



A .S.D. Govt.Degree College for Women(A) KAKINADA

(Under the Jurisdiction of Adikavi Nannaya University Rajamahendravaram)

Department of Physics

Certificate Course 2022-23

Title : “Electromagnetism and electricity”

Course Duration : 45 Hours.

Eligibility : I,II B.SC (MPC,MPCS).

Number of Seats : 50.

Course Fee : Rs.100

Objectives :

- (1) To Excel Quality Based Science Education and to develop A Scientific temper in Students ,Department of Physics of ASD Government Degree College for Women(A),Kakinada conducting 35 Hours Certificate course in “Electromagnetism & Electricity”. The Course is designed to have detailed understanding which helps the students for further understanding of Major Electronic-Mechanical devices.
- (2) With clear Understanding of Concepts, theories and applications of Electromagnetism & Electricity, it is possible to understand Electric motor, Generators, Wireless power Transfer, Wireless Chargers ,Induction heating to Advanced applications.
- (3) The framework of Syllabus of this Certificate Course specifies the Students must know be able to do, understand ,with focus of big ideas that encompass core principles, Theories, Process and Applications in “Electromagnetism & Electricity”.
- (4) To impart Quality Education both in Theoretical and Experimental Physics

Course Learning Outcomes:

- (1) Students improve their Knowledge and Skills in the field of Electromagnetism, Electricity and its applications. The students get Knowledge about various Electronic Apparatus and their working Principles.**
- (2) This course gives importance of Electrostatics, Electromagnetism, Electricity in Physics. The course gives Overall description of Electromagnetic properties and choice of Electromagnetic materials for different applications.**
- (3) We depend on Electricity everyminute of Everyday. The Electromagnetism and Electricity are closely related to each other. The Concept of Electromagnetism & Electricity can be applied in many Technologies for an effective productivity.**
- (4) The Virtual labs outlines distinct skills called hands-on experiments in virtual mode in which students can practice the practicals related to their certificate course syllabus. The Virtual lab Sessions will help the students to learn, think and implementing Theory to Experiments skills. The virtual Labs are useful for Students Remembering, Understanding , Application and Analysis skills.**

Evaluation process:

Students Who enrolled the Certificate course in Electro magnetism & Electricity has to complete the Laboratory Excercises ,Problem Solving Sessions ,Hands-in Assignments after completion of each module. After completion of this Certificate course (Duration of 35 hours) the students have to appear the Exam. The Evaluation is based on average Assignment score and Final Exam Score. The students who secured Good Score , will be awarded by Certificate.

ASD GOVERNMENT DEGREE COLLEGE FOR WOMEN(A),KAKINADA

DEPARTMENT OF PHYSICS

CERTIFICATE COURSE IN "ELECTROMAGNETISM & ELECTRICITY

Syllabus

Module 1 (10 Hours) :Electrostatics:

Introduction of Electrostatics, Fundamental forces of nature, Electric charge, Properties, Coulomb's Law, Electric field, Electric field Intensity, Electric Potential, Equipotential surfaces, Electric flux, Gauss's Law, Applications, Electric Dipole, Dipole moment, Electric field at Equatorial point, Conductors in Electrostatics, Force on the surface of a charged Conductor, Capacitance of Conductor, Principle, Energy stored in a Charged Conductor, Sharing of Charge, Dielectrics, principle, Effect of Dielectrics in Capacitors, Classifications of Dielectrics, Uses and applications of dielectrics.

Module 2 (10 Hours) :Electromagnetism:

Basics, Properties and applications of Magnets and Electromagnets, Magnetic Induction, Electromagnetism, The Right hand rule, Flemings Left hand rule, Applications of Electromagnets, Electromagnetic Induction, Faraday's Law, Lenz's Law, Biot-Savarts Law, Ampere's Circuital law, Lorentz Forces, Applications, Self-Induction, Mutual Induction, Grouping of coils, Transformers, Principle, Construction, Working, Transformers Equation, Classification of Transformers, Eddy current & Hysteresis losses, applications of Electromagnetism, working of a Calling bell.

Module 3 (10 Hours) : Electricity:

Introduction to Basic components, Semiconductors, Ohms Law, Generation of AC, RMS Value, Average Value, Form Factor, Ac through basic Components, Power Factor, AC through R, L, C, RC, RL, RLC series, RLC Parallel, Tuning Circuits, Basics of House Wiring, Electric Shock, Overloading, Open Circuiting, Short circuiting, Fuses, Earthing and its necessity, Semiconductors, Intrinsic Semiconductors, Extrinsic Semiconductors, Conduction through Semiconductors, N-Type and P-Type Semiconductors, PN-Junction Diode, Zener Diode working, applications.

Module 4 (5 Hours) : Virtual Labs(V- Labs)

Basics of Virtual labs, Procedure to perform Experiments using Virtual lab

- 1) Series and Parallel RC Circuits
- 2) Series and Parallel RLC Circuits
- 3) Kirchoff's Laws

4) PN Junction Diode Characteristics

5) Zener Diode Characteristics

A.S.D.Government Degree College(W)(Autonomous)
Physics Certificate Course Exam-March-2023

1. One million electrons are added to a glass rod. The total charge on the rod is

1. $10^{-13} C$ 2. $1.6 \times 10^{-13} C$
3. $1.6 \times 10^{-12} C$ 4. $10^{-12} C$

2. Two identical metal spheres possess +60C and -20C of charges. They are brought in contact and then separated by 10 cm. The force between them is

1. $36 \times 10^{13} N$ 2. $36 \times 10^{14} N$
3. $36 \times 10^{12} N$ 4. $3.6 \times 10^{12} N$

3. An electron and proton are sent into an electric field. The ratio of force experienced by them is

1. 1 : 1 2. 1 : 1840 3. 1840 : 1 4. 1 : 9.11

4. An α -particle and a β -particle are projected into the same electric field. The ratio of forces on them is

1. 2 : 1 2. 1 : 2 3. 2 : 3 4. 3 : 2

5. Two charges of $10 \mu C$ and $-90 \mu C$ are separated by a distance of 24 cm. Electrostatic field strength from the smaller charge is zero at a distance of

1. 12 cm 2. 24 cm 3. 36 cm 4. 48 cm

6. The force acting on a charge of $10^{-10} C$ placed in an electric field of intensity $600 N/m$ is

10. If μ is the permeability and ϵ is the permittivity then $\frac{1}{\sqrt{\mu \epsilon}}$ is equal to

1. Speed of sound
2. Speed of light in vacuum
3. Speed of sound in medium
4. Speed of light in medium

11. On increasing temperature, the conductivity of pure semiconductors

- 1) decreases 2) increases
3) remains unchanged 4) becomes zero

A semiconductor at 0K behaves as

- 1) conductor 2) insulator
3) super conductor
4) extensive semiconductor

12. The valency of impurity element for making n-type semiconductor is

- 1) 3 2) 5 3) 4 4) 7

13. A semiconductor at 0K behaves as

- 1) conductor 2) insulator
3) super conductor
4) extensive semiconductor

14. Transistors are made of

- 1) insulators 2) conductors
3) alloys 4) doped semi-conductors

15. The depletion region is

- 1) region of opposite charges
2) neutral region

Photo Gallery

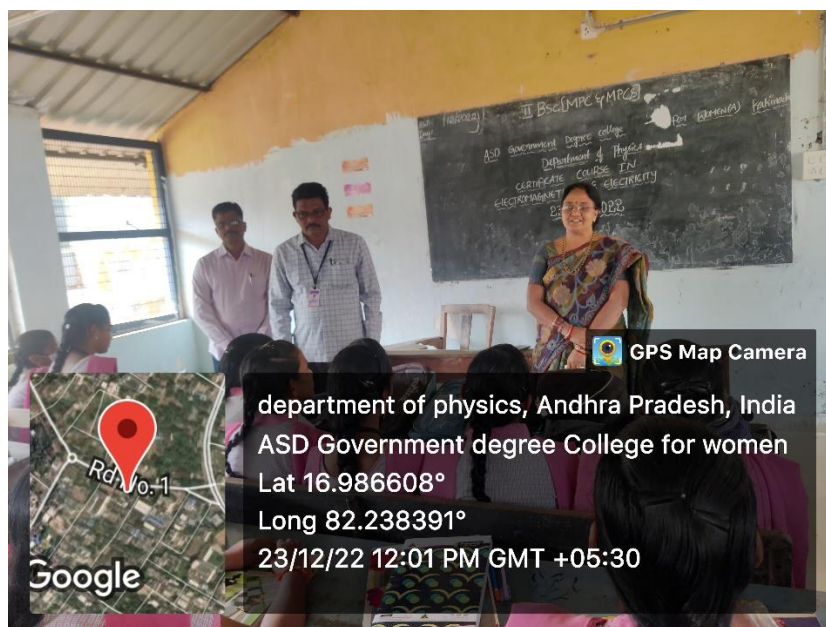



Figure 1 : Inauguration of Certificate Course



Figure 2: Classes



 **GPS Map Camera**



Kakinada, Andhra Pradesh, India


1, near Womens College, Jagannaickpur, Kakinada, Andhra Pradesh 533002, India

Lat 16.939686°

Long 82.23841°

02/02/23 04:38 PM GMT +05:30



 **GPS Map Camera**



Kakinada, Andhra Pradesh, India

1, ASDGovt. Womens College, Jagannaickpur, Kakinada, Andhra Pradesh 533002, India

Lat 16.939687°

Long 82.238412°

14/03/23 04:13 PM GMT +05:30



Figure 3 :Certificates Distribution

S.NO	REGD NO	NAME OF THE STUDENT	Max-30
1	2132001	A. MADHU SREE SANTHOSHI	10
2	2132002	D.JAYASRI	15
3	2132003	K. HARIKA	17
4	2132004	M.SOWJANYA	25
5	2132005	A. SRIDURGA	18
6	2132006	A. AKSHYA	12
7	2132007	B. SIREESHA	20
8	2132008	B. SAHITHI	20
9	2132009	CH. RUKUMINI SRI	22
10	2132010	CH. CHANDRIKA ANUSHA	25
11	2132011	CH. VISHNU SRI	19
12	2132013	G. SRAVANI	19
13	2132014	G. SHARON GRACE	20
14	2132015	K. KAVYA	19
15	2132016	K. LAKSHMI LAVANYA	15
16	2132017	K. RAMA TULASI	22
17	2132018	K. SATYA SOWJANYA	21
18	2132019	K. JAYASRI	25
19	2132020	L.PADMAVATHI	25
20	2132021	P. KAVYASRI SATYA	20
21	2132022	P. DHANAJAYA	25
22	2132023	P. NIKITHA	23
23	2132024	P. PARVATHI	24
24	2132025	P. SYAMALA	24
25	2132026	R. JYOTHI	24
26	2132027	S. KUMARI SRI GANGA	25

27	2132028	S. DEEPIKA	24
28	2132029	S. SURYA PRASANNA	18
29	2132030	S. BHARATHI DEVI	10
30	2132031	S. LAVANYA	23
31	2132032	T. SUNITHA	23
32	2132033	T. SARITHA	25
33	2132034	V. ARUNA	22
34	2132035	V. NANDINI	21
35	2132037	A. DEVI	24
36	2132038	CH. SURYA BHAVANI	24
37	2132039	CH. SRILAKSHMI DEVI	22
38	2132040	D. SINGARA LAKSHMI	26
39	2132041	D. SANTHA KUMARI	08
40	2132042	G. ANUHYA	24
41	2132045	K. APARNA	18
42	2132047	M. SAILU	24
43	2132048	M. MADHURI LATHA	ABSENT
44	2132049	N. NAGADURGA	23
45	2132050	P. SAILAJA	24
46	2132051	P. SANTHI	20
47	2132052	P. LAKSHMI KANTAM	27
48	2132053	P. KUSUMA SRI	22
49	2132054	P. VARALAKSHMI	19
50	2132055	P. INDU	18
51	2132056	P. DIVYA	23
52	2132057	P. LAKSHMI SOWJANYA	23
53	2132058	P. PREMA JYOTHI	25
54	2132059	R. MANI	19
55	2132060	S. ASHA DEVI	20



A.S.D. Govt Degree College for Women (Autonomous)

(NAAC Re-Accredited with 'B' Grade)

(Affiliated to Adikavi Nannaya University Rajamahendravaram,)

DEPARTMENT OF PHYSICS


CERTIFICATE COURSE (45-Days / Hours)

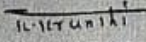
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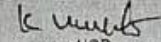
ELECTROMAGNETISM & ELECTRICITY

Regd No 2132015

This is to Certify that Ms.....KARL KAVYA..... of II MPCS has
Completed a 45 - Day/hours Certificate Course on "**ELECTROMAGNETISM & ELECTRICITY**"
Organized by the Department of Physics, A.S.D. Govt. Degree College for Women (Autonomous), Kakinada from
Dec 23rd 2022 to Feb 27th 2023 (45 Days/ hours)


CONVENER
B. SURYANARAYANA DEVERA


CO - CONVENER
K. KRANTHI


LECTURER IN CHARGE
K. VENKATESWARA RAO
A. S. Govt. Degree College for Women
KAKINADA.

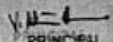
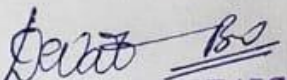
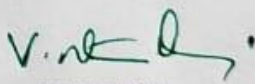

PRINCIPAL
A.S.D. GOVT. DEGREE COLLEGE (W)
AUTONOMOUS
KAKINADA



Figure 4 Model Certificate issued after successful completion.


LECTURER IN CHARGE
Department of Physics
A. S. Govt. Degree College for Women
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