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# SACRED HEART COLLEGE, CHALAKUDY

Railway Station Road, Thrissur Dt., Kerala - 680 307, India

(Affiliated to University of Calicut & Re-accredited with A+ Grade by NAAC, CGPA 3.55)

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Date 29/09/2022

## Sub- Clarification regarding the Add-on/Certificate courses of the year 2020-21 Metric - (1.2.2)

I certify that the four Add-on/Certificate courses offered during the academic year 2020-21 listed below are not part of the curricula offered by the University. The Course Codes and syllabi of these Add-on/Certificate courses are also not the same with the Course codes, titles and syllabi of Courses as part of the curriculum. We have attached the list of the Course Codes and syllabi of the normal curricula for clarification. The syllabi, attendance, certificates of the Add-on/Certificate courses are also provided in the other link so that NAAC can verify that the courses are not part of the normal curricula.

In the DVV, you have apparently accepted all the Add-on/Certificate courses but the number of students enrolled for the course has been reduced. Thank you for giving us an opportunity to clarify this. I hope you will accept all the four Add-on/Certificate courses offered during the year 2020-21 and the corresponding number of students who pursued this course into consideration.

Name of Add on /Certificate programs offered	Course Code (if any)	Year of offering	No. of times offered during the same year	Duration of course	Number of students enrolled in the year	Number of Students completing the course in the year
Certificate Course on Human Rights and Duties Education		2020-21	1	30 hours	50	50
Certificate Course An Introduction to Latex		2020-21	1	100 hrs	15	15
Add on course on communication Skills	ADENG01	2020-21	1	140hrs	31	31
Certificate Course on Quantitative Aptitude and Analytical Skills		2020-21	1	30 hours	16	16



PRINCIPAL  
 SACRED HEART COLLEGE  
 CHALAKUDY



**UNIVERSITY OF CALICUT**

**Abstract**

BSc programme in Physics-CUCBCSS UG 2014-Core and Complementary Courses-Scheme and Syllabus- Approved- Implemented-w.e.f 2014 Admissions-Orders issued

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**G & A - IV - J**

U.O.No. 6902/2014/Admn

Dated, Calicut University.P.O, 17.07.2014

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*Read:-*1. U.O. No. 3797/2013/CU, dated 07.09.2013 (CBCSS UG Modified Regulations) (File.ref.no. 13752/GA IV J SO/2013/CU).

2. U.O. No. 5180/2014/Admn, dated 29.05.2014 (CBCSS UG Revised Regulations) (File.ref.no. 13752/GA IV J SO/2013/CU).

3. Item no. 1 of the minutes of the meeting of the Board of Studies in Physics UG held on 20.06.2014.

4. Item no. 34 of the minutes of the meeting of the Faculty of Science held on 27.06.2014.

5. Orders of the VC on 14.07.2014, in the file no, 18602/GA IV /J1/2013/CU.

**ORDER**

The Modified Regulations of Choice Based Credit Semester System for UG Curriculum w.e.f 2014 was implemented under the University of Calicut vide paper read as (1).

The Revised CUCBCSS UG Regulations has been implemented w.e.f 2014 admission, for all UG programme under CUCBCSS in the University, vide paper read as (2).

The Board of Studies in Physics UG approved the new syllabus for **B.Sc. Physics Core Course**, B.Sc. Applied Physics, and **Complimentary Courses** according to the new system, which is to be implemented w.e.f 2014 admissions vide paper read as (3).

The Faculty of Science has also approved the minutes of the Board vide paper read as (4).

The Hon'ble Vice Chancellor, considering the exigency, exercising the powers of the Academic Council has approved the items regarding syllabus implementation in the minutes of the concerned Boards of Studies mentioned in the minutes of the Faculty of Science, subject to ratification by the Academic Council, vide paper read as (5).

Sanction has, therefore, been accorded for implementing the Scheme and Syllabus of **BSc. programme in Physics Core and Complementary Courses** under CUCBCSS UG 2014, in the

Orders are issued accordingly.

(The syllabus is available in the website: [universityofcalicut.info](http://universityofcalicut.info))

Muhammed S  
Deputy Registrar

To

1. All Affiliated Colleges/SDE/Dept.s/Institutions under University of Calicut.
2. The Controller of Examinations, University of Calicut.
3. The Director SDE, University of Calicut.

Forwarded / By Order

Section Officer

**UNIVERSITY OF CALICUT**

**B.Sc. PHYSICS**

**(CORE AND COMPLIMENTARY PROGRAMMES)**

**SYLLABUS & MODEL QUESTION PAPERS**

**w.e.f 2014 admission onwards**

## B.Sc. DEGREE PROGRAMME (PHYSICS CORE)

### COURSE STRUCTURE

Semester	Course Code	Course Title	Total hours	Hours/Week	Credits
I	A 01	Common Course I – English	72	4	4
	A 02	Common Course II – English	90	5	3
	A 07	Common Course III – Language other than English	72	4	4
	PH1 B01	Core course I - Methodology of Science and Physics	36	2	2
		Core Course V - Practical I	36	2	*
		1 <sup>st</sup> Complementary Course I - Mathematics	72	4	3
		2 <sup>nd</sup> Complementary Course I	36	2	2
		2 <sup>nd</sup> Complementary Course Practical I	36	2	*
	<b>Total</b>	<b>450</b>	<b>25</b>	<b>18</b>	
II	A 03	Common Course IV – English	72	4	4
	A 04	Common Course V – English	90	5	3
	A 08	Common Course VI – Language other than English	72	4	4
	PH2 B02	Core Course II - Properties of Matter, Waves and Acoustics	36	2	2
		Core Course V - Practical I	36	2	*
		1 <sup>st</sup> Complementary Course II - Mathematics	72	4	3
		2 <sup>nd</sup> Complementary Course II	36	2	2
		2 <sup>nd</sup> Complementary Course Practical II	36	2	*
	<b>Total</b>	<b>450</b>	<b>25</b>	<b>18</b>	
III	A 05	Common Course VI – English	90	5	4
	A 09	Common Course VIII - Language other than English	90	5	4
	PH3 B03	Core Course III – Mechanics	54	3	3
		Core Course VI– Practical I	36	2	*
		1 <sup>st</sup> Complementary Course III – Mathematics	90	5	3
		2 <sup>nd</sup> Complementary Course III	54	3	2
		2 <sup>nd</sup> Complementary Course Practical III	36	2	*
	<b>Total</b>	<b>450</b>	<b>25</b>	<b>16</b>	
IV	A 06	Common Course IX – English	90	5	4

	A 10	Common Course X - Language other than English	90	5	4
	PH4 B04	Core Course IV - Electrodynamics I	54	3	3
	PH4 B05	Core Course Practical V – Practical I	36	2	5
		1 <sup>st</sup> Complementary Course IV– Mathematics	90	5	3
		2 <sup>nd</sup> Complementary Course IV	54	3	2
		2 <sup>nd</sup> Complementary Course Practical IV	36	2	4
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>25</b>
V	PH5 B06	Core Course VI - Electrodynamics II	54	3	3
	PH5 B07	Core Course VII - Quantum Mechanics	54	3	3
	PH5 B08	Core Course VIII - Physical Optics and Modern Optics	54	3	3
	PH5 B09	Core Course IX- Electronics (Analogue and Digital)	72	4	4
		Open Course – ( <i>course from other streams</i> )	54	2	2
		Core Course Practical XIV - Practical II	72	4	*
		Core Course Practical XV- Practical III	72	4	*
		Project	36	2	*
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>15</b>
VI	PH6 B10	Core Course X - Thermal and Statistical Physics	72	4	4
	PH6 B11	Core Course XI - Solid State Physics, Spectroscopy and Laser physics	72	4	4
	PH6 B12	Core Course XII - Nuclear Physics, Particle Physics and Astrophysics	72	4	4
	PH6 B13	Core Course XIII (Elective)	54	3	3
	PH6 B14	Core Course Practical XIV – Practical II	72	4	5
	PH6 B15	Core Course Practical XV – Practical III	72	4	5
	PH6 B16	Course XVI Project& Tour report	36	2	3
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>28</b>
	<b>Total Credits</b>				

**Tour report may be evaluated with Practical III**

**Total Credits: 56 (Internal: 20%; External: 80%)**

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hrs/Week</i>	<i>Total Hrs</i>	<i>Credit</i>	<i>Marks</i>	
<b>I</b>	PH1B01	Core Course I: Methodology of Science and Physics	2	36	2	100	
	-	Core Course V : Practical-I	2	36	-*	-	
<b>II</b>	PH2B02	Core Course II: Properties of matter waves and Acoustics	2	36	2	100	
	-	Core Course V : Practical-I	2	36	-*	-	
<b>III</b>	PH3B03	Core Course III: Mechanics	3	54	3	100	
	-	Core Course V : Practical-I	2	36	-*	-	
<b>IV</b>	PH4B04	Core Course IV: Electrodynamics-I	3	54	3	100	
	PH4B05	Core Course V : Practical-I	2	36	5	150	
<b>V</b>	PH5B06	Core Course VI: Electrodynamics-II	3	54	3	100	
	PH5B07	Core Course VII: Quantum Mechanics	3	54	3	100	
	PH5B08	Core Course VIII: Physical Optics and Modern Optics	3	54	3	100	
	PH5B09	Core Course IX: Electronics	4	72	4	100	
		Core Course XIV: Practical II	4	72	-**	-	
		Core Course XV: Practical III	4	72	-**	-	
		Core Course XVI: Project Work	2	36	-**	-	
<b>VI</b>	PH6B10	Core Course X: Thermal and statistical Physics	4	72	4	100	
	PH6B11	Core Course XI: Solid State Physics, Spectroscopy and Laser	4	72	4	100	
	PH6B12	Core Course XII: Nuclear Physics, Particle Physics and Astrophysics	4	72	4	100	
	PH6B13(E1)	Core Course XIII: Elective***	1. COMPUTATIONAL PHYSICS	3	54	3	100
	PH6B13(E2)		2. MATERIALS SCIENCE				
	PH6B13(E3)		3. NANO SCIENCE AND TECHNOLOGY				
	PH6B14	Core Course XIV: Practical -II	4	72	5**	150	
	PH6B15	Core Course XV: Practical-III	4	72	5**	150	
	PH6B16	Core Course XVI: Project Work &Tour Report	2	36	3**	75 25	
<b>Total</b>					<b>56</b>	<b>1750</b>	

\* Exam will be held at the end of 4<sup>th</sup> semester

\*\* Exam will be held at the end of 6<sup>th</sup> semester

\*\*\* An institution can choose any one among the three courses.

<b>CORE COURSE – XIII (ELECTIVE) :</b>		
<b>1</b>	PH6 B13 (E1)	COMPUTATIONAL PHYSICS
<b>2</b>	PH6 B13 (E2)	MATERIALS SCIENCE & THIN FILMS
<b>3</b>	PH6 B13 (E3)	NANO SCIENCE AND TECHNOLOGY

<b>OPEN COURSES OFFERED BY PHYSICS DEPARTMENT (For students from other streams)</b>		
<b>1</b>	PH5 D01(1)	NON CONVENTIONAL ENERGY SOURCES
<b>2</b>	PH5 D01(2)	AMATEUR ASTRONOMY AND ASTROPHYSICS
<b>3</b>	PH5 D01(3)	ELEMENTARY MEDICAL PHYSICS

### **PHYSICS COMPLEMENTARY COURSE STRUCTURE**

**Total Credits: 12 (Internal: 20%; External: 80%)**

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hrs/Week</i>	<i>Total Hrs</i>	<i>Credit</i>	<i>Marks</i>
<b>I</b>	PH1C01	Complementary Course I: Properties of matter and Thermodynamics	2	36	2	80
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
<b>II</b>	PH2C02	Complementary Course II: Mechanics, Relativity, Waves and Oscillations	2	36	2	80
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
<b>III</b>	PH3C03	Complementary Course III: Optics ,Laser, Electronics and Communication	3	54	2	80
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
<b>IV</b>	PH4C04	Complementary Course IV: Electricity ,Magnetism and Nuclear Physics	3	54	2	80
	PH4C05	Complementary Course V: PHYSICS Practical	2	36	4*	80
<b>Total</b>					<b>12</b>	<b>400</b>

\* Examination will be held at the end of 4<sup>th</sup> semester



**OPEN COURSE STRUCTURE**  
**(FOR STUDENTS OTHER THAN B.Sc. Physics)**  
**Total Credits: 2 (Internal 20%; External 80%)**

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hrs/Week</i>	<i>Total Hrs</i>	<i>Marks</i>
<b>V</b>	PH5D01	Open Course 1: Non conventional Energy Sources	2	36	50
	PHYD02	Open Course 2: Amateur Astronomy and Astrophysics			
	PHYD03	Open Course 3: Elements of Medical Physics			

**OPEN COURSE: EVALUATION SCHEME**

The evaluation scheme contains two parts: *viz.*, internal evaluation and external evaluation.

**Maximum marks from each unit are prescribed in the syllabus.**

**Problems are not required**

**1. INTERNAL EVALUATION**

20% of the total marks are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

**Table 1: Components of Evaluation**

<i>Sl. No.</i>	<i>Components</i>	<i>Marks</i>
1	Attendance	2.5
2	Test papers: I & II	2.5 + 2.5
3	Assignment / Viva	2.5
<i>Total Marks</i>		10

**Table 2: Percentage of Attendance and Eligible Marks**

<i>% of attendance</i>	<i>Marks</i>
Above 90%	2.5
85-89%	2
80-84%	1.5
76-79%	1
75%	0.5

**Table 3: Pattern of Test Papers ( Internal)**

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
1 Hour	One word	4	4	1	4
	Short answer	2	1	2	2
	Paragraph	4	2	3	6
	Essay	2	1	8	8
<i>Total Marks</i>					20

\*Marks: 80% and above = 2.5, 60 to below 80% = 2, 50 to below 60% = 1.5, 40 to below 50% = 1, 35 to below 40% = 0.5, below 35% = 0.



**UNIVERSITY OF CALICUT**

**Abstract**

General and Academic - Faculty of Science - Modified Syllabus of BSc Physics Programme under CBCSS UG Regulations 2019 with effect from 2020 Admission onwards - Implemented- Orders Issued.

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**G & A - IV - J**

U.O.No. 6321/2020/Admn

Dated, Calicut University.P.O, 07.07.2020

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- Read:-*1. U.O.No. 4368/2019/Admn dated 23.03.2019  
2. U.O.No. 18084/2019/Admn Dated 28.12.2019  
3. The item No.5 in the minutes of the meeting of the Board of Studies in Physics UG held on 05.03.2020  
4. Remarks of the Dean, Faculty of Science dtd 08.06.2020  
5. Order of the Vice Chancellor in the file even no. dtd 11.06.2020

**ORDER**

1. The Regulations for Choice Based Credit and Semester System for Under Graduate (UG) Curriculum-2019 (CBCSS UG Regulations 2019) for all UG Programmes under CBCSS-Regular and SDE/PrivateRegistration w.e.f. 2019 admission, has been implemented vide paper read first above and the same has been modified vide paper read second above.
2. The meeting of the Board of Studies in Physics (UG) held on 05/06/2020 has recommended the following modifications in the I and II semester of the Syllabus of B.Sc Physics Programme in tune with the new CBCSS UG - 2019 Regulations with effect from 2020 Admission, vide paper read third above.
  - Two units in semester I should be removed. The title of the course changed to Mechanics-I.
  - The syllabus of the unit, "Waves" in the syllabus of semester II is modified with another standard text book as book of study. The title of the course changed to Mechanics-II.
3. The Dean, Faculty of Science has approved the modified syllabus of BSc Physics programme in tune with the new CBCSS UG-2019 Regulations with effect from 2020 Admission onwards, vide paper read fourth above.
4. Considering the urgency of the matter, the Vice Chancellor has accorded sanction to implement the Scheme and Syllabus of B Sc Physics Programme in accordance with the new CBCSS UG Regulations 2019, in the University with effect from 2020 Admission onwards, subject to ratification by the Academic Council.
5. The Modified Scheme and Syllabus of B Sc Physics Programme in accordance with CBCSS UG Regulations 2019, is therefore implemented in the University with effect from 2020 Admission onwards.
6. Orders are issued accordingly. (Syllabus appended).

Arsad M

Assistant Registrar

To

The Principals of all Affiliated Colleges  
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Section Officer

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**UNIVERSITY OF CALICUT**

**B.Sc. PHYSICS**

**(CORE AND COMPLEMENTARY PROGRAMMES)**

**SYLLABUS & MODEL QUESTION PAPERS**

**w.e.f 2020 admission onwards**

**CBCSSUG Regulations 2020**

**B.Sc. PHYSICS**  
**CORE & COMPLEMENTARY PROGRAMMES**  
**SYLLABUS**

## B.Sc. DEGREE PROGRAMME (PHYSICS CORE)

### COURSE STRUCTURE

Semester	Course Code	Course Title	Total hours	Hours/Week	Credits
1	A 01	Common Course I – English	72	4	4
	A 02	Common Course II – English	90	5	3
	A 07	Common Course III – Language other than English	72	4	4
	PHY1 B01	Core course I - Mechanics I	36	2	2
		Core Course V - Practical I	36	2	*
		1 <sup>st</sup> Complementary Course I - Mathematics	72	4	3
		2 <sup>nd</sup> Complementary Course I	36	2	2
		2 <sup>nd</sup> Complementary Course Practical I	36	2	*
	EO1	Environment Studies	-	-	4**
	<b>Total</b>	<b>450</b>	<b>25</b>	<b>18</b>	
2	A 03	Common Course IV – English	72	4	4
	A 04	Common Course V – English	90	5	3
	A 08	Common Course VI – Language other than English	72	4	4
	PHY2 B02	Core Course II - Mechanics II	36	2	2
		Core Course V - Practical I	36	2	*
		1 <sup>st</sup> Complementary Course II - Mathematics	72	4	3
		2 <sup>nd</sup> Complementary Course II	36	2	2
		2 <sup>nd</sup> Complementary Course Practical II	36	2	*
	E02	Disaster Management			4**
	<b>Total</b>	<b>450</b>	<b>25</b>	<b>18</b>	
3	A 05	Common Course VI – English	90	5	4
	A 09	Common Course VIII - Language other than English	90	5	4
	PHY3 B03	Core Course III – Electrodynamics-I	54	3	3

		Core Course VI– Practical I	36	2	*
		1 <sup>st</sup> Complementary Course III – Mathematics	90	5	3
		2 <sup>nd</sup> Complementary Course III	54	3	2
		2 <sup>nd</sup> Complementary Course Practical III	36	2	*
E03		Human Rights <b>or</b> Intellectual Property Rights <b>or</b> Consumer protection			4**
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>16</b>
4	A 06	Common Course IX – English	90	5	4
	A 10	Common Course X - Language other than English	90	5	4
	PHY4 B04	Core Course IV - Electrodynamics II	54	3	3
	PHY4 B05	Core Course Practical V – Practical I	36	2	5
		1 <sup>st</sup> Complementary Course IV– Mathematics	90	5	3
		2 <sup>nd</sup> Complementary Course IV	54	3	2
		2 <sup>nd</sup> Complementary Course Practical IV	36	2	4
	E04	Gender studies <b>or</b> Gerontology			4**
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>25</b>
5	PHY5 B06	Core Course VI - Computational Physics	54	3	3
	PHY5 B07	Core Course VII - Quantum Mechanics	54	3	3
	PHY5 B08	Core Course VIII - Optics	54	3	3
	PHY5 B09	Core Course IX- Electronics (Analog and Digital)	54	3	3
		Open Course – ( <i>course from other streams</i> )	54	3	3
		Core Course Practical XIV - Practical II	72	4	*
		Core Course Practical XV- Practical III	72	4	*
		Core Course XVII Project/Research methodology	36	2	*
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>15</b>
6	PHY6 B10	Core Course X - Thermodynamics	54	3	3
	PHY6 B11	Core Course XI -Statistical Physics, Solid State Physics, Spectroscopy and Photonics	54	3	3
	PHY6 B12	Core Course XII - Nuclear Physics and Particle Physics	54	3	3

	PHY6 B13	Core Course XIII - Relativistic Mechanics and Astrophysics	54	3	3
	PHY6 B14	Core Course XIV (Elective:EL1 / EL2 / EL3)	54	3	3
	PHY6 B15	Core Course Practical XV – Practical II	72	4	5
	PHY6 B16	Core Course Practical XVI – Practical III	72	4	5
	PHY6 B17 (P/R)	Core Course XVII Project/Research methodology Tour report	36	2	2 1
		<b>Total</b>	<b>450</b>	<b>25</b>	<b>28</b>
<b>Total Credits</b>					<b>120</b>

**Tour report shall be evaluated with Practical III**

\*Credit for practical / project to be awarded only at the end of Semester 4 and Semester 6.

\*\*Mandatory audit courses for the program, but not counted for the calculation of SGPA or CGPA.

Student can attain only pass (Grade P) for these courses.

45 to below 55	C	Average	5	4.5 – 5.49	Second Class
35 to below 45	P	Pass	4	3.5 – 4.49	Third class
Below 35	F	Fail	0	0 – 3.49	Fail

**Core Course Structure**  
**Total Credits: 56 (Internal: 20%; External: 80%)**

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hours/Week</i>	<i>Total Hours</i>	<i>Credit</i>	<i>Marks</i>
<b>1</b>	PHY1B01	Core Course I: Mechanics I	2	36	2	75
	-	Core Course V : Practical-I	2	36	-*	-
<b>2</b>	PHY2B02	Core Course II: Mechanics II	2	36	2	75
	-	Core Course V : Practical-I	2	36	-*	-
<b>3</b>	PHY3B03	Core Course III: Electrodynamics-I	3	54	3	75
	-	Core Course V : Practical-I	2	36	-*	-
<b>4</b>	PHY4B04	Core Course IV: Electrodynamics-II	3	54	3	75
	PHY4B05	Core Course V : Practical-I	2	36	5	100
<b>5</b>	PHY5B06	Core Course VI: Computational Physics	3	54	3	75
	PHY5B07	Core Course VII: Quantum Mechanics	3	54	3	75
	PHY5B08	Core Course VIII: Optics	3	54	3	75
	PHY5B09	Core Course IX: Electronics (Analog and Digital)	3	54	3	75
		Core Course XIV: Practical II	4	72	-**	-
		Core Course XV: Practical III	4	72	-**	-
		Core Course XVII: Project Work	2	36	-**	-
<b>6</b>	PHY6B10	Core Course X: Thermodynamics	3	54	3	75
	PHY6B11	Core Course XI: Statistical Physics, Solid State Physics, Spectroscopy and Photonics	3	54	3	75
	PHY6B12	Core Course XII: Nuclear Physics and Particle Physics	3	54	3	75
	PHY6B13	Core Course XIII Relativistic mechanics and Astrophysics	3	54	3	75



	PHY6B14 (EL1)	Core Course XIV: Elective***	1. Biomedical Physics	3	54	3	75
	PHY6B14 (EL2)		2. Nanoscience and Technology				
	PHY6B14 (EL3)		3. Materials Science				
	PHY6B15	Core Course XV: Practical -II		4	72	5**	100
	PHY6B16	Core Course XVI: Practical-III		4	72	5**	100
	PHY6B17 (P/R)	Core Course XVII: Project Work /Research Methodology and Tour Report		2 1	36	3**	60 15
<b>Total</b>						<b>56</b>	<b>1350</b>

\* Exam will be held at the end of 4<sup>th</sup> semester

\*\* Exam will be held at the end of 6<sup>th</sup> semester

\*\*\* An institution can choose any one among the three courses.

### CORE COURSE: PRACTICAL EVALUATION SCHEME

Internal		External		Marks for Python Programming
Items	Marks	Items	Marks	
Record	4	Record with 20 experiments Max.one mark for each experiment	10	10
Regularity in doing the experiment	4	Formulae, Theory, Principle/ Programme	22	15
Attendance	4	Adjustments& setting / Algorithm	14	15
Test 1	4	Tabulation, Observation and performance/ Execution	20	24
Test 2	4	Calculation, result, graph, unit/ Result	10	12
		Viva	4	4
<b>Total</b>	<b>20</b>	<b>Total</b>	<b>80</b>	<b>80</b>

<b>CORE COURSE – XIII (ELECTIVE) :</b>		
<b>1</b>	PHY6 B14 (EL1)	BIOMEDICAL PHYSICS
<b>2</b>	PHY6 B14 (EL2)	NANO SCIENCE AND TECHNOLOGY
<b>3</b>	PHY6 B14 (EL3)	MATERIALS SCIENCE

<b>OPEN COURSES OFFERED BY PHYSICS DEPARMENT (For students from other streams)</b>		
<b>1</b>	PHY5 D01(1)	NON CONVENTIONAL ENERGY SOURCES
<b>2</b>	PHY5 D01(2)	AMATEUR ASTRONOMY AND ASTROPHYSICS
<b>3</b>	PHY5 D01(3)	ELEMENTARY MEDICAL PHYSICS

## PHYSICS COMPLEMENTARY COURSE STRUCTURE

Total Credits: 12 (Internal: 20%; External: 80%)

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hours/ Week</i>	<i>Total Hours</i>	<i>Credit</i>	<i>Marks</i>
1	PHY1C01	Complementary Course I: Properties of matter and Thermodynamics	2	36	2	75
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
2	PHY2C02	Complementary Course II: Optics ,Laser, Electronics	2	36	2	75
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
3	PHY3C03	Complementary Course III: Mechanics, Relativity, Waves and Oscillations	3	54	2	75
	-	Complementary Course V: PHYSICS Practical	2	36	-*	-
4	PHY4C04	Complementary Course IV: Electricity ,Magnetism and Nuclear Physics	3	54	2	75
	PHY4C05	Complementary Course V: PHYSICS Practical	2	36	4*	100
<b>Total</b>					<b>12</b>	<b>400</b>

\* Examination will be held at the end of 4<sup>th</sup> semester

### COMPLEMENTARY COURSE THEORY: EVALUATION SCHEME

The evaluation scheme for each course contains two parts: *viz.*, internal evaluation and external evaluation. Maximum marks from each unit are prescribed in the syllabus.

#### 1. INTERNAL EVALUATION

20% of the total marks in each course are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

**OPEN COURSE STRUCTURE**  
**(FOR STUDENTS OTHER THAN B.Sc. Physics)**  
**Total Credits: 2 (Internal 20%; External 80%)**

<i>Semester</i>	<i>Code No</i>	<i>Course Title</i>	<i>Hours/Week</i>	<i>Total Hours</i>	<i>Marks</i>
<b>5</b>	PHY5D01(1)	Open Course 1: Non conventional Energy Sources	3	54	75
	PHY5D01(2)	Open Course 2: Amateur Astronomy and Astrophysics			
	PHY5D01(3)	Open Course 3: Elements of Medical Physics			

**OPEN COURSE: EVALUATION SCHEME**

The evaluation scheme contains two parts: *viz.*, internal evaluation and external evaluation.

**Maximum marks from each unit are prescribed in the syllabus.**

**Problems are not required**

**1. INTERNAL EVALUATION**

20% of the total marks are for internal evaluation. The colleges shall send only the marks obtained for internal examination to the university.

**Table 1: Components of Evaluation**

<i>Sl. No.</i>	<i>Components</i>	<i>Marks for 2/3 credits papers</i>
1	Class room participation based on attendance	3
2	Test paper: I	6
3	Assignment	3
4	Seminar/ Viva	3
<i>Total Marks*</i>		15

**Table 2: Pattern of Test Papers (Internal)**

<i>Duration</i>	<i>Pattern</i>	<i>Total number of questions</i>	<i>Number of questions to be answered</i>	<i>Marks for each question</i>	<i>Marks</i>
2 Hours	Short answer	12	10-12	2	20
	Paragraph/problem	7	6-7	5	30
	Essay	2	1	10	10
<i>Total Marks*</i>					60



UNIVERSITY OF CALICUT

**Abstract**

M.Sc Programme in Physics-Credit Semester System PG(CUCSS-PG-2010)-Affiliated Colleges-Modified Scheme and Syllabus -approved -implemented-w.e.f 2017 admissions-Orders issued.

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**G & A - IV - J**

U.O.No. 10035/2017/Admn

Dated, Calicut University.P.O, 10.08.2017

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- Read:-*
1. U.O.No. GA IV/J1/1373/08 dated 23.07.2010.
  2. U.O.No. GA IV/J2/4170/10 dated 26.07.2010.
  3. U.O.No. 2071/2013/CU Dated, 13.06.2013
  4. Item No.1 of the minutes of the meeting of Board of Studies in Physics held on 13.03.2017
  5. Item No.I in the minutes of the meeting of Faculty of Science held on 10.07.2017
  6. Item No. II(H) in the minutes of the LXXVI meeting of the Academic Council held on 17.07.2017
  7. Orders of the Vice-Chancellor in the file No.191466/GA IV/J1/2013/CU dated 27.07.2017

ORDER

The Credit Semester System was implemented for Post Graduate Programmes in affiliated colleges under University of Calicut w.e.f 2010 admissions, vide paper read first above.

The Scheme and Syllabus of M.Sc programme in Physics under Credit Semester System was implemented in affiliated colleges with effect from 2010 admissions, vide paper read second and the same had been modified with effect from 2012 admissions, vide paper read third.

Vide paper read fourth, the Board of Studies in Physics PG has approved the modified Scheme and Syllabus for M.Sc programme in Physics, under Credit Semester System in affiliated colleges w.e.f 2017 admissions.

Faculty of Science vide paper read fifth and the Academic Council vide paper read sixth above have approved the recommendations of the Board.

The Hon'ble Vice-Chancellor, has accorded sanction to implement the resolutions of the Academic Council vide paper read seventh above.

Sanction has, therefore, been accorded for implementing the modified Scheme and Syllabus of M.Sc Programme in Physics under Credit Semester System (CUCSS-PG-2010) in affiliated colleges w.e.f 2017 admissions.

Orders are issued accordingly.

(Scheme and Syllabus appended)

Vasudevan .K

Assistant Registrar

To

Affiliated Colleges offering M.Sc. Physics.  
Copy to: Pareeksha Bhavan

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Section Officer



## UNIVERSITY OF CALICUT

Scheme and Syllabus for  
**M.Sc. (Physics) Programme (CSS)**  
for affiliated colleges, w.e.f. 2017 admissions

The duration of the M.Sc (Physics) programme shall be 2 years, split into 4 semesters. Each course in a semester has 4 credits (4C) and Practicals having 3 credits (3C). The total credits for the entire programme is 80. The scheme and syllabus of the programme, consisting of sections (a) *Courses in various semesters* (b) *Constitution of elective clusters* (c) *The Credits and Hours per week* (d) *Grading and Evaluation* (e) *Detailed syllabus* (f) *Pattern of question papers* are as follows:

### A) COURSES IN VARIOUS SEMESTERS

#### Semester – I (16C)

- (PHY1C01) Classical Mechanics (4C)
- (PHY1C02) Mathematical Physics – I (4C)
- (PHY1C03) Electrodynamics and Plasma Physics (4C)
- (PHY1C04) Electronics (4C)
- (PHY1P01) General Physics Practical -I
- (PHY1P02) Electronics Practical – I

#### Semester – II (22C)

- (PHY2C05) Quantum Mechanics -I
- (PHY2C06) Mathematical Physics – II (4C)
- (PHY2C07) Statistical Mechanics (4C)
- (PHY2C08) Computational Physics (4C)
- (PHY2P03) General Physics Practical - II (3C)
- (PHY2P04) Electronics Practical – II (3C)

External Practical Exam for PHY1P01&PHY2P03, PHY1P02&PHY2P04

#### Semester -III (16C)

- (PHY3C09) Quantum Mechanics -II (4C)
- (PHY3C10) Nuclear and Particle Physics (4C)
- (PHY3C11) Solid State Physics (4C)
- Elective -I (4C)
- (PHY4Pr) Project
- (PHY3P05) Modern Physics Practical -I

## Semester -IV (26C)

(PHY4C12) Atomic and Molecular Spectroscopy (4C)  
Elective -II (4C)  
Elective -III (4C)  
(PHY4Pr1) Project (4C)  
(PHY4P06) Modern Physics Practical –II (3C)  
(PHY4P07) Computational Physics Practical (3C)  
Viva Voce (Comprehensive) (4C)

External Practical Exam. for PHY3P05 & PHY4P06, PHY4P07 and  
Comprehensive Viva Voce.

## B) CONSTITUTION OF CLUSTERS

### Elective -I Cluster:

(PHY3E01) Plasma Physics  
(PHY3E02) Advanced Quantum Mechanics  
(PHY3E03) Radiation Physics  
(PHY3E04) Digital Signal Processing  
(PHY3E05) Experimental Techniques  
(PHY3E06) Elementary Astrophysics

### Elective -II Cluster:

(PHY4E07) Advanced Nuclear Physics  
(PHY4E08) Advanced Astrophysics  
(PHY4E09) Astrophysics and Astronomical Data Analysis  
(PHY4E10) Advanced Statistical Mechanics  
(PHY4E11) Materials Science  
(PHY4E12) Electronic Instrumentation  
(PHY4E13) Laser Systems, Optical Fibres and Applications  
(PHY4E14) Communication Electronics

### Elective -III Cluster:

(PHY4E15) Quantum Field Theory  
(PHY4E16) Chaos and Nonlinear Physics  
(PHY4E17) Advanced Condensed Matter Physics  
(PHY4E18) Modern Optics  
(PHY4E19) Physics of Semiconductors  
(PHY4E20) Microprocessors and Applications



UNIVERSITY OF CALICUT

**Abstract**

General & Academic - CBCSS PG Regulations 2019 - Scheme and Syllabus of M.Sc Physics Programme w.e.f 2020 Admission onwards -Prepared as per Outcome Based Education - Implemented- Subject to ratification by the Academic Council - Orders Issued.

**G & A - IV - J**

U.O.No. 5811/2021/Admn

Dated, Calicut University.P.O, 31.05.2021

- Read:-*1)U.O.No.9200/2019/Admn, Dated 12.07.2019.  
2)Email , Dated 30.05.2021, from the Chairperson, Board of Studies in Physics PG.  
3)Remarks of the Dean, Faculty of Science, Dated 31.05.2021.  
4)Orders of the Vice Chancellor in the file of even no, Dated 31.05.2021.

ORDER

1. Scheme and Syllabus of MSc Physics Programme in accordance with CBCSS PG Regulations 2019, with effect from 2019 admission has been implemented in the University ,vide paper read (1) above.
2. The Chairman, Board of Studies in Physics PG, vide paper read (2) above, has forwarded the revised Scheme and Syllabus of M.Sc Physics Programme , prepared as per Outcome Based Education(OBE) in accordance with CBCSS PG Regulations 2019, w.e.f 2020 admission, after circulating among the members of the board , as per Chapter 3(34) of Calicut University First Statute, 1976.
3. The Scheme and Syllabus of M.Sc Physics Programme (CBCSS-PG-2019), prepared as per Outcome Based Education(OBE), has been approved by the Dean, Faculty of Science, vide paper read (3) above and by the Vice Chancellor, subject to ratification by the Academic Council, vide paper read (4) above.
4. The Scheme and Syllabus of M.Sc Physics (CBCSS) programme prepared as per Outcome Based Education (OBE) , in tune with CBCSS PG Regulations 2019, is therefore implemented with effect from 2020 Admission , under affiliated colleges of the University, subject to ratification by the Academic Council.
5. Orders are issued accordingly.(Revised syllabus appended).

Ajitha P.P

Joint Registrar

To

All affiliated Colleges

Copy to: PS to VC/PA to PVC/ PA to Registrar/PA to CE/JCE I/JCE V/JCE VIII/DoA/EX and EG Sections/GA I F/CHMK Library/Information Centres/SF/DF/FC

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Section Officer



I	<b>Audit Course I :</b> Ability Enhancement Course (AEC)	Not coming in the normal work load	4 (Not added for SGPA / CGPA)	4
II	<b>Audit Course II :</b> Professional Competency Course (PCC)		4 (Not added for SGPA / CGPA)	4

### c) COURSES IN VARIOUS SEMESTERS

#### Semester – I (16C)

- (PHY1C01) Classical Mechanics (4C)
- (PHY1C02) Mathematical Physics – I (4C)
- (PHY1C03) Electrodynamics and Plasma Physics (4C)
- (PHY1C04) Electronics (4C)
- (PHY1L01) General Physics Practical - I\*
- (PHY1L02) Electronics Practical – I\*\*
- (PHY1A01) Ability Enhancement Course (4C)

#### Semester – II (22C)

- (PHY2C05) Quantum Mechanics –I (4C)
- (PHY2C06) Mathematical Physics – II (4C)
- (PHY2C07) Statistical Mechanics (4C)
- (PHY2C08) Computational Physics (4C)
- (PHY2L03) General Physics Practical - II (3C)\*
- (PHY2L04) Electronics Practical – II (3C)\*\*
- (PHY2A02) Professional Competency Course (4C)

\*External Practical Exam for PHY1L01 & PHY2L03 together will be conducted at the end of 2<sup>nd</sup> semester

\*\* External Practical Exam for PHY1L02 & PHY2L04 together will be conducted at the end of 2<sup>nd</sup> semester.

#### Semester -III (16C)

- (PHY3C09) Quantum Mechanics – II : (4C)
- (PHY3C10) Nuclear and Particle Physics (4C)
- (PHY3C11) Solid State Physics (4C)
- Elective -I (4C)
- Project\*
- (PHY3L05) Modern Physics Practical-I<sup>#</sup>

#### Semester -IV (26C)

- (PHY4C12) Atomic and Molecular Spectroscopy (4C)
- Elective -II (4C)

Elective -III (4C)

- (PHY4P01) Project(4C) #
- (PHY4L06) Modern Physics Practical – II (3C) ##
- (PHY4L07) Computational Physics Practical (3C)
- (PHY4V01) Comprehensive Viva voce (4C)

*#Project will be started at 3<sup>rd</sup> semester and external evaluation for PHY4P01 will be conducted at the end of 4<sup>th</sup> semester.*

*##External Practical Exam for PHY3L05 & PHY4L06 together will be conducted at the end of 4<sup>th</sup> semester*

#### **d) CONSTITUTION OF CLUSTERS**

##### **Elective -I Cluster:**

- (PHY3E01) Plasma Physics
- (PHY3E02) Advanced Quantum Mechanics
- (PHY3E03) Radiation Physics
- (PHY3E04) Digital Signal Processing
- (PHY3E05) Experimental techniques
- (PHY3E06) Elementary Astrophysics
- (PHY3E07) Introduction to Nanoscience and Technology

##### **Elective –II Cluster:**

- (PHY4E08) Advanced Nuclear Physics
- (PHY4E09) Advanced Astrophysics
- (PHY4E10) Astrophysics and Astronomical Data Analysis
- (PHY4E11) Advanced Statistical Mechanics
- (PHY4E12) Materials Science
- (PHY4E13) Electronic Instrumentation
- (PHY4E14) Laser Systems, Optical Fibres and Applications
- (PHY4E15) Communication Electronics
- (PHY4E16) Synthesis, Characterization Techniques and Applications of Nanomaterials
- (PHY4E17) Astrophysics and Positional Astronomy

##### **Elective –III Cluster:**

- (PHY4E18) Quantum Field Theory
- (PHY4E19) Chaos and Non-linear Physics
- (PHY4E20) Advanced Condensed Matter Physics
- (PHY4E21) Modern Optics
- (PHY4E22) Physics of Semiconductors
- (PHY4E23) Microprocessors, Microcontrollers and Applications
- (PHY4E24) Biophysics
- (PHY4E25) Space Physics