K. R. MANGALAM UNIVERSITY, GURUGRAM

(Agenda Item No. 5) APPENDIX V

SBAS | **SCHEME OF STUDIES (YEAR 2018 - 2021)** | **B.SC. PHYSICS**

YEAR	ODD SEMESTER								EVEN SEMESTER							
	SN	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	SN	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C
FIRST	1	CC	BSPH101	MATHEMATICAL PHYSICS-I	4	1	0	5	1	CC	BSPH102	MATHEMATICAL PHYSICS-II	4	1	0	5
	2	CC	BSPH107	MECHANICS	4	1	0	5	2	CC	BSPH112	ELECTRICITY & MAGNETISM	4	1	0	5
	3	CC	BSPH105	OPTICS	4	1	0	5	3	CC	BSPH106	OSCILLATION & WAVES	4	1	0	5
	4	GEC	BSMA141	MATHEMATICS-I	3	1	0	4	4	AECC	BSEL101	COMMUNICATION SKILLS	4	0	0	4
	5	AECC	BSCH125	ENVIRONMENTAL STUDIES	3	0	0	3	5	AECC	BSEL171	COMMUNICATION SKILLS LAB	0	0	2	1
	6	SEC	BSCA131	INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION	4	0	0	4	6	GEC	BSCH110	CHEMISTRY-I	4	0	0	4
	7	CC	BSPH153	BASIC PHYSICS LAB-I	0	0	2	1	7	SEC	BSMA224	BASICS OF MATLAB	2	0	0	2
	8	SEC	BSCS157	C PROGRAMMING LAB	0	0	2	1	8	CC	BSPH160	BASIC PHYSICS LAB-II	0	0	2	1
	9	SEC	BSMA131	DATA PRESENTATION FOR SCIENCES	0	0	2	1	9	GEC	BSCH154	CHEMISTRY LAB-I	0	0	2	1
				TOTAL	**22**	**4**	**6**	**28**				**TOTAL**	**22**	**3**	**6**	**28**
SECOND	1	CC	BSPH201	MATHEMATICAL PHYSICS-III	4	1	0	5	1	CC	BSPH202	MATHEMATICAL PHYSICS-IV	4	1	0	5
	2	CC	BSPH203	THERMAL PHYSICS	4	1	0	5	2	CC	BSPH204	NUCLEAR PHYSICS	4	1	0	5
	3	CC	BSPH205	CLASSICAL MECHANICS	4	1	0	5	3	CC	BSPH206	ATOMIC & MOLECULAR PHYSICS	4	1	0	5
	4	CC	BSPH209	MODERN PHYSICS	4	1	0	5	4	CC	BSPH208	QUANTUM MECHANICS	4	1	0	5
	5	GEC	BSCH207	CHEMISTRY-II	4	0	0	4	5	CC	BSPH210	STATISTICAL MECHANICS	4	1	0	5
	6	SEC	BSCS215	OBJECT ORIENTED LANGUAGE	2	1	0	3	6	GEC	BSMA142	MATHEMATICS-II	3	1	0	4
	7	CC	BSPH251	BASIC PHYSICS LAB-III	0	0	2	1	7	CC	BSPH252	BASIC PHYSICS LAB-IV	0	0	2	1
	8	GEC	BSCH257	CHEMISTRY LAB-II	0	0	2	1								
	9	SEC	BSCS259	OBJECT ORIENTED LANGUAGE LAB	0	0	2	1								
				TOTAL	**22**	**5**	**6**	**30**				**TOTAL**	**23**	**6**	**2**	**30**
THIRD	1	CC	BSPH301	BASICS OF ELECTRONICS	4	1	0	5	1	CC	BSPH302	DIGITAL ELECTRONICS	4	1	0	5
	2	CC	BSPH313	BASICS OF NANO SCIENCE-I	4	0	0	4	2	CC	BSPH326	BASICS OF NANO SCIENCE-II	4	0	0	4
	3	CC	BSPH305	SOLID STATE PHYSICS	4	1	0	5	3	CC	BSPH306	ELECTROMAGNETIC THEORY	4	1	0	5
	4	CC	BSPH311	LOW TEMPERATURE PHYSICS AND VACUUM TECHNOLOGY	4	1	0	5	4	SEC	BSPH308	PROJECT	0	0	0	5
	5	CC	BSPH309	PARTICLE PHYSICS	4	1	0	5	5	DSE		ELECTIVE	4	1	0	5
	6	CC	BSPH351	BASIC PHYSICS LAB-V	0	0	2	1	6	CC	BSPH352	BASIC PHYSICS LAB-VI	0	0	2	1
	7	AECC	BSDM301	DISASTER MANAGEMENT	3	0	0	3								
				TOTAL	**20**	**4**	**2**	**28**				**TOTAL**	**16**	**3**	**2**	**25**

ELECTIVES

1	DSE	BSPH322	STUDY OF MATERIALS	4	1	0	5	2	DSE	BSPH324	MECHANICAL PROPERTIES OF MATERIALS	4	1	0	5

TOTAL HOURS: LECT [L]+PRAC [P]+TUT [T]	**174**
TOTAL CREDITS [C]	**169**

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K. R. MANGALAM UNIVERSITY, GURUGRAM

SBAS | **SCHEME OF STUDIES (YEAR 2019 - 2022) AS PER CBCS** | **B.SC.(H) PHYSICS**

ODD SEMESTER									EVEN SEMESTER							
YEAR	SN	COURSE CODE	COURSE TYPE	COURSE TITLE	L	T	P	C	SN	COURSE CODE	COURSE TYPE	COURSE TITLE	L	T	P	C
FIRST	1	BSPH131A	CC-1	MATHEMATICAL PHYSICS-I	5	1	0	6	1	BSPH132A	CC-3	ELECTRICITY AND MAGNETISM	5	1	0	6
	2	BSPH133A	CC-2	MECHANICS	5	1	0	6	2	BSPH134A	CC-4	WAVES AND OPTICS	5	1	0	6
	3	BSCH125A	AECC-1	ENVIRONMENTAL STUDIES	3	0	0	3	3	BSEL101A	AECC-2	COMMUNICATION SKILLS	4	1	0	5
	4	BSCS102A		INFORMATION TECHNOLOGY FUNDAMENTALS	3	1	0	4	4	GEC-2		OPEN ELECTIVE COURSE II	4	0	0	4
	5		GEC-1	OPEN ELECTIVE COURSE I	4	0	0	4								
	TOTAL							23	TOTAL							21
SECOND	1	BSPH201A	CC-5	MATHEMATICAL PHYSICS-II	4	0	0	4	1	BSPH202A	CC-8	MATHEMATICAL PHYSICS-III	4	0	0	4
	2	BSPH251A	CC-5 LAB	MATHEMATICAL PHYSICS-II LAB	0	0	4	2	2	BSPH252A	CC-8 LAB	MATHEMATICAL PHYSICS-III LAB	0	0	4	2
	3	BSPH203A	CC-6	THERMAL PHYSICS	4	0	0	4	3	BSPH204A	CC-9	ELEMENTS OF MODERN PHYSICS	4	0	0	4
	4	BSPH253A	CC-6 LAB	THERMAL PHYSICS LAB	0	0	4	2	4	BSPH254A	CC-9 LAB	ELEMENTS OF MODERN PHYSICS LAB	0	0	4	2
	5	BSPH205A	CC-7	DIGITAL SYSTEMS AND APPLICATIONS	4	0	0	4	5	BSPH206A	CC-10	ANALOG SYSTEMS AND APPLICATIONS	4	0	0	4
	6	BSPH255A	CC-7 LAB	DIGITAL SYSTEMS AND APPLICATIONS LAB	0	0	4	2	6	BSPH256A	CC-10 LAB	ANALOG SYSTEMS AND APPLICATIONS LAB	0	0	4	2
	7	BSDM301A	AECC-3	DISASTER MANAGEMENT	3	0	0	3	7		GEC-4		4	0	4	6
	8		GEC-3		4	0	4	6								
	TOTAL							27	TOTAL							24
THIRD	1	BSPH301A	CC-11	QUANTUM MECHANICS AND APPLICATIONS	4	0	0	4	1	BSPH302A	CC-13	ELECTROMAGNETIC THEORY	4	0	0	4
	2	BSPH351A	CC-11 LAB	QUANTUM MECHANICS AND APPLICATIONS LAB	0	0	4	2	2	BSPH352A	CC-13 LAB	ELECTROMAGNETIC THEORY LAB	0	0	4	2
	3	BSPH303A	CC-12	SOLID STATE PHYSICS	4	0	0	4	3	BSPH304A	CC-14	STATISTICAL MECHANICS	4	0	0	4
	4	BSPH353A	CC-12 LAB	SOLID STATE PHYSICS LAB	0	0	4	2	4	BSPH354A	CC-14 LAB	STATISTICAL MECHANICS LAB	0	0	4	2
	5	BSPH305A	SEC-3	BASIC INSTRUMENTATION SKILLS	2	2		4	5	BSPH306A	SEC-4	APPLIED OPTICS	2	2	0	4
	6	BSPH307A	DSE-1	CLASSICAL DYNAMICS	5	1	0	6	6	BSPH308A	DSE-3	PHYSICS OF EARTH	5	1	0	6
	7	BSPH309A	DSE-2	NUCLEAR AND PARTICLE PHYSICS	5	1	0	6	7	BSPH356A	DSE-4	DISSERTATION	0	0	0	6
	TOTAL							28	TOTAL							28

Electives (Choose any one from each)

Open Elective Course I								Open Elective Course II							
1	BSCH110A	FUNDAMENTALS OF CHEMISTRY & WATER PROCESSES	4	0	0	4	1	BSCH207A	TECHNICAL INTERFACE OF CHEMISTRY	4	0	0	4
2	IIIT101A	HARNESSING THE POWER OF WEB AS A KNOWLEDGE DEVICE	4	0	0	4	2	IIIT104A	UNDERSTANDING THE POWER OF DATA	4	0	0	4
3		ANY OTHER FROM POOL OF UNIVERSITY	4	0	0	4	3		ANY OTHER FROM POOL OF UNIVERSITY	4	0	0	4
GEC-3								GEC-4							
1	BSMA215A	PROBABILITY AND STATISTICS	4	0	0	4	1	BSMA304A	LINEAR PROGRAMMING	4	0	0	4
	BSMA271A	PROBABILITY AND STATISTICS LAB	0	0	4	2		BSMA374A	LINEAR PROGRAMMING LAB	0	0	4	2
2	BSCH241A	SOLUTIONS, PHASE EQUILIBRIUM, CONDUCTANCE,	4	0	0	4	2	BSCH242A	GREEN CHEMISTRY: DESIGNING CHEMISTRY FOR HUMAN	4	0	0	4
	BSCH267A	SOLUTIONS, PHASE EQUILIBRIUM, CONDUCTANCE,	0	0	4	2		BSCH268A	GREEN CHEMISTRY: DESIGNING CHEMISTRY FOR HUMAN	0	0	4	2
3		ANY OTHER FROM POOL OF UNIVERSITY				6	3		ANY OTHER FROM POOL OF UNIVERSITY				6

Total Credits [C] = 151

Student can choose two non credit courses (2 hours per week), one in odd semester and one in even semester during the entire duration of Programme from the pool of courses provided by the university.

Student can choose available MOOCs recommended by Dean Academics and approved by Vice Chancellor of K. R. Mangalam University, from the list of approved MOOCs by SWAYAM Board in each semester.

COURSE TYPE	NOMENCLATURE
CC	CORE COURSE
SEC	SKILL ENHANCEMENT COURSE
AECC	ABILITY ENHANCEMENT COMPULSORY COURSE
GEC	GENERIC ELECTIVE COURSE
DSE	DISCIPLINE SPECIFIC ELECTIVE

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SBAS **Scheme of Studies as per Choice-Based Credit System and Learning Outcome-Based Curriculum Framework: 2022 - 2025** **BSc(H) PHYSICS**

YEAR	SN	COURSE CODE	COURSE TYPE	COURSE TITLE	L	T	P	C
				ODD SEMESTER				
FIRST	1	BSPH101A	CC-1	MATHEMATICAL PHYSICS-I	4	0	0	4
	2	BSPH151A	CC-1 LAB	MATHEMATICAL PHYSICS-I LAB	0	0	4	2
	3	BSPH103A	CC-2	MECHANICS	4	0	0	4
	4	BSPH153A	CC-2 LAB	MECHANICS LAB	0	0	4	2
	5	BSPH105A	SEC-1	PHYSICS WORKSHOP SKILL	2	2	0	4
	6	UCES125A	AECC-1	ENVIRONMENTAL STUDIES	3	0	0	3
	7		GEC-1 / OEC-1		4	0	0	4
				TOTAL	**18**	**2**	**8**	**23**
				EVEN SEMESTER				
	1	BSPH102A	CC-3	ELECTRICITY AND MAGNETISM	4	0	0	4
	2	BSPH152A	CC-3 LAB	ELECTRICITY AND MAGNETISM LAB	0	0	4	2
	3	BSPH104A	CC-4	WAVES AND OPTICS	4	0	0	4
	4	BSPH154A	CC-4 LAB	WAVES AND OPTICS LAB	0	0	4	2
	5	BSPH106A	SEC-2	ELECTRICAL CIRCUITS AND NETWORK SKILLS	2	2	0	4
	6	UCCS155A	AECC-2	COMMUNICATION SKILLS	4	0	0	4
	7	ETCS104A	EMP	INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING IN PYTHON	3	1	0	4
	8	ETCS150A	EMP	INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING IN PYTHON LAB	0	0	2	1
	9		GEC-2 / OEC-2		4	0	0	4
				TOTAL	**21**	**3**	**10**	**29**
SECOND	1	BSPH201A	CC-5	MATHEMATICAL PHYSICS-II	4	0	0	4
	2	BSPH251A	CC-5 LAB	MATHEMATICAL PHYSICS-II LAB	0	0	4	2
	3	BSPH203A	CC-6	THERMAL PHYSICS	4	0	0	4
	4	BSPH253A	CC-6 LAB	THERMAL PHYSICS LAB	0	0	4	2
	5	BSPH205A	CC-7	DIGITAL SYSTEMS AND APPLICATIONS	4	0	0	4
	6	BSPH255A	CC-7 LAB	DIGITAL SYSTEMS AND APPLICATIONS LAB	0	0	4	2
	7	UCDM301A	AECC-3	DISASTER MANAGEMENT	3	0	0	3
	8	ETCS109A	EMP	DATA ANALYSIS AND VISUALIZATION	2	0	0	2
	9	ETCS159A	EMP	DATA ANALYSIS AND VISUALIZATION LAB	0	0	2	1
	10		MOOC					2
				TOTAL	17	0	14	26
	1	BSPH202A	CC-8	MATHEMATICAL PHYSICS-III	4	0	0	4
	2	BSPH252A	CC-8 LAB	MATHEMATICAL PHYSICS-III LAB	0	0	4	2
	3	BSPH204A	CC-9	ELEMENTS OF MODERN PHYSICS	4	0	0	4
	4	BSPH254A	CC-9 LAB	ELEMENTS OF MODERN PHYSICS LAB	0	0	4	2
	5	BSPH206A	CC-10	ANALOG SYSTEMS AND APPLICATIONS	4	0	0	4
	6	BSPH256A	CC-10 LAB	ANALOG SYSTEMS AND APPLICATIONS LAB	0	0	4	2
	7	BSMA274A	SEC-3	INTRODUCTION TO LATEX	0	0	2	1
	8			VALUE ADDED COURSE				
	9	BSPH218A		INTERNSHIP PROGRAM IN PHYSICS				2
				TOTAL	**12**	**0**	**14**	**21**
THIRD	1	BSPH301A	CC-11	QUANTUM MECHANICS AND APPLICATIONS	4	0	0	4
	2	BSPH351A	CC-11 LAB	QUANTUM MECHANICS AND APPLICATIONS LAB	0	0	4	2
	3	BSPH303A	CC-12	SOLID STATE PHYSICS	4	0	0	4
	4	BSPH353A	CC-12 LAB	SOLID STATE PHYSICS LAB	0	0	4	2
	5	BSPH305A	SEC-4	BASIC INSTRUMENTATION SKILLS	2	2	0	4
	1	BSPH302A	CC-13	ELECTROMAGNETIC THEORY	4	0	0	4
	2	BSPH352A	CC-13 LAB	ELECTROMAGNETIC THEORY LAB	0	0	4	2
	3	BSPH304A	CC-14	STATISTICAL MECHANICS	4	0	0	4
	4	BSPH354A	CC-14 LAB	STATISTICAL MECHANICS LAB	0	0	4	2
	5	BSPH306A	SEC-5	APPLIED OPTICS	2	2	0	4

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6	BSPH307A	DSE-1	CLASSICAL DYNAMICS	5	1	0	6
7	BSPH309A	DSE-2	NUCLEAR AND PARTICLE PHYSICS	5	1	0	6
8			VALUE ADDED COURSE				
TOTAL				20	4	8	28

6	BSPH308A	DSE-3	PHYSICS OF EARTH	5	1	0	6
7	BSPH356A	DSE-4	DISSERTATION	0	0	0	6
TOTAL				15	3	8	28

Total Credits [C] = 155

Electives (Choose any one from each group)

GEC-1 / OEC-1							
1	ANY ONE FROM THE POOL OF UNIVERSITY				4		

GEC-2 / OEC-2							
1	ANY ONE FROM THE POOL OF UNIVERSITY				4		

Student can choose two non credit value added courses (2 hours per week), one in odd semester and one in even semester during the entire duration of Programme from the pool of courses provided by the university.

Student can choose available MOOCs recommended by Dean Academics and approved by Vice Chancellor of K. R. Mangalam University, from the list of approved MOOCs by SWAYAM Board in each semester.

COURSE TYPE	NOMENCLATURE
CC	CORE COURSE
SEC	SKILL ENHANCEMENT COURSE
AECC	ABILITY ENHANCEMENT COMPULSORY
GEC/OEC	GENERIC ELECTIVE COURSE / OPEN
DSE	DISCIPLINE SPECIFIC ELECTIVE
EMP	EMPLOYBILITY

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K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

SCHOOL OF BASIC AND APPLIED SCIENCES

Bachelor of Science (Honours) Physics
B.Sc. (Hons.) Physics

Programme Code-09

2018-21

Approved in the 17th Meeting of Academic Council Held on 29 June 2018

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TEXT BOOK

1. Introduction to Electrodynamics, David J. Griffiths, 3rd edition, (Pearson Education).

REFERENCE BOOKS:

1. Electromagnetics, Joseph A.Edminister 2nd ed.(New Delhi: Tata Mc Graw Hill).
2. Fundamentals of Electromagnetics, M.A.W.Miah.(Tata Mc Graw Hill).
3. Applied electromagnetism, Liang Chi Shen, Jin Au Kong (PWS Pub. Co.).
4. Introduction to Electrodynamics, A.Z.Capri & P.V.Panat.(Narosa Pub.House).
5. Classical Electrodynamics, J. D. Jackson, 3rd edition, (Wiley, New York).

BSPH308 **Project** **(Credit – 5)**

The student will submit a synopsis at the beginning of the semester for the approval from the project committee in a specified format. Synopsis must be submitted within two weeks. The first defense, for the dissertation work, should be held within two months' time. Dissertation Report must be submitted in a specified format to the project committee for evaluation purpose at the end of semester.

Elective

Student can choose any one option from the Elective* Courses which will be offered in 6th semester from the option listed below.

BSPH 322 Study of Materials

BSPH 324 Mechanical Properties of Materials

BSPH322 **STUDY OF MATERIALS** **(Credit – 5)**

Course Objective: Metallurgy and Materials deal with the structure and properties of all materials, which have engineering applications. Metallurgists and Materials Engineers are responsible for designing, producing, examining and testing materials as diverse as metallic engineering alloys, semiconductors and superconductors, ceramics, plastics and composites. This course will help students understand the properties of different types of materials and their applications.

UNIT I

Composite Materials

Large-Particle Composites, Dispersion-Strengthened Composites,fiber-reinforced composites:Influence of Fiber Length,Influence of Fiber Orientation and Concentration, The Fiber Phase, The Matrix Phase, Polymer-Matrix Composites, Metal-Matrix Composites, Ceramic-Matrix Composites, Carbon–Carbon Composites, Hybrid Composites,Processing of Fiber-Reinforced Composites.

B. Sc. (H) Physics

BSPH218A	INTERNSHIP IN PHYSICS	L	T	P	C
Version 1.0		0	0	0	2
Total Contact Hours	30				
Pre-requisites/Exposure	Practical exposure				
Co-requisites	--				

Course Objectives

1. To learn how to carry out literature surveys on the assigned topic.
2. To be associated with an area of research/research project and contribute towards domain knowledge through hands on.
3. To learn the art of technical report writing.
4. To learn the art of verbal communication with the help of modern presentation techniques.

Course Outcomes

On completion of this course, the students will be able to

CO1. Carry out the extensive literature survey on the topic assigned by academicians and industry experts.

CO2. Learn to write and present technical reports/articles.

CO3. Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.

CO4. Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.

Catalog Description

1. In the end of Semester IV, students will be asked to join research/academic organizations or industries to get hands on knowledge on the selected topics.
2. The student will work on the assigned topic for 3-4 weeks in regular consultation with his/her assigned expert/guide.
3. The student will write a report based on the work carried out during internship and prepare two copies to be submitted to the office of the Head of the Department duly signed by the student and the expert.

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4. The student will make a power point presentation based on the work carried out and mentioned in the report to the board of examiners appointed by the University in the fifth semester. The student will be evaluated based on a report and presentation.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Internal (Interaction of Student with Supervisor)	External			Total
		Relevance of topic (20)	Presentation (20)	viva (10)	100
Weightage (%)	50	20	20	10	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Carry out the extensive literature survey.	**PO1, PO3**
CO2	Learn to write and present technical reports/articles.	**PO1, PO5, PO8, PO9**
CO3	Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.	**PO2,PO3,PO4, PSO1, PSO4**
CO4	Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.	**PO5, PO6,PSO2 and PSO3**

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		Enhancement in Advanced Scientific	Development of critical, logical and	Demonstrate interdisciplinary	Learning of fundamental concepts and	Orientation towards research and	Acquiring capability to work	Understanding of impact of chemicals	Fostering communication skills	Ethical awareness and digital literacy	Capability to deal with professional	Systematic and coherent understanding	Appreciate the techniques for the	Learn problem solving approach	Apply principles ofchemistry to
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PSO 1	PSO 2	PSO 3	PSO 4
BSPH218A	Internship in Physics	3	3	3	3	3	3	3	3	3	3	3	3	3	3

1=weakly mapped; 2= moderately mapped; 3=strongly mapped

Programme and Course Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PSO1	PSO 2	PSO3	PSO4
CO1	3		3								2		1	
CO2	3				3			3	3			3		
CO3		3	3	3		3				3	3			3

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CO4					**3**	**3**	**3**	**3**	**3**	**3**	**1**	**2**	**3**	**3**
	1=lightly mapped				2= moderately mapped						3=strongly mapped			

Unit	**Internship in Physics**
Local	-
Regional	-
National	-
Global	-
Employability	Choice Based Credit System having field projects / research projects / internships (1.3.4) Courses on employability/ entrepreneurship/ skill development (1.1.3); Student centric methods, such as experiential learning, participative learning and problem-solving methodologies (2.3.1)
Entrepreneurship	Entrepreneurship; Team work/ Creativity by designing research problem
Skill Development	Disciplinary knowledge; Research related skills; scientific skills,
Professional Ethics	-
Gender	-
Human Values	-
Environment & Sustainability	-
SDG	Equal Access to TVET and Higher Education (SDG 4.3), Quality Education and skills for employability 4.4
NEP	Higher Education System through scientific temper (9.1.1) India's Higher Education System through scientific temper (9.1.1)Towards a More Holistic and Multidisciplinary Education opportunitiesfor cross-disciplinary and interdisciplinary thinking (11.6); strong culture of research and knowledge creation (17.6) "
POE/4th IR	Employability, Project, Hands on Experience, Entrepreneurship; Team work

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B.Sc. (H) Physics (2019-20 onwards)

BSPH356A	DISSERTATION	L	T	P	C
Version 1.0		0	0	0	6
Total Contact Hours	90				
Pre-requisites/Exposure	Practical exposure				
Co-requisites	--				

Course Objectives

1. To learn how to carry out literature survey
2. To be associated with an area of research/research project and contribute towards domain knowledge.
3. To learn the art of technical report writing
4. To learn the art of verbal communication with the help of modern presentation techniques.

Course Outcomes

On completion of this course, the students will be able to

CO1. Carry out the extensive literature survey.

C02. Learn to write and present technical reports/articles.

CO3. Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.

CO4. Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.

Catalog Description

1. Students will be divided among faculty members of the Department for the supervision of the research work.

2. In the first week of Semester VI, each faculty member will assign a suitable research topic to the students from the selected topics in the areas of chemical sciences.

3. The student will work on the assigned research topic during semester VI in regular consultation with his/her assigned teacher.

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4. The student will write a dissertation based on the research work carried out during Semester VI and prepare two copies to be submitted to the office of the Head of the Department duly signed by the student and the supervisor in the sixth week of VI semester or a date decided by the HOD of the department.

5. Before preparing power point presentation and submission of dissertation, each student has to deliver a seminar talk on his/ her research project work on a date fixed by HOD, necessary suggestions has to be incorporated in the final draft of dissertation.

6. The student will make a power point presentation based on the work carried out and mentioned in the dissertation to the board of examiners appointed by the University.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Internal (Interaction of Student with Supervisor)	External			Total
		Relevance of topic (20)	Presentation (20)	viva (10)	100
Weightage (%)	50	20	20	10	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Carry out the extensive literature survey.	PO1, PO3
CO2	Learn to write and present technical reports/articles.	PO1, PO5, PO8,

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		PO9
CO3	Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.	**PO2,PO3,PO4, PSO1, PSO4**
CO4	Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.	**PO5, PO6,PSO3.PSO3**

		Enhancement in Advanced Scientific	Development of critical, logical and	Demonstrate interdisciplinary	Learning of fundamental concepts and	Orientation towards research and	Acquiring capability to work	Understanding of impact of chemicals	Fostering communication skills	Ethical awareness and digital literacy	Capability to deal with professional	Systematic and coherent understanding	Appreciate the techniques for the	Learn problem solving approach	Apply principles ofchemistry to
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PS O1	PS O2	PS O3	PS O4
BSPH356A	Dissertation	3	3	3	3	3	3	3	3	3	3	3	3	3	3

1=weakly mapped

2= moderately mapped

3=strongly mapped

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Programme and Course Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PSO1	PSO 2	PSO3	PSO4
CO1	3		3								2		1	
CO2	3				3			3	3			3		
CO3		3	3	3		3				3	3			3
CO4					3	3	3	3	3	3	1	2	3	3
	1=lightly mapped				2= moderately mapped						3=strongly mapped			

Unit	Dissertation
Local	-
Regional	-
National	-
Global	-
Employability	Choice Based Credit System having field projects / research projects / internships (1.3.4) Courses on employability/ entrepreneurship/ skill development (1.1.3); Student centric methods, such as experiential learning, participative learning and problem-solving methodologies (2.3.1)
Entrepreneurship	Entrepreneurship; Team work/ Creativity by designing research problem
Skill Development	Disciplinary knowledge; Research related skills; scientific skills,
Professional Ethics	-
Gender	-
Human Values	-
Environment &	-

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Sustainability	
SDG	Equal Access to TVET and Higher Education (SDG 4.3), Quality Education and skills for employability 4.4
NEP	Higher Education System through scientific temper (9.1.1) India's Higher Education System through scientific temper (9.1.1)Towards a More Holistic and Multidisciplinary Education opportunities for cross-disciplinary and interdisciplinary thinking (11.6); strong culture of research and knowledge creation (17.6) "
POE/4th IR	Employability, Project, Hands on Experience, Entrepreneurship; Team work

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