



OFFICE OF THE PRINCIPAL
GOALPARA COLLEGE, GOALPARA

An ISO 9001:2015 Certified Institution

Affiliated to Gauhati University, Guwahati, Assam

The College is covered under Section 2(f) and 12(B) of the UGC Act, 1956

P.O. : Goalpara, Dist. : Goalpara, (Assam) Pin : 783101

Dr. Subhash Barman, M.A. Ph.D
Principal & Secretary
Goalpara College, Assam

Phone No : 03663-240046
Mobile No. : 7399002231
E-mail : goalparacollege55@gmail.com
Website : www.goalparacollege.ac.in

No : GC/

Date :

Certificate course on
BASIC ELECTRONICS
5 February 2018 to 12 February 2018
Organized by
Department of Physics
Goalpara College
Goalpara: 783101

Department of Physics, Goalpara College organized a 36 hours long certificate course on Basic Electronics. The certificate course was inaugurated by Prof. Jyotish Das, Principal (i/c) of Goalpara College. Inaugural Program was presided over by Dr. G C Sarma, HoD, Department of Physics. Dr. Utapal Sarma, Associate Professor, Department of Instrumentation and USIC, Gauhati University, Dr. Banti Tiru, Assistant professor, Department of Physics, Gauhati University, Dr. Ranjit Choudhury, Associate Professor, Department of Physics, Goalpara College, and Dr. Manjit Borah, Assistant Professor, Department of Physics, Goalpara college was course instructor. Research scholars from Gauhati University namely Rajdeep, Sudipta and Nipan also helped in the laboratory class.

Course Objectives

1. To introduce basic semiconductor devices, their characteristics and application.
2. To understand analysis and design of simple diode circuit.
3. To learn to analyze the PN junction behavior at the circuit level and its role in the operation of diodes and active device.
4. Understand the utility of OPAMP and oscillator circuits in electronic devices.
5. To Give student idea about digital electronics.

Course Outcomes

After completion of the course, students will have both theoretical and practical understanding of

1. Working of PN junction diodes, photo diodes, zener diodes, solar cell etc. as applications of Semiconductor Physics.
2. Working and principle of bipolar junction transistor.
3. Gain knowledge on amplifier circuit and the mechanism of feedback in such amplifiers.
4. Understand the utility of OPAMP and oscillator circuits in electronic devices.
5. Students will be able to apply the knowledge of Boolean algebra in designing digital circuits.
6. Students will be able to analyze combinational logic circuits.



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Course Layout

Syllabus	No. of theory Class (1 hour per class)	No. of laboratory (1 hour per class)
Unit: 1: A brief history of electronics,	1	0
Unit 2: Semiconductor and Semiconductor diode: Energy Level Diagram. Conductivity and Mobility, P and N type semiconductors, PN Junction Fabrication, Barrier Formation in PN Junction Diode. Static and Dynamic Resistance. Current Flow Mechanism in Forward and Reverse Biased Diode. Drift Velocity. Derivation for Barrier Potential, Barrier Width and Current for Step Junction. Current flow mechanism in Forward and Reverse Biased Diode. Half wave and Full wave rectifier, Filter	5	3
Unit 3: Special types of diode: Zener Diode and Voltage Regulation, LEDs, Photodiode and Solar Cell.	2	1
Unit 4: Bipolar Junction Transistors: Types of transistor, Transistor configuration, Load Line analysis of Transistors. DC Load line and Q-point. Physical Mechanism of Current Flow. Active, Cutoff and Saturation Regions.	6	4
Unit 5: Amplifiers: Transistor Biasing and Stabilization Circuits. Fixed Bias and Voltage Divider Bias. Transistor as 2-port Network. H parameter Equivalent Circuit. Analysis of a single-stage D amplifier using Hybrid Model. Input and Output Impedance. Current, Voltage and Power Gains. Classification of Class A, B & C Amplifiers.	6	3
Unit 7: Digital Electronics: Digital Circuits Basic gates AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR, Building AND, OR Gate with diodes, Digital logic families RTL, DTL, TTL, CMOS, Comparison of logic families, introduction to Latch and Flip Flop	3	2



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Glimpses from the Program



Inaugural Session



Prof. Utpal Sarma from GU taking class

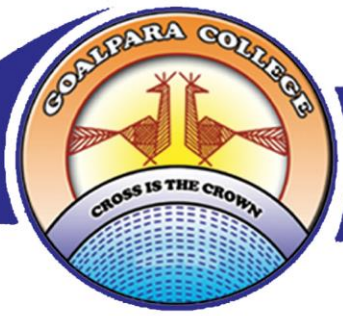


Dr. Banti Tiru from GU taking class.



Laboratory Class

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Banner of the Course

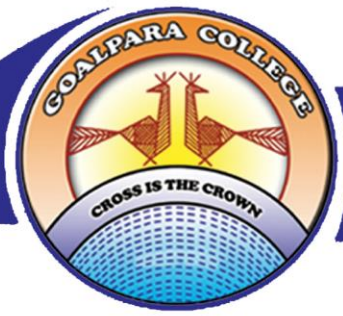
CERTIFICATE COURSE ON
BASIC ELECTRONICS

ORGANIZED BY
DEPARTMENT OF PHYSICS
GOALPARA COLLEGE
GOALPARA: 783101

Free for all
5 February 2018 to 12 February 2018

*#Course includes both theoretical
and Laboratory Class
#For certificate 100% Class
attendance is must*

Venue: Department of Physics
Contact: Dr. Manjit Borah
Phn No.: 8876505265



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Certificate of the Course

 Goalpara College Goalpara	Organised by Department of Physics Goalpara College, Goalpara , Assam	
CERTIFICATE OF COMPLETION		
This is to certify that		
Mr/Ms..... of Participated and successfully completed one week long certificate course named " <i>Basic Electronics</i> " held from 5 th February to 12 th February, 2018 organised by Department of Physics, Goalpara College.		
Jyotish Das Principal Goalpara College	G C Sarma Head Department of Physics	Dr. Manjit Borah Course Coordinator Department of Physics