

**Course Study Cum Examination Scheme**

Semester	Paper Code	Nomenclature of Paper	Exam System
I	Paper-1	Electronic Devices and Circuits-I	Semester
	Paper-2	Network Analysis	
II	Paper-1	Electronic Devices and Circuits-II	Semester
	Paper-2	Digital Electronics-I	
Common for Sem I & Sem II	Paper-3	Electronics Lab.(Practical)	Annual
III	Paper-1	Op-amp and Linear Integrated Circuits	Semester
	Paper-2	Digital Electronics-II	Semester
IV	Paper-1	Oscillators and Multivibrators	Semester
	Paper-2	Advance Digital Electronics	
Common for Sem III & Sem IV	Paper-3	Electronics Lab. (Practical)	Annual
V	Paper-1	Microprocessor Architecture Programming-I(Th)	Semester
	Paper-2	Electronic Communication(Th)	
VI	Paper-1	Microprocessor Architecture and Programming-II(Th)	Semester
	Paper-2	Introduction to C & its Programming(Th)	
Common for Sem V & Sem VI	Paper 3	Electronics Lab. (Practical)	Annual

Sahni

  
**Principal**  
Pt. C.L.S Govt. College  
KIRANAL

## **COURSE OUTCOME**

### **B.Sc.-1<sup>st</sup> Semester**

**Nomenclature: Electronic Devices and Circuits-I**

**Learning outcome:** Upon successful completion of this paper, the students will be able to understand the physics behind the working of a diode and a transistor, their equivalent circuits, various configurations of transistor and their applications (diode/transistor).

**Nomenclature: Network Analysis**

**Learning outcome:** Upon successful completion of this paper, the students will have better understanding about electronic circuits taught them in theory papers and will be able to analyze their performance.

### **B.Sc.-2<sup>nd</sup> Semester**

**Nomenclature: Electronic Devices and Circuits-II**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To bias the transistor properly using a suitable biasing circuit.
2. To understand and analyze the circuits of the Amplifiers.
3. To understand the difference between FET and BJT transistors and their working.

**Nomenclature: Digital Electronics**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To convert a number from one system to another number system.
2. To design a digital circuit with optimized hardware required.
3. To understand various logic families and combinational circuits.

### **B.Sc.-3<sup>rd</sup> Semester**

**Nomenclature: Op-amp and Linear Integrated Circuits**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To use operational amplifier in different application based circuits.
2. To know how integrated circuits are used to reduce the complex circuitry.
3. To use regulated power supply in various electronic equipments.

**Nomenclature: Digital Electronics-II**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To design various combinational circuits used for many applications in digital system.
2. To design any counter circuit for a specific use.
3. To understand various types of registers and the applications of registers to store the digital data.

*Savitri*

*Sharma*  
**Principal**  
**Pt. G.L.S Govt. College**  
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### **B.Sc.-4<sup>th</sup> Semester**

**Nomenclature: Oscillators and Multivibrators**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To use the feedback concept as per the requirement of the circuit.
2. To understand various types of amplifiers and their applications.
3. To use oscillators and multivibrators in various applications depending on frequency and shape of waveforms.

**Nomenclature: Advance Digital Electronics**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To use the DAC and ADC as per the requirement of the circuit.
2. To understand various types of memory and their applications.

### **B.Sc.-5<sup>th</sup> Semester**

**Nomenclature: Microprocessor Architecture and Programming with 8085**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To understand the concept of SAP -1 and SAP-2 computer.
2. To understand various instructions used for low level programming.
3. To write assembly level programs on microprocessor 8085 kit.

**Nomenclature: Electronic Communication**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To understand the concept of AM and FM.
2. To understand various digital modulation techniques.

### **B.Sc.-6<sup>th</sup> Semester**

**Nomenclature: Interfacing Peripheral Devices and Applications of 8085**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To understand the use of interrupts used in microprocessor 8085.
2. To understand the interfacing of IC 8255 as well as interfacing & programming of 8253.
3. To write assembly level programs on microprocessor 8085 kit for various applications.

**Nomenclature: Introduction to C and its programming**

**Learning outcome:** Upon successful completion of this paper, the students will be able

1. To understand the "C" fundamentals.
2. To understand various data types used for programming and will be able to write programs.

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**HOD, Electronics Dept.**



## **B.Sc.(Non-Medical) with Physics, Electronics & Mathematics**

It is a three-year degree programme, conducted in affiliation to Kurukshetra University, spread over six semesters. The course offers three subjects Electronics, mathematics and physics, with equal emphasis given to each of these three majors. English language and optional languages are also part of this curriculum, which can be pursued during semesters 1 to 4. Practical-based laboratory sessions are an integral part of the curriculum.

The main objectives of this course are: to provide a comprehensive understanding of electronics and communication system as part of electronics; to provide an understanding of advanced mathematics; to impart working knowledge of fundamental concepts in the basic areas of physics such as classical mechanics, quantum mechanics, electricity and magnetism, and thermodynamics.

### **Electronics**

Electronics is a branch of physics and technology concerned with the design of circuits using transistors and microchips, and the behaviour and movement of electrons in semiconductors, conductors, vacuum, or gas. The course covers various aspects of basic electronics, electronic circuits, special purpose devices, linear integrated circuits, digital electronics, communication and microprocessors.

The department aims at setting a benchmark in education in the field of electronics by incorporating new and innovative teaching methods which include video presentations, projects etc. The undergraduate programme is diversified greatly in order to keep in pace with recent trends and developments and the fast changing needs of the society. The three years of study starts from the fundamentals of electronics, semiconductor devices and applications, Linear integrated circuits and applications, digital logic design, Analog and digital communication systems, satellite communication, microprocessor.

### **PROGRAMME OUTCOME**

After successful completion of graduation in science (non-medical) faculty a student should have:

1. Acquired the knowledge with facts and figures related to various subjects in pure sciences such as Physics, Chemistry, Electronics, Computer Science and Mathematics.
2. Understood the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
3. Acquired the skills in handling scientific instruments, planning and performing in laboratory experiments.
4. The skills of observations and drawing logical inferences from the scientific experiments.

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5. Analyzed the given scientific data critically and systematically and the ability to draw the objective conclusions.
6. Realized how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.
7. Developed scientific outlook not only with respect to science subjects but also in all aspects related to life.
8. Imbided ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.
9. Developed various communication skills such as reading, listening, speaking, etc., which we will help in expressing ideas and views clearly and effectively.
10. Realized that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude and other necessary qualities leads towards a successful life.

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## B.Sc. (Hons.)- Information Technology

**B.Sc. (Hons.) Information Technology** or **Bachelor of Science Honours in Information Technology** is an undergraduate Information Technology Management course. Information Technology is the branch of engineering that deals with the use of computers and telecommunications to retrieve and store and transmit information. The course aims to acquaint students with a wide range of problems that arise in computing & information technology, together with various methods & technologies available as solutions. The course includes communications, computer networking, computer-based systems, database management, software development, website development, digital media, and electronic publishing. Students learn how to evaluate current and emerging technologies, identify user needs, design user-friendly interfaces, apply, configure and manage technologies, and assess the impact of technologies on individuals, organizations, and society.

### PROGRAMME OUTCOME

The completion of the B.Sc. (Hons.) IT Programme shall enable a student to:

1. To communicate technical information both orally and in writing.
2. Apply the knowledge gained in core courses to a broad range of advanced topics in computer science, to learn and develop sophisticated technical products independently.
3. To design, implement, and evaluate computer-based system, process, component, or program to meet desired needs by critical understanding, analysis and synthesis.
4. Identify applications of Computer Science in other fields in the real world to enhance the career prospects.
5. Realize the requirement of lifelong learning through continued education and research.
6. Use the concepts of best practices and standards to develop user interactive and abstract application.
7. Understand the professional, ethical, legal, security, social issues and responsibilities.

### LERNING OUTCOMES OF PAPERS :

#### B.SC(I.T) 1<sup>ST</sup> SEMESTER:

**1) BSIT 101 : Communication Skills (English)-I :** Understand the Concept of Communication: Verbal and Non-Verbal, Oral-Written, Body language etc.

Learn to write official Letters, Telegram, Notifications, Communiqué's , Employee manuals, fax and Resume.

**2) BSIT 103: Fundamental of EM Waves :** Upon successful completion of the course, Students will be able to

- Physical interpretation of Maxwell's equation and problem solving in different media.
- Understanding of propagation of an electromagnetic wave.

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3) **BSIT 104: Electronic Devices and Circuits:** Upon successful completion of the course, Students will be able to

- Describe the behaviour of semiconductor materials/ devices.
- Explain the applications of semiconductor devices like diode, Zener diode and transistor.
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4) **BSIT 105 : Electronic Communication-I** : Upon successful completion of the course, Students will be able to :

- Use of different modulation and demodulation techniques used in analog and digital communication
- Identify and solve basic communication problems
- Analyze transmitter and receiver circuits
- Compare and contrast design issues, advantages, disadvantages and limitations of analog and digital communication system.

5) **BSIT 106: Computer Fundamentals** : Bridge the fundamental concepts of computers with the present level of **knowledge** of the students. Understand binary, hexadecimal and octal number systems and their arithmetic. Understand how logic circuits and Boolean algebra forms as the basics of digital computer.

### **B.SC( I.T) 2<sup>ND</sup> SEMESTER:**

1) **BSIT 201: Communication Skills (English)-II** : Learn Business Communication skills: writing Business letters.

Learn Official Correspondence Skills: Letters of appreciation, Reference, Appointments, Quotations, Letters of recommendation, proposals, Contracts, brochures and Precis Writing.

Understand the Correct Usage of Articles, Tense, Voice and Reported Speech, Auxiliaries and Subject-Verb Concord.

Understand English Speech Sounds, Phonetic Alphabet and be able to write the Phonetic symbols and transcribe simple words.

Be able to do Phonetic Transcription of One/Two syllable words.

Learn the Phonetic concepts of Syllable, Stress and intonation.

Understand phonemic transcription, word accent, English pronunciation and intonation.

2) **BSIT 203: Applications of EM wave** : Upon successful completion of the course, Students will be able to

- Understand the properties of different types of electromagnetic waves.
- Understand that electromagnetic waves can be polarized.

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Principal  
Pt. C.L.S Govt. College  
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- Understand the properties of different types of antenna.
- Understand Kepler's three laws of planetary motion

Understand Remote sensing and its application.

**3) BSIT 204: Digital Electronics-I** : Upon successful completion of the course, Students will be able to

- Understand and represent number in powers of base.
- Understand basic logic gates, concepts of Boolean algebra and technique to reduce/simplify Boolean expressions.
- Understand different Logic families.

**4) BSIT 205: Electronic Communication-II** : Upon successful completion of the course, Students will be able to

- Understand digital Modulation Techniques.
- Understand methods of controlling errors.
- Design the channel performance using Information theory.
- Comprehend various error control code properties

**5) BSIT 206: Programming Techniques** : Apply implement learned algorithm design techniques and data structures to solve problems. Design different hashing functions and use files organizations. Solve problems by using modular programming concepts. Understand and implement control and logic structures in modular programming.

### B.SC (I.T) 3<sup>RD</sup> SEMESTER:

**1) BSIT 301: Circuit Analysis & Digital Electronics-II** : Upon successful completion of the course, Students will be able to

- Understand Kirchhoff's Voltage Law, Kirchhoff's Current Law, Mesh Analysis, and Nodal Analysis
- Solve circuit using star-delta transformation.
- Apply various network theorems.
- To design various combinational circuits used for many applications in digital system.
- To understand basic concept of sequential circuits.

**2) BSIT 302 : Transistor and Linear Integrated Circuits** : Upon successful completion of the course, Students will be able to

- Understand the h-parameters of transistor.
  - Understand the basic process of IC fabrication.
- Understand the operation of differential amplifier.

**3) BSIT 303: Telecommunication & Networking-I**: Upon successful completion of this paper, the students will be able

*Dakin*

*Shan*  
Principal  
Pt. C.L.S Govt. College  
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- Independently understand basic computer network technology.
- Understand and explain Data Communications System and its components.
- Identify the different types of network topologies and protocols.
- Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each

**4) BSIT 304: Microprocessor Architecture and Programming-I** : Upon successful completion of this paper, the students will be able

- To understand the concept of SAP-1, SAP-2, SAP-3 computer and 8085 microprocessor.
- To understand various instructions used for low level programming.
- To write assembly level programs on microprocessor 8085 kit.
- To understand the use of interrupts used in microprocessor 8085.

**5) BSIT 305: Operating System – I:** Components of a computer operating system, and the interactions among the various components. The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.

**6) BSIT 306: Computer Programming with C – I :** Understanding a functional hierarchical code organization. Ability to define and manage data structures based on problem subject domain. Ability to work with textual information, characters and strings.

### **B.SC (I.T) 4<sup>TH</sup> SEMESTER**

**1) BSIT 401 : Digital Electronics-III :** Upon successful completion of this paper, the students will be able

- To design various combinational circuits used for many applications in digital system.
- To design any counter circuit for a specific use.
- To understand various types of registers and the applications of registers to store the digital data.

**2) BSIT 402 : Oscillators and Multivibrators :** Upon successful completion of this paper, the students will be able

- To use the feedback concept as per the requirement of the circuit.
- To understand various types of amplifiers and their applications.
- To use oscillators and multivibrators in various applications depending on frequency and shape of waveforms.

**3) BSIT 403: Telecommunication & Networking-II :** Upon successful completion of this paper, the students will be able

- Identify the different types of network devices and their functions within a network
- Understand and building the skills of subnetting and routing mechanisms.

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Principal  
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- Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
- Distinguish Step Index, Graded index fibers and compute mode volume.
- Explain the Transmission Characteristics of fiber and Manufacturing techniques of fiber/cable
- Classify the construction and characteristics of optical sources and detectors.

4) **BSIT 404 : Microprocessor Architecture and Programming-II** : Upon successful completion of this paper, the students will be able

- To understand the interfacing of IC 8255 as well as interfacing & programming of 8253.
- To write assembly level programs on microprocessor 8085 kit for various applications.
- To understand the concept of 8086 microprocessor and their programming.
- To understand and classify the instruction set of 8086 microprocessor and distinguish the use of different instructions and apply it in assembly language programming.

5) **BSIT 405 : Operating System – II** : This Course Will Introduce:- Threads and thread usage  
 • Multithreading operating system • Client – server model • Implementation of Client-server model • Remote procedure call • Implementation of remote procedure call • Synchronization in distributed systems • Clock synchronization • Mutual exclusion • Election algorithms • Transaction and concurrent control • Deadlock in distributed systems • Processor Allocation • Real – time distributed systems • Distributed file systems.

6) **BSIT 406 : Computer Programming with C – II:** Demonstrate an understanding of computer programming language concepts. To be able to develop C programs on linux platform. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage. Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures. Student must be able to define union and enumeration user defined data types. Develop confidence for self education and ability for life-long learning needed for Computer language.

### **B.SC (I.T) 5<sup>TH</sup> SEMESTER**

1) **BSIT 501 : Computer System Architecture-I** : Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os. Analyze the performance of commercially available computers.

2) **BSIT 502 : Programming In C++ - I** : To learn the fundamental programming concepts and methodologies which are essential to building good C/C++ programs. To code, document, test, and implement a well-structured, robust computer program using the C/C++ programming language. To write reusable modules (collections of functions).

3) **BSIT 503: Web-Site Design Implementing Basic Design Tools-I** : This course will introduce you to the realm of web design. The first and necessary step for that goal is to

Principal  
 G.L.S Govt. College  
 JALPAIGURI

Sahin

*Sahin*  
 Principal  
 G.L.S Govt. College  
 JALPAIGURI



understand how HTML works, and then we will proceed to more advanced and complicated structures and concepts of web design, such as CSS and layout control. A series of tasks (website evaluation, website development, reflective report, collaborative website development, website self-assessment), as well as several group activities (discussions, online resource sharing, collaborative work) will help you gain practical experience on web development and a thorough understanding of web design issues.

**4) BSIT 504 : Internet Concepts And Applications:** - On completion of this course, a student will be familiar with client server architecture and able to develop a web application using java technologies. Students will gain the skills and project-based experience needed for entry into web application and development careers.

**5. BSIT 505 : Microprocessor Architecture And Programming III:** - Upon successful completion of this paper, the students will be able

- To understand and realize the Interfacing of memory & various I/O devices with 8086 microprocessor.
- To understand the interfacing concept of analog to digital converter and digital to analog convertor with 8086.
- To understand the basic features of 80286, 80386, 80586, Pentium 4 and numeric processor 8087.

### B.SC (IT) 6<sup>TH</sup> SEMESTER:

**1) BSIT 601 : Computer System Architecture-II:** Understand the theory and architecture of central processing unit. 2. Analyze some of the design issues in terms of speed, technology, cost, performance. 3. Design a simple CPU with applying the theory concepts. 4. Use appropriate tools to design verify and test the CPU architecture. 5. Learn the concepts of parallel processing, pipelining and interprocessor communication. 6. Understand the architecture and functionality of central processing unit. 7. Exemplify in a better way the I/O and memory organization. 8. Define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.

**2) BSIT 602 : Programming In C++ - II:** Gain a foundation for writing efficient, safe C++ code. **Learn** how to use STL libraries. Understand memory pitfalls in C++. Know how to expand the C++ memory model. Utilize object-oriented for analysis and design. Apply multiple inheritance to an application. Understand how streams work.

**3) BSIT 603 : Web-Site Design Implementing Basic Design Tools-II:** You'll learn tools to create international standard websites by your own. So this course will help you in taking big leap in your prospective career. You will discover how does web works really, what makes web sites work. Simple and impressive design techniques, from basics till advanced to focus on goal oriented and user centric designs. How to and where to start research, planning for website & actually build excellent web sites. Pro level skills in SEO with keyword research and content strategy for your website. To



create web elements like buttons, banners & Bars and of course complete UI designs. Forms and validations for your website.

4) BSIT 604 : Internet Concepts & Applications -II: As a result of studying the discipline a student must understand and be able to explain the basic concepts and principles for the development of **Internet applications** and **Internet** programming. Students will acquire basic skills in: **Internet** programming, ... programming of various software tools for the **Web**.

5) BSIT 605 : Embedded Systems & 8051 Microcontroller : Upon successful completion of the course, Students will be able to

- Learn basic hardware of embedded system and 8051 microcontrollers.
- Assembly and programming concepts jump and call instructions.
- Basic concepts of microcontroller design and its testing.
- Introduction to 8-bit microcontrollers

*Sharan*  
Principal  
Pt. C.L.S Govt. College  
KARNAL

*Sharan*  
IIT, IT Dept.