ADMISSION TO FIRST YEAR (SECOND) SEMESTER* OF UG PROGRAME FOR THE SESSION 2014-15:

The University shall admit students to the second semester of UG programme in January 2015 against the vacancies that may exist in the first semester of first year. The students admitted in this category shall have to clear all the courses as per the scheme of the discipline of Thapar University, in which she/he is admitted. Students shall have to schedule their remaining courses in the subsequent summer semesters and regular semesters with the permission of DoAA.

The eligibility & schedule of the admission will be as under:

Eligibility:

1	She/he should <u>be</u> a student of BE/BTech programme of a recognised Institute/University and have passed 10+2 or equivalent examination from recognized board and have secured at least 60% (55% for SC/ST candidates) marks in aggregate of Mathematics, Physics and Chemistry/Computer science/Biology/Biotechnology.
2	has qualified TU entrance test with at least 20% aggregate marks (15% for SC/ST candidates).
3	She/he should be a citizen of India.
4	She/he should bear a good character and satisfy the prescribed requirements of the University.

NUMBER OF VACANT SEATS AS ON 29/10/2014.

Number of Seats available for first year (second) semester of UG programme for session 2014-15: Candidates are advised to browse www.thapar.edu regularly for updated information about availability of seats of B.E/B.Tech.

Programme	GEN	SC	ST	PH	TOTAL
Biochemical Engineering	10	3	2	0	15
Chemical Engineering	0	0	0	0	0
Civil Engineering	3	0	0	0	3
Computer Engineering (Honours in Computer Animation and Gaming)	0	0	0	0	0
Computer Engineering (Honours in Machine Learning and Data Analytics)	3	0	0	0	3
Computer Engineering	8	2	1	1	12
Electronics & Communication Engineering	8	2	1	1	12
Electronics (Instrumentation & Control) Engineering	18	4	2	1	25
Electrical Engineering	1	0	0	0	1
Mechatronics	3	0	0	0	3
Mechanical Engineering	3	1	0	0	4
Mechanical Engineering (Production)	6	1	1	0	8
Software Engineering & Management	3	0	0	0	3
TOTAL	66	13	7	3	89

Schedule of the admissions:

Availability of the forms	Available at www.thapar.edu
Last date of receipt of application forms	December 1, 2014
Online Entrance Test	December 19-21, 2014
Declaration of the merit list	January 1, 2015
Counseling for admission & deposit of fee	January 6, 2015
Commencement of classes	January 7, 2015

Venue for counselling: Thapar University, Patiala.

Note: 1) No separate letter for Counselling shall be issued.
2) University reserves the right to make these admissions.

Admission Procedure:

- Only those candidates shall be considered who shall apply on the prescribed application form on or before the last date.
- The admission shall be made on the basis of merit of entrance test to be conducted by Thapar University.
- Candidate is required to pay tuition fee and other dues at the time of admission.
- There will be only one counselling.
- Candidate leaving after taking admission shall be refunded Caution Money and alumni fee only.
- The number of seats available for admission shall be available on our website www.thapar.edu w.e.f. October 15, 2014. 15% seats shall be reserved for SC, 7.5% seats for ST category and 3% for physically handicapped category. In case, any seat in reserved category remains vacant, the same shall be converted to the General Category.
- Candidate should bring all the documents in original at the time of Counselling.
- In case, a student of first year of Thapar University gets a seat under this scheme then the seat vacated by such candidate shall be offered to other candidates in the merit list.

- **GENERAL INFORMATION REGARDING BE/BTECH-DECEMBER 2014 ADMISSIONS INCLUDING ENTRANCE TEST SYLLABUS**

  Structure of the Entrance Test: It will be of 3 hours duration and shall contain 150 Objective/Multiplie choice questions of 1 mark each. 1/4 mark shall be deducted for every wrong answer.:

	Compulsory subjects	Number of Questions
1	English	20
2	Mathematics	20
3	Physics	20
4	Chemistry	20
Any two from following (S.No 5-7)		
5	Solid Mechanics	20
6	Computer Programming	20
7	Electrical and Electronic Science	20
Any two from following (S.No 8-10)		
8	Engineering Graphics	15
9	Thermodynamics	15
10	Manufacturing Process	15
	TOTAL	150

- **ENGLISH**

  Communicative grammar-Spotting errors related to nouns, pronouns, adjective and adverbs. Changing voice from active to passive and Passive to Active. Idioms and phrases; Words often confused; One word substitutes; Formation of words (suffixes, prefixes and derivatives)
  Written English- Types of writing (narrative, expository, analytical, descriptive); Structure of a paragraph; Fundamentals of letter writing.
  Reading Skills –Process of reading; Various types of reading skills; Strategies to become an effective reader.
  Speaking and Listening Skills-Elements of an effective talk; Oral presentations and designing & using audio visual aids; Process of listening; Recognition of barriers to listening; Developing good listening skills; Role of non verbal cues in speaking and listening.

- **Physics**
  Electromagnetic Waves: Introduction, Maxwell's equations in differential and integral forms, Concept of displacement current, Electromagnetic wave equations for free space, Conducting and dielectric medium, Poynting theorem, Concept of wave guides.
  Light Waves: Interference: thin films, wedge-shaped films, non-reflecting films, Newton rings, Michelson interferometer, Diffraction: single, double and multiple slits, Dispersive and resolving powers. Polarization, its production, and detection.
  Quantum Mechanics: Origin of quantum hypothesis, de-Broglie hypothesis of matter waves, Uncertainity principle, Wave function and wave mechanics, Schrodinger equation: steady state form, Quantum mechanical operators,

Expectation value, One dimensional solutions: zero potential, step potential, potential barrier and potential well.

Laser and Fiber Optics: Basic concepts, Laser properties, Laser systems: ruby, Nd:YAG, He-Ne and semiconductor lasers, Optical fiber, Basic theory, Acceptance angle, Numerical Aperture, Normalised Frequency, Mode of propagating ; materials dispersion and pulse dispersion in optical fiber; fiber connectors, splicers and couplers; application of optical fiber.

Magnetic Materials and superconductivity: Classification of magnetic materials, Types of magnetism, Magnetic anisotropy and magnetostriction, Magnetic domain, Hard and soft magnetic materials, Ferrites and their applications, Basic ideas of superconductivity, Type I and Type –II superconductors and their applications.

- **Chemistry**

  Water and its treatment: Specifications of water for different uses, Water for domestic uses, Different methods of water softening, Boiler feed water, Desalination of water

  Electrochemistry: Migration of ions, Transference number, Diffusion and ionic mobility, Debye Huckel theory; Types of electrodes, Concentration cells with and without transference, Potentiometric titirations and conductometric titrations.

  Phase Rule: Definitions of terms, Derivation of phase rule, One component and two component systems.

  Polymers: Basic concepts, Classification and industrial application.

  Spectroscopic Techniques: Law of absorption of light, Limitations and applications of Beer's law, Grotthus-Draper Law, Stark Einstein Law; Jablonski diagram, Types of molecular spectra, Introduction to atomic spectroscopy, Principle and applications of atomic absorption spectroscopy, UV/VIS, IR and NMR spectroscopy

  Corrosion and its prevention: Corrosion, Different types of corrosion, Prevention of corrosion

- **MATHEMATICS**

  Applications of derivatives: Mean value theorems and their geometrical interpretation, Cartesian graphing using first and second order derivatives, polar curves, Polar equations for conic sections. Differential calculus of functions of several variables with applications, directional derivative, homogeneous functions and Euler's theorem, Jacobians, maxima and minima of functions of two variables .

  Integral Calculus: Fundamental theorem of integral calculus applications of definite integral to area and arc length. Double and triple integration , and their applications to areas and volumes.

  Vector Calculus: Differentiation and integration of vector valued functions, velocity, acceleration, tangent, principle normal and binormal vectors, Curvature and Torsion.,Gradient, Divergence and Curl. Line integrals, Work, Circulation and Flux. Green's theorem in Plane

  Infinite Series: Introduction to sequences and Infinite series, Tests for convergence/divergence. Alternating series, Absolute convergence , conditional convergence, power series and its convergence.

  Matrices: Rank and inverse of a matrix, Solution of linear system of equations.

  Complex Numbers: De'Moivre's theorem and its applications.

- **SOLID MECHANICS**
  Review of Engineering Mechanics: Concept of force, representation and resolution of forces, free body diagrams, analysis of Pin jointed plane trusses.
  Simple Stresses and Strains: Stress-strain curves for elastic materials, axial stress and strain, Hookes' law, Young's modulus of elasticity, Bulk modulus of rigidity and Poisson's ratio, relationship between elastic constants, thermal stresses, principal planes and stresses.
  Torsion: Concept of shear strain, Torsion of circular and hollow shafts, power transmitted.
  Bending Moment and Shear force Diagrams: Types of beams, supports and loadings, sign conventions, relationship between load, shear force and bending moment, graphical plots of Shear Force and Bending Moments.
  Bending and shear Stresses: Theory of simple bending, determination of stresses in simple and built -up sections, flitched beams, variation of shear stress across the depth of various beam sections

- **COMPUTER PROGRAMMING**
  Introductory Concepts : Elements of Computer Processing, Basic Concepts of Hardware and Software, Problem solving with Algorithms and Flowchart, Types of Programming Languages, Basic DOS and Linux Commands.
  C Programming Concepts and Operators, Hierarchy of operators, Header files, Data input and output, Control statements: loops and Decision statements, Preprocessor directives, Storage classes, Array, Strings, Structures, Union, Enumerations, Functions, Fundamentals of pointers, File Handling in C, Command line arguments.

- **ELECTRICAL AND ELECTRONIC SCIENCE**

  Basic electrical quantities, electric circuit elements and their V-I relations, KCL, KVL, Ohm's law, combination of circuit elements, temperature dependency of resistance.

  Mesh and Nodal Analysis, Star-Delta Transformation, Superposition theorem, Thevenin's and Norton's theorems, Maximum power transfer theorem, Transient (step) response of RL and RC series circuits.

  Concept of Phasor, sinusoidal steady state response of RL, RC & RLC series and parallel circuits, power and power factors, resonance in series and parallel circuits, bandwidth, loss tangent and quality factor.

  Concepts of magnetic circuits, analogy of magnetic circuit with electric circuit, B-H curve, ampere-turn calculation, constructional features and operating principle of single phase transformer and DC machine, characteristics and applications of DC motor.

  Diode applications and characteristics, transistor operating modes and characteristics in various configurations, colour coding of low power resistors.

- **ENGINEERING GRAPHICS**

  Introduction and use of drafting tools, Lettering, Dimensions and standards, Projection systems, Orthographic projection of points and lines on reference planes, Auxiliary planes and their applications, Projection of surfaces, Projection and sections of solids, Intersection of solids, Development of surfaces,

Orthographic projections from pictorial views, Isometric views. Missing lines and views

- **THERMODYNAMICS**
  Introduction: Basic Concepts : System, Control Volume, Surrounding, Boundaries, Universe, Types of Systems, Macroscopic and Microscopic viewpoints, Concept of Continuum, Thermodynamic Equilibrium, State, Property, Process: Flow and non flow process, cycle concept of work and heat, Specific heats, Zeroth law, Energy and its form, pure substance, Thermodynamic diagrams, triple point, steam tables and their use.

  First Law of Thermodynamics: Concept of internal energy & enthalpy, energy equation as applied to a close and open system, PMM of First kind. Transient flow processes. Charging and discharging of tanks.
  Limitations of the First Law – Thermal Reservoir, Heat Engine, Heat pump, Parameters of performance, Second Law of Thermodynamics, Kelvin-Planck and Clausius Statements and their Equivalence/Corollaries, PMM of Second kind, Carnot's principle, Carnot cycle and its specialties, Thermodynamic scale of Temperature, Second law analysis of control volume.
  Clausius Inequality, Entropy, Principle of Entropy Increase – Energy Equation.
  Various cycles and systems: Rankine cycle, vapour compression refrigeration cycle, Air standard cycles: Otto, Diesel, Dual, Brayton cycles.

- **MANUFACTURING PROCESSES**

  Introduction: Common engineering materials and their important mechanical and manufacturing properties. General classification of manufacturing processes

  Metal Casting: Principles of metal casting, Patterns, their functions, types, materials and pattern allowances, Characteristics of molding sand, Types of cores, chaplets and chills; their materials and functions.

  Metal Forming And Shearing: Forging, rolling, drawing, extrusion, bending, spinning, embossing, shearing, piercing and blanking.

  Machining Processes: Principles of metal cutting, cutting tools, their materials and applications, Geometry of single point cutting tool, Basic machine tools and their applications. Introduction to non-traditional machining processes (EDM, USM, CHM, ECM, and LBM).

  Joining Processes: Electric arc, Gas, Resistance and Thermit welding, Soldering, Brazing and Braze welding, Adhesive bonding, Mechanical fastening.