

KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
COIMBATORE-641 029

B.Sc. PHYSICS

Curriculum and Scheme of Examination under CBCS

(APPLICABLE TO STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2018 –2019 ONWARDS)

Semester	Part	Subject code	Title of the Paper	Instruction hours / cycle	Exam. Marks			Duration of Exam. Hrs.	Credit
					CIA	ESE	Total		
I	I	18TML103®	LAN –Tamil I/Hindi I/ French I / Malayalam I / Sanskrit I	6	25	75	100	3	3
	II	18ENG101	LAN–English I	6	25	75	100	3	3
	III	18UPH101	C.P.1– Properties of Matter and Sound	6	25	75	100	3	5
		18UPH2CL	C.Pr.1-Practical I	3	-	-	-	-	-
		18UMA1A1	Allied Subject I Mathematics – I	7	25	75	100	3	5
	IV	18EVS101	Environmental Studies**	2	-	50	50	3	2
				30	100	350	450		18
II	I	18TML202®	LAN- Tamil II / Hindi II/ French II /Malayalam II / Sanskrit III	6	25	75	100	3	3
	II	18ENG202	LAN- English II	6	25	75	100	3	3
	III	18UPH202	C.P.2 – Heat and Thermodynamics	6	25	75	100	3	5
		18UPH2CL	C.Pr.1-Practical I	3	40	60	100	3	2
		18UMA2A2	Allied Subject I Mathematics – II	7	25	75	100	3	5
	IV	18VED201	Value Education Moral and Ethics**	2	50		50	3	2

				30	140	360	550		20
III	I	18TML303@	LAN - Tamil III/Hindi III/ French III / Malayalam III /	6	25	75	100	3	3
	II	18ENG303	LAN –English III	6	25	75	100	3	3
	III	18UPH303	C.P.3 – Mechanics	4	25	75	100	3	5
		18UPH4CM	C.Pr.2 Practical II	3	-	-	-	-	-
		18UCH3A3	Allied Subject II Chemistry –I	4	20	55	75	3	4
		18UCH4AL	Allied Practical Chemistry Practical	3	-	-	-	-	-
	IV	18UGA3S1	Skill based Subject 1 – General Awareness	2	25	75	100	3	3
	IV	18TBT301/ 18TAT301/ 18UHR3N1	Basic Tamil*/Advanced Tamil** / Non Major Elective-I**	2	75		75	3	2
				30	120	355	550		18

IV	I	18TML404®	LAN – Tamil IV/Hindi IV/ French IV / Malayalam IV Sanskrit IV	6	25	75	100	3	3
	II	18ENG404	LAN – English IV	6	25	75	100	3	3
	III	18UPH404	C.P.4 – Electricity and Magnetism	4	25	75	100	3	5
		18UPH4CM	C.Pr.2 – Practical II	3	40	60	100	3	2
		18UCH4A4	Allied Subject II	4	20	55	75	3	4
		18UCH4AL	Allied Practical	3	20	30	50	3	2
	IV	18UPH4S2	Skill based Subject –2 Medical Instrumentation	2	25	75	100	3	3
		18TBT402/ 18TAT402/	Basic Tamil* / Advanced Tamil** / Non Major Elective - II**	2	-	75	75	3	2
				30	180	520	700		24
V	III	18UPH505	C.P.5 – Astrophysics	4	25	75	100	3	4
		18UPH506	C.P.6 – Optics and	4	25	75	100	3	4

		18UPH507	C.P.7 – Principles of	4	25	75	100	3	4
		18UPH508	C.P.8 – Quantum Mechanics and relativity	4	25	75	100	3	5
		18UPH5E1	Major Elective Paper – I	4	25	75	100	3	5
		18UPH6CN	C.Pr.3 – Practical III - General	3	-	-	-	-	-
		18UPH6CO	C.Pr.4 – Practical IV - Electronics , Digital Electronics and Microprocessors	2	-	-	-	-	-
		18UPH6CP	C.Pr.5 – Practical V - Programming in C	2	-	-	-	-	-
	IV	18UPH5S3	Skill Based Subject 3 - Programming in C	3	25	75	100	3	3
				30	150	450	600		25
VI	III	18UPH609	C.P.9 – Atomic and Solid State Physics	4	25	75	100	3	4
		18UPH610	C.P.10 – Fundamentals of Digital Electronics	4	25	75	100	3	4
		18UPH611	C.P.11 – Nuclear Physics	4	25	75	100	3	5
		18UPH6E2	Major Elective Paper - II	4	25	75	100	3	5
		18UPH6E3	Major Elective Paper - III	4	25	75	100	3	5
		18UPH6CN	C.Pr.3 Practical III - General	3	40	60	100	3	2
		18UPH6CO	C.Pr.4 – Practical IV - Electronics , Digital Electronics and Microprocessors	2	40	60	100	3	2
		18UPH6CP	C.Pr.5 – Practical V – Programming in C	2	40	60	100	3	2
	IV	18UPH6S4	Skill Based Subject 4 – Introduction to Microprocessor	3	25	75	100	3	3
	V	18NCC/NSS/YRC/PYE101\$\$	Extension Activities*	-	50	-	50	-	1
				30	320	630	950		33
Total				180			3800		140

@ Malayalam – 18MLM 101 - 404

@ Hindi/ French/ Sanskrit – 18HIN/FRN/SAN 101 - 404

* No End of Semester Examinations (ESE), only Continuous Internal Assessment (CIA)

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Major Elective Papers

(3 papers are to be chosen from the following 6 papers)

1. Principles of Communication Systems
2. Energy Source and Nanoscience
3. Electronic Instrumentation
4. Mathematical Physics
5. Object oriented programming in C++
6. Introduction to Biophysics

Non - Major Elective papers

1. Human Rights
2. Women's Rights
3. Consumer Affairs

Energy Sources and Nano Science

To enable the learner to

1. Know about the Conventional Energy Sources and Renewable energy sources.
2. Gain knowledge about Nanoscience and Nanotechnology.

Course Outcome (CO)

K1 CO1 The learners will know about basic nuclear properties and particle accelerators.

K2 CO2 The learners will have knowledge about the differences between various decay modes and radioactive dating.

K3 CO3 The learners will have knowledge about basic concepts and relations to calculate Q – values for nuclear reactions, production of radioisotopes and their uses.

K4 CO4 The learners will know about the nuclear fission, fusion and detection of nuclear radiations.

UNIT I

Conventional Energy Sources

World's reserve - commercial energy sources and their availability – various forms of energy –renewable and conventional energy system – comparison – Coal, oil and natural gas – applications –Merits and Demerits

UNIT II

Solar Energy

Renewable energy sources – solar energy – nature and solar radiation – components – solar heaters– crop dryers – solar cookers – water desalination (block diagram) – Photovoltaic generation –merits and demerits

UNIT III

Other forms of energy sources

Energy from Biomass:

Biomass energy - photosynthesis - Biomass conversion technologies (wet processes , dry processes)

Wind Energy:

Principles of wind energy conversion – The nature of the wind – Power in the wind- Applications of wind Energy.

Geothermal energy & Ocean thermal energy:

Nature of Geothermal fields - Geothermal sources – An introduction to Energy from the Oceans

UNIT IV

Development of Nano materials

Introduction - Solid materials and their strength – Perspective of length – Nanoscience and Nano

technology - Quantum Structures – Quantum confinement – Top down and Bottom up approach –

Synthesis of nanomaterials – Arc discharge method – Coprecipitation method

UNIT V

Overview of Nano materials

Nanomaterials and Nanostructures in nature – Super hydrophobic surfaces – Fundamental approaches for cleaning – Self-cleaning and easy cleaning materials: Self-cleaning and easy cleaning glasses and tiles – Self-cleaning paints , textiles and other materials.

Books for study:

1. D.P. Kothari, K.C. Singal & Rakesh Ranjan (2008), Renewable energy sources and emerging Technologies, Prentice Hall of India pvt. Ltd., New Delhi
2. G.D.Rai, (12th re print 2014) Non Conventional Energy Sources, Khanna Publishers,
3. M.A.Shah & Tokeer Ahmed ,(2010), Principles of Nanoscience and Nanotechnology, Narosa Publishing house
4. Micheal F. Ashby , Paulo J. Ferreira , Daniel L.Schodek (2009), Nanomaterials, Nanotechnologies and design: An introduction for Engineers and Architects , Elsevier Science

Books for Reference:

- 1.S.A. Abbasi and Nasema Abbasi (2008), Renewable Energy sources and their Environmental impact, PHI Learning Pvt. Ltd., New Delhi.
2. D.S.Chauhan & S.K.Srivastava, (2004), Non-Conventional Energy Resources, New Age International Publishers.
- 3.C.N.R.Rao , P.J.Thomas and G.U . Kulkarni , (2007), Nano Crystals : Synthesis , Properties and Applications, Springer

The course, “Energy Sources and Nanoscience” has focus on Employability

The course, “Energy Sources and Nanoscience” provides employability in (1.)Thermal power stations, (2.)Petroleum refineries, (3.)Oil and Natural Gas Corporation (ONGC), (4.)Research and development in Photovoltaic industries to harvest solar energy, (5.)Research and development in domestic/industrial solar thermal products, (6.)Installation and maintenance of wind mills, (7.)Geothermal power plants, (8.)Ocean power plants, (9.)Research and development in nanomaterial synthesis and its applications such as paints and textiles.