

Scheme of B. Tech. Aeronautical Engineering, 6th Semester

Codes	Scheme	Internal	External	Max Marks	Contact hours/week				Credits
					L	T	P	Total	
6ANU1	Aerospace Propulsion– I	50	100	150	3	1	0	4	3
6ANU2	Aircraft Structure– II	50	100	150	3	1	0	4	3
6ANU3	Aircraft Stability and Control	50	100	150	3	0	0	3	3
6ANU4	Space Dynamics	50	100	150	3	0	0	3	3
6ANU5	Mechanics of Composites	50	100	150	3	0	0	3	3
6ANU6	Elective –II	50	100	150	3	0	0	3	3
6ANU6.1	Unmanned Aerial Vehicles								
6ANU6.2	Experimental Fluid Mechanics								
6ANU6.3	ME Elective								
6ANU6.4	Fatigue and Fracture								
6ANU7	Aircraft Propulsion Lab	50	25	75	0	0	3	3	2
6ANU8	Aeromodelling Design and Fabrication lab	50	25	75	0	0	3	3	2
6ANU9	Advanced Programming in MATLAB	35	15	50	0	0	2	2	1
6ANU10	Mechatronics Lab	35	15	50	0	0	2	2	1
6ANU11	Business Communication Lab	35	15	50	0	0	2	2	1
6ANUDC	Discipline & Extra Curricular Activity			50	0	0	0	0	1
	Sub- Total			1250	18	2	12	32	26

Scheme and Syllabus of B. Tech. Aeronautical Engineering, 6th Semester for 2017-18

Syllabus of B. Tech. Aeronautical Engineering, 6th Semester

Codes	Syllabus
6ANU1	Aerospace Propulsion– I
	<p>Fundamentals of Air-Breathing Engines: Review of thermodynamic principles, basic principles of propulsion; History of Air-breathing engines; Different types of air-breathing engines, functions of different engine components; Engine-aircraft matching; Methods of thrust augmentation</p> <p>Performance of Air-Breathing Engines: Ideal cycles for turbojet, turboprop, turbofan, turboshaft and ramjet engines; Ideal Cycle analysis, Non-ideal cycle analysis, stage and component efficiencies; Thrust equation; Performance parameters of jet engines</p> <p>Inlets: Internal flow and stall in subsonic inlets, boundary layer separation; Major features of external flow near a subsonic inlet; Diffuser performance; Supersonic inlets, starting problem in supersonic inlets, shock swallowing by variable area inlet or overspeeding aircraft</p> <p>Centrifugal Compressor: Operating principle, conservation of angular momentum, applications, advantages and disadvantages; Stage dynamics, velocity diagrams, cascade efficiency, performance characteristics; Stall and surge</p> <p>Axial Flow Compressor: Euler's Turbo-machinery equations, velocity diagram analysis, cascade action, multistaging; Degree of reaction; Radial equilibrium; Flow problems, compressor efficiency</p> <p>Axial Flow Turbine: Axial turbine stage, stage efficiency; Turbine Performance; Blade stresses, blade cooling; Turbine and compressor matching</p> <p>Nozzles: Flow in isentropic nozzles, nozzle choking; Nozzle efficiency, losses in nozzles; Overexpanded and underexpanded nozzles; Ejector and variable area nozzles</p>

Scheme and Syllabus of B. Tech. Aeronautical Engineering, 6th Semester for 2017-18

	<p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. "Gas Turbine Theory", H.I.H. Saravanamuttoo, G.F.C. Rogers, H. Cohen & P.V. Straznicky, Prentice Hall 2. "Mechanics and Thermodynamics of Propulsion", P. Hill & C. Peterson, Pearson Education <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. "Aircraft Propulsion", Saeed Farokhi, Wiley-Blackwell 2. "Elements of Gas Turbine Propulsion", J.D. Mattingly, McGraw Hill Education 3. "Aircraft Propulsion and Gas Turbine Engines", A.F. El-Sayed, CRC Press 4. "Fundamentals of Jet Propulsion with Applications", R.D. Flack, Cambridge University Press 5. "Gas Turbines", V. Ganesan, McGraw Hill Education 6. "Gas Turbine Propulsion", D.P. Mishra, Viva Books
6ANU2	Aircraft Stability and Control
	<p>Introduction: Static stability, dynamic stability, longitudinal, lateral and directional stability; Equations of motion</p> <p>Longitudinal Static Stability and Control: Contribution of wing, horizontal tail and fuselage to total moment, canard configuration, flying wing configuration; Stick-fixed neutral point and static margin, stick-free neutral point, determination of neutral point by flight test, manoeuvre point; Power contribution to stability, elevator power, elevator angle to trim, elevator hinge movement, stick force and stick gearing, stick force gradients, aerodynamic balancing</p> <p>Directional Static Stability and Control: Vertical tail contribution, fuselage contribution, wing contribution, propeller effect; Rudder power, yaw damping; Rudder-fixed and rudder-free directional stability, asymmetric power, pedal forces, rudder lock</p> <p>Lateral Static Stability and Control: Effect of wing location, sweep and dihedral, fuselage and vertical tail; Coupling between rolling and yawing moments; Adverse yaw effects; Aileron reversal; Lateral control power; Roll damping, directional divergence</p> <p>Dynamic Stability and Control: Euler angles, Equations of motion, stability & control derivatives; Decoupling of</p>

	<p>longitudinal and lateral-directional dynamics; Longitudinal modes; Lateral-directional modes; Autorotation and spin; Control response, impulse and step response; Controllability and Observability; Optimal control</p> <p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. “Flight Stability and Automatic Control”, R.C. Nelson, McGraw Hill Education 2. “Flight Dynamics Principles”, M.V. Cook, John Wiley & Sons Inc. <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. “Performance, Stability, Dynamics and Control of Airplanes”, B.N. Pamadi, AIAA 2. “Airplane Performance, Stability and Control”, C.D. Perkins & R.E. Hage, John Wiley & Sons 3. “Mechanics of Flight”, R.H. Barnard, D.R. Philpott & A.C. Kermode, Prentice Hall 4. “Mechanics of Flight”, W.F. Phillips, John Wiley & Sons 5. “Dynamics of Flight: Stability and Control”, B. Etkin & L.D. Reid, John Wiley & Sons
6ANU3	Aerospace Structures– II
	<p>Unsymmetrical Bending: Bending stresses in beams of unsymmetrical sections, general, principal axis and neutral axis methods; Bending stresses in beams of symmetric section with skew loads</p> <p>Shear Flow in Open Sections: Thin-walled beams, concept of shear flow, shear centre; Shear flow distribution in symmetrical and unsymmetrical thin-walled sections</p> <p>Shear Flow in Closed Sections: Bredt-Batho method, single and multi-cell structures; Shear flow in single and multi-cell under torsion, shear and bending; Shear centre of closed sections</p> <p>Buckling of Thin Plates: Rectangular sheets under compression, local buckling stress of thin walled section; Thin walled column strength, crippling strength estimation; Buckling of sheet-stiffener combination, effective width</p>

	<p>Stress Analysis in Wing and Fuselage: Loads on an aircraft, shear force and bending moment distribution for semi-cantilever and other types of wing and fuselage; Shear and bending moment distribution for cantilever and semi-cantilever types of beams; Thin-webbed beam with parallel and non-parallel flanges; Shear-resistant web beams</p> <p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. "Aircraft Structures for Engineering Students", T.M.G. Megson, Butterworth-Heinemann 2. "Analysis and Design of Flight Vehicles Structures", E.H. Bruhn, Jacobs Publishing Inc. <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. "Theory and Analysis of Flight Structures", R.M. Rivello, McGraw Hill 2. "Aircraft Structures", D.J. Peery & J.J. Azar, McGraw Hill
6ANU4	Space Dynamics
	<p>Introduction: Definition of space, space environment, effect of space environment on materials of spacecraft structure; Solar system, celestial sphere, ecliptic, equatorial plane and equinoxes; History of space exploration, Space missions and role of launch vehicles and spacecraft, different types of earth orbits, types of spacecraft, spacecraft subsystems; Newton's law of gravitation, Kepler's laws; Vector differentiation, kinematics relative to moving frames</p> <p>Two-body Problem: Equation of relative motion, conservation of angular momentum and energy; Different types of trajectories, orbital elements; Lambert's theorem</p> <p>N-body Problem: Equation of motion; Restricted three-body problem, Lagrangian points, concept of sphere of influence</p> <p>Orbital Manoeuvres: Hohmann transfer, bielliptic transfer, plane change manoeuvres, combined manoeuvres, low thrust transfer manoeuvres, Non-coplanar transfer; Rendezvous missions, interplanetary trajectories, gravity assist trajectories; Orbit perturbations</p> <p>Rocket Vehicle Dynamics: Basic functions and features of rockets and missiles; Tsiolkovsky rocket equation; Launch</p>

	<p>vehicle ascent trajectories and its different phases, effect of aerodynamic drag and gravity on ascent mission performance, vertical, inclined and gravity turn trajectories; Static and dynamic stability of rockets, rocket thrust vector control methods; Concept of multi-staging, series and parallel staging configurations, optimal staging solutions; Re-entry vehicles and missions, aerobraking</p> <p>Attitude Dynamics and Control: Euler's equations for rotational dynamics; Torque-free motion of asymmetric and axisymmetric rigid bodies; Spinning and non-spinning spacecraft, dual spin spacecraft, effect of energy dissipation on stability of rotational motion, nature of attitude response to atmospheric disturbances; Overview of actuation mechanisms for attitude control, gyroscopic motion, stabilization through gravity gradient, attitude sensors, design of control of three-axis stabilized spacecraft in orbit using reaction wheels, thrusters, magnets, single and double gimbaled control moment gyros, Yo-Yo mechanism</p> <p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. "Orbital Mechanics for Engineering Students", H.D. Curtis, Butterworth-Heinemann 2. "Elements of Space Technology", R.D. Meyer, Academic Press <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. "Orbital Mechanics", V.A. Chobotov, AIAA Education Series 2. "Fundamentals of Astrodynamics", R.R. Bate, D.D. Mueller & J.E. White, Dover Books 3. "Spaceflight Dynamics", W.E. Wiesel, Aphelion Press 4. "Fundamentals of Astrodynamics and Applications", D.A. Vallado, J. Wertz, Microcosm Press 5. "Rocket and Spacecraft Propulsion", M.J.L. Turner, Springer
6ANU5	Mechanics of Composites
	Basics of Composites: Definition, matrix & fibres, various types of matrix materials and their properties, properties of various type of fibres like glass, Kevlar, carbon and graphite; Polymers, properties of polymers like epoxy, polyester

	<p>and phenolic; Applications of composites with emphasis on Aerospace industry</p> <p>Manufacturing of Composites: Hand lay-up technique; Autoclave moulding; Pressure bag and vacuum bag moulding; Pultrusion; Resin-transfer moulding; Injection moulding; Bulk and sheet moulding compound methods; Prepregs</p> <p>Elastic Behaviour of Composite Lamina-Micromechanics: Volume fraction, weight fraction, density of composites; Micromechanics and Macromechanics approach; Longitudinal elastic properties, transverse elastic properties, in-plane shear modulus, Poisson's ratio, Halpin-Tsai equations</p> <p>Elastic behaviour of Composite Lamina-Macromechanics: Stress-Strain relations, general anisotropic materials, orthotropic material, transversely isotropic material, isotropic material; Stress-strain relations for a thin lamina.</p> <p>Analysis of multidirectional Laminates: Laminate orientation code, symmetric and balanced laminate; Introduction to cross-ply, angle-ply and quasi isotropic laminates; Classical laminate theory, strain-displacement relationship, stress-strain relations, force and moment resultants, in-plane and flexural laminate stiffness; Asymmetric laminate and coupling effect; Stress analysis of cross-ply symmetric laminate under in-plane and flexural loading</p> <p>Special Types of Composites: Short fibre composites; Sandwich structure composites; Honeycomb structure</p> <p>Mechanical Testing of Composites: Tensile testing; Compressive testing; Intra-laminar shear testing; Fracture testing; Impact testing; Fatigue testing</p> <p>Failure and Maintenance of Composites: Failure types in laminates; Damage to laminate structures; Inspection Methodology, quality control</p> <p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. "Analysis and Performance of Fiber Composites", B.D. Agarwal & L.J. Broutman, John Wiley & Sons 2. "Engineering Mechanics of Composite Materials", I.M. Daniel & O. Ishai, Oxford University Press
--	---

	<p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. “Mechanics and Analysis of Composite Materials”, V.V. Vasiliev& E.V. Morozov, Elsevier Science Ltd. 2. “Mechanics of Composite Materials”, R.M. Jones, Technomic Publication 3. “Composite Material: Science and Engineering”, Krishnan K. Chawle. Springer 4. “An Introduction to metal matrix composites”, T.W.Clyne& P.J. Withers, Cambridge University Press
6ANU6.1	Unmanned Aerial Vehicles
	<p>Introduction:History, Classification and applications of UAVs, Unmanned Aircraft System (UAS), UAS composition, societal impact, future prospects, Regulations and safety considerations</p> <p>Characteristics of UAV types: Long-range, long-endurance, MUAV types, MAV and NAV types, UCAV, Novel hybrid aircraft configurations</p> <p>UAV Propulsion: Internal combustion engines, turbine engines, electrical systems</p> <p>Aerodynamics:Low Reynolds number effects, Lift-induced drag, parasite drag, rotary wing aerodynamics, response to air turbulence, dynamic stall</p> <p>Control and stability: Flight control, HTOL aircraft, helicopters, convertible rotor aircraft, Autopilot Systems & Ground control Station, Sensors used in UAVs, on-board flight control</p> <p>Introduction to design and selection of UAV: Conceptual design, preliminary design, detailed design, selection of UAV for particular requirement</p> <p>Aspects of airframe design: Airframe configuration, Scale effects, packaging density, Aerodynamic design, Strength, stiffness and reliability requirements, flight and gust envelopes including manoeuvre loads, selection of powerplants; Design for stealth</p>

	<p>Payload types: Non-dispensable and dispensable payloads, sensing / surveillance, weaponized, delivery</p> <p>Communications: Communication media, radio communication, mid-air collision avoidance system, communication data range and bandwidth usage, antenna types, telemetry</p> <p>Navigation: NAVSTAR-GPS, TACAN, LORAN-C, inertial navigation, radio tracking</p> <p>Control stations: Control station composition, open system architecture, mini-UAV 'Laptop' ground control station, close-range UAV systems, medium and long range UAV systems, sea control stations, air control station</p> <p>TEXTBOOKS:-</p> <ol style="list-style-type: none"> 1. "Unmanned Aircraft Systems: UAVS Design, Development and Deployment", Reg Austin, Wiley 2. "Introduction to Unmanned Aircraft Systems", D.M. Marshall, R.K. Barnhart, E. Shappee & M.T. Most, CRC Press <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. "Small Unmanned Aircraft: Theory and Practice", R.W. Beard & T.W. McLain, Princeton University Press 2. "Unmanned Aircraft Systems", E. Atkins, A. Ollero & A. Tsourdos, John Wiley & Sons 3. "Introduction to UAV Systems", P. Fahlstrom & T. Gleason, Wiley 4. "Theory, Design, and Applications of Unmanned Aerial Vehicles", A.R. Jha, CRC Press 5. "Unmanned Aviation Systems: The Definitive Guide", M. Leasure & M.S. Nolan, eAcademicBooks LLC
6ANU6.2	Experimental Fluid Mechanics
	<p>Basic Concepts: Objective of experimental studies, Properties of fluids, Measuring instruments; Principle of similitude Components of measuring systems</p> <p>Experimental Setup: Low speed wind tunnel; High speed wind tunnel; Water tunnel, towing tank; Power losses; Effect</p>

	<p>of Reynolds number and freestream turbulence; Instrumentation and calibration</p> <p>Flow Visualization Techniques: Smoke tunnel; Surface oil flow, tuft visualization; Hele-Shaw apparatus; Interferometer; Shadowgraph; Schlieren system</p> <p>Pressure Measurement: Pitot-Static tube; Manometer; Pressure transducers; Pressure Sensitive Paints</p> <p>Velocity Measurement: Hot-wire and hot-film anemometry; Laser Doppler Velocimetry; Particle Image Velocimetry</p> <p>Temperature Measurement: Thermometer; Thermocouple; Thermistor</p> <p>Force measurement: Different types of balances; Internal and external balances</p> <p>Data Acquisition and Signal Conditioning: Data Acquisition Principle; Static and dynamic response of measuring systems; Analogue to digital conversion; Multiplexing; Types of signals; Fourier Analysis; Analysis of periodic signals</p> <p>Uncertainty Analysis: Types of measurement error, error estimation; Error analysis and uncertainty propagation</p> <p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. "Instrumentation, Measurements, and Experiments in Fluids", E. Rathakrishnan, CRC Press 2. "Introduction to Instrumentation and Measurements", R.B. Northrop, CRC Press <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. "Fluid Mechanics Measurements", R. Goldstein, CRC Press 2. "Measurement in Fluid Mechanics", S. Tavoularis, Cambridge University Press
6ANU6.3	Renewable Energy Systems (Common with 6MEU6.1)
	Introduction: Renewable and non-renewable energies, significance of renewable energy; Global and national scenarios, Form and characteristics of renewable energy sources

	<p>Solar Energy: Solar radiation, its measurements and prediction; Solar thermal collectors, flat plate collectors, concentrating collectors; Solar heating of buildings, solar still, solar water heaters, solar driers; Conversion of heat energy into mechanical energy, solar thermal power generation systems; Solar Photovoltaic cell and its applications</p> <p>Wind Energy: Atmospheric circulations, classification, factors influencing wind; Wind shear, turbulence, wind speed monitoring; Different types of wind turbines and their applications</p> <p>Ocean Energy: Ocean energy resources, ocean energy routes; Principles of ocean thermal energy conversion systems, ocean thermal power plants; Principles of ocean wave energy conversion and tidal energy conversion</p> <p>Other Sources: Nuclear fission and fusion; Geothermal energy, its origin, types of geothermal energy sites, site selection, geothermal power plants; Magneto-hydro-dynamic (MHD) energy conversion; Biomass resources and their classification, chemical constituents and physicochemical characteristics of biomass, biomass conversion processes</p> <p>Fuel Cells: Thermodynamics and electrochemical principles; Basic design, types, applications</p> <p>Hydrogen Energy: Economics of hydrogen; Production methods</p> <p>TEXT BOOK:-</p> <ol style="list-style-type: none"> 1. “Power Generation through Renewable Source of Energy”, Rai & Ram Prasad, Tata McGraw-Hill <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. Renewable Energy Sources and Conversion Technology, Bansal, Kleemann and Meliss, TMH 2. Solar Energy: Fundamental and Applications, H. P. Garg J Prakash, Tata McGraw-Hill
6ANU6.4	Fatigue and Fracture
	<p>Introduction: Kinds of failure, brittle and ductile fracture; Modes of fracture failure; Brief introduction of parameters to measure crack potency</p>

	<p>Energy Release Rate: Griffith's analysis; Energy release rate formulation; Crack resistance, crack growth, R-curve; Critical energy release rate for plane stress and plane strain</p> <p>Stress Intensity Factor: LEFM, EPFM; Stress and displacement fields in isotropic elastic materials; Stress intensity factor formulation; Field equations</p> <p>Elastic Deformation at the Crack Tip: Plastic zone for plane stress and plane strain; effective crack length formulation using Irwin and Dugdale approaches; Introduction of J-Integral; Crack Tip Opening Displacement (CTOD), Equivalence between CTOD and J-integral</p> <p>Crack Detection Test: NDT methods</p> <p>TEXT BOOK:-</p> <ol style="list-style-type: none"> 1. "Elements of Fracture Mechanics", Prashant Kumar, McGraw Hill <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. "Fatigue and Fracture: Understanding the Basics", F. C. Campbell, ASM International 2. "Fracture Mechanics: An Introduction", E.E. Gdoutos, Springer
6ANU7	Aerospace Propulsion Lab
	<ul style="list-style-type: none"> • Study of an aircraft piston engine (includes study of assembly of subsystems, various components, their functions and operating principles) • Study of an aircraft jet engine (includes study of assembly of sub systems, various components, their functions and operating principles) • Study of performance of a propeller • Characterization of intake • Axial compressor (flow fan) test rig

	<ul style="list-style-type: none"> • Study of an aircraft computerized gas turbine • Measurement of nozzle flow • Cascade testing of a model of axial compressor and turbine blade row • Flame stabilization in continuous combustion unit
6ANU8	Aeromodelling Design and Fabrication
	<ul style="list-style-type: none"> • Design and fabrication of fixed-wing gliders • Comparison of properties of thermocole, balsa wood, Styrofoam, composites for aeromodel fabrication • Detailed design of fixed-wing powered aeromodels • Design, fabrication and testing of different components • Aerodynamic and structural design • Use of flight simulator • Concepts used in unconventional UAVs such as rotary wing models and ornithopters
6ANU9	Advanced Programming using MATLAB
	<ul style="list-style-type: none"> • Basics of MATLAB computer programming • Use of formulae and inbuilt functions • MATLAB scripts and functions (m-files) • Loops and nested loops • Array, vector and matrices • Plotting functions and vector plots • Solving differential equations using MATLAB • Reading and writing data, file handling • Using MATLAB toolboxes • MATLAB graphic functions

Scheme and Syllabus of B. Tech. Aeronautical Engineering, 6th Semester for 2017-18

	<p>TEXT BOOK:-</p> <ol style="list-style-type: none"> 1. “Getting Started with MATLAB: A Quick Introduction for Scientists & Engineers”, R.Pratap, Oxford 2. “MATLAB for Beginners: A Gentle Approach”, P.I. Kattan, P.I. Kattan <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. “MATLAB For Dummies”, J. Sizemore, John Wiley & Sons 2. “Modeling and Simulation using MATLAB – Simulink”, S. Jain, Wiley 3. “MATLAB Programming for Engineers”, S.J. Chapman, Cengage 4. “Essential MATLAB for Engineers and Scientists”, B. Hahn, D.T. Valentine, Academic Press 5. “MATLAB: An Introduction with Applications”, A. Gilet, Wiley
6ANU10	Mechatronics Lab
	<ul style="list-style-type: none"> • Introduction to the concept of Mechatronics and its applications • Study of different types of sensors and transducers • Introduction to Arduino IDE and its basic commands • Introduction to programming in LabVIEW • Use of LabVIEW for data acquisition • Variation of blink rate and brightness of LEDs • Using servo motor as an actuator to move to specified position • Speed control of stepper motor • Use of relay as conditional switch • Use of strain guage sensor for measuring loads • Temperature measurement using thermocouple • Measurement of pressure using data acquisition system • Introduction to Simulink
6ANU11	Business Communication Skills

Scheme and Syllabus of B. Tech. Aeronautical Engineering, 6th Semester for 2017-18

	<p>Introduction: Process of communication, importance of communication in business; Differences between technical and general communication; Barriers to communication and measures to overcome them</p> <p>Language for Communication: Language and communication; Essentials of good style, expressions and words to be avoided, grammar and usage</p> <p>Listening Skills: Importance of Listening, barriers to listening, strategies for effective listening, listening in a business context</p> <p>Oratory Skills: Structure of different types of business speeches, public speaking, voice modulation; Quotations by prominent business personalities; Practice of appreciation, motivation, criticism</p> <p>Internal Business Communication: Guidelines for attending meetings, common mistakes made at meetings; Writing memos, circulars and notices, important guidelines</p> <p>External Business Communication: Writing business letters, importance of business letters, difference between personal and business letters; Types of business letters, structure and format of business letters and important their features such as style, effectiveness, promptness; Communication with media through news releases and advertisements</p> <p>E-mail Writing: Communication through e-mail, e-mail etiquette; Overcoming problems in e-mail communication</p> <p>Body Language: Importance of body language; Appropriate body postures in standing or sitting position, body movements during presentations and speeches, gestures, facial expressions, eye movements in response to different situations; Video samples</p> <p>Presentation skills: Importance of giving presentations, presentation skills, use of visual aids such as handouts, transparencies and presentation software, features of a good presentation; Video conferencing</p> <p>Technical report writing: Types of reports and different formats, purpose of report writing; Structure of report; Features of effective writing such as clarity, brevity, appropriate tone, balance etc.; Synopsis and thesis writing</p>
--	--

	<p>Employment Communication: Preparing resume, contents of good resume, guidelines for writing resume, different types of resumes; Writing cover letter; Group discussion skills; Interview skills, manners and etiquettes to be maintained during an interview, sample questions commonly asked during interview</p> <p>TEXT BOOKS:-</p> <ol style="list-style-type: none"> 1. “Business Communication: Process and Product”, M.E. Guffey & D. Loewy, Cengage Learning 2. “Business Communication: Making Connections in a Digital World”, R. Lesikar, M.E. Flatley & K. Rentz, McGraw-Hill College <p>REFERENCE BOOKS:-</p> <ol style="list-style-type: none"> 1. “Business Communication: Developing Leaders for a Networked World”, P. Cardon, McGraw-Hill Education 2. “Basic Communication Skills for Technology”, A.J. Rutherford, Pearson 3. “Essentials of Business Communication”, R. Pal & J.S. Korlhalli - Sultan Chand & Sons 4. “Business Communication: Skills, Concepts, and Applications”, P.D. Chaturvedi & M. Chaturvedi, Pearson India 5. “Contemporary Business Communication”, S. Ober, Cengage Learning
6ANUDC	Discipline & Extra Curricular activity