ASSAM UNIVERSITY, SILCHAR

SYLLABUS UNDER

CHOICE BASED CREDIT SYSTEM

PHYSICS

(HONOURS & GENERAL)

Semester wise list of Physics papers to be studied by a Physics (H) student

SEMESTER	COURSE OPTED	COURSE NAME	CREDITS
I	PHSHCC101T	Mathematical Physics-I	4
	PHSHCC101P	Mathematical Physics-I Lab	2
	PHSHCC102T	Mechanics	4
	PHSHCC102P	Mechanics Lab	2
II	PHSHCC201T	Electricity and Magnetism	4
	PHSHCC201P	Electricity and Magnetism Lab	2
	PHSHCC202T	Waves and Optics	4
	PHSHCC202P	Waves and Optics Lab	2
III	PHSHCC301T	Mathematical Physics-II	4
	PHSHCC301P	Mathematical Physics-II Lab	2
	PHSHCC302T	Thermal Physics	4
	PHSHCC302P	Thermal Physics Lab	2
	PHSHCC303T	Digital Systems and Applications	4
	PHSHCC303P	Digital Systems & Applications Lab	2
	PHSSEC301T	Workshop skill	4
IV	PHSHCC401T	Mathematical Physics III	4
	PHSHCC401P	Mathematical Physics-III Lab	2
	PHSHCC402T	Elements of Modern Physics	4
	PHSHCC402P	Elements of Modern Physics Lab	2
	PHSHCC403T	Analog Systems and Applications	4
	PHSHCC403P	Analog Systems & Applications Lab	2
	PHSSEC401T	Electrical Circuit and Network	4
V	PHSHCC501T	Quantum Mechanics & Applications	4
	PHSHCC501P	Quantum Mechanics Lab	2
	PHSHCC502T	Solid State Physics	4
	PHSHCC502P	Solid State Physics Lab	2
	PHSDSE501T	A. Classical Dynamics	6
		B. Biological Physics	
	PHSDSE502	A. Nuclear and Particle Physics	6
		B. Advanced Mathematical Physics	
VI	PHSHCC601T	Electro-magnetic Theory	4
	PHSHCC601P	Electro-magnetic Theory Lab	2
	PHSHCC602T	Statistical Mechanics	4
	PHSHCC602P	Statistical Mechanics Lab	2
	PHSDSE601T	A. Astronomy and Astrophysics	6
		B. Nano-materials and applications	
	PHSDSE602T	A. Dissertation	6
		B. Physics of Devices and Communication	

Unit 5:

Applications: Applications of nanoparticles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron transfer devices (no derivation). CNT based transistors. Nanomaterial Devices: Quantum dots heterostructure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots - magnetic data storage. Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS). **(15 Lectures)**

Tutorials: 15 hours

Reference Books:

i. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
ii. S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).
iii. K.K. Chattopadhyay and A.N. Banerjee, Introduction to Nanoscience & Technology (PHI Learning Private Limited).
iv. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).
v. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
vi. S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).
vii. K.K. Chattopadhyay and A. N. Banerjee, Introduction to Nanoscience and Technology (PHI Learning Private Limited).
viii. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).
ix. M. Hosokawa, K. Nogi, M. Naita, T. Yokoyama, Nanoparticle Technology Handbook (Elsevier, 2007).
x. Introduction to Nanoelectronics, V.V. Mitin, V.A. Kochelap and M.A. Stroscio, 2011, Cambridge University Press.
xi. Bharat Bhushan, Springer Handbook of Nanotechnology (Springer-Verlag, Berlin, 2004).

PHSDSE602TA: DISSERTATION

Contact Hours: 90

Full Marks = 100 [ESE (70) CCA(30)]

Pass Marks = 40 [ESE (28) CCA (12)]

A project of 100 marks to be done on topics in/related to any advanced theoretical/ experimental/ computational Topics under the supervision of one of the course teachers.

End semester exam will comprise of presentation (40 marks) as well as evaluation of the Report (30 marks) by an external examiner.

Study of the Average Binding Energy of Different Nuclei with the help of Semi-Empirical Mass Formula:

A Dissertation

Submitted for the partial fulfilment of Bachelor of Science (PHYSICS) degree by

Bikaram Jogi

under the supervision of

Associate Professor and HOD
Dr. Chinmoy Kr. Phookan
Haflong Govt. College

Department of Physics, Haflong Government College
Haflong-788819
June, 2023

STUDY OF RANDOM NUMBERS AND ITS DEVRIVATION TO GAUSSSIAN DISTRIBUTION FUNCTION

- Project Report -

A Thesis submitted in partial satisfaction of the requirements for the degree Bachelor Of Science by

Youraj Thapa

under the Supervision of

Dr. Chinmoy Kr. Phookan
Haflong Government College

Department of Physics, Haflong Government College
Haflong-788819
June-2023

STUDY OF RANDOM NUMBERS AND ITS DEVRIVATION TO GAUSSSIAN DISTRIBUTION FUNCTION

- Project Report -

A Thesis submitted in partial satisfaction of the requirements for the degree Bachelor Of Science by

Abhishek Dey

under the Supervision of

Dr. Chinmoy Kr. Phookan
Haflong Government College

Department of Physics, Haflong Government College
Haflong-788819
June-2023

Study of the Average Binding Energy of Different Nuclei with the help of Semi-Empirical Mass Formula:

A Dissertation

Submitted for the partial fulfilment of Bachelor of Science (PHYSICS) degree by

Dipika Thakur

under the supervision of

Associate Professor and HOD
Dr. Chinmoy Kr. Phookan
Haflong Govt. College

Department of Physics, Haflong Government College
Haflong-788819
June, 2023