisms with an understanding of their functions
2AEST401_3	Describe space-based payload functions, remote sensing satellite capabilities, and ground segment activities including quality assurance and verification.
2AEST401_4	Analyze spacecraft structures using basic engineering principles and apply thermal control techniques for satellite design.

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Course Contents:

Unit 1	**Spacecraft Configurations and Satellite subsystems**	**06**
Mission analysis and design, Space Environment and space weather, Disturbances acting on a satellite, Fundamentals of on-board computer and control electronics, on-board software development for attitude and orbit control,		
Unit 2	**Spacecraft Configuration and Satellite Subsystems – Part II**	**06**
Propulsion system overview, electrical power system: solar arrays, batteries, power control electronics, telemetry and telecommand, mechanisms in satellites, radiation tolerance, electromagnetic compatibility		
Unit 3	**Spacecraft Structures and Thermal Control System**	**08**
Introduction, Spacecraft Structural Configuration, Launch Loads, Stress-Strain Analysis, Matrix Methods of Structural Analysis, Finite Element Analysis, Instability of Structures, Dynamic Analysis, Multi-Degree-of-Freedom System, Random Excitation, Mode Synthesis, Materials, Structural Design Verification Tests, Introduction, Heat Transfer, Thermal Analysis, Thermal Control Techniques, Spacecraft Thermal Design, Thermal Testing		
Unit 4	**Remote Sensing and Space-based Payloads**	**06**
Payloads of communication satellites, remote sensing satellites, navigation satellites, science mission satellites and missile detection. Optical, Quantum Satellite communication		
Unit 5	**Remote Sensing and Propulsion Systems- Advanced Concepts**	**07**
Earth coverage by low-earth orbit and high-earth orbit remote sensing satellites; infrared and radar remote sensing from space, Propulsion Systems, Liquid Propellant Thrusters, Electric Propulsion		
Unit 4	**Ground Segment and Spacecraft Verification**	**06**
Ground segment: assembly, integration, and verification, Quality control and product assurance		

Text Books:

Sl.No	Title	Authors	Publisher	Edition	Year
1	Space Mission Analysis and Design,	Larson, W. J., and Wertz, J. R., (Eds.),	Springer	-	2006
2	Space Vehicle Design,	Griffin, M. D., and French, J. R.,	AIAA Education Series	2nd ed.,	2004

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Sl.No	Title	Authors	Publisher	Edition	Year
3	Spacecraft Systems Engineering,	Fortescue, P., Swinerd, G., and Stark, J., (Eds.),	Wiley	4th ed.,	2011

Reference Books:

Sl.No	Title	Author	Publisher	Edition	Year
1	Satellite Technology: Principles and Applications,	Maini, A. K., and Agrawal, V.,	Wiley	3rd ed	2007
2	Small Satellites for Earth Observation,	Sandau, R., Roser, H.-P, and Valenzuela, (Eds.),	Springer	2nd ed,	2008

Assessment Modes:

Sl. No	Method/ Technique	Course Outcomes					Marks		Weightage
		1	2	3	4	5	Max	Min	
1	ISE : ABA	☑	☑	☑	☑	☑	40	16	40 %
2	MSE	☑	☑	☑	☐	☐	30	24	60 %
3	ESE	☐	☐	☑	☑	☑	30		

- ISE - In-Semester Examination, MSE - Mid-Semester Examination, ESE - End-Semester Examination
- ABA - Activity Based Assessment, TA - Tutorial Assessment, PA - Practical Assessment

CO's - PO's & PSO's Mapping: (Low - 1, Medium - 2, High -3, No Correlation - "-")

CO's	PO's												PSO's	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	2	-	-	-	-	1	-	-	-	-	-	1	-	-
2	2	-	-	-	-	-	-	-	-	1	-	1	-	-
3	2	-	-	-	-	-	-	1	-	1	-	1	-	-
4	3	1	-	-	1	-	-	-	-	1	-	1	-	-
Avg	2	1	-	-	1	1	-	1	-	1	-	1	-	-

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Department of Aeronautical Engineering

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Minor Stream in Space Technology

Course Details:

Class	B.Tech., Sem - V to VIII
Course Code and Course Name	**2AEST402 - Capstone Project on Space Technology**
Prerequisite	2AEST201, 2AEST301, 2AEST302, and 2AEST401
Teaching Scheme: Lecture/Tutorial/Practical	00/00/06
Credits	03
Evaluation Scheme: ISE/ESE	50/50

Course Objectives:

1. To provide students with the opportunity to identify and solve real-world engineering problems in space technology by integrating multidisciplinary knowledge and project-based learning.
2. To develop students' ability to design, implement, and evaluate practical solutions or prototypes in space applications, utilizing appropriate engineering tools, simulations, and teamwork skills.
3. To foster effective communication, critical thinking, and professional reporting abilities through the documentation and presentation of project outcomes to both technical and non-technical audiences.

Course Outcomes (CO's): After successful completion of this course, the student will be able to,

2AEST402_1	Identify and define a relevant engineering problem in space technology, with clarity and alignment to real-world needs, using authentic scenarios and guidance provided by the instructor.
2AEST402_2	Design and develop a feasible solution or prototype for a space technology application , demonstrating logical methodology and fulfilling all project specifications , utilizing appropriate engineering principles and available simulation/modeling tools
2AEST402_3	Plan and execute the capstone project, including systematic documentation and project management ensuring completion of all major milestones and deliverables to an acceptable standard working independently or as part of a team with access to laboratory or research resources
2AEST402_4	Analyze project results and troubleshoot technical challenges encountered, providing accurate diagnosis and effective resolution to improve system performance, using diagnostic instruments, data analysis methods, or simulation outputs as available.
2AEST402_5	Communicate project objectives, methodology, results, and societal impact through clear, well-organized oral presentations and written reports suitable for both technical and non-technical audiences, employing standard reporting templates and digital presentation tools

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Department of Aeronautical Engineering

Course Contents:

- **Project Scope**: The minor project may encompass various types of work, including design projects, experimental studies, or computer simulations, focusing on topics relevant to Minor Stream.
- **Project Components**: The minor project should involve several key elements, such as identifying a problem, conducting a literature review, formulating the problem, designing components or systems, and utilizing modern tools and techniques relevant to the project.
- **Project Synopsis Submission**: A synopsis of the selected project must be submitted, which should clearly outline the project's scope, objectives, methodology, approach, and tools to be employed. This includes any software or resources anticipated to be used, as well as expected results and a timeline for completion.
- **Report Distribution**: The project group is required to submit one copy of the synopsis report to their project guide, while retaining another copy for their own records.
- **Project Duration**: The minor project work is structured to be completed over four semesters (V to VIII), with the same group continuing to work under the guidance of the assigned project guide throughout this period.
- **Group Formation**: Students will work in groups of 2 to 4 members to complete the minor project. However, individual students may also choose to undertake the project independently. In no case should the student group size exceed 5 members. The ideal group size would be a maximum of 4 students.
- **Project Timeline and Assessments:**

Semester	Work to be completed	Assessment	Marks
V	Literature Review (Review Papers) and Synopsis Presentation	Review-I	50
VI	Methodology / Design / Tools	Review-II	50
VII	Complete Setup/Fabrication/Assembly	Review-III	50
VIII	Testing, Report Writing, Paper Publication	Review-IV	50

- **Submission Requirements:**
  - ✓ **Project Work Diary**: Maintained by the group and countersigned by the guide weekly, reflecting the efforts taken for project selection, literature review, and day-to-day activities.
  - ✓ **Synopsis Report**: Submitted in a prescribed format, including the project title, student names, guide name, relevance, literature review, proposed work, methodology, expected outcomes, plan of proposed work, detailed budget estimate, and references. The synopsis should consist of a minimum of 10 review papers from referred Journals and be signed by each student, approved by the guide, and endorsed by the Head of the Department.
  - ✓ **Minor Project Report**: A typed report of Min 30 to Max 50 pages, following a standardized format for page size, margins, font, and spacing (refer Guidelines for Main Project). The report should include references in a specific format for review papers and books.
  - ✓ **Presentation Requirement:** Students must make presentations in front of faculty members and review panel members during the scheduled reviews in each semester. They are required to submit soft copies of their Presentation PowerPoint (PPT) to the project guide.

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- ✓ **Documentation:** The project guide or Minor Project Coordinator must maintain a separate file for each group, which should include:
  - o Approved Synopsis
  - o Review Schedule
  - o Presentation Copies
  - o Assessment marks for each review, along with the corresponding rubrics
- ✓ **Assessment**: The term work shall be assessed by the project guide based on the presentation of the completed work and the submitted report at the end of each semester.

- **Work Diary Maintenance for Project Groups**

  The project group is required to maintain a work diary throughout the duration of the project. The work diary should include the following entries:

  (a) Books Referred: List all books consulted during the project.

  (b) Company Visited: Document any companies visited for research or collaboration.

  (c) Person Contacted: Record the names and details of individuals contacted for information or assistance.

  (d) Papers Referred: Include references to any research papers or articles consulted.

  (e) Creative Thinking: Note any ideas, brainstorming sessions, or innovative thoughts that emerged during the project.

  Assessment

- The work diary, along with the final project report, will be assessed during the End-Semester Examination (ESE) at the end of VIII Semester.

  Proper maintenance and thorough documentation in the work diary will contribute to the overall evaluation of the project.

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