



Department of Computer Engineering
Bridge Course Computer Programming using C

Course Objectives:-

1. Understand the concept of a programming.
2. List of popular languages.
3. Understand the concept of a variable holding a value, how a variable is declared and how it can change
4. Understand the concept of a loop – that is, a series of statements which is written once but executed repeatedly- and how to use it in a programming language
5. Be able to use a conditional statement to select a choice from two or more alternatives

Course Outcome:-

1. To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
2. Explore algorithmic approaches to problem solving.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
3	Introduction to programming, Fundamentals of C language, Control Statements, Loop Control Structures in C.	3

Books:-

For Faculty coordinator:-

1. Let us C – by Yashavant P. Kanetkar
2. Programming In Ansi C -by E. Balagurusamy
3. A First Course in Programming with C- by T Jeyapoovan

For Students:-

- On line lecture series of NPTEL
Introduction to Programming in C - Satyadev Nandakumar | IIT Kanpur:
<https://www.youtube.com/watch?v=XTiliI-LOY8&list=PLEAYkSg4uSQ2k6GwNhpgSHodGT8wfvvgwu>



Bridge Course Computer Hardware & Networking

Course Objectives:-

1. To impart the skills needed to assemble a PC, PC troubleshooting, installation of system/application software.

Course Outcome:-

1. Student will be able to apply knowledge of basic assembly of PC.
2. Student will be able to understanding the installation of system and application software.
3. Student will be able to troubleshooting the issues with PC.
4. Student can prepare cables for LAN, assign IP's to machines.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
4	Introduction of Hardware and Software/components of computer.	3
	Mother boards, Chipsets & Microprocessor concept & latest available in market. Basics & types of Floppy drive/HDD/DVD/RAM /SMPS/ /BIOS etc	
	Handling & Holding sensitive equipments, Installing Motherboards, Choosing Cabinet & Cooling considerations, Installing CPU.	
	Assembling of different parts of computers.	
	Knowing ports, wires attached in the pc. Knowing SATA slots, IDE Slots	
	CMOS. Setting BIOS configurations.	
	Networking Basics: Different Wires, Hubs, Connectors. Punching/Crimping Tools. Switches, I/O Sockets	
	Creation of Cross Wires and Direct Cables.	
	IP & Setting up a computer on LAN	

Books:-

For Faculty coordinator:-

- Hardware & Networking.
- Networking and its application

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For Students:-



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- <https://www.coursera.org/learn/computer-hardware-software?action=enroll>
 - On line lecture series of NPTEL
 - https://www.youtube.com/watch?v=_oByjgoJQWs
 - <https://www.youtube.com/watch?v=L3ZzkOTDins>

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Bridge Course Basic Engineering

Course Objectives:-

1. Understand applications of Mechanical Principles, components, tools, etc.
2. Understanding of basic principles of Mechanical Engineering is required in day to day life.

Course Outcome :-

1. To understand the fundamentals of mechanical systems.
2. To understand and appreciate significance of mechanical engineering in different fields of engineering.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	Internal Combustion Engines: Introduction, Classification, Engine details, four-stroke/ two-stroke cycle Petrol/Diesel engines, Indicated power, Brake Power, Efficiencies	1
2	Pumps: Types and operation of Reciprocating, Rotary and Centrifugal pumps, Priming. Air Compressors: Types and operation of Reciprocating and Rotary air compressors.	
3	Refrigeration & Air Conditioning: Refrigerant, Vapor Compression refrigeration system, vapor absorption refrigeration system, Domestic Refrigerator, Window and split air conditioners	

Books:-

For Faculty coordinator:-

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1. Elements of Mechanical Engineering by N M Bhatt and JR Mehta, Mahajan Publishing House
2. Basic Mechanical Engineering by Pravin Kumar, Pearson
3. Fundamental of Mechanical Engineering by G.S. Sawhney, PHI Publication New Delhi
4. Elements of Mechanical Engineering by Sadhu Singh S. Chand Publication
5. Introduction to Engineering Materials by B.K.Agrawal Tata McgrawHillPublication, New Delhi

For Students:-

- libguides.wpi.edu/mechanicalengineering
- paniit.iitd.ac.in/indest/index.php/e-resourc
- krc.gitam.edu/about/e-resources
- NPTL resources

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Department Of Science And Humanity
Bridge Course Maths

Course Objectives:-

Aim of the Bridge course in Engineering Mathematics is

1. To understand " Mathematics as a discipline and not as a subject".
2. To Bridge "the School education and Engineering education".
3. To make "learning of Mathematics as a pleasant experience".

Course Outcome :-

1. Student will be able to apply knowledge of basic theories of science in core subject of Engineering.
2. Student will be able to create an experimental approach in applied theories of science in problem solving technical problems.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	Exponential and Logarithms, Algebraic Expression	5
2	Trigonometry	5
3	Permutation,Combination &Probability	5
4	Differential and Integration	5

Books:-

For Faculty coordinator:-

- (i) Mathematical Statistics, J. N. Kapur& H. C. Saxena.

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- (ii) Probability and Statistics for Engineers, Irwin Miller & John E. Freund
 - (iii) Elements of Probability and Statistics, A. P. Balsnab& M. Jas.
 - (iv) Statistics, Schism's Outlines, M. R. Spiegel & L. J. Stephens.
 - (v) Probability and Statistics, Schism's Outlines, M. R. Spiegel, J. J. Schiller, R. A. Srinivasan.
 - (vi) Mathematics Text Books for class X ,NCERT
 - (vii) Mathematics Text Books for class XI ,NCERT
 - (viii) Mathematics Text Books for class XII ,part-I&II,NCERT

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Department Of Science And Humanity
Bridge Course Physics

Course Objectives:-

1. To create strong problem solving skills as an engineer along with an understanding of the approach, methods, and requirements of engineering and engineering design for a successful career in advancing technology. Its engineering science and design components prepare students to work as professional engineers.
2. To build concrete foundation for their core branch as a thinker, inter disciplinary thoughts and socio- technical issues in field.
3. To create advance applied knowledge of Physics as a subject of foundation of engineering.

Course Outcome :-

1. Student will be able to apply knowledge of basic theories of science in core subject of Engineering.
2. Student will be able to create an experimental approach in applied theories of science in problem solving technical problems.
3. Student will be able to associate natural phenomenon with technological advancement.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	Classical Mechanics: Sub Topics (If any)	5
2	Electricity and Magnetism	5
3	Basic Electronics	5
4	Properties of Matter	5



Books:-

For Faculty coordinator:-

1. Conceptual Physics , Hewitt, Pearson Education
2. Principles of Physics, Halliday, Resnik and Walker, Wiley India
3. Physics for Scientists and Engineers, Raymond A. Serway, John Jewett, Cengage Learning.
4. Six ideas that shape physics, Tata Mc Grawhill
5. Flying Circus of Physics, Jerald Walker, Wiley India

For Students:-

- On line lecture series of Emeritus Walter Lewin – MITOnline Courses.
- www.howstuffworks.com
- Dr Carlsons Science theater series on youtube

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Department Of Science and Humanities
Bridge Course English

Course Objectives:-

1. To Improve and broaden the knowledge of students in grammar and enhance their LSRW skills.
2. To give the students confidence and skills successfully transition to college and new curriculum.
3. To bridge the gap between school and collegiate education to meet the students communicative requirements
4. To prepare the students for a classroom atmosphere in which English is the medium of instruction.

Course Outcome:-

After the completion of the course, there was a significant progress in the Listening, Speaking, Reading and Writing skills of the students. Students who had tremendous stage fear were able to overcome it and speak fluently in English. They could easily take part in Group Discussions and exhibit their views in English.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	Parts of Speech	5
2	Sentence and Its Parts	5
3	Tenses	5
4	LSRW	5



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Books:-

For Faculty coordinator:-

1. English Grammar & Composition, Pearson Education
2. Contemporary English Grammar Structure and Usage, Green, David
3. High school English Grammar, Wren and Martin,

For Students:-

- <http://www.free-english-study.com>
- <http://www.english-online.org.uk/course.htm>
- <http://www.english-online.org.uk/>

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Bridge Course**ELEMENTS OF ELECTRICAL ENGINEERING****Course Objectives:-**

1. The course provides introductory treatment of the field of Electrical Engineering to the students of various branches of engineering.
2. Student get knowledge of various electrical equipments and safety and Protection.

Course Outcome:-

1. Students should be able to understand electrical current, potential difference, power and energy, sources of electrical energy, resistance and its behavior with temperature. Use the Ohm's Law and the Kirchhoff's Law and star delta transformation for solving resistive series, parallel and series-parallel circuits, basics of AC Quantities, the mathematical operation on AC waveforms, Draw phasor diagram and waveforms for purely resistive, purely inductive and purely capacitive as well as series and parallel R-L-C circuits and also circuit Resonance and Q-factor and derive resonance frequency for such circuits.
2. Understand the different types of wires, cables, connectors & switches used for wiring. Different types of domestic and industrial wiring and able to Identify and use of different type of lamps, fixtures & reflectors.
3. Understand the different types of illumination schemes and lumen requirements for different categories also learn about the importance of safety and the precaution to be taken while working with electrical equipments and accessories. Understand the working principle, usage and construction of circuit protection devices such as fuse, MCB, ELCB & Relays.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	D. C. Circuits	8
2	A. C. Circuits	7
3	Batteries, wiring, illumination & electrical safety	5



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Books:-

1. B.L. Theraja (2012), Electrical Technology, Vol – 1, S. Chand.
2. D. P. Kothari and I. J. Nagrath (2013), Theory and Problems in Basic Electrical Engineering, Prentice Hall, India.
3. John Bird (2012), Electrical Circuit Theory and Technology, Forth edition, Routledge, Taylor and Francis Group.
4. Parker Smith (2003), Problems in Electrical Engineering, CBS Publishers.
5. Surinder P Bali (2013), Electrical Technology, Vol – I, Pearson
6. V. N. Mittal and A. Mittal (2012), Basic Electrical Engineering, Tata McGraw Hill.

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Bridge Course

ELECTRICAL AND ELECTRONICS WORKSHOP

Course Objectives:-

1. Students of Electrical and Computer Engineering allied programs will come across various types of electrical and electronic systems. Such systems require various power sources to make systems function. Such systems are built and interconnected using various components such as wires and cables, active and passive electrical/electronic components, and connectors.
2. Electronic systems are built on printed circuit board (PCB) and breadboard. One need to use source instruments (power sources and signal sources), and appropriate measuring instruments to study behavior of a system. It is also require using various tools in assembling, interconnecting, and testing of such systems.
3. This course deals with basic introduction of system components of electrical and electronic systems, and provides hands on practice in assembling, interconnecting, testing, and repairing such system by making use of various tools used in electrical and electronic workshop.

Course Outcome:-

1. Measure voltage, current, frequency, phase difference, power, power factor for single and three-phase supply
2. Wire fan, tube light, two-way control (staircase wiring). Wire instrument panel with various accessories following standard codes. Wire MCB, ELCB for a given load circuit.
3. Preparing the drawing for wiring a newly built room, without any electrical wiring along with a bill of materials with specifications; the room may be a class-room, an office, a shop, a clinic, a small workshop etc
4. Compare specification for different types of tools (electrical, mechanical, pneumatic, hydraulic), wires, cables (and tubing), switches, batteries, connectors and sockets, electronic components (active, and passive), PCB, fuses, for a given application.
5. Draw electrical/electronic circuit diagram using IEEE standard symbols.
6. Identify and rectify open circuit, and short circuit faults in PCB/System. Solder and de-solder electronic components on different types of PCB. Test assembled electronic circuit for various parameters and faults.
7. Identify and test electrical/electronic active and passive components. Use basic source and measuring instruments (power supply, function generator, CRO, DMM)



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Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	Electronic Components, Measuring Instruments and Tools Building, Wiring, Soldering and Testing of Electronic Circuits.	1

Books:-

1. Electronic Principles, Albert Malvino and David J Bates, McGrawHill(7th Edition)
2. Electronic Devices, Thomas L. Floyd, Pearson (7th Edition)
3. Electronic Devices and Circuits, David A. Bell, Oxford Press (5th Edition)
4. Integrated Electronics, Jacob Millman, Christos, Tata McGraw Hill (2nd Edition)

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Bridge Course Workshop
Mechanical/Automobile Workshop for Computer Engineering

Course Objectives:-

1. Understand applications of hands tools and power tools.
2. Understand the operations of machine tools
3. Select the appropriate tools required for specific operation.
4. Comprehend the safety measures required to be taken while using the tools.

Course Outcome :-

1. Introduction to various shops / sections and workshop layouts. Safety norms to be followed in a workshop should be conveyed to students.
2. Demonstration of hand tools, power tools, machine tools, basic measuring instruments, materials, Marking and measurement in Carpentry, Fitting, Smithy, Welding, Tin smithy, Plumbing and Machine shop.

Course Planning:-

Scheduled Week	Topic	No. of Hrs.
1	Introduction to various shop:	1
2	Carpentry Shop: (a) Study of tools & operations and carpentry joints. (b) Simple exercise using jack plane. (c) To prepare half-lap corner joint, mortise & tennon joints. (d) Simple exercise on wood working lathe	1
3	Fitting (Bench Working) Shop: (a) Simple exercises involving fitting work. (b) Simple exercises involving	1



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	drilling/tapping/dieing.	
4	Welding Shop: (a) Study of tools & operations of Gas welding & Arc welding (b) Simple butt and Lap welded joints. (c) Oxy-acetylene flame cutting.	1

Books:-

For Faculty coordinator:-

1. Mechanical Workshop Practice by K C John, PHI Learning
2. Workshop Technology Vol. 1 and 2 by Raghuvanshi B.S. Dhanpat Rai & Sons 1998
3. Workshop Technology by Chapman W.A. J and Arnold E. Viva low priced student edition, 1998
4. Workshop Technology by Chapman W.A. J and Arnold E. Viva low priced student edition, 1998
5. Workshop Practices and Materials, B J Black, CRC Press.

For Students:-

- www.howstuffworks.com
- Online videos related to workshop on youtube.

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