Sullamussalam Science College Areacode

PGDepartment of Physics.

MSc Physics 2017-18.

List of Projects/Internships MSc Physics		
Reg. No	**Name of the Student**	**Title of the Project/Internships**
MEAQMPH001	Alfida Mol N	Study on non-linear optical crystal - Potassium dihydrogen phosphate
MEAQMPH002	Anju T M	Minkowski Space-time - A Sojourn in relativity
MEAQMPH003	Asharudheen Kozhisseri	A Study on Acoustic parameters and effectiveness of different cough syrups
MEAQMPH004	Baheej N	Study about Titanium dioxide thin films by dc reactive magnetron sputtering and investigation of its photocatalytic bahaviour
MEAQMPH005	Jaleela K P	Synchronisation of linearly and nonlinearly coupled stochastic Hindmarsh-Rose neutron model
MEAQMPH006	Muhsina U K	Spatiotemporal instability in negative index material
MEAQMPH007	Rashiqua Parveen C	Understanding Wave packets in the Harmonic oscillator using Bohmian machinery
MEAQMPH008	Sahla K	X-Ray diffraction - Aconceptual use of reciprocal lattice
MEAQMPH009	Shadha K	Studies on Heisenberg and entropic uncertainity relation
MEAQMPH010	Shahma P	Synthesis and characterisation of CdS clusters
MEAQMPH012	Shana P C	A theoretical study on pulse broadening in optical fiber due to group velocity dispersion
MEAQMPH013	Muhmina Kalakudichalil	Study on central intensity ratio of nearby early and late type galaxies

HOD PG Department of Physics.

SULLAMUSSALAM SCIENCE COLLEGE AREEKODE UGRAPURAM P.O MALAPPURAM DT. PIN-673639

PRINCIPAL
SULLAMUSSALAM SCIENCE COLLEGE
AREACODE, UGRAPURAM (PO)
MALAPPURAM (Dt), Pin: 673639

PRINCIPAL.

7 of 2,215

Mohemmed Shanid
to me

1:01 PM (3 hours ago)

---------- Forwarded message ---------
From: **Saif Stic** <saif.stic@gmail.com>
Date: Thu, 7 Mar 2019 5:16 pm
Subject: XRD analysis data
To: shanid n a Mohemmed <namshanid@gmail.com>

Please find the data attached herewith .

File Ref.No.9316/GA - IV - J2/2013/CU

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.

G & A - IV - J

U.O.No. 10035/2017/Admn Dated, Calicut University.P.O, 10.08.2017

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 ans Syllabus appended)

Vasudevan .K

Assistant Registrar

To

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

Forwarded / By Order

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

C) THE CREDITS AND HOURS PER WEEK

The credits and hours proposed for various courses in different semesters are as given under.

Semester	No. of Theory Papers	Practicals	Theory		Practical		Project		Seminar	Viva Cred.	Total hours	Total Cred
			Hrs	Cred	Hrs	Cred	Hrs	Cred	Hrs			
I	4	1. Gen. Phy 2. Electronics	16	16	8	0	0	0	1	0	25	16
II	4	1. Gen. Phy 2. Electronics	16	16	8	6	0	0	1	0	25	22
III	4	1. Mod. Phy	16	16	4	0	4	0	1	0	25	16
IV	3	1. Mod Phy 2. Comp. Phy	12	12	8	6	4	4	1	4	25	26
Total Credits for the Programme												**80**

D) GRADING AND EVALUATION

1) Accumulated minimum credit required for successful completion of the course shall be 80.

2) A project work of 4 credit is compulsory and it should be done in III & IV semesters. Also a comprehensive Viva Voce may be conducted by external examiners at the end of IV Semester and carries 4 credits.

3) Evaluation and Grading :
All grading starting from the evaluation of papers is done on 5 point scale (A, B, C, D, E) and SGPA and CGPA – between 0 to 4 and in two decimal points. An overall letter grade (Cumulative Grade) for the whole programme shall be awarded to the student based on the value of CGPA using a 7-point scale given below.

Overall Grade in a Programme

CGPA	*Overall Letter Grade*
3.80 to 4.00	A+
3.50 to 3.79	A
3.00 to 3.49	B+
2.50 to 2.99	B
2.00 to 2.49	C+

1.50 to 1.99	C
1.00 to 1.49	D

(4) Weightage of Internal and External valuation:

The evaluation scheme for each course shall contain two parts (1) internal evaluation (2) external evaluation. Its weightages are as follows:

Evaluation	*Weightage*
Internal	1 (or 25%)
External	3 (or 75%)

Both internal and external evaluation will be carried out using Direct Grading System

(5) Internal evaluation (must be transparent and fair):

Theory:

a) Tests- wt = 2 (at least 2 tests with 50% Problems)
b) Tutorial on assignments and Exercises-wt =1
c) Seminars and Viva Voce- wt =1
d) Attendance - wt =1

Practical:

a) Tests - wt=2
b) Lab. skill/quality of their results- wt =1
c) Viva Voce- wt =1

Project:

a) Monthly progress - wt =2
b) Regularity and attendance -wt =1
c) Seminar and Viva Voce- wt =1

6) External evaluation:

a) Theory: Every semester

Pattern of question Papers

Division	*Type*	*No.of Questions*	*Weightage*	*Total Weightage*
Part A	Short Answer	12 (No Choice)	1	12
Part B	Essay	2 out of 4	6	12
Part C	Problems	4 out of 6	3	12
Total weightage for a question paper				36

Answer to each question may be evaluated based on

a) Idea/knowledge – wt =1
b) Logic/steps – wt =1
c) Analytic skill – wt =1
d) Correctness – wt =1

b) Practicals: At the end of II and IV semesters.

c) Project: End of IV semester. Its evaluation is based on:

(a)Presentation – wt =3

(b) Project Report – wt =2
(c) Project Viva – wt =1

d) Comprehensive Viva-Voce at the end of IV semester.

(7) Theory papers must contain at least 4 lectures plus 1 Tutorial. Project is equivalent to one theory papers (6 hours) and one practical (8 hours).

(8) Directions for question paper setters:

Part A: Set each questions to be answered in 5 minutes duration and should extract the critical knowledge acquired by the candidate in the subject.

Part B: 30 minutes answerable questions each. May be asked as a single question or parts. Derivation type questions can be also asked.

Part C: 15 minutes answerable questions each and as far as possible avoid numerical type questions.

(E) DETAILED SYLLABUS

SEMESTER – I

PHY1C01 : CLASSICAL MECHANICS (4C)

1. Lagrangian and Hamiltonian Formulation:

Constraints and Generalized coordinates, D'Alemberts principle and Lagrange‟s equation, Velocity dependent potentials, Simple applications, Hamilton‟s Principle, Lagrange‟s equation from Hamilton‟s principle, Kepler problem, Scattering in a central force field, Transformation to lab coordinates, Legendre Transformation , Hamilton‟s canonical equations, Principle of least action, Canonical transformations, examples (14 hours)

Text : Goldstein, Sections 1.3 – 1.6, 2.1 – 2.3, 3.10, 3.11, 8.1, 8.5, 8.6, 9.1, 9.2

2. The classical background of quantum mechanics:

Equations of canonical transformations, Examples, Poisson brackets and other canonical invariants, Equation of motion in Poisson bracket form, Angular momentum Poisson brackets, Hamilton-Jacobi equation, Hamilton‟s principal and characteristic function, H-J equation for the linear harmonic oscillator, Separation of variables, Action-angle variables, H-J formulation of the Kepler problem, H-J equation and the Schrödinger equation.

(15 hours)

Text : Goldstein, Sections 9.1, 9.2, 9.4 - 9.6, 10.1 – 10.5, 10.7, 10.8

3. The Kinematics and Dynamics of Rigid Bodies:

Space-fixed and body-fixed systems of coordinates, Description of rigid body motion in terms of direction cosines and Euler angles, Infinitesimal rotation, Rate of change of a vector, Centrifugal and Coriolis forces, Moment of inertia tensor, Euler‟s equation of motion, Forcefree motion of a rigid bodys. (13 hours)

Text : Goldstein, Sections 4.1, 4.4, 4.8 – 4.10

4. Small Oscillations:

Formulation of the problem, Eigen value equation, Eigenvectors and Eigenvalues, Orthogonality, Principal axis transformation, Frequencies of free vibrations, Normal coordinates, Free vibrations of a linear tri atomic molecule. (8 hours)

Text : Goldstein, Sections 6.1 – 6.4

5. Nonlinear Equations and Chaos:

Introduction, Singular points of trajectories, Nonlinear oscillations, Limitcycles, Chaos : Logistic map, Definitions, Fixed points, Period doubling, Universality. (10 hours)

Text : Bhatia, Sections10.1, 10.2, 10.3, 10.4, 10.5, 10.51

Text Books :

1. Goldstein “Classical Mechanics” (Addison Wesley)
2. V.B.Bhatia : “Classical Mechanics” (Narosa Publications, 1997)

Reference :

1. Michael Tabor : “Chaos and Integrability in Nonlinear Dynamics” (Wiley, 1989)
2. N.C.Rana and P.S.Joag : “Classical Mechanics” (Tata McGraw Hill)
3. R.G.Takwale and P.S.Puranik : “Introduction to Classical Mechanics” (Tata McGraw Hill)
4. Atam P. Arya : "Introduction to Classical Mechanics, (2nd Edition)" (Addison Wesley1998)
5. Laxmana : “Nonlinear Dynamics” (Springer Verlag, 2001)

For further reference: Classical Physics Video Prof. V. Balakrishnan IIT Madras
http://nptel.iitm.ac.in/video.php?subjectId=122106027
Special Topics in Classical Mechanics Video Prof. P.C. Deshmukh IIT Madras
http://nptel.iitm.ac.in/courses/115106068/
Physics I - Oscillations & Waves Video Prof. S. Bharadwaj IIT Kharagpur
http://nptel.iitm.ac.in/video.php?subjectId=122105023
Chaos, Fractals & Dynamic Systems Video Prof. S. Banerjee IIT Kharagpur
http://nptel.iitm.ac.in/video.php?subjectId=108105054

STUDY ON NON-LINEAR OPTICAL CRYSTAL-POTASSIUM DIHYDROGEN PHOSPHATE

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE IN PHYSICS

Submitted By

Alfida Mol. N

(Reg. No: MEAQMPH001)

Under the guidance of

Mr. Shafeeque CA

Department of Physics

SULLAMUSSALAM SCIENCE COLLEGE,

AREACODE,MALAPPURAM

2016-2018

MINKOWSKI-SPACETIME -A SOJOURN IN RELATIVITY

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE IN PHYSICS

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Department of Physics

SULLAMUSSALAM SCIENCE COLLEGE,

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2016-2018

A STUDY ON ACOUSTIC PARAMETERS AND EFFECTIVNESS OF DIFFERENT COUGH SYRUPS

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

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2016-2018

STUDY ABOUT TITANIUM DIOXIDE THIN FILMS BY DC REACTIVE MAGNETRON SPUTTERING AND INVESTIGATION OF ITS PHOTOCATALYTIC BEHAVIOUR

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

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2016-2018

SYNCHRONIZATION OF LINEARLY AND NONLINEARLY COUPLED STOCHASTIC HINDMARSH-ROSE NEURON MODEL

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

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2016-2018

SPATIOTEMPORAL INSTABILITY IN NEGATIVE INDEX MATERIAL

Dissertation submitted to the

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In partial fulfilment of the requirements for the award of the degree of

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2016-2018

UNDERSTANDING WAVE PACKETS IN THE HARMONIC OSCILLATOR USING BOHMIAN MACHINERY

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

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2016-2018

X-RAY DIFFRACTION- A CONCEPTUAL USE OF RECIPROCAL LATTICE

Dissertation submitted to the

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2016-2018

STUDIES ON HEISENBERG AND ENTROPIC UNCERTAINTY RELATION

A Dissertation submitted to the

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2016-2018

SYNTHESIS AND CHARACTERIZATION OF CdS CLUSTERS

Dissertation submitted to

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In partial fulfilment of the requirements for the award of the degree of

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2016-2018

A THEORETICAL STUDY ON PULSE BROADENING IN OPTICAL FIBER DUE TO GROUP VELOCITY DISPERSION

Dissertation submitted to the

UNIVERSITY OF CALICUT

In partial fulfilment of the requirements for the award of the degree of

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2016-2018

STUDY ON CENTRAL INTENSITY RATIO OF NEARBY EARLY AND LATE TYPE GALAXIES

(Dissertation submitted to the

UNIVERSITY OF CALICUT

in partial fulfillment of the requirements for the award of

the degree of *MASTER OF SCIENCE IN PHYSICS*

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2016-2018