Syllabus for Aerospace Engineering (AE)

ENGINEERING MATHEMATICS

Linear Algebra: Matrix algebra, systems of linear equations, eigen values and eigen vectors.

Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, evaluation of definite and improper integrals, partial derivatives, total derivative, maxima and minima, gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals. Theorems of Stokes, Gauss and Green.

Differential Equations: First order linear and nonlinear equations, higher order linear ODEs with constant coefficients, Cauchy and Euler equations, initial and boundary value problems,Laplace transforms. Partial differential equations and separation of variables methods.

Numerical methods: Numerical solution of linear and nonlinear algebraic equations, integration by trapezoidal and Simpson rule, single and multi-step methods for differential equations.

FLIGHT MECHANICS

Atmosphere: Properties, standard atmosphere. Classification of aircraft.Airplane (fixed wing aircraft) configuration and various parts.

Airplane performance: Pressure altitude; equivalent, calibrated, indicated air speeds; Primary flight instruments: Altimeter, ASI, VSI, Turn-bank indicator. Drag polar; take off and landing; steady climb & descent,-absolute and service ceiling; cruise, cruise climb, endurance or loiter; load factor, turning flight, V-n diagram; Winds: head, tail & cross winds.

Static stability: Angle of attack, sideslip; roll, pitch & yaw controls; longitudinal stick fixed & free stability, horizontal tail position and size; directional stability, vertical tail position and size; dihedral stability. Wing dihedral, sweep & position; hinge moments, stick forces.

Dynamic stability: Euler angles; Equations of motion; aerodynamic forces and moments, stability & control derivatives; decoupling of longitudinal and lat-directional dynamics; longitudinal modes; lateral-directional modes.

SPACE DYNAMICS

Central force motion, determination of trajectory and orbital period in simple cases. Orbit transfer, in-plane and out-of-plane. Elements of rocket motor performance.

AERODYNAMICS

Basic Fluid Mechanics: Incompressible irrotational flow, Helmholtz and Kelvin theorem, singularities and superposition, viscous flows, boundary layer on a flat plate.

Airfoils and wings: Classification of airfoils, aerodynamic characteristics, high lift devices, Kutta Joukowski theorem; lift generation; thin airfoil theory; wing theory; induced drag; qualitative treatment of low aspect ratio wings.

Viscous Flows: Flow separation, introduction to turbulence, transition, structure of a turbulent boundary layer.

Compressible Flows: Dynamics and Thermodynamics of I-D flow, isentropic flow, normal shock, oblique shock, Prandtl-Meyer flow, flow in nozzles and diffusers, inviscid flow in a c-d nozzle, flow in diffusers. subsonic and supersonic airfoils, compressibility effects on lift and drag, critical and drag divergence Mach number, wave drag.

Wind Tunnel Testing: Measurement and visualisation techniques.
STRUCTURES

Stress and Strain: Equations of equilibrium, constitutive law, strain-displacement relationship, compatibility equations, plane stress and strain, Airy□s stress function.

Flight Vehicle Structures: Characteristics of aircraft structures and materials, torsion, bending and flexural shear. Flexural shear flow in thin-walled sections. Buckling. Failure theories. Loads on aircraft.

Structural Dynamics: Free and forced vibration of discrete systems. Damping and resonance. Dynamics of continuous systems.
PROPULSION

Thermodynamics of Aircraft Gas Turbine engines, thrust and thrust augmentation.

Turbomachinery: Axial compressors and turbines, centrifugal pumps and compressors.

Aerothermodynamics of non rotating propulsion components: Intakes, combustor and nozzle. Thermodynamics of ramjets and scramjets. Elements of rocket propulsion.Admission Notice-2012 M.A. Psychology Admission-2012

Eligibility: B.A. (Hons)/B.A. (pass)/B.A. Programme Examination in Psychology of Delhi University and other universities recognized by Delhi University 55% marks or above in Psychology and 55% marks in aggregate

Graduation from Delhi University or other universities recognized by Delhi University 60% marks or above in aggregate

Post Graduation from Delhi University or other universities recognized by Delhi University 60% marks or above in aggregate

Admission Procedure: 50% seats will be reserved for B.A. (Hons) Psychology/B.A. (Hons) Applied Psychology of Delhi University students and will be filled up on the basis of merit

Advertisement

Candidates are, however, required to take entrance test and interview as well for determination of merit

Entrance Test: An entrance test will be conducted followed by an interview for admission to this course in addition to the basic eligibility requirements as given above

The questions will be set from the following areas, General Psychology, Social Psychology, Statistics of Psychology, Abnormal/Clinical Psychology, Industrial and Organizational Psychology, Developmental Psychology

The duration of test will be three hours

The written test will consist of objective type questions

Candidates getting less than 40% marks in the entrance exam will not qualify for the interview

Candidates will be selected for admission in order of merit prepared on the basis of following weightage; Entrance Test 80%; Interview 20%

Application Form: All applicants are required to pay a registration fee of Rs 400/- for General/OBC category and Rs 100/- for SC/ST/PH category non-refundable by a Bank draft/demand draft of the State Bank of India drawn in favour of the Registrar, University of Delhi, Delhi-10007, payable at State Bank of India, Delhi University Branch (North Campus)

A priced bulletin of information with the admission form will be available in the Department of Psychology, Extension Building, Faculty of Arts, University of Delhi, North Campus, Delhi-110007

Admission Programme

Sale of information booklet and registration: 14th June, 2012, Thursday to 29th June, 2012, Friday, 10.00 a.m. to 3.00 p.m. (excluding Saturdays, Sundays and Holidays)

Venue: Department of Psychology, Arts Faculty Extension Building, University of Delhi, Delhi-110007

Admission Test: 02nd July, 2012, Monday, 10.00 a.m. to 1.00 p.m.

Venue: Arts Faculty Building (Room number will be announced on the notice board in the corridor between Arts Faculty and Extension Building for exams details) University of Delhi, Delhi-110007

List of successful candidates for interview: 05th July, 2012, Thursday, 5.00 p.m.

Venue: Department of Psychology, Arts Faculty Extension Building (Outside the office), Arts Faculty,
University of Delhi and University website www.du.ac.in

Interview: 08th-09th-10th July, 2012, (Sunday/Monday/Tuesday), 10:00 a.m. onwards

Venue: Department of Psychology, Arts Faculty Extension Building, University of Delhi, Delhi-110007

List of successful candidates for admission: 11th July, 2012, Wednesday, 5.00 p.m.

Venue: Department of Psychology, Arts Faculty Extension Building, University of Delhi and University website www.du.ac.in