



## GURU NANAK INSTITUTE OF ENGINEERING & TECHNOLOGY

Dahegaon, Kalmeshwar Road, Nagpur-441 501

### DEPARTMENT OF APPLIED SCIENCE AND HUMANITIES

Session 2017-2018(ODD/EVEN)



#### I SEM

#### Engineering Mathematics-I (BESI-1T)

Year of Study 2017-2018

- CO 1: Able to understand and solve the system of linear equations arising in all engineering fields using matrix methods and knowledge of Eigen values and Eigen vectors.
- CO 2: Able to understand and solve algebraic and transcendental equations.
- CO 3: Able to understand successive differentiation, sequence and series of the functions.
- CO 4: Able to understand the concept of limits and expansion of functions.
- CO 5: Able to understand and solve ordinary and partial differential equations.
- CO 6: Able to understand the concept of Jacobians, Maxima-Minima and error- approximations.

#### Engineering Physics (BESI-2T)

Year of Study 2017-2018

- CO 1: Ability to apply principles of optics for measurement of various complex Engineering Problems.
- CO 2: Ability to develop understanding of phenomenon of acoustics in various Engineering field and apply it for various applications.
- CO 3: Students will understand the recent trends and advances in technologies and know how it is implemented in applications.
- CO 4: Students will be able to use basic concepts to analyze and design a wide range of semiconductor devices.
- CO 5: Ability to analyze and solve quantum mechanical problems and enhance knowledge of atomic systems.
- CO 6: Ability to learn method of synthesis of nano-particles and study the physical properties of nano materials and superconductors and also be able to understand their technological applications.

#### 3) Engineering Chemistry (BESI-3T)

Year of Study 2017-2018

- CO 1: Understand the technology involved in purification of water for industrial use.
- CO 2: Describe basic concepts of electro-analytical methods that facilitate rapid and reliable measurements.
- CO 3: Understand important relationships between chemical structure and properties of polymers. Also applications of polymers in various engineering fields.
- CO 4: Understand the characteristics of different types of fuel, and look at the factors governing efficient combustion.

CO 5: The ability to know the development and applications of Nano-materials, Fuel cells, Composite materials in various fields of technologies.

CO 6: Analyze and able to explain the corrosion principles and mechanisms. Critically evaluate corrosion prevention and control strategies.

#### **4) Basic Electrical Engineering (BESI-4T)**

**Year of Study 2017-2018**

CO 1: Understand and solve problems on basic terminologies of electrical engineering.

CO 2: Understand and solve the problems on basic concepts of electromagnetism.

CO 3: Understand the fundamentals of electrostatics and Single Phase transformer.

CO 4: Understand and solve the problems on AC fundamentals.

CO 5: Understand the fundamentals of AC single phase circuits and poly phase circuits.

CO 6: Define various DC circuits laws, theorems and apply them to obtain solutions.

#### **5) Basic Civil Engineering (BESI-5T)**

**Year of Study 2017-2018**

CO 1: Student will understand the basic areas of civil engineering.

CO 2: Student will understand the types of structure and construction materials

CO 3: Student will be able to use modern surveying equipments.

CO 4: Student will to use the natural resources more effectively and reduce the waste generations.

CO 5: Student will be able to follow the principles and bye rules for building planning.

CO 6: Student will be able to acquire the self learning with Presentation in a group on the topic related to environment and energy.

#### **6) Engineering Graphics-I (BESI-6T)**

**Year of Study 2017-2018**

CO 1: Ability to create geometric construction with hand tools.

CO 2: Ability to solve traditional descriptive geometry problems. (Projection of Line and Plane)

CO 3: Ability to visualise and draw primitive solids.

CO 4: Ability to draw curves and lateral surfaces of primitive solids to develop the base for engineering design.

CO 5: Ability to draw 2-D and 3-D views of Solid objects.

CO 6: Ability to develop imagination of physical objects to be represented on paper for engineering communication.

## II SEM

### 1) Engineering Mathematics-II (BESII-1T)

Year of Study 2017-2018

- CO 1: Able to understand the concept of modeling of various physical systems such as Newton's law of cooling, Electrical circuits, rectilinear motion etc.
- CO 2: Able to design and analyse the continuous and discrete system, where knowledge of Fourier Series and Harmonic analysis is required.
- CO 3: Able to use advanced techniques to evaluate integrals.
- CO 4: Able to measure the arc length of various curves..
- CO 5: Able to use the concept of Sphere, cone and cylinder that arise in vector calculus, electro-magnetic field theory, cad-cam, computer graphics etc.
- CO 6: Able to workout Area, Volume, RMS values and Center of Gravity using techniques of multiple integrals.

### 2) Advanced Physics (BESII-2T)

Year of Study 2017-2018

- CO 1: The ability to identify, formulate, and solve engineering physics problems and the ability to apply the design process to engineering problems.
- CO 2: The ability to formulate, conduct, analyze and interpret experiments in engineering physics; with to use modern engineering physics techniques and tools, including software and laboratory instrumentation.
- CO 3 : Apply vector calculus approach to problems in electric field and magnetic field. Apply laws of physics to simple LRC circuits. Learn physics behind various types of lasers and their characteristics.
- CO 4 : Understand the interference and diffraction from wave optics concepts and know its applications. Understand polarization of light and its application
- CO 5 : To enhance knowledge about photonics and optical fiber communication system and use modern engineering physics techniques and tools.
- CO 6 : Describe development of modern physical optics, with particular attention to the wave properties of light and optic application.

### 3) Material Chemistry (BESII-3T)

Year of Study 2017-2018

- CO 1 : Describe the methodology and perspectives of Science and the importance of Science in the development of material chemistry.
- CO 2 : Builds a knowledge in chemical bonding and compounds of non-transition elements and gives an elementary idea about nano materials.
- CO 3 : Describes about the general principles of isolation and purification of elements and instrumental methods of analysis.
- CO 4: Explains the chemical and physical properties and dynamics in the thermodynamic limit. Understand the microscopic properties of the constituent atoms and molecules of a bulk

system.

CO 5 : Ethical behavior in issues facing material chemistry including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy and health.

CO 6: Rationalise the physical properties of a range of functional materials including conductors  
semi-conductors, insulators, dielectric etc.

#### **4) Engineering Mechanics (BESII-4T)**

**Year of Study 2017-2018**

CO 1: Students will demonstrate knowledge of mathematics and mechanics with logics in resolution and composition of force systems.

CO 2: Students will demonstrate the ability to relate kinematics with kinetic equations on linear displacement, velocity and acceleration.

CO 3: Students will solve practical examples related to curvilinear motion.

CO 4: Students will correlate power; work and energy to solve practical problems.

CO 5: Students will be able to develop the confidence for self learning in application of equilibrium conditions for co-planar and non co-planar force system.

CO 6: Students will get prepare for analysis of truss, cable, frame and friction

#### **5) Advanced Electrical Engineering (BESII-5T)**

**Year of Study 2017-2018**

CO 1 : Work professionally in one or more of the following areas: analog electronics, digital electronics, communication systems, signal processing, and computer-based systems.

CO 2 : Achieve personal and professional success with awareness and commitment to their ethical and social responsibilities, both as individuals and in team environments.

CO 3 : Maintain and improve their technical competence through lifelong learning, including entering and succeeding in an advanced degree program in a field such as engineering.

CO 4 : Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice to function on multi-disciplinary teams.

CO 5 : Analyse complex electrical and electronics engineering problems and apply appropriate engineering techniques and design processes.

CO 6 : Acquire and evaluate research regarding new knowledge development within the electrical and electronics engineering discipline and its social, cultural, environmental and legal context



**Principal  
GNIET, Nagpur**