



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

PROSPECTUS

(2024-2025)

NON-FORMAL SHORT TERM / JOB ORIENTED
COURSES
UNDER TRAINING
(Consultancy Policy-III/IRG DSTTE Patna, Bihar)





K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi



In this growing technology, K N S Govt. Polytechnic, Samastipur, Department of science & technology, Govt. of Bihar, impart education with creation, dissemination and application of knowledge in an integrated form. The basic purpose of creating I.R.G cell is not just imparting knowledge as is generally perceived but also to enable students to understand and discover themselves, realise their complete potential and find that one thing that they love the most – the one thing which they are passionate about and would like to pursue as their career. Our objective is to impart education with creation, dissemination and application of knowledge in an integrated form. Our aim is to produce good quality of students and their job opportunities in this competitive time. Apart from all these, students shall improve their technical ability along with their communicative skills. This is the orientation/ short term/ job oriented program that needs to be given to students. A regular student – faculty interaction helps in grooming the students into leaders and not simply the technocrats. I.R.G has been established with the purpose and commitment of training students to develop these very skills to take better job opportunities.

~Dr. Aseem Kumar Thakur
Principal
K N S Government Polytechnic,
Samastipur



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

BA

CKGROUND

K N S Government Polytechnic, samastipur, has great pleasure to extend warmest greetings to all of you. As per the regulations of the Department of Science & Technology, Government of Bihar, the Institution runs several training programmes under the I. R. G. scheme. These training programmes are computer hardware & Networking, data entry, computer applications, Amanat and Electrician. Students can gain a better position in the present competitive world with well-paid jobs, as well as develop their personalities and self-employment, by participating in these training programmes.

The I.R.G Section of K N S Govt. polytechnic, Samastipur, under the instruction of Department Of Science & Technology, Bihar, Patna is scheduled to run its session of Training Programme.

Vision

To facilitate transformation of students into good human beings, responsible citizens and competent professionals for socio economic development of state and nation.

Mission

- ❖ To inspire socially and economically backward students upon a strong foundation of secular, humanitarian world view.
- ❖ To make the teaching learning process simpler and stronger.
- ❖ To provide quality education to our students.
- ❖ To produce diploma engineers to peruse engineering professions and seek collaboration with institutions of higher learning of repute to upgrade and update the quality of the institution.
- ❖ To create good future citizens for the nation of capability, commitment, conscience and compassion.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

GUIDELINES

1. This is an internal resource Generation Scheme of the K N S Govt. Polytechnic, Samastipur, Department of Science & Technology, and Govt. of Bihar.
2. Student selected for admission has preferably to deposit the entire course fee at the time of admission. Those who are unable to deposit course fee at the time of admission may be allowed to deposit in installment in due time.
3. Concession in course fee will be given to SC, ST, Physically Handicapped and female Students as per management decision. Relevant certificate need to be submitted for this.
4. Fee once taken is none refundable and none adjustable in any circumstances.
5. The student is required to submit two stamped size photograph at the time of admission.
6. Photograph which has to be pasted on the application form should be self-attested.
7. Every student will get an identity card after admission. The student required to carry his / her identity card, when he / she is at the college campus center.
8. In case of loss of identity card, duplicate identity card shall be issued after a written request by the student, after making payment of Rs. 45/- which must be signed by the concern faculty.
9. The minimum attendance of student must be 75% in the theory and practical classes; otherwise the student will not be allowed to appear in the examination.
10. If the student will be absent up to 10 days without prior information, his/her name will be struck off from the batch and he/she has to take re-admission after paying Rs. 100/-
11. Information given by the student must be correct. If it is found wrong, student candidature will be cancelled anytime and legal action can be taken against him.
12. The examination will be conducted module wise at the end of the course completion.
13. In any dispute the principal / management decision will be final.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

The Basic Features of the Course:-

1. The Course is envisaged to train a student in Computer Hardware & Networking/Computer applications, Data Entry, Welder, Amanat and Electrician.
2. The Course will equally cover the basic fundamentals with aptitude for specialization.
3. The Theory and Practical will be handled and supervised by eminent faculty and professionals.
4. The students will be given sufficient time to interact with the Computer/Machines/Tools/Lab.
5. Our Emphasis is on the equality of the product. The students will be acquainted with the best of knowledge available in the market of this level.
6. The Course is monitored as per the guidance and Counseling of Department of Science & Technology, Govt. of Bihar, Patna.

Basic Eligibility:-

1. The applicants must have passed matriculation Examination in any stream with pass in English is a must.
2. The upper age limits restricted to 35 years on day of last dated submission of application form.
3. Relaxation of age for SC/ST/EBC/BC and other categories will be effective as per Government of Bihar Rules.
4. The Selection will be done strictly on merit list prepared on basis of screening test.
5. The students will have to attach the self-attested copies of certificates and mark sheet with the application form and will have to show originals at the time of admission.
6. Any other instruction(s) issued by Government of Bihar will have to be followed during the admission procedure and study period.
7. The application form must accompany three passport size photographs affixed.
8. Reserved category candidates must have to submit caste certificate from the competent authority.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

I.R.G Cell

COURSES UNDER I.R.G PROGRAMES

Name of course	Course Code	Duration	Minimum Eligibility
Certificate Course in Data entry Operator	CCDO	6 Months/ 24 weeks	Matric
Certificate Course in Computer Hardware & Networking	CCHN	6 Months/ 24 weeks	Matric
Certificate Course in Electrician cum Wireman	CCEW	6 Months/ 24 weeks	Matric
Certificate Course in Surveying (Amanat)	SUR	1 Year/48 weeks	Matric



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

I.R.G Computer Section

K N S Government Polytechnic, Samastipur is a prestigious institution of the Department of Science & Technology. The institution is imparting Engineering Diploma Education in different disciplines as well as different computer education course. The computer education is open to all people of this region.

Approach:

The computer education at this institution is being imparted with modern infrastructures by competent computer professionals. The course emphasis equally on the class room teaching as well as on extensive practical training. Following courses are offered as per current need.

- ❖ 24 weeks short term Certificate Course in Computer Application provides the basic ideas and application of various functions of computer in brief. One can learn how to handle, operate and work on computer after completion of this course. It is suitable for a good job in India or abroad.
- ❖ 24 weeks short term Certification Course in Computer Hardware & Networking provides the basic needful knowledge of computer application. After completion of this course, one can be a computer software and hardware expert professional. It is suitable for a good job in India or abroad. Knowledge of networking concept is also given.
- ❖ 24 weeks short term Certificate Course in Data entry Operator provides students to prepare themselves to enter data and its manipulation processing as per requirement, such as survey, result or demographics, research, examination work, office technology, library work etc.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Certificate Course in Data entry Operator
--

Course Code: CCDO

Duration: 6 months/ 24 Weeks (240 Hrs.)

Eligibility: Matric & above

Mode of Admission: through Entrance test / Interview

Course Evaluation:

Class participation assignments- 20%

Internal Examination – 30%

Final Examination - 50%

Maximum Marks: 100

Minimum Pass Marks: 35

Time: 3 hours

Certificate will be issued only after appearing the final examination and scoring the minimum passing marks, which will be held after completion of the Course.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Course Outlines

UNIT-I: Introduction to Computer Fundamentals	20Hrs
Basic Computer Concept	
Computer Organization	
Windows OS: Windows XP Vs Windows 7	
UNIT-II: Microsoft Office 2007	50 Hrs
MS Word	
MS Excel	
MS PowerPoint	
UNIT-III: Network	30Hrs
UNIT-IV: Internet Practice	70Hrs
Word Processing (MS-Word)	
Spreadsheet (Ms-Excel)	
UNIT-V: Forms Design (MS Access)	70 Hrs

- ❖ Hindi & English Typing
- ❖ Practice of Numerical Key Depression
- ❖ Introduction to Internet
- ❖ Project Work

Lectures:	70 Hrs.
Practical:	150 Hrs.
Assignment:	20 Hrs.
Total:	240 Hrs.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Detailed Syllabus

UNIT-I:

1. Introduction to Computer System

1.1 Computer Appreciation–

Characteristics of Computers, Input, Output, Storage units, CPU, Computer System.

1.2 Computer Organization

Central Processing Unit - Processor Speed, Cache, Memory, RAM, ROM, Booting, and Memory- Secondary Storage Devices: Floppy and Hard Disks, Optical Disks CD-ROM, DVD, Mass Storage Devices: USB thumb drive. Managing disk Partitions, File System Input.

1.3 Devices–

Keyboard, Mouse, joystick, Scanner, web cam, Output Devices- Monitors, Printers – Dot matrix, inkjet, laser, Multimedia- What is Multimedia, Text, Graphics, Animation, Audio, Images, Video; Multimedia Application in Education, Entertainment, Marketing. Names of common multimedia file formats, Computer Software- Relationship between Hardware and Software; System Software, Application Software, Compiler, names of some high level languages, free domain software.

Tutorial: The student is allowed to enumerate in what ways he can use the computer for his own purpose/business.

Practical: The student needs to be exposed/shown various components and supposed how to switch on a computer.

2. Introduction to Windows

2.1 What is an operating system and basics of Windows

2.2 The User Interface

1. Using Mouse and Moving Icons on the screen
2. The My Computer Icon
3. The Recycle Bin
4. Status Bar, Start and Menu & Menu-selection
5. Running an Application
6. Windows Explorer Viewing of File, Folders and Directories
7. Creating and renaming of files and folders
8. Opening and closing of different Windows

2.3 Windows Setting

1. Control Panels
2. Wall paper and Screen Savers
3. Setting the date and Sound
4. Concept of menu Using Help



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

2.4 Advanced Windows

1. Using right Button of the Mouse
2. Creating Short cuts
3. Basics of Window Setup
4. Notepad
5. Window Accessories

Practical: More stress is on practical. Allow the student to freely use the computer to experience each command rather than explaining in a theory class

UNIT-II: Microsoft Office 2007

3. Office 2007

3.1 Word Processing

Word processing concepts: saving, closing, Opening an existing document, Selecting text, Editing text, Finding and replacing text, printing documents, Creating and Printing Merged Documents, Character and Paragraph Formatting, Page Design and Layout. Editing and Profiling Tools: Checking and correcting spellings, Handling Graphics, Creating Tables and Charts, Document Templates and Wizards.

3.2 Spreadsheet Package

Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, entering data in a cell / formula Copying and Moving from selected cells, handling operators in Formulae, Functions: Mathematical, Logical, statistical, text, financial, Date and Time functions, Using Function Wizard. Formatting a Worksheet: Formatting Cells –changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors, Printing worksheets, Charts and Graphs – Creating, Previewing, Modifying Charts. Integrating word processor, spread sheets, web pages.

3.3 Presentation Package

Creating, Opening and Saving Presentations, Creating the Look of Your Presentation, Working in Different Views, Working with Slides, Adding and Formatting Text, Formatting Paragraphs, Checking Spelling and Correcting Typing Mistakes, Making Notes Pages and Handouts, Drawing and Working with Objects, Adding Clip Art and other pictures, Designing Slide Shows, Running and Controlling a Slide Show, Printing Presentations.

Lab-Assignment/ Test

UNIT-III: Network

Introduction to computer Networks, Element of networks, Types of Networks, and Network Topologies: Bus, Star, Mesh, Ring etc., And Common Lan Media: STP, UTP, Coaxial cable, Optical fiber, Description of the seven layers of OSI Model, TCP/IP Model, Comparison of OSI & TCP/IP Model.

UNIT-IV: Internet Practice

Internet, Concept of Internet, Application of Internet, service of Internet, WWW and web browser, electronic mails, communication of internet, WWW and web browser, Internet



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

explorer, Netscape navigator, surfing of internet, Giving the URL address, Search, Moving around in a web site, Printing or saving portion of web page, Downloading, Chatting on internet, E-mail, What is an electronic mail, E-mail addressing, Mail box, inbox and outbox, Using emails, Using Internet Services: Railway reservation, Downloading songs etc., Banking Transaction, Filling of online application Forms etc.

4.1 Word Processing (MS-Word)

Introduction to MS Word- Opening, MS-Word, Parts of MS- Word, typing the text-option to type text, Saving Opening & Closing, common edit function- Selection Text, Copying Text, Moving Text & Change case, cursor Control, printing documents, using the interface (menu, toolbar), Text Editing- working with Multiple documents, Moving around the documents, correcting Mistakes, Inserting Text, Insert & Type over mode, Spell Check, Common formatting functions- Working with Alignment, Working with indentation, Working with Highlights, Working with Font, find & replace , formatting the paragraph, special symbols with Highlights, Working with Font, find & replace, formatting the paragraph, Special symbols & Tables Bullets & Numbering, Tables, Insert Clipart & word art, Picture & Drawing Tool Bar, Printout, header & footer, spell check feature, auto correct feature, grammar facility, auto text, charter formatting, page formatting, document enhancement, creating tables and newspaper columns adding border and shading, Macros, Mail merge.

4.2 Spreadsheet (MS-Excel)

Introduction to MS- Excel, Operating MS- Excel, Parts of MS- Excel window, opening, saving and closing workbook, Entering data in spreadsheet, Entering Numbers, entering Texts, Entering date and time, editing data in MS- Excel, Moving around then worksheet, selecting data range, using the interface (tool bars, Menu), copying the Data, Moving the Data, Formatting the data in Ms- Excel, Drawing toolbar, Formatting and editing the worksheet, Format cells window, Inserting row and Column, deleting Row and column, Inserting Worksheet, Deleting worksheet, Renaming worksheet, Formulas in MS- Excel, Creating simple formulas, Functions, data Arithmetic, Working with Chart, Types of Charts, Inserting Charts, Formatting the Charts, advances Excel functions, lookup & References, statistical, Financial functions.

UNIT-V: Forms Design (MS Access)

Introduction: What is access, The many faces of Access, what is an Access database file, Learning objectives, Starting Access, Creating a new database, Opening an existing database, importing data from other applications, Compacting your database, The database file in Access, Compacting a database, Renaming a Database, Developing applications in Access, Use of Linked Tables, application to the assignment, table-Introduction: the importance of table design, Datasheet basics, Creating a new Table, specifying the primary key, setting field properties, Using the input mask wizard, key terminology, fields and field properties, data types, Disappearing numbers in auto number fields, input mask, Application to the assignment, Form Design, Inserting Caption, Buttons, and Connectivity to data base, Conditional form design.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Certificate Course in Computer Hardware & Networking

Duration: 6 months/ 24 Weeks (240 Hrs.)

Eligibility: Matric & above

Mode of Admission: through Entrance test / Interview

Course Evaluation:

Class participation & assignments - 20%

Internal Examination – 30%

Final Examination - 50%

Maximum Marks: 100

Minimum Pass Marks: 35

Time: 3 hours

Certificate will be issued only after appearing the final examination and scoring the minimum passing marks, which will be held after completion of the Course.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Course Outlines

UNIT-I: Electronics Components and PC Hardware **20 Hrs**

Basic Computer Concept

PC Architecture

UNIT-II: Computer Peripherals and Networking **50 Hrs**

Operating System

Introduction to Linux

UNIT-III: System Software, Diagnostic & Debugging Tools **30 Hrs**

UNIT-IV: PC Hardware and Networking Components **70 Hrs**

Networking

Data Communication and Computer Networks

UNIT-V: Network Management and Administration **70 Hrs**

❖ Introduction to Internet

❖ Project Work

Lectures: **70 Hrs.**

Practical: **150 Hrs.**

Assignment: **20 Hrs.**

Total: **240 Hrs.**



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Detailed Syllabus

UNIT-I:

1. Electronics Components and PC Hardware

1.1 Basic Computer Concept

Microprocessor System, Introduction of System overview, Introduction to Processors, Memory Interfacing, Interfacing I/O Devices, Interfacing Data Converters, Display Interface, Serial I/O and Data Communication, Higher level Processors.

1.2 PC Architecture

Introduction to PC Architecture Study of PC-AT/ATX System, Pentium, Core, Core 2 Core, Core 2 Duo, Processor, Basics of Processor and CPU Block Diagram of Computer and Computer Generation, Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory. Internal Components IDE and SATA Devices, Hard Disk Drive and CD/DVDs Drives, SCSI Devices, Floppy Disk, Zip Drive, Backup Drive, Expansion Cards LAN Card, IDE Card, VGA and SVGA Cards, Sound Card, Interface Cards, I/O cards, Video Cards, USB Card, Fire-Wire Cards, Internal Ports, Cables and Connector Types. External Components Monitors:- CRT, LCD and LED Displays, Printers:- Dot-Matrix Printer, Inkjet Printer. Laser Printer Scanner:- Photo Scanner, Documents Scanner, Bar Code Scanner, Keyboards, Mouse, External Modem, Ports and Connectors, Batteries, Power supply, PenDrives, SCSI interface devices, Laptop Computers, Digital Advance storage technology..

2. Computer Peripherals and Networking

2.1 Operating System

Operating System Basics & Installation Introduction to OS, Types of Operating systems, System files FAT and NTFS DOS, Windows XP, Windows Vista, Windows 7 and Windows 8 and Red Hat Linux and Multi Boot Operating System. Various types of Software Installation, Office Automation Tools, Photoshop 7 and CS5, PageMaker 6.5, Corel Draw X3, Auto-CAD, Tally 7.0 and ERP, Acrobat Reader X, Java, Visual Studio, C & C++, Multimedia software's, and Internet Browsers like- IE9, Google Chrome, Mozilla Firefox etc. Device Installation Graphics Card, Sound Card, LAN Card, Wireless LAN Card, SCSI Card, External Drive, Flash Cards, Web Camera, CCTV Camera, Mobile Devices, Pen Drive, Fire wire Cards, Modem, Plotter, Wireless LAN Access Point etc, Basic Network Introduction & Installation Introduction about Network, Installing Network Operating System Windows 2003 Server and Windows 2008 Server, Cable Crimping, Network Sharing and user Permission, Internet Connection, E-Mail, Cloud Networking, Google Drive, Sky Drive, Drop box etc.

2.2 Introduction to Linux

Introduction and installation of Linux History of Linux, Linux distributions, Features of Linux, advantages of Linux Installation of Red Hat and SUSE Linux and Ubuntu Edition, System requirements, Disk partition, Mount points, Installation

method, creating the boot disk. Working with Linux GNOME and KDE User Management, Mounting, X- windows Desktop environment, Using Gnome and KDE Desktop environment, Linux commands, Linux file system, directories, Text Editors, Linux Shell, Feature of Shell, Shell available, System Software, Diagnostic & Debugging Tools.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

3. System Software, Diagnostic & Debugging Tools

Diagnostic Tools & PC Maintenance Introduction, Virus and its types, Effect of Virus for Computer System, Scanning and Antivirus remover tools, Antivirus Utilities for Diagnostic, Safety and Preventive Maintenance Tools, Data Recovery, Concept of Fax and E-mail, PC care and Maintenance, Electrical Power Issues, Troubleshooting PC Hardware:- O/S Troubleshooting issues in computer System. Introduction and Installation of Server Installation of server like windows 2003 and 2008, user account administration, group management, implementing DNS server, creating a Domain account, File system NTFS permission, Configuring Services Printing services, Active Directory services, DNS services, DHCP services, RAS, Volumes and Disk management, Auditing and Resource Access, Gateway services, Terminal services, Configuring & implementing VPN, Local and Domain security policy, Group Policies.

4. PC Hardware and Networking Components

4.1 Networking:

Overview of Networking Introduction to networks and networking, LAN, VLAN, MAN, WAN, Internet and Intranet etc, Uses and benefits of Network, Server-client based network, peer to peer networks. Network Hardware and Components Concept of Server, client, node, segment, backbone, host etc. Analog and Digital transmission, Network Interface Card, Crimping tools and Color standards for Straight crimping and Cross crimping Functions of NIC, Repeaters, Hub, Switches, Routers, Bridges, Router etc.

4.2 Data Communication and Computer Networks:

Transmission Media and Topologies Media types: STP cable, UTP cable, Coaxial cable, Fiber cable, Base band and Broadband transmission, Cables and Connectors, Physical and logical topologies, Bus, Star, Ring and Mesh topologies. Protocols and Services HTTP, FTP and other Different types of protocols, OSI Model, Media Access Method, DNS services, DHCP services, Remote Access Services, Proxy Services etc, TCP/IP and Sub-netting Introduction about TCP/IP Model and Sub-nettings, configuring IP address and sub nettings with different Routers and Network, TCP/IP Errors and Solutions and Network Troubleshooting Issue.

5. Network Management and Administration

Network Administration Installing and Configuring Wire & Wireless Network, Network Troubleshooting, Installing Manageable Switches, Routers, Wi-Fi Device, Printer, CCTV Camera, IP Camera and Other Network Devices, Storage Solution, TAP Drive WANs and Remote Connectivity Public networks, Remote connectivity for server and clients, Indoor and Outdoor Wireless, WLAN- WIFI and WIMAX, PCI Wireless Card, USB Wireless Card, Wireless Access Point, Security of networks like Firewalls Hardware and Software, VPN. Networking with Linux Installing and setting up a Network card, Setting TCP/IP parameters with Linux, Testing the network, Utilities of Linux, TAR Program, Send Mail, Send mail Configuration, Pine, Browsers, NFS and Samba Configuration, Network Printing and Interoperability with windows. Linux Services and Network Security Administering user accounts and groups, command line tool, Network Services, Proxies, Firewalls, NIS and Host Security, Diskless Terminal, File systems, IP address, DNS and Internet, Security fundamentals, system security, choosing user ID's for services, Network security, IT laws and security.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Certificate Course in Electrician cum Wireman

Course Code: CCEW

Duration: 6 months/ 24 Weeks (240 Hrs.)

Eligibility: Matric & above

Mode of Admission: through Entrance test / Interview

Course Evaluation:

Class participation & assignments - 20%

Internal Examination – 30%

Final Examination - 50%

Maximum Marks: 100

Minimum Pass Marks: 35

Time: 3 hours

Certificate will be issued only after appearing the final examination and scoring the minimum passing marks, which will be held after completion of the Course.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Course Outlines

UNIT-I: Introduction to Fundamental of Electricity **30 Hrs**

Basic Electricity Concept
Occupational Safety and Health Basic safety introduction
Identification of Trade-Hand tools Specifications
Ohm's Law

UNIT-II: Chemical effect of Electric current **40 Hrs**

Electrolysis
Electric Power and Energy
Batteries and Power Systems
D.C and A.C. Current
Semiconductors

UNIT-III: Introduction of fitting trade, Safety and precautions **30 Hrs**

UNIT-IV: Measuring Instruments **70 Hrs**

Electrical Wiring System
Branching of Circuits
Different Electrical fittings and accessories
Description of Rowel tools and Rowel plugs

UNIT-V: Power drives Machines **70 Hrs**

Lectures: **70 Hrs.**

Practical: **150 Hrs.**

Assignment: **020 Hrs.**

Total: **240 Hrs.**



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Detailed Syllabus

UNIT-I:

1. Introduction to Fundamental of Electricity

1.1 Fundamental of electricity, Electron theory free electron, Fundamental terms, Definitions, units and effects of Electric Current Explanation.

Practical: Practice in using cutting pliers, screw drivers, etc. skinning the cables and joint practice on single strand.

1.2 Solders, flux and soldering technique, Types & properties of resistors Specific Resistance.

Practical: Practice on soldering Measurement of Resistance. Determination of specific Resistance.

1.3 Ohm's Law - Simple electrical circuits and problems, Series and Parallel Circuits, Kirchhoff's Laws and applications, Wheatstone bridge principle and its application.

Practical: Verification of Ohm's Law, Verification of Kirchhoff's Laws, Verification of series and parallel circuits, Verification of open circuit and closed circuit network, measuring unknown resistance using different methods.

1.4 Introduction of National Electrical Code Voltage grading of different types of Insulators, Temp. Rise permissible, Types of wires and cables standard wire gauge.

Practical: Demonstration and identification of types of cables. Demonstration and practice on using standard wire gauge & micrometer. Practice on crimping thimbles, Lugs.

2. Chemical effect of Electric current

2.1 Chemical effect of electric current Principle of electrolysis, Faraday's Law of electrolysis, Basic principles of Electroplating and Electro chemical equivalents.

Practical: Grouping of Dry cells for a specified voltage and current. Practice on Battery Charging, Preparation of battery charging, testing of cells, Installation of batteries, and charging of batteries by different methods.

2.2 Series and Parallel Circuits, Series and Parallel Combined Circuit, Electrical Instrumentation Signals, Conductors and Insulators, A.C and D.C Unit, Alternating Current -Comparison and Advantages D.C and A.C. Related terms frequency Instantaneous value, R.M.S. value Average value, Peak factor, form factor, Generation of sine wave, phase and phase difference.

Practical: Determine the characteristics of R, XL and XC in A.C. Circuits both in series and parallel. Experiment on poly phase circuits. Current, voltage, power and power factor measurement in single & poly- phase circuits.

2.3 Basic electronics- Semiconductor energy level, atomic structure 'P' type and 'N' type, Type of materials -P-N-junction. Classification of Diodes - Reverse and Forward Bias, Heat sink, Specification of Diode Explanation and importance of D.C. rectifier circuit, half wave, Full wave and Bridge circuit. Filter circuits-passive filter.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Practical: Determine the resistance by Colour coding Identification of active/passive components. Diodes-symbol - Tests -Construct & Test Half wave rectifier circuit Full wave rectifier circuit Bridge rectifier circuit.

3. Introduction of fitting trade, Tools, Electrical Drawing, Safety and precautions:

3.1 Introduction of fitting trade, Safety precautions to be observed. Description of files, hammers, chisels hacksaw frames & blades, punch, etc, their specification and grades, Care and maintenance of steel rule, try square and files. Marking tools description and use, Types of drills description and drilling machines, proper use, care and maintenance.

Practical: Allied trades: Use of chisels and hacksaw on flats, sheet metal filing practice, filing true to line. Sawing and planing practice. Practice in using firmer chisel and preparing simple half lap joint, Drilling practice in hand drilling and power drilling machines.

3.2 Description of marking and cutting tools such as snubs shears punches and other tools like hammers, mallets, etc. used by sheet metal workers.

Practical: Practice in using snips, marking and cutting of straight and curved pieces in sheet metals, bending the edges of sheets metals.

3.3 Common Electrical wiring Accessories, their specifications in line with NEC - Explanation of switches, lamp holders, plugs and sockets.

Practical: Identification and use of wiring accessories Practice on installation and overhauling common electrical accessories.

3.4 Earthling - Principle of different methods of ear thing. I.e. Pipe, Plate, etc. Importance of Earthling. Improving of earth resistance Earth Leakage circuit breaker (ELCB).

Practical: Practice on Earthling-different methods of ear thing, Measurement of Earth resistance by earth tester, Connection & Testing of Earth Leakage by ELCB.

3.5 Follow safety norms as defined by organization, Adopt healthy & safe work practices, Implement good housekeeping and environment protection process and activities

4. Measuring Instruments

4.1 Type of measuring instruments – MC & MI, Construction & working principles of Ammeter, Voltmeter, Ohm-meter, Wattmeter, Energy meter, P.F. meter, frequency meter, multi meter, clamp meter, Megger & earth tester, Introduction of Digital meters, CT & PT. Tong tester/Clip on Meter.

Practical: Electrical Measuring: Instruments measurement of voltage, current & resistance in different circuits, Direct & indirect measurement of electrical power & energy, Calibration of energy meters, Measurement of current and voltage using CT & PT, Measurement of 3 Phase energy using CT & PT. Phase sequence meter, measure current and voltage using Tong tester, Power measurement.

4.2 Introduction and explanation of electrical wiring systems, cleat wiring, casing & Capping, CTS, Conduit and concealed etc., I. E. Rules, Related to wiring, National Building codes for house wiring, specification and types, rating & material.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Practical: Domestic wiring - methods, Installation & testing demonstration & Practice on connecting common electrical accessories in circuits and testing them in series board, Demonstration on Testing & replacement of different types of fuses.

4.3 Branching of circuits with respect to loads such as lighting and power, CTS/PVC Conduit-surface.

Practical: Layout on wiring boards. Practice in P.V.C. insulated cable wiring on wood buttons with distribution board and number of points.

4.4 Description of different electrical fittings and accessories such as lamp holders, switches, plugs brackets, ceiling rose, cut out etc. IS 732-1963. Wiring materials used for P.V.C. cables I.E. rules, Indian standards regarding the above wiring such as-clip distance fixing of screws, cable bending etc.

Practical: Practice of wiring: A) One lamp controlled by one SP switch, (B) Two lamps controlled by two independent switches, (C) One lamp controlled by two 2way switches (Staircase wiring), (D) One lamp controlled by intermediate switch from three different locations, (E) Hospital wiring, (F) Tunnel/Godown wiring, (G) Hostel wiring, (H) Bell Buzzer Indicator wiring (I) Domestic wiring practice.

4.5 Conduit pipe wiring materials and accessories, types and sizes of conduit, Layout of Light points, fan points etc. Layout of heating leads etc.- their controls, main switches, distribution boards as per I.E. rules. I. E. Rules for Earthing conduits using earth clips and earth wire as per IS 732-1963.

Practical: Demonstration and practice in cutting and threading conduit pipes, Cold and hot bending of pipes. Layout of Light points, fan points etc. Layout of heating leads etc.- their controls, main switches, distribution boards as per I.E. rules..

5. Power drives Machines

5.1 Power drives - Introduction, types, advantages & disadvantages. UPS- Introduction, types, Load calculation, Backup time calculation.

Practical: Installation of 1 ph. and 3 ph. on line /off line UPS wiring, Testing of Industrial wiring and UPS wiring installation.

5.2 Explanation of inter connection wiring circuits in the main building and auxiliary blocks, meter boards and its locations, Study of layout symbols in the preparation of layout diagrams.

Practical: Wiring of different circuit using Single core cable use for 2 ways, intermediate master switches etc, testing of wiring installation.

5.3 Introduction to D.C Generators and working principle, parts of D.C. Generator. Classification of Generators- Self excited and separately excited- their application in practical field, Types and characteristics of D.C. Generators – Series, Shunt and compound, their applications.

Practical: D.C. Generators, Identification of the parts of D.C. Generators. Testing and measuring the field and Armature resistances, Identification of different parts of generators testing fields & Apparatus, Insulation resistance measurements.

5.4 Introduction to D.C. Motor-Working principle, types of motors Explanation of terms used Torque, speed, Back E.M.F. etc.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Practical: MOTORS & STARTER: Practice in connecting generators- Generators- Testing of D.C. Machines by Megger.

5.5 Parts and construction of Alternators, principle of working, types of Alternators, EMF equation, Various applications and power rating of alternators, Introduction to A.C single phase motors and types. Capacitors start/run- start and run. FHP motors and their uses.

Practical: A.C. Generators, Motors & Starters Identification of Alternator of parts. Demonstration and practice on A.C single phase motors starting and running for specific requirements.

5.6 Types of Substations - Indoor, Outdoor & Pole Mounting Substation construction, U.G. CABLE Construction of cable, Types , Application & methods of jointing UG cable & testing General idea of laying method and jointing precautions to be observed and different accessories used for medium voltage termination.

Practical: Demonstration and practice in terminating an U.G. cable to a bus bar chamber. Crimping lugs to the conductors of U.G. cable and connection to bus bar Loop connection for other circuit.

5.7 Control Panel elements, types and specifications. Layout and installation of panel board, Panel board wiring methods, colour coding of cables for its easy identification, Concept and Principle of plan, estimation and cost. Preparation of complete house wiring layout, industrial wiring, commercial wiring for office Lodge, Hospital, Bank, Hotels etc

Practical: Control panel wiring Preparation of control panel board and its layout Fixing of indicating meters /Instruments, Control devices, Protection devices, Planning , Estimation and Costing of Wiring Planning and Preparation of layout for domestic, commercial, Multi storied building wiring and workshop electrical wiring.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

LAND SURVEYOR (AMANAT) COURSE
--

Course Code: SUR

Duration: 12 months/ 48 Weeks

Eligibility: Matric & above

Mode of Admission: through Entrance test / Interview

Course Evaluation:

Week -Wise Contents Index of Two Semesters (First & SecondSemester)

Sr. No.	Subject	Paper	Duration (Weeks)	Periods Per Week	Periods in First semester	Periods in Second semester	Hours of Exam	Full Marks	Pass Marks
01	Surveying - TT	Theory (External)	16	06	48	48	03	100	36
02	Surveying - TP	Practical (Internal)	16	06	48	48	03	50	25
03	Workshop Calculation &Science	Practical (Internal)	16	06	48	48	03	50	25

Certificate will be issued only after appearing the final examination and scoring the minimum passing marks, which will be held after completion of the Course.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Detailed Syllabus of First Semester

Duration- 06 Months/24 Weeks

1. Syllabus for SUR-TT (Code: SUR-01)

Sl. No.	Topic	Week No.	Duration
01	Introduction to Trade, Uses of different instruments & equipment's used by Surveyor, their types and uses. Lettering, Scales-different types.	1-2	12 hrs.
02	Geometrical construction-lines, angles, triangles, quadrilaterals and circles.	3-4	12 hrs.
03	Classification of survey. Common terms used and definitions.	5-8	24 hrs.
	Linear measuring instruments, their description & uses. Types of chain, Testing & Adjustment of Chain.		
	Types of offset and their limit, town survey traversing with chain, procedure in plotting.		
Total		08 Weeks	48 hrs.

2. Syllabus for SUR-TP

Sl. No.	Topic	Week No.	Duration
01	Importance of Trade training, instruments & equipment's used, nature of job done by surveyors, Drawing different types of lines, printing letter.	1-2	12 hrs.
02	Geometrical drawing-problems on lines, angles triangles & quadrilaterals.	3-4	12 hrs.
03	Conventional sign & symbols used in survey. Topography and building drawing. Map reading practice, contours, drainage.	5-8	24 hrs.
	Chain survey-Practice in unfolding & folding chain, errors & adjustments of chains, alignment, chaining lines, measurement of distances and booking.		
	Procedure in conduction chain survey. Chain survey of small plots by triangulation, booking & plotting.		
	Chain survey of built up plots, locating details, booking & plotting.		
Total		08 Weeks	48 hrs.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

3. Syllabus for Workshop Calculation & Science (WCS)

Sl. No.	Topic	Week No.	Duration
01	Addition & subtraction of decimal number and fractions.	1-2	12 hrs.
02	Multiplication & division of decimal numbers and fractions conversion of decimals into fractions and vice versa. Units of Lengths, Area and Volume and their conversion.	3-4	12 hrs.
03	Algebra-fundamental formulae, multiplication and factorization.	5-8	24 hrs.
Total		08 Weeks	48 hrs.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

Detailed Syllabus of Second Semester

Duration- 06 Months/24 Weeks

Syllabus for SUR-TT (Code: SUR-02)

Sl. No.	Topic	Week No.	Duration
01	Technical terms used in compass survey, difference between angles & bearings, magnetic & true meridians.	1-3	18 hrs.
	Locating details by bearings, Traversing by compass survey & its plotting.		
02	Plane table survey-merits & demerits, equipment's used, methods of plane tabling.	4-6	18 hrs.
03	Project work/ Industrial visit (optional)/ Revision/ Preparatory test & Examination.	7-8	12 hrs.
Total		08 Weeks	48 hrs.

2. Syllabus for SUR-TP

Sl. No.	Topic	Week No.	Duration
01	Practice in setting up a compass & checking its accuracy-taking bearing & calculating angles.	1-3	18 hrs.
	Determining, laying out rectilinear & polygonal plots of ground using compass & tape.		
02	Setting up of plane table, leveling, centering & orientation surveying an area with plane table by radiation & intersection methods.	4-6	18 hrs.
03	Project work, Preparatory test & Examination.	7-8	12 hrs.
Total		08 Weeks	48 hrs.

3. Syllabus for Workshop Calculation & Science (WCS)

Sl. No.	Topic	Week No.	Duration
01	Properties of plane geometrical figures-triangles, rectangles, quadrilaterals & Polygons.	1-3	18 hrs.
02	Determination of sides & area of triangles, quadrilaterals & polygons, Circles.	4-6	18 hrs.
03	Project work Revision & Examination.	7-8	12 hrs.
Total		08 Weeks	48 hrs.



K.N.S. Govt. Polytechnic, Samastipur
Department of Science & Technology, (Government of Bihar)
Approved by AICTE, New Delhi

How to Apply:-

1. Application form along with prospectus can be obtained from the office of K. N. S. Government Polytechnic, Samastipur on any working day on payment of Rs. 250 in cash between 11AM to 4 PM.
2. Duly filled application form with required attachments application form must be submitted on any working day between 11AM to 4 PM till 30.09.2021.
3. Application form received after due date will be rejected.
4. Candidate will collect his/her admit card for screening test after in person at the office counter after submitting the form.
5. The screening test will be held on 07.10.2021 at 11.30 AM sharp.
6. Result will be published on 11.09.2021.

Course Fee:-

Course Duration	Course Fee (in Rs.)	Admission Charge (in Rs.)	Examination Charge (in Rs.)	Miscellaneous Charge (in Rs.)	Total Fee (in Rs.)	First Installment to pay at the time of Admission	Second Installment to pay Before the Final Exam
6 Months/ 24 Weeks	6500/-	500/-	700/-	500/-	8200/-	Rs. 3500+500+700+500 = 5200.00/-	Rs. 3000
12 Months/ 48 Weeks	13000/-	500/-	700/-	500/-	14700/-	Rs. 6500+500+700+500 = 8200.00/-	Rs. 6500

Mode of Payment:-

Every fee payment will be made through SBI E-Collect, link of which is given as follows:-

<https://www.onlinesbi.com/sbicollect/icollecthome.htm?corpID=3980157>

Note: -No direct payment will be made as per AICTE norms.