

# **Program and Course Structure**

School of Allied Health Science B.Sc.

(Forensic Science)

**Program Code-SAH0120** 



#### 1. Standard Structure of the Program at University Level

#### 1.1 Vision, Mission and Core Values of the University

#### Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

## Mission of the University

- 1. Transformative educational experience
- 2. Enrichment by educational initiatives that encourage global outlook
- 3. Develop research, support disruptive innovations and accelerate entrepreneurship
- 4. Seeking beyond boundaries

#### **Core Values**

- Integrity
- Leadership
- Diversity
- Community

#### 1.2 Vision and Mission of the School

#### Vision of the School

To steer the School of Allied Health Sciences towards excellence in academics, innovation and entrepreneurship by constant endeavors

#### **Mission of the School**

- 1. To create and sustain a stimulating and responsive academic inclusive environment.
- **2.** To regularly enhance the teaching contents & techniques in keeping with current and future trends.
- **3.** To provide a competitive and career-oriented programme.
- **4.** To strengthen the main line medical and health services.

#### **Core Values**

- Skilled Professional
- Multidimensional
- Compassion
- Management



#### 1.3 Programme Educational Objectives (PEO)

**PEO1**: To gain a knowledge of basic science application in forensic field.

**PEO1**: To gain knowledge of forensic examination of evidences and investigation of all types of evidences

**PEO1**: Develop a conceptual understanding of criminal justice systems, rule of evidence, legal system.

**PEO1**: They can apply their knowledge of forensic science in different Investigative agencies.

**PEO1** Laboratory skills to exacting standards of precision and care.



## 1.3.2 Map PEOs with Mission Statements:

PEO Statements	School Mission 1	School Mission 2	School Mission 3
PEO1:	3	3	3
PEO2:	3	3	2
PEO3:	3	2	3
PEO4:	2	3	3
PEO5:	3	3	2

Enter correlation levels 1, 2, or 3 as defined below:

1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)



#### 1.3.3 Program Outcomes (PO's)

- **PO1**: Ability to acquire and apply knowledge and understanding of the chemical principles
- **PO2** : Ability to demonstrate thorough knowledge, understanding and skills in application of scientific methodology to undertake and report on experimental investigation.
- **PO3**: Possess high awareness of major issues and development of chemical research and competent in initiating, developing, and pursuing a scientific research.
- **PO4** : Ability to present technical, scientific and forensic information and arguments clearly and correctly, in written and oral presentation
- **PO5** : Ability to portray good interpersonal skills with high ability to work collaboratively as part of a team undertaking a range of different team roles
- **PO6**: Ability to act with integrity and good ethics in their profession and their obligation to society
- **PO7**: Ability to seek new knowledge, skills and manage relevant information from various sources.
- **PO8**: Ability to demonstrate knowledge and skills in analyzing and identifying businessopportunities.
- **PO9**: Ability to demonstrate leadership, to take action and to get others involved.
- **PSO1:** This programme is an application-based programme where all the main stream science subject- Biology, Physics and chemistry are applied for the scientific investigation of crime.
- **PSO2**: It is a multidisciplinary, versatile and result oriented subject which dealt with different branches of science as well as law, medicine, medical jurisprudence and police.
- **PSO3**: Forensic techniques are used to process sample and evidences to solve crime.



### 1.3.4 Mapping of Program Outcome Vs Program Educational Objectives

	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	3	3	1	3	3
PO2	3	3	3	3	3
PO3	3	3	2	3	3
PO4	2	3	3	3	3
PO5	2	2	2	2	2
PO6	3	3	3	3	3
PO7	3	3	3	3	3
PO8	3	3	2	2	2
PO9	2	2	2	3	2
PSO1	3	3	2	3	3
PSO2	3	3	3	3	3
PSO3	3	3	3	3	3

1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)



# 1.3.5 Program Outcome Vs Courses Mapping Table<sup>1</sup>:

Program Outcome Courses	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PSO 1	PSO 2	PSO 3
					Se	em-1							
Cours101.	Forensic sc.	3	3	3	3	3	3	3	3	3	3	3	3
Cours101.	Physics 1	2	2	2	3	3	3	3	3	3	3	3	3
Cours101.	Chemistry 1	3	3	3	3	3	3	3	3	3	3	3	3
Cours101. 4.	Botany 1	3	3	3	3	3	3	3	3	3	3	3	3
Cours101. 5.	Zoology 1	3	3	3	3	3	3	3	3	3	3	3	3
					Se	em-2							
Cours201.	Forensic sc. 2	3	3	3	3	3	3	3	3	3	3	3	3
Cours201.	Physics 2	2	2	2	3	3	3	3	3	3	3	3	3
Cours201.	Chemistry 2	3	3	3	3	3	3	3	3	3	3	3	3
Cours201. 4.	Botany 2	3	3	3	3	3	3	3	3	3	3	3	3
Cours201.	Zoology 2	3	3	3	3	3	3	3	3	3	3	3	3
					Se	em-3							
Course 301.1	Forensic sc.	3	3	3	3	3	3	3	3	3	3	3	3
Course 301.2	Physics 3	2	2	2	3	3	3	3	3	3	3	3	3
Cours301.	Chemistry 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours301. 4.	Botany 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours301.	Zoology 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours301.	Psychology	2	2	3	3	3	3	3	3	3	2	2	3

	Sem-4												
Course 401.1	Forensic sc. 3	3	3	3	3	3	3	3	3	3	3	3	3
Course 401.2	Physics 3	2	2	2	3	3	3	3	3	3	3	3	3
Cours401.	Chemistry 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours401.	Botany 3	3	3	3	3	3	3	3	3	3	3	3	3

 $<sup>^{\</sup>rm 1}$  Cel value will contain the correlation value of respective course with PO.

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S > Beyond Boundaries													
Cours401.	Zoology 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours401. 6	Project	3	3	3	3	3	3	3	3	3	3	3	3
					Se	em-5							
Course 501.1	Forensic sc. 3	3	3	3	3	3	3	3	3	3	3	3	3
Course 501.2	Physics 3	2	2	2	3	3	3	3	3	3	3	3	3
Cours501.	Chemistry 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours501.	Botany 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours501.	Zoology 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours501.	Cyber Forensic	3	3	3	3	3	3	3	3	3	3	3	3
					Se	em-6							
Course 601.1	Forensic sc. 3	3	3	3	3	3	3	3	3	3	3	3	3
Course 601.2	Physics 3	2	2	2	3	3	3	3	3	3	3	3	3
Cours601.	Chemistry 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours601.	Botany 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours601.	Zoology 3	3	3	3	3	3	3	3	3	3	3	3	3
Cours601.	Cyber Forensic	3	3	3	3	3	3	3	3	3	3	3	3

1. Slight (Low)

2. Moderate (Medium)

3. Substantial (High)



## Program Structure Template School of Allied Health Science B.Sc. (Forensic Science)

Batch: 2019-2022 Semester: I

				Tea	ching l	Load			Type of
S. No.	Paper ID	Subject Code	Subjects	L	Т	P	Credits	Core/Elective Pre-Requisite/ Co Requisite	Course <sup>2</sup> : 1. CC 2. AECC 3. SEC 4. DSE
			THEORY SUBJECTS						
1.	35139	FSB 101	Forensic Science	2	1		3	Core	CC, AECC,SEC
2.	35140	FSB 115	Physics	2	1		3	Core	CC, AECC
3.	35141	FSB 103	Chemistry	2	1		3	Core	CC, AECC
4.	35142	FSB 104	Botany	2	1		3	Core	CC, AECC
5.	35143	FSB 105	Zoology	2	1		3	Core	CC, AECC
6.		FSB 132	Project Assistance	1	_		1	Core	AECC, SEC
			Practical/Viva-Voce/Jury	<u>y</u>					
1.	35174	FSB 151	Forensic Science LAB	0	0	4	2	Core	CC, AECC
2.	35175	FSB 152	Physics LAB	0	0	4	2	Core	CC, AECC
3.	35176	FSB 153	Chemistry LAB	0	0	4	2	Core	CC, AECC
4.	35177	FSB 154	Botany LAB	0	0	4	2	Core	CC, AECC
5.	35178	FSB 155	Zoology LAB	0	0	4	2	Core	CC, AECC
			TOTAL CREDITS				26		

<sup>&</sup>lt;sup>2</sup> CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



B.Sc. (Forensic Science) Batch: 2019-2022

**Semester-II** 

				Tea	ching I	oad			Type of
S. No.	Paper ID	Subject Code	Subjects	L	Т	P	Credits	Core/Elective Pre-Requisite/ Co Requisite	Course <sup>3</sup> : 1. CC 2. AECC 3. SEC 4. DSE
			THEORY SUBJECTS						
1.		FSB116	Forensic Science	2	1		3	Core	CC, AECC,SEC
2.		FSB117	Physics	2	1		3	Core	CC, AECC
3.		FSB118	Chemistry	2	1		3	Core	CC, AECC
4.		FSB119	Botany	2	1		3	Core	CC, AECC
5.		FSB120	Zoology	2	1		3	Core	CC, AECC
6.		OPE	Open Elective Course	2			2	Elective	SEC
			Practical/Viva-Voce/Jur	y					
1.		FSB156	Forensic Science LAB	0	0	4	2	Core	CC, AECC
2.		FSB157	Physics LAB	0	0	4	2	Core	CC, AECC
3.		FSB158	Chemistry LAB			4	2	Core	CC, AECC
4.		FSB159	Botany LAB			4	2	Core	CC, AECC
5.		FSB160	Zoology LAB			4	2	Core	CC, AECC
			TOTAL CREDITS				29		

<sup>&</sup>lt;sup>3</sup> CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



**B.Sc.** (Forensic Science) Batch: 2019-2022

**Semester-III** 

				Tea	ching I	oad			Type of
S. No.	Paper ID	Subject Code	Subjects	L	Т	P	Credits	Core/Elective Pre-Requisite/ Co Requisite	Course <sup>4</sup> : 1. CC 2. AECC 3. SEC 4. DSE
			THEORY SUBJECTS						
1.	35474	FSB 201	Forensic Science 3	2	1		3	Core	CC, AECC,SEC
2.	35475	FSB 202	Physics 3	2	1		3	Core	CC, AECC
3.	35476	FSB 203	Chemistry 3	2	1		3	Core	CC, AECC
4.	35477	FSB 204	Botany 3	2	1		3	Core	CC, AECC
5.	35478	FSB 205	Zoology 3	2	1		3	Core	CC, AECC
6.	35480	FSB 207	Psychology		1		1	Core	CC, AECC
7.	35481	FSB 208	Project				1	Core	CC, AECC
			Practical/Viva-Voce/Jury	y					
1.	35482	FSB 251	Forensic Science 3 LAB	0	0	4	2	Core	CC, AECC
2.	35483	FSB 252	Physics 3 LAB	0	0	4	2	Core	CC, AECC
3.	35484	FSB 253	Chemistry 3 LAB			4	2	Core	CC, AECC
4.	35485	FSB 254	Botany 3 LAB			4	2	Core	CC, AECC
5.	35486	FSB 255	Zoology 3 LAB			4	2	Core	CC, AECC
6.	35487	FSB 256	Psychology 1 Lab			2	1	Core	CC, AECC
			TOTAL CREDITS				28		

<sup>&</sup>lt;sup>4</sup> CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



**B.Sc.** (Forensic Science) Batch: 2019-2022

Semester- IV

				Te	aching	Load			Type of
S. No.	Paper ID	Subject Code	Subjects	L	Т	P	Credits	Core/Elective Pre-Requisite/ Co Requisite	Course <sup>5</sup> : 1. CC 2. AECC 3. SEC 4. DSE
			THEORY SUBJECTS						
1.		FSB209	Forensic Science 4	2	1		3	Core	CC, AECC,SEC
2.		FSB 210	Physics 4	2	1		3	Core	CC, AECC
3.		FSB211	Chemistry 4	2	1		3	Core	CC, AECC
4.		FSB212	Botany 4	2	1		3	Core	CC, AECC
5.		FSB213	Zoology 4	2	1		3	Core	CC, AECC
6.		OPE	Open Elective Course	2			2	Elective	SEC
			Practical/Viva-Voce/Jur	y					
1.		FSB257	Forensic Science 4 LAB	0	0	4	2	Core	CC, AECC
2.		FSB258	Physics 4 LAB	0	0	4	2	Core	CC, AECC
3.		FSB259	Chemistry 4 LAB			4	2	Core	CC, AECC
4.		FSB260	Botany 4 LAB			4	2	Core	CC, AECC
5.		FSB261	Zoology 4 LAB			4	2	Core	CC, AECC
			TOTAL CREDITS				27		

<sup>&</sup>lt;sup>5</sup> CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



## Program Structure Template School of Allied Health Science B.Sc. (Forensic Science)

Batch: 2019-2022 Semester- V

				Tea	ching	Load			Type of
S. No.	Paper ID	Subject Code	Subjects	L	T	P	Credits	Core/Elective Pre-Requisite/ Co Requisite	Course <sup>6</sup> : 1. CC 2. AECC 3. SEC 4. DSE
			THEORY SUBJECTS						
1.	35428	FSB 301	Forensic Science 5	2	1		3	Core	CC, AECC,SEC
2.	35429	FSB 302	Physics 5	2	1		3	Core	CC, AECC
3.	35430	FSB 303	Chemistry 5	2	1		3	Core	CC, AECC
4.	35431	FSB 304	Botany 5	2	1		3	Core	CC, AECC
5.	35432	FSB 305	Zoology 5	2	1		3	Core	CC, AECC
6.	35434	FSB 307	Project 2				1	Core	CC, AECC
7.	35435	FSB 308	Applied Digital and cyber forensic 1		1		1	Core	CC, AECC
			Practical/Viva-Voce/Jur	y					
1.	35436	FSB 351	Forensic Science 5 LAB	0	0	4	2	Core	CC, AECC
2.	35437	FSB 352	Physics 5 LAB	0	0	4	2	Core	CC, AECC
3.	35438	FSB 353	Chemistry 5 LAB			4	2	Core	CC, AECC
4.	35439	FSB 354	Botany 5 LAB			4	2	Core	CC, AECC
5.	35440	FSB 355	Zoology 5 LAB			4	2	Core	CC, AECC
6.	35441	FSB 356	Digital & Cyber Forensic 1 Lab			2	1	Core	CC, AECC
			TOTAL CREDITS				28		

<sup>&</sup>lt;sup>6</sup> CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



**B.Sc.** (Forensic Science) Batch: 2019-2022

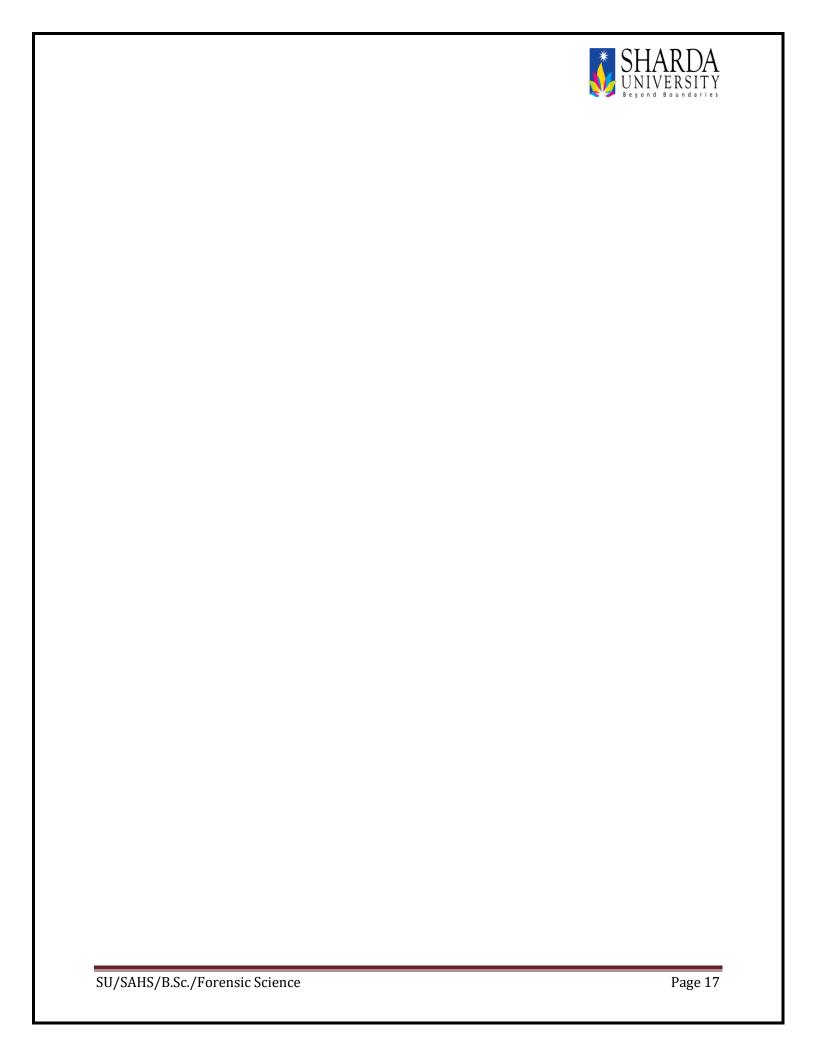
**Semester- VI** 

				Tea	ching	Load			Type of		
S. No.	Paper ID	Subject Code	Subjects	L	Т	P	Credits	Core/Elective Pre-Requisite/ Co Requisite	Course <sup>7</sup> : 1. CC 2. AECC 3. SEC 4. DSE		
			THEORY SUBJECTS								
1.         FSB309         Forensic Science 6         2         1         3         Core											
2.		FSB310	Physics 6	2	1		3	Core	CC, AECC		
3.		FSB311	Chemistry 6	2	1		3	Core	CC, AECC		
4.		FSB312	Botany 6	2	1		3	Core	CC, AECC		
5.		FSB313	Zoology 6	2	1		3	Core	CC, AECC		
6.		FSB315	Applied Digital and cyber forensic 2		1		1	Core	CC, AECC		
7.		FSB316	Internship				1		AECC, DSE		
8.		OPE	Open Elective Course	2			2	Elective	SEC		
			Practical/Viva-Voce/Jur	y							
1.		FSB357	Forensic Science 6 LAB	0	0	4	2	Core	CC, AECC		
2.		FSB358	Physics 6 LAB	0	0	4	2	Core	CC, AECC		
3.		FSB359	Chemistry 6 LAB			4	2	Core	CC, AECC		
4.		FSB360	Botany 6 LAB			4	2	Core	CC, AECC		
5.		FSB361	Zoology 6 LAB			4	2	Core	CC, AECC		
6.		FSB362	Digital & Cyber forensic 2 lab			2	1	Core	CC, AECC		
			TOTAL CREDITS				30				

<sup>&</sup>lt;sup>7</sup> CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



- > Value added courses are mandatory for each student of odd semester (List of VAC is enclosed as Annexure 1) and it is non-graded.
- > Open elective course is mandatory for each student of even semester (List of approved open elective courses offered by the University are enclosed as Annexure 2 and it will be in audit mode and mandatory to pass it.
- > In each academic session, project work will be provided to the students.





# **Syllabus of Bachelors of Science (Forensic Science)**

Scho	ool: SAHS	Batch: 2019-2022	
Prog	gram: BFS	Current Academic Year: 2020	
Brai	nch:Forensic	Semester: 1 <sup>ST</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Forensic science	
3	Credits	3	
4	Contact	2-1-0	
	Hours		
	(L-T-P)		
	Course Type	Compulsory	
5	Course	1.To guide about basic concept and characteristic of crime.	
	Objective	2.Help students to understand present crime scenario in India.	
		3.Learn the application of scientific principles offorensic science to	or the
		purpose of CSI.	
6	Course	CO1:Explains history & development of Forensic science.	
	Outcomes	CO2:Illustrate the role of Forensic Scientist.	
		CO3:Categorize the services performed by crime investigators,	
		crime lab and medical examiners.	
		CO4:Develop the skill of crime scene investigation.	
7	C		114
7	Course	The completion of this course help students in thorough known the grime its history & establishment along with grime score	_
	Description	the crime, its history & establishment along with crime scene investigation.	e and its
		investigation.	
8	Outline syllabı	IS	CO Mapping
	Unit 1	CRIMESCENARIOININDIA	2 2 2 3 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
	0 222 2		
	Δ.	Introduction to cuine and history	CO1 CO2
	A	Introduction to crime and history.	CO1, CO2
			CO1, CO2
	В	Sociological aspects of crime and criminal in society.	

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	UNIVERSITY Beyond Boundaries

Unit 4	Basics Development of Forensic Science	
С	Physical evidence, Definition, classification of physical evidence, types of physical evidences, sources of physical evidence, signification and values of physical evidence, handling and packaging of physical evidences, linkage between crime scene, victim and criminal, study of special crime scene such as mass disaster, terror attack, geological scene and explosive etc.	CO3, CO4
В	Role of the police and judiciaries, Fire Brigade, Medicolegal officers and other experts	CO3, CO4
A	Forensic scientist, Investigating officers and their assigned role and duties.	CO3, CO4
Unit 3	Crime Scene and Investigation	
С	Significance of crime scene, argument and ethics of crime scene, initial response, role of first responding officer, duty management.	CO3, CO4
В	Definition of Crime Scene , Classification of crime Scene: indoor and outdoor, primary and secondary , macroscopic and microscopic crime scene, protection of crime scene and its importance.	CO3, CO4
A	Types of Crime and its causes – property crimes, public order crimes, violent crimes, cyber crimes, juvenile delinquency, Society – Criminal interaction and various types of crimes in India	CO3, CO4
Unit 2	Types of Crime and Crime Scene	
С	Definition of crime, characterstics of crime, A brief ideas about White collar crime, Professional crime, Organized crime, Present scenario of crime in india.	CO2

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				<b>▼</b> B	eyond Boundaries		
A	Introduction C Development.	Global History a	and Scope, Need and		CO1, CO2		
В	Principles, em Scientists in th	CO1, CO2					
С	Branches of F	orensic Science	e, Police Officers, Pro	osecution.	CO1, CO2		
Unit 5	Forensic Lab	s and Their Lo	egal Aspects				
A		Judicial Officers and Medico legal expert etc. Role and Qualifications of Forensic Scientists.					
В	Code of conduct for Forensic Scientists, Ethical issue in Forensic Science, professional structure and function of state and regional Forensic Science Laboratory, Central Forensic Science Laboratory and facility provided, Mobile Forensic Science Laboratory. Directorate of Forensic Science Service.						
С	Police and For criminal invest expert and jud and Internation FSL.	CO1,CO2					
Mode of examination	Theory						
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	B.R.Sharma : Trails.	Forensic science	e in criminal Investi	gation &			
Other References	James.S.H and Nordby J.J: Forensic Science- An introduction to scientific and investigative techniques.  Saferstein: Criminalistics - An introduction to Forensic Science.						



POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022						
Pro	gram: BFS	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 1 <sup>ST</sup>	Semester: 1 <sup>ST</sup>					
Scie	ence							
1	Course Code							
2	Course Title	Forensic Science Lab						
3	Credits	2						
4	Contact Hours (L-T-P)	0-0-4						
	Course Status	Compulsory						
5	Course	To guide the collection and preservation of variou	is evidences.					
	Objective	2. To understand the importance and methods of	f photography at					
		crime scene.						
		3. To understand the method of sketching of crime s	cene.					
6	Course Outcomes	CO1:To gain knowledge of collection, preservation and p physical evidences.	packaging of					
		CO2:Understand the methods of Searching, sketching and crime scene.	d photography of					
		CO3: Able to do photography of outdoor crime scene.						
		CO4: Able to Investigate and collect evidence of Indoor	crime scene.					
7	Course	The completion of this course students will be able to col	lect and pack all					
	Description	kind of evidences.						
8	Outline syllabus		CO Mapping					
	Unit 1	Use of Druggist's fold Methods	CO1,CO3,CO4					
		Collection						
		<ul> <li>Packaging</li> </ul>						
		<ul> <li>Forwarding</li> </ul>						
	Unit 2	Photography of Outdoor Crime Scene	CO2					
		Overall photography						



				Beyond Boundaries		
	• Phot	ography wit	h Scale			
	• Phot	ography of	Evidence			
Unit 3	Photograph	y of Indoo	r Crime Scene	CO2		
	Over	rall photogra	aphy			
	• Phot	ography wit	h Scale			
		ography of				
Unit 4	Sketching o	of Crime Sc	ene	CO2		
	• Brie	fing				
	• Dem					
	• Prac	tical				
Unit 5	Unit 5 Collect and Preserve the physical evidence in hanging case					
	Bries					
	• Dem	· ·				
	• Prac	• Practical				
Mode of	Drastical/Vis					
examination	Fractical/ VI	Practical/Viva				
Weightage	CA	MTE	ETE			
Distribution	60%	0%	40%			
Text book/s*	-					
Other	-					
References						

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022
Program: BFS		Current Academic Year: 2020
Brai	nch: Forensic	Semester: 1 <sup>ST</sup>
Scie	nce	
1	Course Code	
2	Course Title	Physics

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3	Credits	3	Beyond Boundaries			
4	Contact	2-1-0				
ļ ·	Hours					
	(L-T-P)					
	Course Type	Compulsory				
5	Course	1. Understanding basic laws, principals and phenomena in the are	a of fluid			
	Objective	mechanics.				
		2. Solve statistic problem on basis of surface tension and also ten	mnoraturo			
	effect on the basis of it.					
	3.To identify forces acting upon an object if given physical description of					
		situation.	01101101			
		Situation				
6	Course	CO1:To recall the presence of balanced or unbalanced forces to	the			
	Outcomes	state of motion.				
		CO2:Understand the universal Newton's law				
		CO3: Able to demonstrate general physics phenomena.				
		CO4:To apply basic physics laws in daily concept.				
7	Course	The completion of this course students will be able to know	the basic laws			
'	Description	of physics.	the basic laws			
	Bescription	of physics.				
8	Outline syllabu	I IS	CO Mapping			
	Unit 1	Measurement and Vectors				
	A	Unit of measurement	CO1, CO2			
	В	Vectors, component notation, unit vectors	CO1, CO2			
	С	Mgnitude of vectors, dot product, cross product	CO1, CO2			
	Unit 2	Newton's Law of Motion				
	A	Kinematics: Linear motion, Projectile motion, uniform	CO1, CO2			
		circular motion				
	В	Dynamics: Newton's laws of motion, free body diagram,	CO1, CO2			
		static and kinetic friction.				
	С	Work and energy, Energy and momentum conservation,	CO1, CO2			
		kinetic energy, gravitational potential energy, spring force				
		and dpring potential energy, Elastic and non elastic				
	Unit 2	collission, impact of a force Fluids Mechanics				
	Unit 3		CO3			
	A	Fluidstatics: pressure in a fluid, measurement of pressure using open tube manometer and mercury barometer,	COS			
		variation of pressure with depth, hydraulic machines,				
		Pascal's law, buoyancy and Archimedes principle				
		1 ascar s law, buoyancy and Archimedes principle				
	В	Fluid dynamics: Equation of continuity, streamlines and	CO3			
		streamlined flow, incompressible and ideal fluids,				
		Bernoulli's equation, Venturi meter, Pitot tube,				
		Bernoulli's equation, Venturi meter, Pitot tube,				

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				Beyond Boundaries				
	aerodynamic l	ift						
С	Viscosity, Nev Poiseuille's ec turbulence and	CO3						
Unit 4	Elasticity and	l Surface Tens	sion					
A	Elasticity, stre	ess and strain.		CO3				
В	Hook's Law, 'modulus.	Young's modu	lus, Shear modulus, Bulk	CO3				
С	Surface tensio	n, capillarity.		CO3				
Unit 5	Gravitational	Gravitational and oscillations						
A		e velocity, circu	al, Gravitational potential ular and elliptical orbits,	CO3				
В	Oscillations, S	Simple harmoni	ic motion.	CO3				
С	Damed and fo	rced oscillation	ns, Resonance.	CO3				
Mode of examination	Theory	·						
Weightage	CA	MTE	ETE					
Distribution	30%	20%	50%					
Text book/s*	College physic Halliday & Re	•	Vuille, Principles of physics-					
Other	Sear's & Zem	ansky's Univer	sity physics- Young and					
References	Freedman.							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022
Prog	gram: BFS	Current Academic Year: 2020
<b>Branch: Forensic</b>		Semester: 1 <sup>st</sup>
Scie	nce	
1	Course Code	
2	Course Title	Physics Lab
3	Credits	2
4	Contact Hours	0-0-4
	(L-T-P)	

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	Course Status	Compulsory	Beyond Boundaries					
5	Course	1. To have an overview of the Newton's ring method.						
	Objective	2. To develop the basic knowledge of determining focal length.						
	,	3. To have an overview of Stefan's law of radiation.						
		3. To have an overview of Stelan's law of radiation.						
6	Course	CO1:Able to determine the knowledge of the wavelength o	f					
	Outcomes	monochromatic light using Several methods.						
		CO2: To gain knowledge about Stefan's Law.						
		CO3: To understand the focal length of the combination of	two thin					
		convergent lenses.	tion					
		CO4: To determine the specific rotation of cane sugar solut	lion.					
7	Course							
,	Description	With the completion of this curriculum students will be abl	e to determine					
	rate F	the wavelength by using several methods.						
8	Outline syllabus		CO Mapping					
	Unit 1	To determine the wavelength of monochromatic light	CO1					
		by Newton's Ring method						
		Briefing						
		• Demo						
		Practical						
	Unit 2	To determine the wavelength of prominent lines of	CO1					
		mercury by plane diffraction grating						
		Briefing						
		• Demo						
		<ul> <li>Practical</li> </ul>						
	Unit 3	To determine the focal length of the combination of	CO3					
		two thin convergent lenses separated by a distance						
		with the help of a nodal-slide and verify the formula						
		Briefing						
		• Demo						
		<ul> <li>Practical</li> </ul>						
	Unit 4	To determine the specific rotation of cane sugar	CO4					
		solution with the help of a polarimeter						
		Briefing						
		▼ Dileting						



				Beyond Boundaries					
	• De	emo							
	• Pr	actical							
Unit 5	To verify	Stefan's law o	f radiation	CO2					
	• Br	Briefing							
	• De	emo							
	• Pr	actical							
Mode of examinati		Practical/Viva							
Weightage	e CA	MTE	ETE						
Distribution	on 60%	0%	40%						
Text book	B.Sc. Prac	B.Sc. Practical Physics- Harman Singh and PS Hemne.							
Other	-								
Reference	S								

			,	,		,	,	,			,	
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: BFS	Current Academic Year: 2020						
Brai	nch: Forensic	Semester: 1 <sup>st</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Chemistry						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course	1. Conceptual understanding of scientific methods and the proper use of						
	Objective	significant figures.						
		2. Evaluate the type of molecular bonding in the covalent molecule and						
		identify the orbital used for bonding.						
		3. Different physical properties of states of matter.						

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			Beyond Boundaries
6	Course Outcomes	CO1:Describe concept of acidity and basicity, electrophiles and nucleophiles. CO2:Explain molecular activity in different states of matter. CO3:-Apply kinetic molecular theory of gas or the quantum mechanical theory of the atom to the solution of general chemistry problem. CO4:Solve quantitative chemistry problems.	
7	Course Description	The completion of this course students will be able to know acidity & basicity and all states of matter.	about the
8	Outline syllabu	ls	CO Mapping
	Unit 1	Gaseous State	11 6
	A	Gaseous States: Postulates of kinetic theory of gases, Gas Laws, deviation from ideal behaviour, van der Waals equation of state. Relationship between critical constants and van der Waals constants, the law of corresponding states	CO1, CO2,CO3
	В	Molecular Velocities: Root mean square, average and most probable velocities.	CO1, CO2,CO3
	С	Qualitative discussion of the Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter. Liquefaction of gases	CO1, CO2,CO3
	Unit 2	Liquid and Solid State	
	A	Liquid State: Intermolecular forces, structure of liquids (a qualitative description). Structural differences between solids, liquids and gases. Liquid crystals: Difference between liquid crystal, solid and liquid. Classification, structure of nematic, sematic and cholesteric phases and applications.	CO1, CO2,CO3
	В	Solid State: Definition of space lattice and unit cell. Laws of crystallography: (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Law of symmetry - Symmetry elements in crystals	CO1, CO3
	С	X-ray diffraction: Derivation of Bragg's equation. Determination of crystal structure of NaCl and KCl. A brief introduction to point defects in crystals, semiconductors, superconductors and nanomaterials (only qualitative idea).	CO1, CO2,CO3
	Unit 3	Atomic Structure	
	A	Bohr's theory and its limitations, dual behavior of matter and radiation, de Broglie relation, Heisenberg Uncertainty	CO3,CO4

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	principle			Beyond Boundaries		
В	Hydrogen ator hydrogenic wa	avefunctions (a 1s, 2s, 2p, 3s, 3	tal and angular parts of the tomic orbitals) and their ap and 3d orbitals (Only	CO3,CO4		
С	Significance of momentum and p and d atomic (s) and magne filling electron configurations completely fill configurations	CO3,CO4				
Unit 4		of Organic C splacements –	hemistry Physical Effect, I			
A	Classification preparations, preactions of all	CO4				
В	Electromeric I Cleavage of B	CO4				
С	Structure, shap Nucleophiles a Carbocations, organic acids a on factors affe	CO4				
Unit 5		of Organic Che splacement – l	emistry Physical Effect,			
A	Aromaticity: I	romaticity: Benzenoids and Hückel's rule. tereochemistry Conformations: Ethane, butane and				
В						
С	Configuration Enantiomerism Threo and ery Rules: R/S (for Nomenclature	CO4				
Mode of examination	Theory	*	* ,			
Weightage Distribution	CA 30%	MTE 20%	ETE 50%			



Text book/s*	M. Barrow: Physical Chemistry Tata McGraw Hill (2007).	
Other	Cotton & G. Wilkinson: Basic Inorganic Chemistry, John	
References	Wiley, Miessler, G. L. & Donald, A. Tarr. Inorganic	
	Chemistry 3rd Ed.(adapted), Pearson, 2009 ISBN	

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Calaa	al. CATIC	Datah, 2010-2022					
	ool: SAHS	Batch: 2019-2022					
	gram: FSB	Current Academic Year: 2020					
	nch: Forensic	Semester: 1 <sup>st</sup>					
Scie							
1	Course Code						
2	Course Title	Chemistry Lab					
3	Credits	2					
4	Contact Hours	0-0-4					
	(L-T-P)						
	Course Status	Compulsory					
5	Course	1. To use purification of organic compound by crystallization.					
	Objective	2. To have an overview of the detection of extra elements in inorganic					
		compounds.					
		3. To develop knowledge about the end point of HCl by titration.					
		3. To develop knowledge about the end point of free by thration.					
6	Course	CO1: To gain knowledge about the estimation of Fe.					
	Outcomes	CO2: To prepare the solution with different morality.					
		CO3: To understand the detection of extra element in inorganic					
		compounds.					
		CO4: Able to demonstrate the purification of organic compound by					
		crystallization.					
7	Course						
	Description	With the ending of this curriculum students will be having the basic					
	•	knowledge about different methods like titration and crystallization and					
		also have the overview of detection of organic and inorganic compounds.					
8	Outline syllabus	CO Mapping					



Unit 1	Preparation of solution with different morality, specially NaOH and standardization of NaOH using an indicator  • Briefing	CO1
	<ul><li>Demo</li><li>Practical</li></ul>	
Unit 2	Estimation of Fe(II) ions by titrating it with K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> using internal indicator  Briefing Demo Practical	CO2
Unit 3	Purification of organic compound by crystallization (from Water).	CO4
	<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>	
Unit 4	<ul> <li>Detection of extra elements in Inorganic Compound</li> <li>Briefing</li> <li>Demo</li> <li>Practical</li> </ul>	CO3
Unit 5	To determine the end point of HCl by titration it with NaOH volumetrically.  Briefing Demo Practical	CO2
Mode of examination Weightage Distribution Text book/s*	Practical/Viva  CA MTE ETE  60% 0% 40%  B.D Khosla- Chemistry Practical book	
Other References	Ahluwalia- Chemistry Practical Book	

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												

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											beyond bod	
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
Brai	nch: Forensic	Semester: 1 <sup>st</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Botany						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course	1-Able to identify common infectious agents and the diseases re	lated to it.					
	Objective	<b>2-</b> To provide a basic understanding of biology, taxonomy and phylogeny of fungi.						
		<b>3-</b> Identify their chemical elements and difference between simp complex carbohydrates, proteins, lipids and nucleic acids.	le sugar and					
6	Course Outcomes	CO1:Knowledge of equipment used in microbiology. CO2:Able to prepare solid & liquid culture media of microbes. CO3:Demonstrate gram stain bacteria. CO4:Able to demonstrate temporary mount and identification of fungi.	f algae and					
7	Course	The completion of this course students will have a knowledg	e of					
	Description	microbiology along with their culture process and also about						
		carbohydrates, lipids and proteins.						
8	Outline syllabu	I IS	CO Mapping					
	Unit 1	Microbiology						
	A	Introduction to microbial world: Microbial nutrition,	CO1,					
		growth and metabolism.	CO2,CO3					
	В	Bacteria: General characteristics; Types-archaebacteria,	CO1,					
		eubacteria, wall-less forms (mycoplasma).	CO2,CO3					
	C	Viruses: Physiochemical and biological characteristics;	CO1,					
		general structure; replication (general account), DNA virus	CO2,CO3					

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	(T-phage), RNA virus (TMV).	Beyond Boundaries
Unit 2	Mycology and Phycology	
A	Algae: General characteristics; Ecology and distribution; range of thallus organization	CO1, CO3
В	Fungi: Introduction- General characteristics	CO1, CO3
С	Lichens: General account, reproduction. Mycorrhiza: ectomycorrhiza and endomycorrhiza.	CO1, CO3
Unit 3	Economic Importance	
A	Microbe: Economic importance of viruses with reference to	CO1,
	vaccine production, role in medicine and diagnostics, as	CO2,CO3
	causal organisms of plant diseases. Economic importance	
	of bacteria with reference to their role in agriculture and	
	industry (fermentation and medicine).	
В	Algae: Ecology and distribution; range of thallus organization. Role of algae in the environment, agriculture, biotechnology and industry	CO1, CO3
С	Fungi: Ecology and Significance, range of thallus organization Lichens: Significance. Mycorrhiza: significance	CO1, CO3
Unit 4	General Account of Cell Structure and Reproduction	
A	Bacteria: Cell structure; Nutritional types; Reproduction-vegetative, asexual and recombination (conjugation, transformation and transduction).	CO1, CO3
В	Algae: Cell structure and components; cell wall, pigment system, flagella; methods of reproduction.	CO1, CO3
С	Fungi: Cell wall composition, nutrition, reproduction	CO1, CO3
Unit 5	Biomolecules	
A	Biomolecules: Types and significance of chemical bonds; Structure and properties of water; pH and buffers.	CO4
В	Carbohydrates:Nomenclature and classification;	CO4
	Monosaccharides; Disaccharides; Oligosaccharides and	
	polysaccharides.Lipids:Definition and major classes of	

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				Beyond Boundaries					
	storage and str	storage and structural lipids; Fatty acids structure and							
	functions; Ess	functions; Essential fatty acids							
С	Proteins: Struc	cture of amino	acids; Levels of protein	CO4					
	structure-prim	ary, secondary	, tertiary and quarternary;						
	Protein de-nat	uration and bio	logical roles of						
	proteins.Nucle	eic acids:Struct	ure of nitrogenous bases;						
	Structure and	function of nuc	eleotides; Types of nucleic	,					
	acids.								
Mode of examination	Theory	Theory							
Weightage	CA	MTE	ETE						
Distribution	30%	20%	50%						
Text book/s*	-								
Other	-	-							
References									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022				
Program: FSB		Current Academic Year: 2020				
<b>Branch: Forensic</b>		Semester: 1 <sup>st</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Botany Lab				
3	Credits	2				
4	Contact Hours	0-0-4				
	(L-T-P)					
	Course Status	Compulsory				
5	Course	1. To develop the knowledge of equipments used in microbiology.				
Objective		2. To have an overview of qualitative test.				
		3. To develop the knowledge of preparation of culture media.				

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	T				Beyond Boundaries				
6	Course Outcomes		CO1: Able to prepare culture media. CO2: Able to prepare temporary mount of Algae.						
		CO3: To determine the qualitative test of carbohydrate, proteins and							
			lipids.						
		CO4: 10 g	CO4: To gain knowledge about the equipments used in microbiology.						
7	Course								
	Description			his course students will have					
			knowledge of preparation of culture media including preparation of temporary mount and qualitative tests.						
			1		CO Mapping				
8	Outline syllabu								
	Unit 1			nts used in Microbiology	70.4				
		-	rit lamp and H	lot air oven	CO4				
			coclave						
		• Inc	ubator						
	Unit 2	Qualitativ	e Test						
		• Car	CO3						
		• Pro	Protein						
		• Lip							
	Unit 3	Bacteria (	Fram Staining						
		• Stri	acture of bacte	eria	CO1				
		• Pos	itive gram sta	ining					
		• Neg	gative Gram S	taining					
	Unit 4	Preparation	on of Tempor	ary Slides					
		• Alg	gae		CO2				
		• Fur	ngi						
		• Dif	ferences in the	eir structure					
	Unit 5	Preparation	on of culture	media					
		• Sol	id media		CO1				
		• Liq	uid media						
		• Cul	ture growth in	sheet media					
	Mode of	Mode of Practical/Viva							
	examination								
	Weightage	CA	MTE	ETE					
	Distribution	60%	0%	40%					
	Text book/s*	-							
	Other -								



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References		

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 1 <sup>st</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Zoology						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course Objective	<b>1-</b> Able to understand the structure and purpose of basic components of						
		<b>2</b> -Able to understand the process of cell division in both somatic and germ cells.						
		<b>3-</b> Able to understand complete process of fertilization, way of cleavage,embryonic dev. and formation of germ cell.						
6	Course Outcomes	CO1: Able to describe the function and composition of plasma membrane						
		CO2:Identify membrane bound organelles in eukaryotic cell. CO3:Illustrate different parts, working and care of different types of microscopes.						
		CO4:know about development of embryo and formation of germ cell.						
7	Course The completion of this course students will be able to know all about cell							
Description and cell organelles, cell division.			COM:					
8	Outline syllabu		CO Mapping					
	Unit 1	Cytology I	CO1 CO2					
	A	Ultra structure of different cell organelles of animal cell: Prokaryotic and Eukaryotic cells, Virus, Viroids,	CO1, CO2					

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		Beyond Boundaries
	Mycoplasma, Prions	
В	Plasma Membrane: Fluid mosaic model, various modes of transport across the membrane, mechanism of active and passive transport, endocytosis and exocytosis.	CO1, CO2
С	Endoplasmic reticulum (ER): types, role of ER in protein synthesis and transportation in animal cell.	CO1, CO2
Unit 2	Cytology II	
A	Golgi complex: Structure, Associated enzymes and role of Golgi-complex in animal cell.	CO1, CO3
В	Mitochondria: Mitochondrial DNA; as semiautonomous body, biogenesis, mitochondrial enzymes (only names), role of mitochondria.	CO1, CO3
С	Lysosomes: Structure, enzyme and their role; polymorphism.	CO1, CO3
Unit 3	Cytology III	
A	Ribosomes: Types, biogenesis and role in protein synthesis	CO1, CO3
В	Cytoskeleton: Microtubules, microfilaments, centriole and basal body. Cilia and Flagella	CO1, CO3
С	Cytoskeleton Structure and Functions: Microtubules, Microfilaments and Intermediate filaments.	CO1, CO3
Unit 4	Cytology IV	
A	Nucleus Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus Chromatin: Euchromatin and Hetrochromatin, lampbrush chromosomes and polytene chromosomes	CO1, CO3
В	Cell Division: Mitosis, Meiosis, Cell cycle and its regulation.	CO1, CO3
С	Cell Signaling GPCR and Role of second messenger (cAMP)	CO1, CO3
Unit 5	Developmental Biology	
A	Historical perspective and basic concepts: stages of development, Cell-Cell interaction, Differentiation and growth.	CO4
В	Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, Blocks to polyspermy; General account of cleavage division: Planes and patterns of	CO4

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				Beyond Boundaries			
			Implantation of embryo in				
	humans, Place	humans, Placenta (Structure, types and functions of					
	placenta						
C	Regeneration:	Modes of rege	neration, In vitro fertilization,	CO4			
	Stem cell (ESC	C).					
Mode of	Theory	Theory					
examination							
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	Karp, G. 2010	. Cell and Mole	ecular Biology: Concepts and				
	Experiments.	6th Edition.					
	John Wiley &	Sons. Inc.					
Other	Cooper, G.M.	and Hausman,	R.E. 2009. The Cell: A				
References	Molecular App	proach. 5th					
	edition. ASM	Press & Sunde	rland, Washington, D.C.;				
	Sinauer Assoc	iates, MA.					

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022
Prog	gram: BFS	Current Academic Year: 2020
Brai	nch: Forensic	Semester: 1 <sup>st</sup>
Scie	nce	
1	Course Code	
2	Course Title	Zoology Lab
3	Credits	2
4	Contact Hours	0-0-4
	(L-T-P)	
	Course Status	Compulsory
5	Course	1. To develop the knowledge of basic working of different microscopes.
	Objective	2. To have an overview about the structure of cell and its organelles.
		3. To develop a sense of cell division in somatic cell and generative
		cells.
		CONS.
6	Course	CO1:To gain the knowledge of working and basic principle of different

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		Beyond Boundaries					
	Outcomes	microscopes. CO2: Study different types of cells with their specifications. CO3: Able to determine different cell division stages under the microscope. CO4: Able to identify different cell organelles under the microscope.					
7	Course Description	After the completion of this course curriculum students widentify and differentiate between different types of cells the basic knowledge about the cell division.					
8	Outline syllabu	is .	CO Mapping				
	Unit 1	To study Different Microscope.	CO1				
		Simple Microscope					
		Compound Microscope					
		Comparison Microscope					
	Unit 2	Study of Cell.	CO2				
		<ul> <li>Prokaryotic Cell</li> </ul>					
		Eukaryotic Cell					
		Animal and Plant Cell					
	Unit 3	Study of slides	CO3				
		<ul> <li>Stages of Mitosis</li> </ul>					
		<ul> <li>Stages of Meiosis</li> </ul>					
		Chick Embryo					
	Unit 4	To comment upon the slides or microphotographs showing ultra structures of some cell types and cell organellesI	CO4				
		Endoplasmic Reticulum					
		Mitochondria					
		Golgi Apparatus					
	Unit 5	To comment upon the slides or microphotographs	CO4				
	5 5	showing ultra structures of some cell types and cell organellesII					
		• Nucleus					
		Choloplast					



			<b>*</b>	Beyond Boundaries
	• Cillia	and Flagella		
Mode of examination	Practical/Viv	a		
Weightage	CA	MTE	ETE	
Distribution	60%	0%	40%	
Text book/s*	-			
Other	-			
References				

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Brai	nch: Forensic	Semester: 2 <sup>nd</sup>
Scie	nce	
1	Course Code	
2	Course Title	Forensic Science
3	Credits	3
4	Contact	2-1-0
	Hours	
	(L-T-P)	
	Course Type	Compulsory
5	Course	1- Able to explain the various social science, methods of inquiry.
	Objective	2- Gaining insight into the law and legal system.
		<b>3-</b> To provide knowledge and techniques required to improve product qualityand process efficiency by identify and measuring production process.
6	Course Outcomes	CO1:Enumerate criminal theory to explain criminal behaviour. CO2:They have all relative knowledge of Laws and testimony related to investigation& crime. CO3:They give knowledge of process and techniques of laboratory along with quality maintenance. CO4:Define structure & function of police organization.

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			Beyond Boundaries
7	Course Description	After the completion of this course students will be able to debetween several criminal cases and the power and limitation magistrate.	
8	Outline syllab	us	CO Mapping
	Unit 1	Criminology	
	A	Definition of Law, Court, Judge, Introduction to Criminal	CO1, CO2
		Procedure Code, FIR, Object of Punishment, Kinds of	
		Punishment, Primary and Sanctioning Rights.	
	В	Classification – civil, criminal cases. Essential elements of criminal law. Constitution and hierarchy of criminal courts.	CO1, CO2
	С	Cognizable and non-cognizable offences. Bailable and non-bailable offences. Sentences which the court of Chief Judicial Magistrate may pass.	CO1, CO2
	Unit 2	Police Organization	
	A	Definition and scopePolice organization under central government: general information about their structure and function BPR&D, CBI, IB, RAW, NCRB, NICFS, NPA, UT Police Force.	CO4
	В	International Police Organization: INTERPOLE- history, structure general and special notices.	CO4
	С	State Police organization: general organization of police at state and range level. Police organization at district level.	CO4
	Unit 3	Laws Specific to Forensic Science	
	A	<u>Indian Penal Code</u> pertaining to offences against persons – Sections 121A, 299, 300, 302, 304A, 304B, 307, 309, 319, 320, 324, 326, 351, 354, 359, 362.	CO1, CO2
	В	<u>Cr.P.C.</u> – Sections 291,291A, 292 & 293 in the code of criminal procedure.	CO1, CO2
	С	Amendments in Sections related to Forensic Science: Sections 375 & 377 and their amendments.	CO1, CO2
	Unit 4	Acts to related to Forensic Science and special Acts related to Society	
	A	<u>Indian Evidence Act</u> – Evidence and rules of relevancy in brief. Expert witness. Cross examination and reexamination of witnesses, Sections 32, 45, 46, 47, 57, 58, 60, 73, 135, 136, 137, 138, 141.	CO1, CO2
	В	Acts Pertaining to Socio-economic and Environmental  Crimes- Dowry Prohibition Act, Immoral Traffic  Prevention Act,	CO1, CO2
	С	Wildlife Protection Act, Environment Protection Act, Untouchability Offences Act.	CO1, CO2
	Unit 5	Quality Management	
	Cint 5	Quanty Management	

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				Beyond Boundaries
A	CO3			
В	Equipment, meatest and calibration result	CO3		
С	Accreditation at ASCLD/LAB, A	CO3		
Mode of examination	Theory			
Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	IPC, Cr.P.C &			
Other	-		·	
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022					
Prog	gram: FSB	Current Academic Year: 2020					
Brai	nch: Forensic	Semester: 2 <sup>nd</sup>					
Science							
1	Course Code						
2	Course Title	Forensic science Lab					
3	Credits	2					
4	Contact Hours	0-0-4					
	(L-T-P)						
	Course Status	Compulsory					
5	Course	1. To have an overview of crime cases and criminal profiling assisting					
	Objective	the police.					

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		2. To have an overview of power and limitations	of first class					
		magistrate.	with different					
		3. To develop the knowledge of studying crime cases with different sections.						
6	Course Outcomes	CO1:To understand the knowledge of various crime cases. CO2: Students will be able to differentiate between cognizable and non-cognizable offences. CO3: To understand different cases in which criminal profiling is helpful. CO4: Have the knowledge of power and limitations of first class						
		magistrate.						
7	Course							
	Description	After the completion of this course students will be able to between several criminal cases and the power and limitation magistrate.						
8	Outline syllabus	, •	CO Mapping					
	Unit 1	To review past criminal cases and illucidate which theory best explain the criminal behavior of the accused.	CO1					
		Briefing						
		• Demo						
		Practical						
	Unit 2	To review crime cases where criminal profiling assisted the police to apprehend the accused	CO2					
		Briefing						
		• Demo						
		Practical						
	Unit 3	To prepare a schedule of five cognizable and five non cognizable offences.	CO2, CO3					
		Briefing						
		• Demo						
		Practical						
	Unit 4	To study the power and limitation of the court of judicial magistrate of the first class.	CO4					
		Briefing						
		• Demo						
		Practical						
	Unit 5	To study a crime case in which an accused was punished on	CO1, CO3					



				Beyon	d Boundaries		
	• Brie	<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>					
	• Dem						
	• Prac						
Mode of examination	Practical/Vi	Practical/Viva					
Weightage	CA	MTE	ETE				
Distribution	60%	0%	40%				
Text book/s*	-	-					
Other	-						
References							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
002	_	-	_	-			2	2	_		2	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022				
Prog	gram: FSB	Current Academic Year: 2020				
Brai	nch: Forensic	Semester: 2 <sup>nd</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Physics				
3	Credits	3				
4	Contact	2-1-0				
	Hours					
	(L-T-P)					
	Course Type	Compulsory				
5	Course Objective	1-Students can understand analogy between translational and rotational kinematics.				
		<b>2</b> - Develop understanding of mass, energy, heat, work, efficiency and real thermodynamics cycles and process.				
		<b>3</b> -To gain knowledge and skill in understanding of sounds.				
6	Course	CO1:Develop a qualitative understanding of rotational inertia.				
	Outcomes	CO2:Able to describe a nature of wave and explain the distinction				

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		between wave motion & particle motion.  CO3:Determine and calculate appropriate mass and energy transfers and properties to analyse selected transient control volume applications.  CO4:Correctly apply the laws of thermodynamics.						
7	Course Description	After the completion of this course students will be able to determine and calculate several parameters like inertia, acceleration and viscosity of liquid.						
8	Outline syllabu		CO Mapping					
	Unit 1	Rotational Motion						
	A	Rotational kinematics: angular displacement, angular velocity.	CO1, CO2					
	В	Angular acceleration, rotation with constant angular acceleration.	CO1, CO2					
	С	Rotational motion of a particle: torque on a particle, angular momentum of a particle.	CO1, CO2					
	Unit 2	Rigid Body Dynamics						
	A	Rigid bodies: angular momentum of a rigid body, moment of inertia.	CO1, CO2					
	В	Parallel axis theorem, perpendicular axis theorem, center of mass.	CO1, CO2					
	С	Rigid body dynamics: Equations of motion of a rigid body, combined translation and rotation of a rigid body, rolling.	CO1, CO2					
	Unit 3	Wave motion, Sound and Ultrasound						
	A	Transverse and longitudinal waves, superposition of waves, beats, standing waves, normal modes in organ pipes and strings	CO3					
	В	Sound waves: speed of sound in solids, liquids and gases, sound intensity and decibel scale, resonance and natural frequency, sound spectrum, pitch and timbre of musical sound Doppler effect, shock waves, echo, reverberation, acoustics of buildings.	CO3					
	С	Ultrasound: Production and application of ultrasonic waves.	CO3					
	Unit 4	Thermodynamics I						
	A	Temperature, zeroth law of thermodynamics, heat capacity.	CO4					
	В	Specific heat, molar heat capacity, heats of fusion and evaporation.	CO4					
	С	Mechanisms of heat transfer: conduction, convection, and radiation, Stefan's law of radiation.	CO4					
<u> </u>								

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Unit 5	Thermodyna	mics II		Beyond Boundaries			
A	First law of the equilibrium, sta processes.	CO4					
В	Second law of t engines, refrige	CO4					
C	Kinetic theory	CO4					
Mode of examination	Theory	Theory					
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	College physic Halliday & Re						
Other	Sear's & Zem	ansky's Univer	sity physics- Young and				
References	Freedman.						

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	2	2	2	3	2
003	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2
	1	I	I	I	1	I	I	1	I	ı	l	ı

Scho	ool: SAHS	Batch: 2019-2022					
Prog	gram: FSB	Current Academic Year: 2020					
Bra	nch: Forensic	Semester: 2 <sup>nd</sup>					
Scie	nce						
1	Course Code						
2	Course Title	Physics Lab					
3	Credits	2					
4	Contact Hours	0-0-4					
	(L-T-P)						
	Course Status	Compulsory					
5	Course	1. To develop the knowledge of how to measure the acceleration due to					
	Objective	gravity.					
		2. To have an overview of the moment of inertia.					
		3. Use to calculate the moment of inertia of different frequency shapes.					
6	Course	CO1: To understand how to calculate the moment of inertia.					
	Outcomes	CO2: To understand the process of measuring the acceleration due to					



		gravity. CO3: Able to determine the coefficient of viscosity of water. CO4: Learn how to calculate the moment of inertia with different shapes.							
7	Course Description	After the complete calculate several water.							
8	Outline syllabus	<u> </u>			CO Mapping				
	Unit 1		cceleration o	lue to gravity using a simple	CO1				
		Briefing							
		Demo							
		Practical							
	Unit 2	To determine the axis of rotation.	moment of i	inertia of Flywheel about its	CO1				
		<ul> <li>Briefing</li> </ul>							
		• Demo							
		• Practical							
	Unit 3	To determine the Poiseuille's metho		f viscosity of water by	CO2				
		<ul> <li>Briefing</li> </ul>							
		• Demo							
		• Practical							
	Unit 4	To determine the Sextant.	height of a l	ouilding by the help of a	CO2, CO3				
		Briefing							
		<ul> <li>Demo</li> </ul>							
		Practical							
	Unit 5		ent of inert	ia of different irregular shapes	CO4				
		Briefing							
		• Demo							
		Practical							
	Mode of examination	Practical/Viva							
	Weightage	CA M	ΓE	ETE					



Distribution	60%	0%	40%	
Text book/s*	B.Sc. Practica	al Physics- Harı	nan Singh and PS Hemne.	
Other	-			
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

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	ool: SAHS								
	gram: FSB	Current Academic Year: 2020							
	nch: Forensic	Semester: 2 <sup>nd</sup>							
Scie									
1	Course Code								
2	Course Title	Chemistry							
3	Credits	3							
4	Contact	2-1-0							
	Hours								
	(L-T-P)								
	Course Type	Compulsory							
5	Course	1-Able to recognize to write the mechanism of electrophilic aror	natics						
	Objective	substitution							
		2- Fundamental understanding and application of thermodynam	tal understanding and application of thermodynamics.						
		<b>3-</b> Understand the general trends in chemistry behind p and s blo	ock element.						
6	Course Outcomes	CO1:Able to predict chemical and physical properties of element compound in s & p blocks	ts and						
		CO2:Concept of aromaticity and the main property of aromatic compounds.							
		CO3:To distinguish between spontaneous and non-spontaneousprocess.							
		CO4:Understand the concept of free energy.							
7	Course	After the completion of this course students will be able to de							
	Description	of process of purification of organic compound and also have the							
		knowledge of different chemical compounds in the mixture.							
8	Outline syllabu	ls	CO Mapping						
	Unit 1	Chemical Thermodynamics I							

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A	What is thermodynamics? State of a system, state variables,	CO3,CO4
	intensive and extensive variables, concept of heat and work,	
	thermodynamic equilibrium, thermodynamic properties, various	
	types of systems and processes.	
	types of systems and processes.	
В	First Law of thermodynamics. Calculation of work (w), heat (q), changes in internal energy (QU) and enthalpy (QH) for expansion or compression of ideal gases under isothermal and adiabatic conditions for both reversible and irreversible processes.	CO3,CO4
С	Calculation of $w$ , $q$ , QU and QH for processes involving changes	CO3,CO4
	in physical states.	
Unit 2	Chemical Thermodynamics II	
A	Various statements of Second Law of thermodynamics, concept of entropy, Gibbs free energy and Helmholtz energy, Calculations of entropy change and free energy change for reversible and irreversible processes under isothermal and adiabatic conditions.	CO3,CO4
В	Criteria of spontaneity. Gibbs – Helmholtz equation. Maxwell's relations.	CO3,CO4
С	Statement of Third Law of thermodynamics and calculation of absolute entropies of substances.	CO3,CO4
Unit 3	Compounds of s block elements	
A	Concept of multicentre bonding (diborane).	CO1
В	Structure, bonding and their important properties like oxidation/reduction, acidic/basic nature of the following compounds.	CO1
С	Their applications in industrial, organic and environmental chemistry.	CO1
Unit 4	Compound of p block elements	
A	Hydrides and their classification (ionic, covalent and interstitial), structure and properties with respect to stability of hydrides of p- block elements.	CO1
В	Hydrides of nitrogen (NH3, N2H4, N3H, NH2OH). Oxoacids of P, S and Cl.	CO1

Halides and oxohalides: PCl3, PCl5, SOCl2 and SO2Cl2.

**Aromatic Hydrocarbons** 

С

Unit 5

CO1

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A	•	Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene.					
В	Sulphonic acid. substitution: nit Craft's reaction benzene).	CO2					
С		Side chain oxidation of alkyl benzenes (Upto 4 carbons on					
Mode of examination	Theory						
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	Arun Bahl and S. Chand						
Other References	-	5. Chang					

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022				
Prog	gram: FSB	Current Academic Year: 2020				
Bra	nch: Forensic	Semester: 2 <sup>nd</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Chemistry Lab				
3	Credits	2				
4	Contact Hours	0-0-4				
	(L-T-P)					
	Course Status	Compulsory				
5	Course	1. To develop a sense for purification of organic compound.				
	Objective	2. To have an overview estimate of sodium carbonate.				
		3. To have the knowledge of different chemical compounds in the				

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	1		Beyond Boundaries
		mixture.	
6	Course Outcomes	CO1: Learn the process of crystallization and distillation. CO2: Estimation of different chemical compounds in a mix CO3: Will be able to differentiate between anions and ca help of qualitative analysis. CO4: Able to understand the estimation of sodium carbonat	ations with the
7	Course Description	After the completion of this course students will be able to sense of process of purification of organic compound and a knowledge of different chemical compounds in the mixture	lso have the
8	Outline syllabus		CO Mapping
	Unit 1	Purification of organic compounds by crystallization (from water and alcohol) and distillation.	CO1
		<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>	
	Unit 2	Semi-micro qualitative analysis using H2S of mixtures not more than four ionic species (two anions and two cations and excluding insoluble salts) out of the following: Cations: Al3+, Ca2+, K+, Anions: Cl-, Br-, I-, F.	CO1, CO2
		<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>	
	Unit 3	Estimation of sodium carbonate using standardized HCl.  • Briefing	CO3
		<ul><li>Demo</li><li>Practical</li></ul>	
	Unit 4	Estimation of carbonate and hydroxide present together in a mixture.	CO3
		<ul><li>Briefing</li><li>Demo</li></ul>	



				Beyond Boundaries	
	• Pra	actical			
Unit 5		Estimation of carbonate and bicarbonate present together in a mixture.			
	<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>				
Mode of examination	Practical/V	Viva			
Weightage	CA	MTE	ETE		
Distribution	60%	0%	40%		
Text book/s*	B.D Khos	B.D Khosla- Chemistry Practical book			
Other References	Ahluwalia	Ahluwalia- Chemistry Practical Book			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2
I	1	ı	ı	ı	ı	ı	1	1	ı	ı	I	

Scho	ool: SAHS	Batch: 2019-2022				
Prog	gram: FSB	Current Academic Year: 2020				
Bran	nch: Forensic	Semester: 2 <sup>nd</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Zoology				
3	Credits	3				
4	Contact	2-1-0				
	Hours					
	(L-T-P)					
	Course Type	Compulsory				
5	Course	<b>1-</b> To identify the structural elements of protein, basic features of enzymes.				
	Objective	2- Understanding Mendel's law and crossing mechanism.				
		<b>3-</b> Able to describe central dogma.				

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_	Course		leyond Boundaries
6	Course	CO1:Able to define laws of genetics.	
	Outcomes	CO2:To demonstrate and understanding of fundamental biocher	mical principles.
		CO3:Able to explain the process of replication, transcription and	
		translation.	
		CO4:Able to evaluate conclusion based on genetics data.	
		This to evaluate contraston based on genetics data.	
7	Course	The students will have the knowledge and basic concepts of	inheritance
'	Description	will be able to apply the law of segregation and independent	
	Description	the human population.	assortificat in
8	Outline syllabu	1 1	CO Mapping
0	Unit 1	Mendelian Genetics	CO Mapping
	A	Concept of Dominance (Complete, Incomplete, and Co-	CO1, CO4
	A	dominance); Laws of Heredity: Segregation, Independent	CO1, CO4
		Assortment, Molecular biology of wrinkled seed; Test Cross,	
		Back Cross.	
	В	Modifications in Mendelian Di-hybrid Ratio; Epistasis,	CO1, CO4
	В	Pleiotropy, Multiple Allelism in Human Blood System,	201, 201
	С	Human Mendelian Traits.	CO1, CO4
	Unit 2	Sex Determination and Inheritance	,
	A	Sex determination in Drosophila: Chromosomal theory, origin of	CO1, CO4
		Gynanders and Intersexes, Genetic balance. Sex chromosome	,
		system and sex determination: XX/XO, XX/XY, ZZ/ZW and	
		haploidy/ dipolidy type	
	В	Sex determination in human: Gene Dosage Compensation and	CO1, CO4
		Molecular basis of X-chromosome inactivation.	
	C	Cytoplasmic inheritance: Sigma factor in Drosophila, Kappa	CO1, CO4
		particle inheritance. Chromosomal aneuploidy in human beings.	
	Unit 3	Chromosomes, DNA and Mutation	
	A	Composition of chromatin and structural organization,	CO1, CO4
		Nucleosome model. Giant chromosomes: Lampbrush	,
		chromosomes and Polytene chromosomes.	
	В	Chemistry of nucleic acids, DNA as genetic materials and	CO1, CO4
		Structural variants of DNA, DNA replication: Process, origin of	
		replication, unwinding of DNA helix, role of primers,	
		elongation, DNA repair mechanisms	
	C	MUTATION :Point Mutation, Single gene disorder, Genetic	CO1, CO4
		Anomaly /Disorders/syndrome:- Down Syndrome, Turner's	
		syndrome, Klinefelter syndromes chronic myeloid leukemia and	
		"cri -du -chat" syndrome.	
	Unit 4	Gene Expression and rDNA technology	
	A	Transcription and Translation in Prokaryotes. Post	CO2
		transcriptional modifications.	
	В	Regulation of gene expression, Lac Operon and Tryp Operon.	CO2

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С	rDNA Technol	rDNA Technology: Introduction, Cloning Vectors, Restriction					
	Enzymes and C	Cloning Methods	, PCR, Gene Transfer Methods,				
	Microarray. Eth						
Unit 5	Biochemistry						
A	Elementary kno	owledge of funct	ional groups (alcohols,	CO3			
	thioalcohols ac	ids, aldehydes, k	tetones, and amines) and their				
	reaction; Hydro	ogen ion concent	ration and buffering mechanism				
В	Classification of	of carbohydrates	Characteristics of	CO3			
	monosaccharid	es; Chemical cla	ssification of amino acids;				
			ds; Hydrolysis of fats				
С	Enzymes: Type	es of enzymes; C	onditions for enzymatic activity	CO3			
	.Vitamins: Typ	es of vitamins ar	nd micronutrients.				
Mode of examination	Theory						
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	-						
Other	-	-					
References							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
002	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
004	2	2	2	2	2	2			2	2	2	2
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022
Program: FSB		Current Academic Year: 2020
Brai	nch: Forensic	Semester: 2 <sup>nd</sup>
Scie	nce	
1	Course Code	
2	Course Title	Zoology Lab
3	Credits	2

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4	Contact Hours (L-T-P)	0-0-4	3 eyond Boundaries				
	Course Status	Compulsory					
5	Course Objective	<ol> <li>To develop the knowledge of pattern of inheritance in human population.</li> <li>To develop a sense between the sex influenced traits of long and short second finger.</li> <li>Use to identify the presence of barr body in the buccal cavity.</li> </ol>					
6	Course Outcomes	CO1: Will be able to differentiate the sex influenced traits. CO2:Able to apply principle of segregation and independent using color beads. CO3: Gain the knowledge of inheritance of morphogenetic human population. CO4: Identify the presence of barr body in female buccal care.	traits in				
7	Course Description	The students will have the knowledge and basic concepts o will be able to apply the law of segregation and independent in the human population.					
8	Outline syllabus		CO Mapping				
	Unit 1	Simulation of principles of segregation and independent assortment using coloured beads. Application of law of probability.	CO1				
		Briefing					
		• Demo					
		Practical					
	Unit 2	Study of pattern of inheritance in human population of the traits Rolling of tongue and interlocking.	CO3				
		Briefing					
		• Demo					
		Practical					
	Unit 3	Study of the sex-influenced trait long vs. short second finger in relation to the Fourth finger (apply Hardy-Weinberg law.	CO2				
		Briefing					
		• Demo					
		• Practical					
	Unit 4	Study of mutants in Drosophila (Bar eye, white eye, yellow	CO4				



body, sepia eye, curled wing, Dumpy wing, vestigial wing and sepia eye-curled wing and curled wing-ebony body-								
	sepia Eye.	• • • • • • • • • • • • • • • • • • • •						
	Brief	Briefing						
	• Demo	)						
	• Pract	<ul> <li>Practical</li> </ul>						
Unit 5	Identify the p	CO4						
	Brief	ing						
	• Demo	)						
	• Pract	ical						
Mode of examination	Practical/Viv	Practical/Viva						
Weightage	CA	MTE	ETE					
Distribution	60%	0%	40%					
Text book/s*	-	-						
Other	-	-						
References								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
000	2	2	2	2	2	2	2	2	2	2	2	2
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Bra	nch: Forensic	Semester: 2 <sup>nd</sup>
Scie	nce	
1	Course Code	
2	Course Title	Botany
3	Credits	3
4	Contact	2-1-0
	Hours	
	(L-T-P)	
	Course Type	Compulsory

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Course Objective	<ul><li>1-Focusing on main metabolic pathway in a living cell.</li><li>2- Describe the distinguish traits of liverworts, hornworts and more</li></ul>							
Objective	2- Describe the distinguish traits of liverworts, hornworts and mo							
	2- Describe the distinguish traits of liverworts, hornworts and mosses							
	<b>3-</b> Understand the scope and importance of plant pathology.							
	, , , , , , , , , , , , , , , , , , , ,							
Course	CO1:They will be able to identify living entities that causes diseases in plants.							
Outcomes	CO2:Describe the general spore disposal mechanism of moss	·						
	CO3:Classify Bryophytes and Teridophytes.							
	CO4:Able to describe structure function and mechanism of action	n ofenzymes.						
Course	On the completion of this course the students will have the ki							
Description		ytes and						
On41: 11 1		COM						
•		CO Mapping						
		CO1						
Α		CO1						
	relation; prevention and control of plant diseases.							
В	Bacterial diseases: Citrus canker and angular leaf spot of cotton.							
	The state of the s							
С	Fungal diseases: Early blight of potato. Black stem rust of	CO1						
=								
	wheat, white rust of cruchers.							
IIn:4 2	Mysology							
		CO2						
Λ		CO2						
	Organic acids, Enzymes, Mycoproteins)							
В	Secondary metabolites (Pharmaceutical preparations);	CO2						
	Agriculture (Biofertilizers); Mycotoxins.							
С		CO2						
TI:4 3								
		CO4						
Α		CO4						
	molecule.							
В	Enzymes:Structure of enzyme: holoenzyme, apoenzyme,	CO4						
	cofactors, coenzymes and prosthetic group; Classification of							
	enzymes.	GC t						
C	Features of active site, substrate specificity, mechanism of action	CO4						
	(activation energy, lock and key hypothesis, induced - fit							
	Course Description  Outline syllabu Unit 1 A  B  C  Unit 2 A  B  C  Unit 3 A	CO2: Classify Bryophytes and Teridophytes.  CO4: Able to describe structure function and mechanism of actio  Course Description On the completion of this course the students will have the k general account of morphology and characteristics of bryoph pteridophytes.  Outline syllabus Unit 1 Phytopathology A Terms and concepts; General symptoms; Geographical distribution of diseases; Etiology; Symptomology; Host-Pathogen relationships; Disease cycle and environmental relation; prevention and control of plant diseases.  B Bacterial diseases: Citrus canker and angular leaf spot of cotton.  Viral diseases: Tobacco Mosaic viruses, vein clearing.  C Fungal diseases: Early blight of potato, Black stem rust of wheat, White rust of crucifers.  Unit 2 Mycology A Mycology:Role of fungi in biotechnology; Application of fungi in food industry (Flavour & texture, Fermentation, Baking, Organic acids, Enzymes, Mycoproteins)  B Secondary metabolites (Pharmaceutical preparations); Agriculture (Biofertilizers); Mycotoxins.  C Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides); Medical mycology.  Unit 3 Bioenergetics and Enzymes  A Bioenergetics: Laws of thermodynamics, concept of free energy, endergonic and exergonic reactions, coupled reactions, redox reactions. ATP: structure, its role as an energy currency molecule.  B Enzymes:Structure of enzyme: holoenzyme, apoenzyme, cofactors, coenzymes and prosthetic group; Classification of enzymes.  C Features of active site, substrate specificity, mechanism of action						

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 Seyond Boundarie								
	theroy), Michae	elis – Menten eq	uation, enzyme inhibition and					
	factors affecting	factors affecting enzyme activity.						
Unit 4	Bryophytes							
A	• • •		stics, adaptations to land habit, organization. Classification (up	CO3				
В			oduction of Marchantiaand s not to be included).	CO3				
С	••	Ecology and economic importance of bryophytes with special mention of <i>Sphagnum</i> .						
Unit 5	Pteridophyte	S						
A			cation, Early land plants fication (up to family),	CO3				
В	Morphology, an <i>Equisetum</i> and	natomy and representation of the properties of t	oduction of <i>Selaginella</i> , omental details not to be d habit, stelar evolution	CO3				
С	Ecological and	Ecological and economical importance of Pteridophytes.						
Mode of examination	Theory	Theory						
Weightage	CA	CA MTE ETE						
Distribution	30%							
Text book/s*	-							
Other References	-							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022
Program: FSB		Current Academic Year: 2020
<b>Branch: Forensic</b>		Semester: 2 <sup>nd</sup>
Scie	nce	
1	Course Code	
2	Course Title	Botany lab

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3	Credits	2	seyond Boundaries					
4	Contact Hours	0-0-4						
	(L-T-P)							
	Course Status	Compulsory  1. To dayslen the knowledge shout the membels gy of Bissia.						
5	Course	1. To develop the knowledge about the morphology of Riccia.						
	Objective	2. To develop the sense of transverse section of internodes for						
		equisetum.						
		3. To have an overview of fungi.						
6	Course	CO1: To gain knowledge about several Pteridophytes.						
	Outcomes	CO2: To understand the morphology of Riccia.						
		CO3: To gain the knowledge of Gnetum (Male and female	cones).					
		CO4: Prepare the temporary mount of bryophytes.						
7	Course	On the completion of this course the students will have the	knowledge					
	Description	and general account of morphology and characteristics of b	ryophytes and					
		pteridophytes.						
8	Outline syllabus		CO Mapping					
	Unit 1	Riccia- Morphology of thallus.	CO2					
		Briefing						
		• Demo						
		Practical						
	Unit 2	Equisetum- Morphology, transverse section of internode, longitudinal section of strobilus.	CO1					
		Briefing						
		• Demo						
		Practical						
	Unit 3	Gnetum- Morphology (stem, male & female cones), transverse	CO3					
		section of stem						
		Briefing						
		• Demo						
		Practical						
	Unit 4	Introduction to the world of fungi (Unicellular,	CO3					
		coenocytic/septate mycelium, ascocarps &basidiocarps).						
		Briefing						
	•		•					



				Beyond Boundaries				
	• De	emo						
	• Pra	<ul> <li>Practical</li> </ul>						
Unit 5	Temporary	CO4						
	• Br	iefing						
	• De	emo						
	• Pra	actical						
Mode of	Practical/V	√iva						
examination								
Weightage	CA	MTE	ETE					
Distribution	60%	0%	40%					
Text book/s*	-							
Other	-							
References								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO2	2	3	2	2	3	2	3	3	2	2	2	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
00.4	_	_	_	_	_	_	_	_	_			
CO4	3	3	3	3	3	3	3	3	3	3	2	2
1			ı		ı					ĺ		1

	chool: AHS	Batch: 2019-2022							
Program: FSB		Current Academic Year: 2020							
	ranch:	Semester: 3 <sup>rd</sup>							
	orensic								
Sc	cience								
1	Course								
	Code								
2	Course	Forensic Science-III							
	Title								
3	Credits	3							
4	Contact	2-1-0							
	Hours								
	(L-T-P)								
	Course	Compulsory							
	Type								
5	Course	1-Complete and thorough knowledge regarding the various aspects of forensic							

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	Ohiootissa		d Boundaries					
	Objective	serology.						
		<b>2-</b> Develop and apply critical thinking and analytical skill of anthropology.						
		<b>3-</b> Explains the key concept in population evolutionary and quantitative	genetics.					
6	Course Outcomes	CO1:Able to identify and examine all biological fluids. CO2:Understand the range of molecular lab techniques used routinely in human forensic analysis and population genetics analysis. CO3:Describe cultural systems construction differently for various human groups. CO4:Able to explain different diversities.						
7	Course Descriptio n	After the completion of this course students will be able to have the kr of human skeletal system and differentiation between human and anim remains, about genetics related to Investigation and also all about the fluids.	nal					
8	Outline sylla	abus	CO					
	-		Mapping					
	Unit 1	Forensic Biology and Serology I						
	A	AnalysisofBiologicalFluid,Saliva,Semen, VaginalFluid, Urine, Sweat,	CO1,					
		SerologicalConcepts.	CO2					
	В	Antigen / Antibodies, Polyclonal	CO1,					
		antibodies, Monoclonalantibodies, Antiglobulin. Serological Techniques,	CO2					
		ElectrophoreticMethods— Agarosegel, SDS, Natured/Denatured.						
	С	Identification ofBlood, Properties, BloodGrouping – Human&Non-human,	CO1,					
		Presumptive&ConfirmatoryTests.	CO2					
	Unit 2	Forensic Biology and Serology II						
	A	Human&AnimalHairmorphology. Determinationofhuman	CO1,					
		andanimaloriginfrombones,hairs,nails, skin. Bodytissuefluids /strains viz.blood,menstrualblood, semen,saliva, sweat,pus, vomit, etc.,throughimmunodiffusionandimmune— electrophoresis	CO2					
	В	Serogeneticmarkers: -Blood groups— biochemistryandgenetics of	CO1,					
		ABO,Rh,Mnsystems,stains andotherfluids/stainsviz. menstrual	CO2					
		blood, semen, saliva, sweat, tear, pus, vomit, hair, bone, nailblood specific ABH						
		substances.						
	С	Determination of secretor/non secretor Lewis antigen, Bombay Blood group,	CO1,					
		Polymorphicenzymes typing–PGM, GLO,ESD,	CO2					
		EAP,AK,ADA,etc.,andtheirforensicsignificance,HLA						
		typing,roleserogeneticmarkersinindividualization,paternitydisputes etc.						
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Unit 3	Genetics and DNA					
A	Structural&definitive properties of Chromosomes	CO1,				
Λ	• •	CO2,				
	o HumanGenome	CO3				
	<ul> <li>DeoxyriboseNucleicAcid—Structuralproperties</li> </ul>					
	<ul> <li>SourcesofDNAevidence</li> </ul>					
	<ul> <li>DNAExtraction</li> </ul>					
	<ul> <li>BasicPrinciples</li> </ul>					
	<ul> <li>MethodofDNAextraction</li> </ul>					
	<ul> <li>DNAQuantification</li> </ul>					
В	<ul> <li>SlotBlotAssay</li> </ul>	CO1,				
	<ul> <li>Southern/NorthernBlotting</li> </ul>	CO2,				
	❖ DNA Amplification byPolymeraseChainReaction	CO3				
	❖ DNAElectrophoresis					
	<b>❖</b> DNAdatabasing					
	* DivAdatabasing					
С	HistoryofDNAfingerprinting, Humangenetics-Heredity, Alleles,	CO1,				
	Mutations&PopulationGenetic,MolecularBiologyofDNA.					
		CO3				
Unit 4	Forensic Biotechnology					
A	ForensicApplicationof recombinantDNAtechnology/					
	Forensic Biotechnology, Human Genome Project, Variations,					
	PolymorphisminDNA system–DNAmarkers RELP,RAPD,VNTRs, SNP,Autosomal–STR,Y-STR, Mitochondrial DNA.					
В	ForensicSignificanceofDNAProfiling:-Applicationindisputed	CO1,				
D	paternitycases, child swapping, Missingperson's identity—					
	immigration, veterinary&wild life andAgriculturecases,					
	legalperspectives—legal standardsfor					
	admissibilityofDNAprofiling, proceduralandethical concerns, statusof					
	development of DNA profiling in India and abroad.					
С	Newandfuturetechnologies:DNAchips,SNPsandlimitations	CO1,				
-	ofDNAProfiling	CO2,				
		CO3				
Unit 5	Anthropology					
A	Introduction&HistoryofAnthropology,Physical	CO1,				
	Anthropology&Human Variability,	CO2,				
	Understanding Archeology & Osteology, Scene Processing,	CO3				
	Examiningremains –Humanor Animal/OldorNew,Issues					
	involvedindevelopmentofbiological profile, Issuesin Identification,					
	Age estimation inchildhoodandadulthood, Sexual Dimorphism,					
	PopulationAncestry, Stature					



			Beyon	d Boundaries				
	· ·	estimation,Individualization&Identification,Evidenceforcauseand mannerofdeathfrombones, Documentation&ExpertWitness						
	Testimony.	ndones, Documen	ttation&Expert witness					
В	PortraitParle,Bertil		reconstruction, Super-	CO1, CO2,				
	impositiontechniques,Reconstructionbasedon craniometric andsomatoscopicmethods.Importanceoftissuedepthtoreconstructva rious facialfeatures.							
С	Witness Testimony IdentificationbyDe Examination&Reco Analysis&Processi	Introduction&HistoryofOdontology,DentalTrainingrequired,Expert Witness Testimony,Body IdentificationbyDentalRecords,PostMortem Examination&Records,Antemortemexamination &records,Record Analysis&Processing,ForensicDentistryin Mass Disasters,BiteMark, Collectionof Bitemarkevidence&comparison.Analysis—						
Mode of examinatio	Theory	•						
Weightage	CA	MTE	ETE					
Distributio 30% 20% 50%								
Text book/s*	Dr. R. Krishnamurty- Forensic biology							
Other References	R.Li- Forensic biol	R.Li- Forensic biology						

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Brai	nch: Forensic	Semester: 3 <sup>rd</sup>
Science		
1	Course Code	
2	Course Title	Forensic Science-III Lab
3	Credits	2
4	Contact Hours	0-0-4
	(L-T-P)	

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	Course Status	Compulsory	Beyond Boundaries					
5	Course Objective	<ol> <li>To develop knowledge about the age and sex.</li> <li>To have an overview of long bones.</li> <li>Use to identification and description of bones and their measurement.</li> </ol>						
6	Course Outcomes	CO1: Able to determine the stature from long bones. CO2:To gain knowledge about how to differentiate the age and sex from skull, teeth and pelvic bone. CO3:To identify the human bones. CO4:To estimate stature of long bones.						
7	Course Description	After the completion of this course students will be able to knowledge of human skeletal system and differentiation be and animal remains.						
8	Outline syllabus	S	CO Mapping					
	Unit 1	To determine the age from skull and teeth.	CO2					
		<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>						
	Unit 2	To determine of sex from skull	CO2					
		<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>						
	Unit 3	To determine sex from pelvis bone	CO3					
		Briefing						
		• Demo						
		• Practical						
	Unit 4	To study identification and description of bones and their measurements.	CO3					
		<ul><li>Briefing</li><li>Demo</li><li>Practical</li></ul>						
	Unit 5	To estimate stature from long bones.	CO4					
		Briefing						



	<ul><li>Demo</li><li>Pract</li></ul>	eyond Boundaries					
Mode of examination	Practical/Viv	Practical/Viva					
Weightage	CA	MTE	ETE				
Distribution	60%	0%	40%				
Text book/s*	-						
Other	-						
References							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 3 <sup>rd</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Physics-III						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course Objective	1-Basic knowledge of electrical quantities for understanding the impact of technologies.						
		2- Explains electrostatic induction & polarization.						
		<b>3-</b> Demonstrate the application of laser.						
6	Course Outcomes	CO1:Explain working principles of laser. CO2:Analyse the intensity variation of light due to polarization, interference and diffraction. CO3:Able to apply all laws of electricity. CO4:Define AC and DC circuits along with its applications.						



7	Course	After the comp	oletion of this c	course students will be able to d	etermine the					
	Description	wavelength an	d variations of	magnetic fields.						
8	Outline syllabu	10			CO Mapping					
0	Unit 1		d Magnetism-	T	CO Mapping					
	A	Electric charge,		, electric field, Gauss law	CO1, CO2					
	В	Electric current	Electric current, resistance, electromotive force, Ohm's law DC circuits, Kirchhoff's rules.							
	С	Magnetic field of Force on a char	CO1, CO2							
	Unit 2	Electricity an	d Magnetism	II						
	A	Biot-Savart law	, Ampere's law.		CO1, CO2					
	В		Faraday's law, Lenz's Law, Electromagnetic induction, Inductors, Self and mutual inductance.							
	С	AC circuits, pha	CO1, CO2							
	Unit 3	Electric Macl	nines and Rela	tive Theories						
	A	Electric machin	CO1, CO3							
	В		tions, displacen		CO1, CO3					
	С	Electromagnetic	Electromagnetic waves.							
	Unit 4	Optics I								
	A	Reflection, refra	action,totalintern	alreflection, polarization.	CO1, CO3					
	В	Thinlens,thickle	nsandlenscombi	nations, aberrations.	CO1, CO3					
	С		diffraction, interiment, single sli	erference in thin films, Young's t diffraction.	CO1, CO3					
	Unit 5	Optics II								
	A	Diffraction grat	ings, spectra, sir	mplespectrophotometer.	CO1, CO3					
	В	Laser physics: ty Lasers.	ypes, properties,	production and applications of	CO1, CO3					
	С	Opticalfibers, an applications of		eandnumericalaperture, losses,	CO1, CO3					
	Mode of examination	Theory								
	Weightage	CA	MTE	ETE						
	Distribution	30%	20%	50%						
	Text book/s*	Halliday & Re	snick.	Vuille, Principles of physics-						
	Other	Sear's & Zema	ansky's Univer	sity physics- Young and						
	References	Freedman.								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3

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CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Program: FSB Branch: Forensic Science  Course Code Course Title Credits Current Academic Year: 2020 Semester: 3 <sup>rd</sup> Semester: 3 <sup>rd</sup> Semester: 3 <sup>rd</sup> Semester: 3 <sup>rd</sup> Credits 2	
Science1Course Code2Course TitlePhysics-III Lab3Credits2	
1Course Code2Course TitlePhysics-III Lab3Credits2	
2 Course Title Physics-III Lab 3 Credits 2	
3 Credits 2	
4 Contact Hours 0-0-4 (L-T-P)	
Course Status Compulsory	
5 Course 1. To develop a sense to determine the variation of magn	etic field.
Objective 2. To have an overview of hysteresis curve.	
3. Use to identify the speed of light.	
CO1: Understand to determine the wavelength of monochrous source by Frensel's biprism.  CO2:Students will be able to determine the variation of monochrous construction of monochrous construction of monochrous construction.  CO3:To gain knowledge how to draw hysteresis curve.  CO4:To evaluate the speed of light using Michelson morles.	agnetic field.
7 Course Description After the completion of this course students will be able to wavelength and variations of magnetic fields.	determine the
8 Outline syllabus	CO Mapping
Unit 1 To determine the variation of magnetic field along the axis of a current carrying coil and estimate the radius of the coil.	CO2
Briefing	
• Demo	
Practical	
Unit 2 To draw hysteresis curve (B-H curve) of a specimen in the form of a transformer on a C.R.O. And to determine its hysteresis loss.	
Briefing	



				Beyond Boundaries					
	• Demo								
	• Praction	cal							
Unit 3	To determine given wire usi	CO1							
	Briefin	Briefing							
	• Demo								
	• Praction	cal							
Unit 4	Find the speed	l of light using N	Michelson-Morley experiment.	CO4					
	Briefin	ng							
	• Demo	• Demo							
	Praction	cal							
Unit 5	To determine by Fresnel's b	CO1							
	Briefin	ng							
	• Demo								
	Practic	cal							
Mode of	Practical/Viva	a							
examination		3.600							
Weightage	CA	MTE	ETE						
Distribution	60%	0%	40%						
Text book/s*	B.Sc. Practica	il Physics- Hari	nan Singh and PS Hemne.						
Other	-								
References									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS	Batch: 2019-2022
Program: FSB	Current Academic Year: 2020

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Bra	nch: Forensic	Semester: 3 <sup>rd</sup>	Beyond Boundaries	
Scie		Semester		
1	Course Code			
2	Course Title	Chemistry-III		
3	Credits	3		
4	Contact	2-1-0		
	Hours			
	(L-T-P)			
	Course Type	Compulsory		
5	Course	1-Comparing and contrasting kinetic and potential energy		
	Objective	<b>2-</b> significance of the no., position in nuclear magnetic resonance	e spectra.	
		<b>3-</b> Predict the direction and relative magnitudes of the dipole magnitudes are the dipole magnitudes.	-	
		molecules.	oments or	
		morecures.		
6	Course	CO1:To understand the meaning of term transition element and	gain an	
	Outcomes	appreciation of the characteristic properties of transition elemen	•	
		CO2: Able to identify and solve chemical problems and explore n		
		research.	o a. cao c.	
		CO3:Explains the bond angle for the hydride of all the elements	through f using	
		both the vsepr and hybridization model.		
		CO4:To describe le-chatelier's principle and its applications.		
7	Course	After the completion of this course students will be able to e		
	Description	identify the heat capacity, enthalpy, melting point and mechanism	anisms of	
	0 41 11 1	several compounds.	COM:	
8	Outline syllabu		CO Mapping	
	Unit 1	Thermochemistry Important principles and definitions of thermochemistry.	CO1 CO2	
	A	Concept of standard state and standard enthalpies of formations,	CO1, CO2	
		integral and differential enthalpies of solution and dilution.		
	В	Calculation of bond energy, bond dissociation energy and	CO1, CO2	
		resonance energy from thermochemical data.	·	
	C	Variation of enthalpy of a reaction with temperature –	CO1, CO2	
	II:4 2	Kirchhoff's equation.		
	Unit 2	Chemical Equilibrium  Free energy change in a chemical reaction. Thermodynamic	CO1 CO2	
	^ <b>1</b>	derivation of the law of chemical equilibrium.	CO1, CO2	
	В	Distinction between $QG$ and $QG$ 0, Le Chatelier's principle.	CO1, CO3	
	C	Relationships between <i>Kp</i> , <i>Kc</i> and <i>Kx</i> for reactions involving	CO1, CO2	
		ideal gases.	,	
	Unit 3	Transition Elements (3 <sup>rd</sup> series)		
	A	General group trends with special reference to electronic	CO3, CO4	
		configuration, variable valency, colour, magnetic and catalytic		
		properties, ability to form complexes and stability of various		
		oxidation states (Latimer diagrams) for Mn, Fe and Cu.		

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			<b>♥</b> " <b>&gt;</b>	Beyond Boundaries			
В		d actinides: Elec	etronic configurations, Oxidation ies.	CO3, CO4			
С		_ , ,	on of lanthanides (ion-exchange	CO3, CO4			
	method only).	, 1	, E				
Unit 4	Alkyl Halide						
A	Alkyl Halides:	(Upto 5 Carbon	s) Types of Nucleophilic	CO3, CO4			
	Substitution (SI	N2, SN1 and SN	i) reactions.	·			
В	Preparation: fr	om alkenes and	alcohols. Reactions: hydrolysis,	CO3, CO4			
	nitrite & nitro f	ormation, nitrile	& iso-nitrile formation.				
C	Williamson's et	ther synthesis: E	limination vs substitution.	CO3, CO4			
Unit 5	Aryl Halides						
A	Aryl Halides: P	CO3, CO4					
	case): from phe	nol, Sandmeyer	& Gattermann reactions				
В	,	,	omatic nucleophilic substitution	CO3, CO4			
	•		·				
C				CO3, CO4			
	allyl, benzyl, vi	nyl and aryl hali	ides.				
Mode of	Theory						
examination							
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	-	-					
Other	-						
References							
B C Mode of examination Weightage Distribution Text book/s* Other	case): from phe Reactions (Chlo (replacement by Benzyne Mecha Reactivity and I allyl, benzyl, vi Theory  CA 30%	nol, Sandmeyer probenzene): Are y –OH group) and anism: KNH2/N Relative strength nyl and aryl hali	& Gattermann reactions omatic nucleophilic substitution ad effect of nitro substituent. H3 (or NaNH2/NH3). n of C-Halogen bond in alkyl, ides.  ETE	CO3, CO4			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Brai	nch: Forensic	Semester: 3 <sup>rd</sup>
Scie	nce	
1	Course Code	
2	Course Title	Chemistry-III Lab
3	Credits	2
4	Contact Hours	0-0-4
	(L-T-P)	

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	Course Status	Compulsory	Beyond Boundaries				
5	Course Objective	<ol> <li>To develop the knowledge of determination of heat capacity.</li> <li>Use to estimation of magnesium and zinc by titration using EDTA.</li> <li>To have an overview preparation and mechanism of various reactions.</li> </ol>					
6	Course Outcomes	CO1:To evaluate the heat capacity of calorimeter for different volumes. CO2:To identify the melting point of bromination of phenol/ aniline. CO3: Understand the preparation and mechanism of various reactions. CO4:Determine the enthalpy of neutralization of hydrochloric acid with sodium hydroxide.					
7	Course Description	After the completion of this course students will be able to identify the heat capacity, enthalpy, melting point and mech several compounds.					
8	Outline syllabus		CO Mapping				
	Unit 1	Determination of heat capacity of calorimeter for different volumes.	CO1				
		Briefing					
		• Demo					
		Practical					
	Unit 2	Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.	CO4				
		Briefing					
		• Demo					
		Practical					
	Unit 3	Preparations: Mechanism of various reactions involved to be discussed. Recrystallisation, determination of melting point and calculation of quantitative yields to be done.	CO1, CO2				
		Bromination of Phenol/Aniline					
		Benzoylation of amines/phenols					
		Oxime and 2,4 dinitrophenylhydrazone of					
		aldehyde/ketone					
	Unit 4	Estimation of (i) Mg2+ or (ii) Zn2+ by complexometric titrations using EDTA.	CO3				
		Briefing					
		• Demo					
<u> </u>	1	I .	1				



			<b>▼</b> 3 B	eyond Boundaries				
	Practi	cal						
Unit 5		Estimation of total hardness of a given sample of water by complexometric titration.						
	Briefi	ng						
	• Demo	)						
	• Practi	cal						
Mode of examination	Practical/Viva	a						
Weightage	CA	MTE	ETE					
Distribution	60%	0%	40%					
Text book/s*	B.D Khosla-							
Other	Ahluwalia- C	Ahluwalia- Chemistry Practical Book						
References								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 3 <sup>rd</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Zoology-III						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course	1-Demonstrate all characteristic of vertebrates.						
	Objective	2- Effectively understand and convey scientific material from peer reviewed						
		sources						
		<b>3</b> -Review methods of estimating toxicity						

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	ı		leyond Boundaries						
6	Outcomes								
	Outcomes	CO2:Critically evaluate and interpret scientific data information and							
		lab result							
		CO3:Demonstrate & understanding of legal, regulatory and ethical							
		consideration related to toxicology.							
		CO4:Apply the scientific methods and quantitative techniques to monitor and understand environmental system.	describe,						
		monitor and understand environmental system.							
7	Course	After the completion of this course the students will be able to	to determine						
	Description	the scales and skeletal structure of vertebrates, they will also	be able to						
		understand the structure of scales, about toxicological element	nts present in						
		environment.							
8	Outline syllabu		CO Mapping						
	Unit 1	Anatomy of Vertebrates I							
	A	Integumentary System; Derivatives of integument w.r.t. glands	CO1, CO2						
	D	and digital tips.	CO1 CO2						
	B C	Skeletal System; Evolution of visceral arches.  Digestive System, Brief account of alimentary canal and	CO1, CO2						
		digestive system, brief account of annientary canar and digestive glands.	CO1, CO2						
	Unit 2	Anatomy of Vertebrates II							
	A	Respiratory SystemBrief account of Gills, lungs, air sacs and							
		swim bladder.							
	В	Circulatory System; Evolution of heart and aortic arches,	CO1, CO2						
		Urinogenital System; Succession of kidney, Evolution of urinogenital ducts.							
	С	Nervous SystemComparative account of brain, Sense Organs;	CO1, CO2						
		Types of receptors, Control of Development– Gene activation,	001, 002						
		determination, induction, Differentiation, morphogenesis,							
		intercellular communication, cell movements and cell death.							
	Unit 3	Environmental Toxicology							
	A	Introduction and scope of toxicology.	CO3, CO4						
	В	Survey of environmental toxicants and their biological and ecological ill-effects.	CO3, CO4						
	С	Dose-response relationship: Graded, quantal and cumulative	CO3, CO4						
		responses.	003, 004						
	Unit 4	Toxicological Testimony, Methods and Translocation							
	A	Outline of toxicological testing methods: Mortality tests	CO3, CO4						
		(LC50/LD50 and safety margins/ Limits); Acute, subacute and							
		chronic testing of local and systemic effects (Skin; Eye;							
		Behavioural; Biochemical; Physiological; Histopathological;							
	В	Haematological; Reproductive; Teratogenic; Carcinogenic).  Translocation of chemicals: Membrane barriers; Storage depots;							
		Biotransformation sites; mixed multifunction oxidases. Selective							
		toxicity in relation to translocation and biotransformation							
		factors.							
	С	Outline of antidotal procedures.	CO3, CO4						

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			<b>*</b> ***	Beyond Boundaries					
Unit 5	Environment	al Biology							
A			n; Trophic structure; Energy	CO3, CO4					
	flow; Ecologica								
	cycles (chiefly								
В	Community: Ba	CO3, CO4							
		distribution and succession. Population: Interspecific and							
	intraspecific rel	ations.							
C			health. Conservation of natural	CO3, CO4					
			nce to wild Life conservation in						
	India (chief end	langered species	and concept of wild Life						
	reserves).								
Mode of	Theory								
examination									
Weightage	CA	MTE	ETE						
Distribution	30%	20%	50%						
Text book/s*	-	-							
Other	-		·						
References									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 3 <sup>rd</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Zoology-III Lab						
3	Credits	2						
4	Contact Hours	0-0-4						
	(L-T-P)							
	Course Status	Compulsory						
5	Course	1. Develop the knowledge about Placoid, Cycloid scales.						
	Objective	2. To have an overview of skeletal structure of vertebrates.						
		3. Develop the sense of induction of organophosphorus poisoning.						
6	Course	CO1: To gain the knowledge about the skeletal of vertebrates.						

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	Outcomes	CO2: To learn drug abuse schedules and control prescription. CO3: To identify the toxicity by the investigation. CO4:Able to understand the placoid, cycloid scales.								
7	Course Description	the scales and	After the completion of this course the students will be about the scales and skeletal structure of vertebrates, they will all understand the structure of scales.							
8	Outline syllabu	S			CO Mapping					
	Unit 1			and ctenoid scales through	CO4					
		Brief	ing							
		• Demo	)							
		• Pract	• Practical							
	Unit 2	CO3								
		Briefi	C							
		• Demo	)							
		• Pract:	ical							
	Unit 3	Investigation	Investigation used in diagnosis and management of toxicity.							
		Brief	ing							
		• Demo	)							
		• Pract:								
	Unit 4	Drug abuse s	CO1							
		Brief	ing							
		• Demo								
		• Pract:	ical							
	Unit 5		0 1	phorus poisoning.	CO2					
		Brief	ing							
		• Demo	)							
		• Pract:	ical							
	Mode of	Practical/Viv	'a							
	examination		T							
	Weightage	CA	MTE	ETE						
	Distribution	60%	0%	40%						
	Text book/s*	-								
	Other -									
	References									



POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
	nch: Forensic	Semester: 3 <sup>rd</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Botany-III						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course	1-Review focus on sectors that effect the distribution and abund	lance of plant					
	Objective	species	·					
		2- To reconstruct the evolutionary history of plant life						
		3-Differentiating vascular and non-vascular plant in terms of mo	rphology and					
		ecology.	. 3,					
6	Course	CO1:Enlist the variety of plant and their distinctive features.						
	Outcomes	CO2:To recognize the major group of vascular plants and their	ohvlogenetic					
		relationship.	, .0.					
		CO3:Understand the habit, vegetative characteristic and plant	morphology of					
		angiosperm.	. 0,					
		CO4:Understand the diversity of gymnosperms.						
7	Course	After the completion of this course the students will be able	to evolution					
	Description	and morphology of plants.						
8	Outline syllabu		CO Mapping					
	Unit 1	Plant Ecology						
	A	Introduction, Ecological factors; Soil: Origin, formation,	CO1, CO2					
		composition, soil profile. Water: States of water in the						
		environment, precipitation types. Light and temperature:						
	В	Variation Optimal and limiting factors.  Adaptation of hydrophytes and xerophytes. Plant communities;	CO1, CO2					
	ש	Adaptation of hydrophytes and aerophytes. I fain communities,	[CO1, CO2]					

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	Characters; Ecotone and edge effect; Succession.	eyond Boundaries
С	Phytogeography; Principle biogeographical zones; Endemism.	CO1, CO2
Unit 2	Plant Taxonomy I	
A	Introduction to plant taxonomy; Identification, Classification, Nomenclature. Identification; Functions of Herbarium, important herbaria and botanical gardens of the world and India.	CO1, CO2
В	Documentation: Flora, Keys: single access and multi-access, Taxonomic evidences from palynology, cytology, phytochemistry and molecular data.	CO1, CO3
С	Taxonomic hierarchy; Ranks, categories and taxonomic groups Botanical nomenclature; Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations.	CO1, CO2
Unit 3	Plant Taxonomy II	
A	Classification; Types of classification-artificial, natural and phylogenetic.	CO1, CO2
В	Bentham and Hooker (upto series), Engler and Prantl (upto series).	CO1, CO2
С	Biometrics, numerical taxonomy and cladistics; Characters; variations; character weighting and coding; cluster analysis;	CO1, CO2
	phenograms, cladograms (definitions and differences).	
·		
Unit 4	Gymnosperm	
Unit 4 A	Gymnosperm  General characteristics, classification. Classification (up to family).	CO4
	General characteristics, classification. Classification (up to family).  Morphology, anatomy and reproduction of <i>Cycas</i> and <i>Pinus</i> .	CO4
A	General characteristics, classification. Classification (up to family).	
A B C	General characteristics, classification. Classification (up to family).  Morphology, anatomy and reproduction of <i>Cycas</i> and <i>Pinus</i> .  (Developmental details not to be included).  Ecological and economical importance.	CO4
A B	General characteristics, classification. Classification (up to family).  Morphology, anatomy and reproduction of <i>Cycas</i> and <i>Pinus</i> . (Developmental details not to be included).	CO4
A B C Unit 5	General characteristics, classification. Classification (up to family).  Morphology, anatomy and reproduction of <i>Cycas</i> and <i>Pinus</i> . (Developmental details not to be included).  Ecological and economical importance.  Angiosperm  Vegetative, Floral and Fruit morphology; Root: Different regions and general functions, types of root systems, Stem: Various parts, normal functions (Different types of buds,	CO4
A B C Unit 5 A	General characteristics, classification. Classification (up to family).  Morphology, anatomy and reproduction of <i>Cycas</i> and <i>Pinus</i> . (Developmental details not to be included).  Ecological and economical importance.  Angiosperm  Vegetative, Floral and Fruit morphology; Root: Different regions and general functions, types of root systems, Stem: Various parts, normal functions (Different types of buds, vegetative and reproductive), forms of stem.  Leaf: Structure and normal functions. Simple and compound leaves, Seed: Definition, structure and types, Bracts, peduncle and inflorescence: Basic types and functions, Flower: Structure of a typical flower, definition and examples of different types of	CO4 CO4 CO3
A B C Unit 5 A	General characteristics, classification. Classification (up to family).  Morphology, anatomy and reproduction of <i>Cycas</i> and <i>Pinus</i> . (Developmental details not to be included).  Ecological and economical importance.  Angiosperm  Vegetative, Floral and Fruit morphology; Root: Different regions and general functions, types of root systems, Stem: Various parts, normal functions (Different types of buds, vegetative and reproductive), forms of stem.  Leaf: Structure and normal functions. Simple and compound leaves, Seed: Definition, structure and types, Bracts, peduncle and inflorescence: Basic types and functions, Flower: Structure of a typical flower, definition and examples of different types of flowers. Introduction to the floral whorls.  Fruits: Definitions of true, false and parthenocarpic fruits. Major types of fruits. Angiosperms: Unique features of angiosperms and diversity; identification, nomenclature and classification (Bentham & Hooker's system); primitive and advanced features; the international code of botanical nomenclature. Families:	CO4 CO4 CO3



Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	-			
Other	-			
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
Brai	nch: Forensic	Semester: 3 <sup>rd</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Botany-III Lab						
3	Credits	2						
4	Contact Hours (L-T-P)	0-0-4						
	Course Status	Compulsory						
5	Course Objective	1-Review focus on sectors that effect the distribution and abundance of plantspecies						
		<ul><li>2- To reconstruct the evolutionary history of plant life</li><li>3-Differentiating vascular and non-vascular plant in terms andecology.</li></ul>	of morphology					
6	Course Outcomes	CO1:Understand about the Instruments used. CO2:To recognize the major group of vascular plants and their relationship. CO3:Understand the diversity of angiosperm. CO4:Understand the diversity of gymnosperms.	phylogenetic					
7	Course Description	After the completion of this course the students will be able evolution and morphology of plants.	to determine					
8	Outline syllabus	1 00 1	CO Mapping					
	Unit 1	Study of instruments used to measure microclimatic	CO1					
		variables: Soil Thermometer, anomometer						
		variables: Soil Thermometer, anemometer,						
		psychomotor/hygrometer, rain gauge and lux meter.						



				Beyond Boundaries
	Brief	ïng		
	• Dem	0		
	• Pract			
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Unit 2			arious soil and water sam	
	Brief	· ·		CO1,CO2
	• Dem			
	• Pract	ical		
Unit 3	Temporary s	lide prepara	tion and identification of	CO4
	gymnosperm	s.		
	Brief	ïng		
	• Dem			
	Pract	ical		
Unit 4	Description,	identificatio	n and classification of seve	eral CO3
	angiosperms	•		
	Brief	ïng		
	• Dem	0		
	• Pract	ical		
Unit 5	Cycas-			CO3
	Brief	_		
	• Dem	0		
	• Pract	ical		
Mode of	Practical/Viv			
examination				
Weightage	CA	MTE	ETE	
Distribution	60%	0%	40%	
Text book/s*	-			
Other	-			
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3

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CO4 3 3 3 3 3 3 3 3 3 2 2

Sch	ool: SAHS	Batch: 2019-2022						
Pro	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 3 <sup>rd</sup>						
Scie	ence							
1	Course Code							
2	Course Title	Psychology						
3	Credits							
4	Contact	1-0-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course Objective	1-Describes connection between knowledge gained in psychologe everyday life	gy to					
		<b>2-</b> Describe selective attention and how illusion helps us to unde perception.	erstand					
		3-To provide a solid foundation in criminal psychology						
6	Course Outcomes	CO1:Describe key concepts, principles and overreaching themes in psychology CO2:Explain how drugs effect consciousness CO3:Apply ethical standard to evaluate psychological practice.						
		CO4:Demonstrate knowledge of the measure theoretical approfinding in psychology.	oaches and					
7	Course Description	After the completion of this course the students will be able about psychology used for Investigation.	to know all					
8	Outline syllabu	IS	CO Mapping					
	Unit 1	Basics of Psychology	11 5					
	A	History of psychology- Development of psychology, role of psychologist.	CO1, CO2					
	В	Concept of psychology- Definition of psychology, goals of psychology.	CO1, CO2					
	С	Different perspectives of psychology- Modern perspectives, Humanistic, cognitive, psychodynamic.	CO1, CO2					
	Unit 2	Psychological Research and Ethical issues						
	A	The science and research method - Interview, observation.	CO1, CO3					
	В	Case study method.	CO1, CO3					
	С	Professional and Ethical issues in psychology - APA code of conduct for psychologist.	CO1, CO3					

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			<b>♥</b> " <b>&gt;</b>	Beyond Boundaries			
Unit 3	Consciousness	and Percepti	on				
A	Consciousness-	Definition of co	nsciousness, state of	CO1, CO3			
	consciousness, A	Altered state of o	consciousness - Dreams, awake				
В			- content, REM sleep and non -	CO1, CO3			
			nosis, Meaning, Hypnotic				
	Attention: Defir	. •	Attention and Awareness -				
С			c concept in perception,	CO1, CO3			
			otion, assessment attention and	001, 003			
	perception.						
Unit 4	Psychology an	d Law					
A			vil and legal proceedings - civil	CO4			
		sessment of civi	il competency, criminal				
	proceedings.	1	C:	004			
В		le insanity - nat	ure of insanity, competency to	CO4			
	stand trial.						
С	Assessment of p	ersonality - Que	estionnaires, Rating scales and	CO4			
	Projective tests,	Biological mod	el assessment of Personality.				
Unit 5	Investigative I	Psychology					
A	Criminal Profil		alysis	CO4			
В	Polygraph Test			CO4			
С	BEOS			CO4			
Mode of	Theory						
examination							
Weightage	e CA MTE ETE						
Distribution	30%						
Text book/s*	C.T.Morgan- In						
Other	R.J. Cohen- Ps	ych <mark>ological Te</mark>	esting and assessment				
References							

	DO 1	200	DOG	DO 4	D0.	DO 6	D05	DOO	DOG	DG C 1	Daca	Daca
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS Batch: 2019-2022

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Prog	gram: FSB	Current Academic Year: 2020	eyond Boundaries
	nch: Forensic	Semester: 3 <sup>rd</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Psychology Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	1-Describes connection between knowledge gained in psychologe everyday life	gy to
		<b>2-</b> Describe selective attention and how illusion helps us to unde perception.	erstand
		3-To provide a solid foundation in criminal psychology	
6	Course Outcomes	CO1:Describe key concepts, principles and overreaching theme CO2:Explain how drugs effect consciousness CO3:Apply ethical standard to evaluate psychological practice. CO4:Demonstrate knowledge of the measure theoretical approfinding in psychology.	, , , ,
7	Course	After the completion of this course the students will be able	to Irmayy all
'	Description	about psychology used for Investigation.	to know an
8	Outline syllabus	1 1 0	CO Mapping
0	Unit 1	To review a crime case involving serial murders. Comment on the psychological trail of the accused.	CO1
		Briefing	
		• Demo	
		Practical	
	Unit 2	To prepare a case report on Minnesota multiphase personality inventory test.	CO3
		Briefing	
		• Demo	
		Practical	
	Unit 3	To prepare a case report on thematic appreciation test.	CO4
		Briefing	
		• Demo	
		Practical	
	Unit 4	To prepare a case report on thematic appreciation test	CO2



				Beyond Boundaries
	• Br	iefing		
	• De	emo		
	• Pra	actical		
Unit 5	To prepar	e a case report	on word association test	CO3
	• Br	iefing		
	• De	emo		
	• Pra	actical		
Mode of examination	Practical/V	√iva		
Weightage	CA	MTE	ETE	
Distribution	60%	0%	40%	
Text book/s*	-			
Other	-			
References				

	DO 1	D0.0	D0.0	DO 4	D0.5	DO 6	D05	DOO	<b>DO</b> 0	DG C 1	Daca	Daga
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022	
Prog	gram: FSB	Current Academic Year: 2020	
Brai	nch: Forensic	Semester:3 <sup>rd</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Project-I	
3	Credits	1	
4	Contact Hours	2-0-0	
	(L-T-P)		
	Course Status	Compulsory	
5	Course Objective	1. To know about the review of literature	
		2. To know about the research knowledge of	
		particular topic.	
		3. To learn about the paper writing	

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			Beyond Boundaries
6	Course Outcomes	CO1: Understand the review of literature and its	
		Importance.	
		CO2: Understand about their topics	
		CO3: Understand the related works about their topic	cs
		CO4: Know to write the project and importance of	it.
7	Course	After completion of this project students will be abl	le
	Description	to understand about research methodology and	
		development in their topics.	
8	Outline syllabus		CO
			Achievement
	Unit 1	Introduction	CO2
		A. Collect the material related to topic	
		B. Make proper format	
		C. Write it in your own words	
	Unit 2	Case study	CO1, CO3
		A. Collect the cases related to the topic	
		B. Study the outcomes and analyse the shortcomings	8
		C. Include in your study	G04 G02
	Unit 3	Review of literature	CO1, CO3
		A. Collect the research already done related to your	
		topic  D. Write it in your even language	
		B. Write it in your own language	
	Tinit 1	C. Proper formatting	CO4
	Unit 4	Conclusion  A Write all what you have done in project	CO4
		<ul><li>A. Write all what you have done in project</li><li>B. If any more outcomes or more ideas can be used</li></ul>	
		C. Formatting of project	
	Unit 5	Finalisation& referencing	CO4
	OIII 5	A. Writing of all references in proper format	CO4
		B. Do the final formatting	
		C. Finalise whole project	
	Mode of	Jury/Practical/Viva	
	examination	<del></del>	
	Weightage	CA MTE ETE	
	Distribution	60% 0% 40%	
	Text book/s*	-	
	Other References		

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3

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CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
Prog	gram: FSB	Current Academic Year: 2020						
	nch: Forensic	Semester: 4 <sup>th</sup>						
Scie	nce							
1	Course Code							
2	Course Title	Forensic Science-IV						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course Objective	<b>1-</b> Able to understand the various types of drugs and toxic substant encountered in an investigation.	ances					
		2- To develop a basic level of knowledge around explosives						
		<b>3-</b> Provides and introduction to the field of instrumentation						
6	Course Outcomes	different toxins on body when administered. CO2:Learn about the basic of forensic chemistry CO3:Analyse the importance of petroleum products	CO2:Learn about the basic of forensic chemistry					
7	Course Description	After completion of this course student will be able to know Investigation and examination of chemicals, toxicological ele						
8	Outline syllabu	ls .	CO Mapping					
	Unit 1	BASICS AND FORENSIC ASPECTS OF FORENSIC TOXICOLOGY						
	A	Basics of Toxicology—Toxicology Introduction, Classification of Toxicology	CO1					
	В	Forensic toxicology. Significance of toxicological findings. Techniques used in toxicology	CO1					
	С	Toxicological analysis and chemical intoxication tests. Post- mortem Toxicology	CO1					

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Unit 2	TOXICOLOGICAL SUBSTANCES AND THEIR LEGAL PROCESSING	3 eyond Boundaries
A	Poisons Classification of poisons. Plant poisons, Animal poisons, Metallic Poisons. Physico-chemical Characteristics and mode of action of poisons. Accidental, suicidal and homicidal poisonings Signs and Symptoms of common poisoning and their antidotes. Metabolism and excretion of poisons	CO1, CO3
В	Narcotics, Drugs and Psychotropic Substances-Definition of narcotics, drugs and psychotropic substances. Broad classification — Narcotics, stimulants, depressants and hallucinogens.  General characteristics and common example of each classification. Drugs and psychotropic substances. Designer drugs. Tolerance, addiction and withdrawal symptoms of narcotics, drugs and psychotropic substance.	CO1, CO3
С	Collection Preservation and analysis, Collection and preservation of viscera, blood and urine for various poison and drug cases. Introduction of Screening and Presumptive, chemical and instrumental analysis of drugs and poisons.	CO1, CO3
Unit 3	FORENSIC CHEMISTRY	
A	<ul> <li>Introduction to Forensic chemistry,</li> <li>Chemical analysis of evidences:         <ul> <li>Screening, sampling-methods of collection, different standard methods</li> <li>Inorganic analysis</li> <li>Micro-chemical method</li> </ul> </li> </ul>	CO3
В	<ul> <li>General idea and basic principle of distillation, various types of distillation techniques</li> <li>Sample treatment techniques – Centrifuge, Filtration, Evaporation, Crystallization</li> <li>Distribution Law, Solvent extraction technique like LLE, SPE, SPME.</li> </ul>	CO3
С	<ul> <li>Study of Analysis of Beverages</li> <li>Introduction, Definition of alcohol and illicit liquor, Alcoholic and non-alcoholic beverages and their composition, Proof spirit, absorption, detoxication and excretion of alcohol, problems in alcohol cases and difficulties in diagnosis, Alcohol and prohibition, Consequences of drunken driving, Analytical techniques used for the analysis of alcohol.</li> <li>Food adulteration: Introduction, Prevention of food adulteration, Analytical techniques for analysis of</li> </ul>	CO3

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				ond Boundarie				
	• Charac	food and other material. mination and legal aspects of gold, ertilizers, Detective dyes- cases and ases.						
Unit 4	FORENSIC	ES						
A	Petroleum an different petro	Products- Commercial uses of C	CO3					
В	Arson and Fire	of fire and c	rigin of fire Material and Chemicals	CO3				
С	Examination o	f scene of fi acking labelli	e/arson, recognition and collection on and forwarding of exhibits, and	CO3				
Unit 5	INSTRUME	NTATION						
A	columns, static HPLC: theory, LC-MS, Forensi Microscopy- Electron Micro Electrophoresi electrophoresi	GC: Theoretical principles, instrumentations and technique, columns, stationary phases, detectors, Forensic applications.  HPLC: theory, Instrumentation, Technique, column, detectors, LC-MS, Forensic applications.  Microscopy- Stereomicroscope, Comparison microscope, Electron Microscopy TEM, SEM and their forensic Application.  Electrophoresis Technique: General principles, Factors affecting electrophoresis, Sodium dodecylsulphate (SDS) Polyacrylamide gel electrophoresis, Agrose gel electrophoresis, Gel immune-						
В	full range  AAS - Introd  Techniques, Fo	principles, Instrumentation and ations.  iple, Instrumentation and working,	CO4					
С	Lambert's laws	cations of UV-Visible electronics, vibrational, rotational and construction, uses	CO4					
Mode of examination	Theory							
Weightage	CA	MTE	ETE					
Distribution	30%	20%	50%					
	1	•	al methods in forensic					



	Toxicology, Delvin S Explosives	
Other	Nicholas T Lappas- Forensic Toxicology	
References		

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022				
Prog	gram: FSB	Current Academic Year: 2020				
Brai	nch: Forensic	Semester: 4 <sup>th</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Forensic Science- IV Lab				
3	Credits	2				
4	Contact Hours (L-T-P)	0-0-4				
	Course Status	Compulsory/Elective				
5 Course Objective		1-Able to understand the various types of drugs and toxic substancesencountered in an investigation.				
		2- To develop a basic level of knowledge around explosives				
		<b>3-</b> Provides and introduction to the field of instrumentation				
6	Course Outcomes	CO1:Will be able to describe varied toxicological science & symptoms of different toxins on body when administered.				
		CO2:Learn about the basic of forensic chemistry				
		CO3:Analyse the importance of petroleum products				
		CO4:Examination of various forensic evidences on different inst	truments			
7 Course Description		After completion of this course student will be able to know about the Investigation and examination of chemicals, toxicological elements.				
8	Outline syllabus		CO Mapping			
	Unit 1	To carry out analysis of gasoline.	CO3			
		Brief				
		Demonstration				
		Experimentation				

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To carry out	analysis of die	esel.		CO3			
Brief							
Demonstratio	Demonstration						
Experimentat	ion						
		n a case invol	ving arson.	C02			
Brief							
Demonstratio	n						
Experimentat	ion						
To separate	explosive subst	ances using T	hin Layer	CO4			
Chromatogr	aphy		-				
Brief							
Demonstratio	n						
Experimentat	ion						
To separat	e drugs of	abuse by	Thin Layer	CO4			
chron							
Brief							
Demonstratio	n						
Experimentat	ion						
Practical/Viv	Practical/Viva						
CA	MTE	ETE					
60%	0%	40%					
-							
-							
	Brief Demonstratio Experimentat To prepare a Brief Demonstratio Experimentat To separate of Chromatogra Brief Demonstratio Experimentat To separat chrom Brief Demonstratio Experimentat To separat chrom Brief Demonstratio Experimentat Practical/Viva	Brief Demonstration Experimentation To prepare a case report of Brief Demonstration Experimentation To separate explosive subst Chromatography Brief Demonstration Experimentation To separate drugs of chromatography. Brief Demonstration Experimentation Fractical/Viva  CA MTE	Demonstration Experimentation  To prepare a case report on a case involve Brief Demonstration Experimentation  To separate explosive substances using Tomography Brief Demonstration Experimentation  To separate drugs of abuse by chromatography.  Brief Demonstration Experimentation  Practical/Viva  CA MTE ETE	Brief Demonstration Experimentation  To prepare a case report on a case involving arson.  Brief Demonstration Experimentation  To separate explosive substances using Thin Layer Chromatography  Brief Demonstration Experimentation  To separate drugs of abuse by Thin Layer chromatography.  Brief Demonstration Experimentation  To separate drugs of abuse by Thin Layer chromatography.  Brief Demonstration Experimentation  Practical/Viva  CA MTE ETE			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Brai	nch: Forensic	Semester: 4 <sup>th</sup>
Scie	nce	
1	Course Code	
2	Course Title	Physics-IV
3	Credits	3
4	Contact	2-1-0

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	TT		leyond Boundaries
	Hours (L-T-P)		
	Course Type	Compulsory	
5	Course		
3	Objective	1-Undestand the relationship between observation and theory a building the basic concept of modern physics.	and their use in
		2- Covers the physical understanding of matter from an atomic v	view point
		<b>3-</b> Understand basic concept of solid state physics	
6	Course Outcomes	CO1: Know the vocabulary and concept of modern physics CO2:To gain abroad knowledge of scientific theory and methods	of their studies
		CO3:Able to demonstrate proficiency in mathematics	or their studies
		CO4:Have a basic knowledge of crystal system.	
7	Course Description	After completion of this course student will be able to know	about the
0	-	modern physics its theory and basics of mathematics.	COM:
8	Outline syllabu		CO Mapping
	Unit 1	MODERN PHYSICS -I	G01 G04
	A	Black body radiation	CO1, CO2
	В	Plank's quantum hypothesis	CO1, CO2
	С	Einstein's photon hypothesis, photoelectric effect	CO1, CO2
	Unit 2	MODERN PHYSICS-II	
	A	Bohr model of hydrogen atom, quantization of angular	CO1, CO2
		momentum	001, 002
	В	Explanation of discrete spectrum	CO1, CO3
		De Broglie's hypothesis, dual nature of matter	,
	С	Qualitative outline of Einstein's special and general theories of	CO1, CO2
		relativity, time dilation, length contraction, relativity of	,
		simultaneity, curved space-time, expanding universe,	
		cosmology	
	Unit 3	SOLID STATE PHYSICS-I	
	A	Crystal structure	CO1, CO2
	В	Bragg diffraction, X-ray crystallography	CO1, CO2
	С	Semiconductor physics, band theory of solids, conduction and valence bands, p and n type semiconductors, diodes, photodiodes, light emitting diodes (LED), Zener diodes, NPN, PNP and FET transistors.	CO1, CO2
	Unit 4	SOLID STATE PHYSICS-II	
1			CO3
	A	Magnetic materials: Paramagnetic, Diamagnetism, Ferromagnetism, Curie temperature, hysteresis	

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 				Beyond Boundaries				
В	Superconductive theory and Coo	CO3						
С	Piezoelectricit	у		CO3				
Unit 5	MATHEMET	TICAL PHYS	ICS					
A	First order dif	ferential equati	ons	CO4				
В	Series method	of solving sec	ond order ordinary differential	CO4				
	equations							
C	Legendre fund	tions, Bessel for	unctions, Periodic functions	CO4				
	and Fourier Se	and Fourier Series.						
Mode of	Theory							
examination								
Weightage	CA	MTE	ETE					
Distribution	30%	20%	50%					
Text book/s*	College physic							
	Halliday & Re							
Other	Sear's & Zem	Sear's & Zemansky's University physics- Young and						
References	Freedman.							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022				
Prog	gram: FSB	Current Academic Year: 2020				
Bra	nch: Forensic	Semester: 4 <sup>th</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Physics-IV Lab				
3	Credits	2				
4	Contact Hours	0-0-4				
	(L-T-P)					
	Course Status	Compulsory				
5	Course	1-Undestand the relationship between observation and theory and their use				
	Objective	in building the basic concept of modern physics.				
		2- Covers the physical understanding of matter from an atomic view point				
		3-Understand basic concept of solid state physics				

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			Beyond Boundaries
6	Course Outcomes	CO1: Know the vocabulary and concept of modern physics CO2:To gain abroad knowledge of scientific theory and method studies CO3:Able to demonstrate proficiency in mathematics CO4:Have a basic knowledge of crystal system.	ls of their
7	Course Description	After completion of this course student will be able to know modern physics its theory and basics of mathematics.	v about the
8	Outline syllabi	IS	CO Mapping
	Unit 1	To determine the Planck's constant by measuring radiation in a fixed spectral range.	CO1
		Brief Demonstration Experimentation	
	Unit 2	To study Solar cell characteristics	CO1
		Brief Demonstration Experimentation	
	Unit 3	Calculate the speed of ultrasonic waves in kerosene oil	CO4
		Brief Demonstration Experimentation	
	Unit 4	To measure the phase difference between current and voltage in R-C and L-R circuits with the method of Lissajous figures by using a CRO	CO3
		Brief Demonstration Experimentation	
	Unit 5	To determine the velocity of sound using resonance tube	CO4
		Brief Demonstration Experimentation	
	Mode of examination	Practical/Viva	



	Weightage	CA	MTE	ETE					
	Distribution	60%	0%	40%					
,	Text book/s*	B.Sc. Practica	B.Sc. Practical Physics- Harman Singh and PS Hemne.						
	Other	-							
	References								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022					
Prog	gram: FSB	Current Academic Year: 2020					
Bra	nch: Forensic	Semester: 4 <sup>th</sup>					
Scie	nce						
1	Course Code						
2	Course Title	Chemistry-IV					
3	Credits	3					
4	Contact	2-1-0					
	Hours						
	(L-T-P)						
	Course Type Compulsory						
5	Course 1-Able to describe the state of chemical equilibrium						
	Objective	2- To understand key features of co-ordination compound					
		<b>3-</b> Understand the properties of alcohol, ethanol and ether					
6	Course Outcomes	CO1:To describe buffer capacity CO2:Able to do Acetylation of several compound using convention CO3:Examination of alcohol, ethanol and ether.	onal methods				
		CO4:To calculate value of pH, pOH and OH					
7	Course Description	After completion of this course student will be able to know equilibrium, pH and also examination of alcohol, ether & eth					
8	8 Outline syllabus						
	Unit 1	SOLUTIONS AND IONIC EQUILLIBRIA	CO Mapping				
	A	Thermodynamics of ideal solutions: Ideal solutions and	CO1, CO2				
		Raoult's law, deviations from Raoult's law – non-ideal					

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	solutions. Vapor pressure-composition and temperature-	
	composition curves of ideal and non-ideal solutions	
В	Distillation of solutions. Lever rule. Azeotropes. Partial	CO1, CO2
	miscibility of liquids: Critical solution temperature; effect	
	of impurity on partial miscibility of liquids. Immiscibility	
	of liquids. Principle of steam distillation. Nernst	
	distribution law and its applications, solvent extraction.	
	71	
С	Strong, moderate and weak electrolytes, degree of	CO1, CO2
	ionization, factors affecting degree of ionization, ionization	
	constant and ionic product of water. Ionization of weak	
	acids and bases, pH scale, common ion effect, Salt	
	hydrolysis-calculation of hydrolysis constant, degree of	
	hydrolysis and pH for different salts. Buffer solutions.	
	Solubility and solubility product of sparingly soluble salts	
Unit 2	<ul> <li>applications of solubility product principle</li> <li>COORDINATION CHEMISTRY AND CRYSTAL</li> </ul>	
Umt 2	FIELD THEORY	
A		CO1 CO2
A	Valence Bond Theory (VBT): Inner and outer orbital	CO1, CO2
	complexes of Cr, Fe, Co, Ni and Cu	
<b>.</b>	(coordination numbers 4 and 6)	G01 G02
В	Structural and stereoisomerism in complexes with	CO1, CO3
	coordination numbers 4 and 6.	
С	Drawbacks of VBT. IUPAC system of Nomenclature.	CO1, CO2
C	Crystal Field Theory: Crystal field effect, Octahedral	CO1, CO2
	· · ·	
	symmetry. Crystal field stabilization energy (CFSE),	
	Crystal field effects for weak and strong fields. Tetrahedral	
	symmetry. Factors affecting the magnitude of	
	Spectrochemical series. Comparison of CFSE for Oh and	
	Td complexes, Tetragonal distortion of octahedral	
	geometry. Jahn-Teller distortion. Square planar	
	coordination	
Unit 3	ALCOHOLS	
A	Preparation: Preparation of 1 3 alcohols: using Grignard	CO4
	reagent, Ester hydrolysis, Reduction of aldehydes, ketones,	
	carboxylic acid and esters	
В	Reactions: With sodium, HX (Lucas test), esterification,	CO4
С	Oxidation (with PCC, alk. KMnO4, acid. Dichromate, con.	CO4
	HNO3). Oppeneauer oxidation <i>Diols:</i> (Upto 6 Carbons)	
	oxidation of diols. Pinacol-Pinacolone rearrangement	
Unit 4	PHENOLS	
A	Preparation: Cumene hydroperoxide method, from	CO4
	diazonium salts.	
В	Reactions: Electrophilic substitution: Nitration,	CO4

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	halogenation	and	sulphona	tion.	Reimer	_		eyond Boundaries	
С	Reaction, Gattermann-K Condensation,			,		_	Hoesch	CO4	
Unit 5 ETHERS									
A	Aliphatic Ethe	ers						CO4	
В	Aromatic Ethe	ers						CO4	
С	Cleavage of E	thers w	vith HI					CO4	
Mode of	Theory								
examination	CA	MTE		DTD					
Weightage	CA	MTE		ETE					
Distribution	30%	20%		50%					
Text book/s*	-	-							
Other	-								
References									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Brai	nch: Forensic	Semester: 4 <sup>th</sup>
Scie	nce	
1	Course Code	
2	Course Title	Chemistry-IV Lab
3	Credits	2
4	Contact Hours	0-0-4
	(L-T-P)	
	Course Status	Compulsory
5	Course	1-Able to describe the state of chemical equilibrium
	Objective	2- To understand key features of co-ordination compound
		3-Understand the properties of alcohol, ethanol and ether
6	Course	CO1:To describe buffer capacity
	Outcomes	CO2:Able to do Acetylation of several compound using conventional



	1	Beyond Boundari									
		methods	methods								
		CO3:Examina	tion of alcohol,	ethanol and ethe	er.						
		CO4:To calcu	late value of pH	I, pOH and OH							
7	Course	After comple	tion of this co	urse student wil	l be able	to kr	now about the				
	Description	equilibrium,	pH and also ex	xamination of al	cohol, et	her &	z ethanol.				
8	Outline syllabus	S					CO				
							Mapping				
	Unit 1	Estimation		<b>g2</b> + <b>or</b> ( <b>ii</b> )	<b>Z</b> n2+	by	CO1				
		complexome	tric titrations	s using EDTA							
		Brief									
		Demonstration	on								
		Experimentat	tion								
	Unit 2	<b>Estimation</b>	of total hard	ness of a give	n sampl	e of	CO4				
		water by cor Brief	nplexometric	titration							
		Experimentat									
	Unit 3	Functional g	CO3								
		Brief									
		Demonstration	n								
		Experimentat	tion								
	Unit 4	Functional g	group tests for	r Phenols			CO3				
		Brief									
		Demonstration	on								
		Experimentat									
	Unit 5	phenols (β		the following or canillin, salicyl d	_		CO3				
		Brief									
		Demonstration	on								
		Experimental	tion								
	Mode of	Practical/Viv									
	examination										
	Weightage	CA	MTE	ETE							
	Distribution	60%	0%	40%							
	Text book/s*	B.D Khosla-	Chemistry Pra	actical book							
	Other		Chemistry Prac								
	References		-								
-											

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												

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CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022				
Pro	gram: FSB	Current Academic Year: 2020				
	nch: Forensic	Semester: 4 <sup>th</sup>				
Scie	ence					
1	Course Code					
2	Course Title	Zoology-IV				
3	Credits	3				
4	Contact Hours (L-T-P)	2-1-0				
	Course Type	Compulsory				
5	Course	1-Understand Animal physiology				
	Objective	2- Focus on study and understanding of nature and their physical p	siology			
		<b>3-</b> Understand the economic importance of vector biology.				
6	Course Outcomes	CO1:Gain knowledge of animal physiology CO2:Thought detail concept of digestive system, respiratory setc. CO3:Understand the concept of aqua culture system. CO4:Be able to describe interaction between different organ				
7	Course	After completion of this course student will be able to know	w about the			
	Description	physiology of human being and also economical biology.				
8	Outline syllabu	ıs	CO			
		T	Mapping			
	Unit 1	Animal Physiology -I	G01 G02			
	A	Tissues Structure, location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue.	CO1, CO2			
	В	Bone and Cartilage Structure and types of bones and cartilages, Ossification, bone growth and resorption	CO1, CO2			
	C Nervous System Structure of neuron, resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers; Types					

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hearing and vision	junction; Reflex action and its types - reflex arc; Physiology of hearing and vision		of synapse Synaptic transmission and Neuromuscular										
hearing and vision	hearing and vision		of synapse, synaptic transmission and, Neuromascular	1		of synapse, Synaptic transmission and, Neuromuscular							
			junction: Peffey action and its types - refley arc: Physiology of			•							
Unit 2 Animal Physiology II			, , , ,										
Citit 2 Ainmai I nysiology – II	V 8V		hearing and vision	Unit	Unit 2	Animal Physiology –II							
A Muscle: Histology of different types of muscle: Ultra		hearing and vision     Unit 2   Animal Physiology –II	hearing and vision	A	Ā	Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus	CO1, CO2						
structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor	Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor	hearing and vision  Unit 2 Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor		В	Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.	CO1, CO4						
structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty,	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty,	Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty,	hearing and vision  Unit 2 Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty,	В		Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.	CO1, CO2						
structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormone secreted by them and their mechanism of action.	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.	Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.	Hearing and vision  Unit 2 Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.	С	Unit 3	Endocrine System							
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structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormone secreted by them and their mechanism of action.  Unit 3 Endocrine System	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System	A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System	hearing and vision  Unit 2 Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System	C Unit	В	Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;	CO1, CO4						
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structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormone secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and	A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion CO1, CO4  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and	hearing and vision  Unit 2 Animal Physiology –II  A Muscle: Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion CO1, CO4  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and	C Unit A B		endocrine system; Placental normones							
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structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormone secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary an endocrine system; Placental hormones	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and endocrine system; Placental hormones  Unit 4 Animal Pathology	Unit 2	Nuit 2	C Unit A B C		Animal Pathology	CO1, CO4						
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structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormone secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary an endocrine system; Placental hormones  Unit 4 Animal Pathology  A Life Cycle, Pathogenicity, clinical features, prophylax  B Pathogenic Helminthes parasites, clinical Features  C Control of pathogenic protozoan: Plasmodium,	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and endocrine system; Placental hormones  Unit 4 Animal Pathology  A Life Cycle, Pathogenicity, clinical features, prophylaxis  Pathogenic Helminthes parasites, clinical Features  CO1, CO4  C Control of pathogenic protozoan: Plasmodium,  CO1, CO4	Unit 2	Nearing and vision	C Unit A B C Unit A B B	A B	Animal Pathology Life Cycle, Pathogenicity, clinical features, prophylaxis Pathogenic Helminthes parasites, clinical Features Control of pathogenic protozoan: Plasmodium,	CO1, CO4						
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structure of skeletal muscle; Molecular and chemical basis muscle contraction; Characteristics of muscle twitch; Moto unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormone secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  B Mode of hormone action, Signal transduction pathways for steroidal and non-steroidal hormones;  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary an endocrine system; Placental hormones  Unit 4 Animal Pathology  A Life Cycle, Pathogenicity , clinical features, prophylax  B Pathogenic Helminthes parasites, clinical Features  C Control of pathogenic protozoan: Plasmodium, Entamoeba histolytica, Leishmania donovani Control and prophylaxis: Fasciola sp., Wuchereria, Ascaries  Unit 5 Medical and Applied Zoology  A Vector Biology: Mosquito (Anopheles Female), Yello Fever, Dengue Fever, (Aedes)Filariasis (Culex Female Japanese encephalitis, Plague  B NonVector Diseases: Typhoid, Cholera, Small pox  C General Account of Vaccine & Vaccination, Eradication Programme, drug Therapy  Mode of examination  Weightage CA MTE ETE	structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, summation and tetanus  B Reproductive System: Histology of testis and ovary; Physiology of male and female reproduction; Puberty, Methods of contraception in male and female.  C Endocrine System: Histology of endocrine glands - pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; hormones secreted by them and their mechanism of action.  Unit 3 Endocrine System  A Classification of hormones; Regulation of their secretion  C Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine of anterior pituitary and endocrine system; Placental hormones  Unit 4 Animal Pathology  A Life Cycle, Pathogenicity, clinical features, prophylaxis  C Control of pathogenic protozoan: Plasmodium, Entamoeba histolytica, Leishmania donovani Control and prophylaxis: Fasciola sp., Wuchereria, Ascaries  Unit 5 Medical and Applied Zoology  A Vector Biology: Mosquito (Anopheles Female), Yellow Fever, Dengue Fever, (Aedes)Filariasis (Culex Female), Japanese encephalitis, Plague  B NonVector Diseases: Typhoid, Cholera, Small pox  C General Account of Vaccine & Vaccination, Eradication Programme, drug Therapy  Mode of examination  Weightage  CA MTE ETE	Unit 2	Nearing and vision	C Unit A B C Unit A	A B C Unit 5 A  B C Mode of examination Weightage	Animal Pathology  Life Cycle, Pathogenicity, clinical features, prophylaxis  Pathogenic Helminthes parasites, clinical Features  Control of pathogenic protozoan: Plasmodium,  Entamoeba histolytica, Leishmania donovani  Control and prophylaxis: Fasciola sp., Wuchereria,  Ascaries  Medical and Applied Zoology  Vector Biology: Mosquito (Anopheles Female), Yellow Fever, Dengue Fever, (Aedes)Filariasis (Culex Female),  Japanese encephalitis, Plague  NonVector Diseases: Typhoid, Cholera, Small pox  General Account of Vaccine & Vaccination, Eradication  Programme, drug Therapy  Theory  CA MTE ETE	CO1, CO4 CO1, CO4 CO3						
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Unit 2 Animal Physiology II													
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References	
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POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022							
Pro	gram: FSB	Current Academic Year: 2020							
Bra	nch: Forensic	Semester: 4 <sup>th</sup>							
Scie	ence								
1	Course Code								
2	Course Title	Zoology-IV Lab							
3	Credits	2							
4	Contact Hours (L-T-P)	0-0-4							
	Course Status	Compulsory							
5	Course	1-Understand Animal physiology							
	Objective	2- Focus on study and understanding of nature and their physic	ology						
		<b>3-</b> Understand the economic importance of vector biology.	, , , , , , , , , , , , , , , , , , , ,						
6	Course Outcomes	CO1:Gain knowledge of animal physiology							
	Outcomes	CO2:Thought detail concept of digestive system, respiratory system etc.							
		CO3:Understand the concept of aqua culture system.							
		CO4:Be able to describe interaction between different organ system.							
7	Course	After completion of this course student will be able to know	about the						
	Description	physiology of human being and also economical biology.							
8	Outline syllabus	3	CO Mapping						
	Unit 1	Study of permanent slide of endocrine gland: Thyroid, Adrenal, Pituitary, Testis, Ovary.	CO1						
		Brief							
		Demonstration							
		Experimentation							
	Unit 2	To determine bleeding time and clotting time of	CO4						



				Beyond Boundari					
	human b	olood							
	Brief								
	Demonst	Demonstration							
	Experime	entation							
Unit 3			brates and in different	CO4					
		gical condition							
	Brief								
	Demonst	ration							
	Experime	entation							
Unit 4			aste product of animal from	CO3					
	different								
	Brief								
	Demonst	ration							
	Experime	entation							
Unit 5	Estimati	on of sugar in l	numan blood.	CO4					
	Brief								
	Demonst								
	Experime								
Mode of	Practical								
examination									
Weightage	CA	MTE	ETE						
Distribution	60%	0%	40%						
Text book/s*	-	•	·						
Other	-								
References									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS	Batch: 2019-2022
Program: FSB	Current Academic Year: 2020
<b>Branch: Forensic</b>	Semester: 4 <sup>th</sup>
Science	

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	UNIVERSITY

1	Course Code		eyond Boundaries
2	Course Title	Botany-IV	
3	Credits	3	
4	Contact	2-1-0	
	Hours		
	(L-T-P)		
	Course Type	Compulsory	
5	Course	1-To describe the structure and function of plant anatomy	
	Objective	2- Demonstrate and understanding of clinical and health mainte	nance
		3-To acquire specialized knowledge and understanding of selectors	ed aspects by
		mean of stem	-
6	Course	CO1:Demonstrate and understanding of fundamental biochemic	alprinciples
	Outcomes	CO2: To gain knowledge of basic lab techniques in both chemist	
		CO3:Describe characteristic of living things	
		CO4:Demonstrate basic structure & function of plant body	
7	Course	After completion of this course student will be able to know	about the
	Description	physiology & anatomy of plants.	
8	Outline syllabu		CO Mapping
	Unit 1	PLANT ANATOMY	
	A	Meristematic and permanent tissues; Root and shoot apical	CO1, CO4
		meristems Organs; Structure of dicot and monocot root	
	D	stem and leaf	CO1 CO4
	В	Adaptive and protective systems; Epidermis, cuticle, stomata	CO1, CO4
	С	General account of adaptations in xerophytes and	CO1, CO4
	C		CO1, CO4
		hydrophytes.	
	Unit 2	PLANT EMBRYOLOGY	
	A	Structural organization of flower; Structure of anther and	CO1, CO4
		pollen; Structure and types of ovules; Types of embryo	
		ponen, structure and types of ovuics, Types of emotyo	
		sacs	
	В	Pollination and fertilization; Pollination mechanisms,	CO1, CO3
		Double fertilization	
	С	Embryo and endosperm; Endosperm types, structure and	CO1, CO4
		functions; Dicot and monocot embryo	
		10.10.10.10, 2.1000 and monocot emoryo	
	TI '4 2	DI ANTE DITYCLOT OCCUPAND A FEB A DOLLOR A	
	Unit 3	PLANT PHYSIOLOGY AND METABOLISM-I	CO1 CO4
	A	Plant-water relations; Importance of water, water potential;	CO1, CO4



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	-	and its sig Root pressure a	nificance; Factors affecting	5			
В	•		ial elements, macro and	1 CO1, CO4			
			f ions across cell membrane	,			
	active and pas	sive transport					
С	Photosynthesi	, CO1, CO4					
			otosystem I and II, Electror				
			of ATP synthesis; C3, C4	;			
	Photorespirati						
Unit 4			ND METABOLISM-II				
A	Respiration; C	ilycolysis, anae	robic respiration	CO1, CO4			
	Enzymes; Stru	acture and prop	perties; Mechanism of enzyme				
		enzyme inhibiti					
В	· ·	•	gical nitrogen fixation; Nitrate	CO1, CO4			
	and ammonia	assimilation.					
C	Plant growth	regulators; P	hysiological roles of auxins	, CO1, CO4			
	gibberellins c	vtokinins					
	)	gibberellins, cytokinins					
Unit 5	BIOTECHNO						
A			logy, Plant tissue culture	· ·			
	Micropropaga						
			is; brief account of embryo &				
В		lture with their	applications niques; Blotting techniques	CO2, CO3			
D			Western Blotting, DNA				
			NA markers i.e. RAPD, RFLP				
			R and Reverse Transcriptase				
			clonal antibodies, ELISA and				
	Immunodetect						
С			ıman disease, Human gene	e CO2, CO3			
		Ç					
	Therapy.						
Mode of	Theory						
examination		T					
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	-						
Other	-						
References							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3

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		IVER	

CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022	
Prog	gram: FSB	Current Academic Year: 2020	
Bra	nch: Forensic	Semester: 4 <sup>th</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Botany-IV Lab	
3	Credits	2	
4	Contact Hours	0-0-4	
	(L-T-P)		
	Course Status	Compulsory	
5	Course	1-To describe the structure and function of plant anatomy	
	Objective	2- Demonstrate and understanding of clinical and health maint	enance
		<b>3-</b> To acquire specialized knowledge and understanding of select mean of stem	ted aspects by
6	Course Outcomes	CO1:Demonstrate and understanding of fundamental biochem CO2: To gain knowledge of basic lab techniques in both chemis CO3:Describe characteristic of living things CO4:Demonstrate basic structure & function of plant body	
7	Course	After completion of this course student will be able to know	about the
	Description	physiology & anatomy of plants.	
8	Outline syllabus		CO Mapping
	Unit 1	Study of meristems through permanent slides and photographs  Brief Demonstration Experimentation	CO1
	Unit 2	Tissues (parenchyma, collenchyma and sclerenchyma)	CO2
		Brief	
		Demonstration	
		Experimentation	
	Unit 3	Stem: Monocot: Zea mays; Dicot: Helianthus;	CO2
		Secondary: Helianthus (only Permanent slides).	
		Brief	
		Demonstration	

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				Beyond Boundaries		
	Experime	ntation				
Unit 4	CO3					
	Secondar	y: Helianthus	(only Permanent slides).			
	Brief					
	Demonstr	ration				
	Experime	entation				
Unit 5	Dissection	n of embryo/er	ndosperm from developing	CO4		
	seeds.	seeds.				
	Brief					
	Demonstr	ration				
	Experime	ntation				
Mode of	Practical/	Viva				
examination						
Weightage	CA	MTE	ETE			
Distribution	60%	0%	40%			
Text book/s*	-	-				
Other	-					
References						

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022					
Prog	gram: FSB	Current Academic Year: 2020					
Bra	nch: Forensic	Semester: 5 <sup>th</sup>					
Scie	nce						
1	Course Code						
2	Course Title	Forensic Science-V					
3	Credits	3					
4	Contact	3-1-0					
	Hours						
	(L-T-P)						
	Course Type	Compulsory					
5	Course	1-Able to apply modern methods of forensic analysis in lab					
	Objective						

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		· · · · · · · · · · · · · · · · · · ·	eyond Boundaries				
		2- In communicating or defending forensic evidence in oral or wri	tten				
		<b>3-</b> To provide depth knowledge related to firearm					
6	Course	CO1:To describe all type of marks and patters.					
	Outcomes	CO2:Able to examine the all type physical evidence					
		CO3:Able to analyze tool marks and firearms					
		CO4: Able to do photography of crime scene.					
7	Course	After the completion of this course the students will be able t	o understand				
	Description	the Investigation and examination of footprint, tire marks, ob	literated				
		marks and their restoration along with fire-arm evidences and	d also				
		understand the aspects of photography.					
8	Outline syllabi	ls	CO Mapping				
	Unit 1	FORENSIC PHYSICS-I	TI B				
	A	Footprints: Importance, GaitPattern,	CO1, CO2				
		Castingoffootprints in Different medium,	·				
		TakingControlsamples.					
		<b>Tire Marks</b> /prints and Skid marks, taking control samples,					
		Forensic Significance					
	В	TOOL MARKS- Types of tool marks- compression	CO1, CO2				
		marks, striated marks, combination of compression and					
		striated marks, repeated marks, class characteristics and					
		individual characteristics, tracing and lifting of marks,					
		Photographic examination of tool marks and cut marks on clothes and walls etc.					
		ciotiles and wans etc.					
	С	Restoration of erased / obliterated marks- Method of	CO1, CO2				
		making-cast, punch, engrave; methods of obliteration,					
		method of restoration- etching (etchings for different					
		metals), magnetic, electrolytic etc., recording of restored					
		marks – restoration of marks on wood,					
	Unit 2	leather, polymer etc.  FORENSIC PHYSICS- II					
	A	Paint - Types of paint and their composition, cases	CO1, CO2				
	11	involve, collection and preservation of paint evidences	CO1, CO2				
		microscopic analysis of paint pigments, micro-chemical					
		analysis- solubility test, chemical and instrumental analysis					
		of paint evidences.					
		Glass - Types of glass and their composition. Matching and					
		comparison. Forensic examinations of glass fractures- rib					
		marks, hackle marks, cone fracture, wavy, backward					
		fragmentation, concentric and radial fractures. Colour,					
		fluorescence, physical measurements, refractive index,					

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		eyond Boundaries					
	density gradient, becke-line, specific gravity						
В	examination and elemental analysis of glass evidence  Soil- Types and composition of soil, sample preparation, removal of contaminants, colour, molecular particle size	CO1, CO2					
	distribution, turbidity test, pH measurements,						
	microscopicexamination, density gradient analysis,						
	ignition-loss test, elemental analysis, interpretation of soil						
С	evidence. <b>Fibres-</b> Types of fibres, forensic aspects of fibre	CO1, CO2					
	examination- fluorescence, optical properties, refractive	CO1, CO2					
	index, birefringence, dye analysis. Physical fit and						
	chemical testing. TLC, IR-micro spectroscopy, Py-MS.						
	Difference between natural and man-made fibres. Fibre						
IImi4 2	comparison of dye Component						
Unit 3	<b>BALLISTICS</b> Firearms-History and development of firearms.	CO3					
A	Classification of firearms. Weapon types and their operation. Firing mechanisms of different firearms.	COS					
	Internal ballistics - Definition, ignition of propellants,						
	shape and size of propellants, manner of burning, and						
	various factors affecting the internal ballistics: lock time, ignition time, barrel time, erosion, corrosion and gas						
	cutting.						
В	External Ballistics - Vacuum trajectory, effect of air	CO3					
	resistance on trajectory, base drag, drop, drift, yaw, shape						
	of projectile and stability, trajectory computation, ballisticscoefficient and limiting velocity, Measurements						
	of trajectory parameters, introduction to automated system						
	of trajectory computation and automated management of						
	ballistic data.						
С	Terminal Ballistics – Effect of projectile on hitting the target: function of bullet shape, striking velocity, striking	CO3					
	angle and nature of target, tumbling of bullets, effect of						
	instability of bullet, effect of intermediate targets, and						
	influence of range. Ricochet and its effects, stopping						
Unit 4	power.  Jnit 4 FIREARMS						
A	Ammunition - Types of ammunition characteristics of	CO3					
	different types of cartridges and bullets. Primers and						
	priming compounds. Projectiles. Headstamp markings on						
	ammunitions.						



				Beyond Boundaries					
В	on cartridge	Different types of marks produced during firing process on cartridge – firing pin marks, breech face marks, chamber marks, extractor and ejector marks.							
С	Firearm Evidences in regular and wads fired Automated in comparison. If fire, Mechanism Methods of a hands and tail Identification in the case of the	CO3							
Unit 5	CRIME SCE	<b>NE PHOTOG</b>	RAPHY						
A	Forensic Pho Techniques of lenses, shutters and printing tech								
В	Different kinds illumination gu	CO4							
С	Modern develo Working and Surveillance p &laboratory ph								
Mode of examination	Theory	<u> </u>							
Weightage	CA								
Distribution	30%								
Text book/s*	J.A. Seigel- Fo								
Other References	C.D.Duncan-	Advance Crimo	e scene photography						

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS Batch: 2019-2022

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Pro	gram: FSB	Current Academic Year: 2020	eyond Boundaries
	nch: Forensic	Semester: 5 <sup>th</sup>	
Scie	ence		
1	Course Code		
2	Course Title	Forensic Science -V Lab	
3	Credits	2	
4	Contact Hours	0-0-4	
	(L-T-P)		
	Course Status	Compulsory	
5	Course	1-Able to apply modern methods of forensic analysis in lab	
	Objective	2- In communicating or defending forensic evidence in oral or w	ritten
		<b>3-</b> To provide depth knowledge related to firearm	
		3-10 provide depth knowledge related to incarm	
6	Course	CO1:To describe all type of marks and patters.	
	Outcomes	CO2:Able to examine the all type physical evidence	
		CO3:Able to analyze tool marks and firearms	
		CO4: Able to do photography of crime scene.	
7	Course	After the completion of this course the students will be able	
	Description	the Investigation and examination of footprint, tire marks, o	bliterated
		marks and their restoration along with fire-arm evidences as	nd also
		understand the aspects of photography.	
8	Outline syllabus	3	CO Mapping
	Unit 1	To determine the gait pattern.	CO1
		Study	
		Enumerate the species	
		Find out the individual character of Gait Pattern	
	Unit 2	To determine the footprint	CO2
		Collection	
		Packing	
		Preserving	
	Unit 3	To carry out the comparison of fired bullets and fired	CO3
		cartridge case.	
		Brief	
		Demonstration	
		Experimentation	
	Unit 4	To describe, with the aid of diagrams, the firing	CO3
		mechanisms of different types of firearms.	
		Brief	
		Demonstration	
		Experimentation	~~~
	Unit 5	To identify gunshot residue.	CO3
		Brief	



				Beyond Boundaries					
	Demonstratio	Demonstration							
	Experimentat	ion							
Mode of examination	Practical/Viva	Practical/Viva							
Weightage	CA	MTE	ETE						
Distribution	60%	0%	40%						
Text book/s*	-								
Other	-								
References									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022						
	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 5 <sup>th</sup>						
Science								
1	Course Code							
2	Course Title	Physics-V						
3	Credits	3						
4	Contact	2-1-0						
	Hours							
	(L-T-P)							
	Course Type	Compulsory						
5	Course	1- Introduce the methods of mathematical physics						
	Objective	2- To acquire working knowledge of quantum mechanics.						
		<b>3-</b> An overview of modern nuclear and particle physics						
6	Course	CO1:Student understand concepts in particles and nuclear physics						
	Outcomes	CO2:Can understand key experiments in nuclear physics						
		CO3:Describes structure of hydrogen atom and understanding of angular momentum						
		CO4:Analyse all type of physical mathematical problems						
7	Course	After the completion of this course the students will be able to						
	Description understand about quantum physics and nuclear physics.							
8	Outline syllabi	us CO						



				<b>\\$</b> ''	Beyond Bound		
	T				Mapping		
Unit 1		TICAL PHYS					
A			tor spaces, mati		CO1, CO2		
			s and eigenvalue				
В	derivatives		ultivariate calcu	, 1	CO1, CO2		
С		r linear par variables meth	tial differential od	equations,	CO1, CO2		
Unit 2	QUANTUM						
A			bles, Hilbert spac	e	CO1, CO3		
В	Schrodinger e	quation			CO1, CO3		
С		ncertainty princ	ciple		CO1, CO3		
Unit 3	QUANTUM		-				
A	Particle in a bo				CO1, CO3		
В	Harmonic oscil	lator			CO1, CO3		
C	<del>_</del>		dinger equation fo	r Hydrogen	CO1, CO3		
	atom	, ,					
Unit 4	NUCLEAR I	PHYSICS					
A	Nuclearcompos	CO1, CO2					
	and fusion				,		
В	Radioactive de	CO1, CO2					
	applicationsof						
С	RadiationDete	CO1, CO2					
Unit 5	PARTICLE PHYSICS						
A	Fermions and b	osons, Standar	d model of fundam	ental	CO4		
	particles						
В	Leptons and qu	iarks, baryons a	and mesons		CO4		
С	Fundamental f	orces of nature,	weak nuclear force	e and strong	CO4		
	nuclear force						
Mode of	Theory						
examination							
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text book/s*	College physi	cs- Serway and	d Vuille, Principle	es of			
		day & Resnick	_				
Other			rsity physics- Yo	ung and			
References	Freedman.	-		_			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3

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CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022				
Pro	gram: FSB	Current Academic Year: 2020				
	nch: Forensic	Semester: 5 <sup>th</sup>				
Scie	ence					
1	Course Code					
2	Course Title	Physics-V Lab				
3	Credits	2				
4	Contact Hours (L-T-P)	0-0-4				
	Course Status	Compulsory				
5	Course Objective	1- Introduce the methods of mathematical physics 2- To acquire working knowledge of quantum mechanics. 3-An overview of modern nuclear and particle physics				
6	Course Outcomes	CO1:Student understand concepts in Optics. CO2:Can understand key experiments in diffraction & Refractio CO3:Describes structure of hydrogen atom and understanding momentum CO4:Analyse all type of physical mathematical problems				
7	Course	After the completion of this course the students will be able	to understand			
	Description	about quantum physics and nuclear physics.				
8	Outline syllabus		CO Mapping			
	Unit 1	Experiments of fibre optic communication systems.	CO1			
		Establish a fibre optic analogue link. Establish a fibre optic digital link. Study of Bending Loss.				
	Unit 2	To determine the diameter of thin wire by diffraction using laser.	CO2			
		Brief Demonstration Experimentation				
	Unit 3	To determine the wavelength of laser light by diffraction at a single slit.	CO2			
		Brief Demonstration				

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				Beyond Boundaries		
·	Experimentat	ion				
Unit 4	To determine	To determine slit width of single and double slit by				
	using Laser					
	Brief					
	Demonstratio	n				
	Experimentat	ion				
Unit 5	To determi	ne waveleng	th of laser light usir	ng CO4		
	measuring so	cale	_			
	Brief					
	Demonstratio	n				
	Experimentat	ion				
Mode of	Practical/Viva	a				
examination						
Weightage	CA	MTE	ETE			
Distribution	60%	0%	40%			
Text book/s*	B.Sc. Practica	al Physics- Hari	nan Singh and PS Hemne.			
Other	-	-				
References						

	•											
POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022				
Pro	gram: FSB	Current Academic Year: 2020				
Bra	nch: Forensic	Semester: 5 <sup>th</sup>				
Scie	ence					
1	Course Code					
2	Course Title	Chemistry-V				
3	Credits	3				
4	Contact Hours	2-1-0				
	(L-T-P)					
	Course Type	Compulsory				
5	Course	1-Understand the effect of pressure on solubility				
	Objective	<b>2-</b> To provide the understanding of relation between the structures, chemical bond				

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		<b>3-</b> Utilize reductive amination for the synthesis of amines	eyond Boundaries		
6	Course Outcomes	CO1:Identify & classify of organic molecules CO2:Predict the physical properties of organic chemicals based on their structure CO3:Able to know the principle various classes of organo-metallic compounds CO4:Able to know the importance & application oforgano-metalliccompounds			
7	Course	After the completion of this course the students will be able t	o understand		
0	Description	about organo-metallic compound and their chemical nature.	G0.14 :		
8	Outline syllabu		CO Mapping		
	Unit 1	PHASE EQUILIBRIUM	G01 G04		
	A	Phases, components and degrees of freedom of a system, criteria of phase equilibrium. Gibbs Phase Rule and its thermodynamic derivation	CO1, CO2		
	В	Derivation of Clausius – Clapeyron equation and its importance in phase equilibrium.	CO1, CO2		
	С	Phase diagrams of one-component systems (water and sulphur) and two component systems involving eutectics, congruent and incongruent melting points (lead-silver, FeCl3-H2O and Na-K only).	CO1, CO2		
	Unit 2	CONDUCTANCE			
	A	Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes.	CO1, CO2		
	В	Kohlrausch law of independent migration of ions. Transference number and its experimental determination using Hittorf and Moving boundary methods. Ionic mobility.	CO1, CO2		
	С	Applications of conductance measurements: determination of degree of ionization of weak electrolyte, solubility and solubility products of sparingly soluble salts, ionic product of water, hydrolysis constant of a salt. Conductometric titrations (only acid-base).	CO1, CO2		
	Unit 3	ORGANOMETALLIC COMPOUNDS			
	A	Definition and Classification with appropriate examples based on nature of metal-carbon bond (ionic, $\sigma$ , $\pi$ and multicentre bonds). Structures of methyl lithium, Zeiss salt and ferrocene. EAN rule as applied to carbonyls.	CO3, CO4		
	В	Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. $\pi$ -acceptorbehaviour of carbon monoxide.	CO3, CO4		
	С	Synergic effects (VB approach). (MO diagram of CO can be referred to for synergic effect to IR frequencies).	CO3, CO4		
	Unit 4	ALDEHYDES			

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				Beyond Boundaries
A	(Formaldehyd	e, Acetaldehyd	e, Benzaldehyde)	CO1
В	Preparation: fro	CO1		
С	Reactions – Rea	action with HCN,	, ROH, NaHSO3, NH2-G	CO1
	derivatives. Iod	oform test. Aldo	ol Condensation, Cannizzaro's	
	reaction, Wittig	reaction, Benzo	oin condensation	
Unit 5	KETONES			
A	Acetone	CO2		
В	Preparation: fro	om acid chloride	s and from nitriles.	CO2
С	Reactions – Rea	action with HCN,	, ROH, NaHSO3, NH2-G	CO2
	derivatives. Iod	oform test. Aldo	ol Condensation, Wittig Reaction	
Mode of	Theory			
examination	-			
Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	-			
Other	-			
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022				
Prog	gram: FSB	Current Academic Year: 2020				
Bra	nch:Forensic	Semester: 5 <sup>th</sup>				
Scie	nce					
1	Course Code					
2	Course Title	Chemistry -V Lab				
3	Credits	2				
4	Contact Hours	0-0-4				
	(L-T-P)					
	Course Status	Compulsory				
5	Course	1-Understand the effect of pressure on solubility				
	Objective	2- To provide the understanding of relation between the structures, chemical bond				
		3-Utilize reductive amination for the synthesis of amines				

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	1 ~	Beyond Boundaries					
6	Course	CO1:Identify					
	Outcomes	CO2:Predict t	ased on their				
		metallic compounds					
		-metalliccompounds					
		1.7.616 101	mow the import	ance a application orongano	metamecompounds		
7	Course	After the con	npletion of this	course the students will be	able to understand		
	Description	about organo	-metallic comp	ound and their chemical na	iture.		
8	Outline syllabu	S			CO Mapping		
	Unit 1	-	of any two ement of their	of the following comple conductivity:	exes CO1		
		tetraammined	carbonatocobalt	(III) nitrate			
		tetraammine	copper (II) sulp	hate			
		Potassium tr	ioxalatoferrate	(III) trihydrate			
	Unit 2	Compare th of M/1000 so	hat CO1				
		Brief					
		Demonstration					
		Experimentar	tion				
	Unit 3	Semicarbazo compounds: cyclohexano	one of any	one of the follow methyl ketone, ⁄de	ring CO3		
		Brief					
		Demonstration					
		Experimentar					
	Unit 4	Aldol conde	nsation using	either conventional or gr	een CO3		
		Brief					
		Demonstration					
		Experimentar					
	Unit 5	Phase equili using cooling eutectic and					
		Brief					
		Demonstration					
		Experimentar					
	Mode of	Practical/Viv					
	examination						
	Weightage	CA	MTE	ETE			
	Distribution	60%	0%	40%			



Text book/s*	B.D Khosla- Chemistry Practical book	
Other	Ahluwalia- Chemistry Practical Book	
References		

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022					
	gram: FSB	Current Academic Year: 2020					
	nch: Forensic	Semester: 5 <sup>th</sup>					
Scie							
1	Course Code						
2	Course Title	Zoology-V					
3	Credits	3					
4	Contact	2-1-0					
	Hours						
	(L-T-P)						
	Course Type	Compulsory					
5	Course	1-To outline the major transition in evolution from the origin					
	Objective <b>2-</b> Describe poor public health functions						
		3-To understand the fundamental of immunology					
6	Course Outcomes	CO1:Able to identify current public health problems CO2:Knowledge of the structure and function of major organ system CO3:Knowledge of antibody and antigens CO4:Able to perform analyse and observation in whole organism biology					
7	Course Description		After the completion of this course the students will be able to understand about public health and hygiene, evolution & human behaviour along with				
8	Outline syllabu	is .	CO Mapping				
	Unit 1	EVOLUTION					
	A	History of diversified life: Geological Time Scale and	CO4				
		Geological Era, Zoogeographical regions (Oriental,					
		Australian and Ethiopian Regions/Realms					
		Introductions to evolutionary Theories: Lamarckism,					
		Darwinism, Neo Darwinism					

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В	Source of heredity variation and evolution: Isolation,	CO4
	Natural Selection, types, Speciation, Evolution of Man and	
	Horse	
С	Hardy Weinberg law of Equilibrium: Genetic Drift,	CO4
	Founder effect	
Unit 2	ANIMAL BEHAVIOR	
A	Concepts and pattern of Behaviors: Innate Behaviors,	CO4
	learned behavior	
В	Social organization in insects: Honey Bee, Migration in	CO4
	Birds	
С	Parental Care in fishes and Amphibian	CO4
Unit 3	PUBLIC HEALTH AND HYGIENE	
A	Introduction to public health and hygiene. Determinants	CO1
	and factors affecting health and hygiene. Pollution and	
	associated hazards; water and air borne diseases.	
	Prevention of diseases through health education and	
	environment improvements	
В	Classification of foods (micro and macro nutrients).	CO1
	Balanced diet and malnutrition. Diseases caused by	
	deficiency of proteins, vitamins and minerals.	
С	Infectious agents responsible for diseases in humans.	CO1
C	Communicable diseases such as measles, polio,	COI
	chickungunya, rabies, leprosy, tuberculosis, AIDS,	
	hepatitis and their preventive measures.	
	Non-communicable diseases such as hypertension,	
	coronary heart disease, stroke, diabetes, obesity, mental ill-	
	health, cancer and their preventive measures.	
	-	
Unit 4	IMMUNOLOGY-I	G02 G02
A	Introduction to Immunity: Innate immunity, Adaptive	CO2, CO3
	immunity. Cell mediated and humoral immune responses	
	Cell and organs of the Immune System.	
В	Cell and organs of immune system: Types of immune cells,	CO2, CO3
	lymphoid and myeloid, Primary and secondary lymphoid	- ,
	organs	
С	Humoral immunity: Antigen, Function of B cell	CO2, CO3
	Cell mediated immunity: Function of T-Cells	,
Unit 5	IMMUNOLOGY-II	
A	Antigens: Antigenicity and immunogenicity, Immunogens,	CO2, CO3

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				→ B	eyond Boundaries
Factors influencing immunogenicity, Band T-Cell					
В	O		dy structure and		CO2, CO3
	antibody isoty	pes, Applicatio	ons Monoclonal antib	odies.	
С	Hypersensitive cell degranula antibody mechypersensitivity	CO2, CO3			
Mode of examination	Theory				
Weightage	CA	MTE	ETE		
Distribution	30%	20%	50%		_
Text book/s*	-				
Other	-				
References					

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Bra	nch: Forensic	Semester: 5 <sup>th</sup>
Scie	nce	
1	Course Code	
2	Course Title	Zoology-V Lab
3	Credits	2
4	Contact Hours	0-0-4
	(L-T-P)	
	Course Status	Compulsory/Elective
5	Course	1-To outline the major transition in evolution from the origin
	Objective	2- Describe poor public health functions
		3-To understand the fundamental of immunology
6	Course	CO1:Able to identify current public health problems
	Outcomes	CO2:Knowledge of the structure and function of major organ system



	T			<b>▼"》</b> B	leyond Boundaries						
		CO3:Knowled	ge of antibody a	nd antigens							
		CO4:Able to p	erform analyse a	and observation in whole organis	m biology						
7	Course	After the com	pletion of this	course the students will be able	to understand						
	Description	about public l	nealth and hygic	ene, evolution & human behavi	iour along						
		with Immuno	logy.								
8	Outline syllabus	S			CO Mapping						
	Unit 1	Protein estim	nation by Colo	rimeter	CO2						
		Brief									
		Demonstratio	n								
		Experimentat	Experimentation								
	Unit 2	Test of biome	olecules		CO1						
		Carbohydrate	Carbohydrates								
		Proteins									
		Lipids									
	Unit 3	Actions of sa	CO3								
		Brief									
		Demonstratio									
		Experimentat	ion								
	Unit 4	Determination	on of ABO bloo	od Group	CO3						
		Brief									
		Demonstratio	n								
		Experimentat	ion								
	Unit 5	DNA separat	ion on Gel		CO4						
		Brief									
		Demonstratio	n								
		Experimentat	ion								
	Mode of	Practical/Viva	a								
	examination										
	Weightage	CA	MTE	ETE							
	Distribution	60%	0%	40%							
	Text book/s*	-									
	Other	_									
	References										

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2



Sch	ool: SAHS	Batch: 2019-2022						
Pro	gram: FSB	Current Academic Year: 2020						
Bra	nch:Forensic	Semester: 5 <sup>th</sup>						
Scie	ence							
1	Course Code							
2	Course Title	Botany-V						
3	Credits	3						
4	Contact	2-1-0						
	Hours (L-T-P)							
	Course Type	Compulsory						
5	Course	1-Introduce the basic principle and concept of plant pathology						
	Objective	<b>2</b> - Identify the sources of genetic variation to conduct breeding	orogram.					
		3-Scope and necessity of applied botany						
6	Course Outcomes	CO1:Understand the diversity among bacteria & virus CO2:Understand the fungal diseases CO3:Understand the causes and prevention of pollution CO4:Able to understand quantitative inheritance and plant bree	ding system					
7	Course Description	After the completion of this course the students will be able tabout Applied botany.	o understand					
8	Outline syllabu	IS	CO Mapping					
	Unit 1	ENVIRONMENTAL BOTANY	11 0					
	A	Ecology: Environmental factors, Ecological adaptations, Plant Succession, Ecosystem (Structure and functions).	CO3					
	В	Environmental pollution: air, water, soil, radioactive, thermal and noise pollutions, their sources, effects and control. (Greenhouse effect, ozone depletion and acid rain). CO2 enrichment and climate change	CO3					
	С	Biodiversity and Phytogeography: biotic communities and populations, their characteristics and population dynamics. Natural vegetation of India, static and dynamic plant geography, basic principles governing geographical distribution of plants, endemism.	CO3					
	Unit 2	APPLIED BIOLOGY						
	A	Forestry: Silviculture – General silvicultural practices, special approaches; Silviculture of important trees <i>Acacia nilotica</i> , <i>Albizzia lebbeck</i> , <i>Butea monosperma</i> , <i>Dalbergia sisoo</i> , <i>Emblica officinalis</i> , <i>Tectona grandis</i>	CO4					



			<u> </u>	Beyond Boundaries				
В		agro-ecologic	ecessity; agro-forestry syste cal zones; role of multipurpo					
С	JFM: principle and role of NG		methodology, scope, bene-	fits CO4				
Unit 3	PLANT BREE	EDING-I						
A	Plant Breeding	Introduction	and objectives.	CO4				
В			reproduction in crop plants.	CO4				
С		Quantitative inheritance: Concept, mechanism, examples. Monogenic vs polygenic Inheritance						
Unit 4	PLANT BREE	PLANT BREEDING-II						
A		Inbreeding depression and heterosis; Genetic basis of inbreeding depression and heterosis; Applications.						
В	Crop improve	Crop improvement and breeding; Role of mutations; Polyploidy; Distant hybridization						
С			o improvement.	CO4				
Unit 5			PROVEMENT					
A		ntres of origin a	and domestication of crop	CO2				
В		ds: For self-poll	linated, cross pollinated and	CO2				
С		or self, cross an	d vegetative propagated plantations.	cs CO2				
Mode of examinat	Theory	-						
Weightag	e CA	MTE	ETE					
Distribut		20%	50%					
Text boo	ζ/s* -							
Other	-							
Referenc	es							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS Batch: 2019-2022

*	SH	[A]	RI	DA
				ITY

Pro	gram: FSB	Current Academic Year: 2020	eyond Boundaries
	nch: Forensic	Semester: 5 <sup>th</sup>	
Scie	ence		
1	Course Code		
2	Course Title	Botany-V Lab	
3	Credits	2	
4	Contact Hours	0-0-2	
	(L-T-P)		
	Course Status	Compulsory	
5	Course	1-Introduce the basic principle and concept of plant pathology	
	Objective	2- Identify the sources of genetic variation to conduct breeding	nrogram
			s program.
		<b>3-</b> Scope and necessity of applied botany	
6	Course	CO1:Understand the sex related experiments	
	Outcomes	CO2:Understand the experimental genetics	
		CO3:Understand the diseases related to genetics	
		CO4:Able to understand quantitative inheritance and plant bre	eding system
			6.7
7	Course	After the completion of this course the students will be able	to understand
	Description	about Applied botany.	
8	Outline syllabus		CO Mapping
	Unit 1	Chromosome mapping using point test cross data.	CO1
		Brief	
		Demonstration	
		Experimentation	
	Unit 2	Pedigree analysis for dominant and recessive	CO1,CO2
		autosomal and sex linked traits.	
		Brief	
		Demonstration	
		Experimentation	
	Unit 3	Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4).	CO1,CO2
		Brief	
		Demonstration	
		Experimentation	
	Unit 4	Blood Typing: ABO groups & Rh factor	CO1,CO2
		Brief	
		Demonstration	
		Experimentation	
	Unit 5	Study of aneuploidy: Down's, Klinefelter's and	CO3
		Turner's syndromes.	
		Brief	



				Beyond Bo	undaries		
	Demonstratio	n					
	Experimentat	ion					
Mode of examination	Practical/Viv	Practical/Viva					
Weightage	CA	MTE	ETE				
Distribution	60%	0%	40%				
Text book/s*	-						
Other							
References							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022	
Prog	gram: FSB	Current Academic Year: 2020	
Brai	nch: Forensic	Semester: 5 <sup>th</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Cyber-I	
3	Credits	1	
4	Contact	1-0-0	
	Hours		
	(L-T-P)		
	Course Type	Compulsory	
5	Course	1- Basic knowledge of computer	
	Objective	2- Describes the structure of file system	
		3-Describe Internet security	
6	Course	CO1:Basic knowledge of RAM & ROM.	
	Outcomes	CO2:Demonstrate and understanding data representation	
		CO3:Describe internet reading	
		CO4:Examination of Internet fraud	
7	Course	After the completion of this course the students will be able t	o understand
	Description	basics of computer and Internet security.	00.11
8	Outline syllabu	1S	CO Mapping

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Unit 1	<b>BASICS OF</b>	COMPUTER		eyond Boundaries			
A	1 0		ponents of computer - Input &	CO1			
	Output device						
В	Memory Hiea	CO1					
	and their types						
С	Application so	CO1					
Unit 2		RESENTATIO	N				
A	Integers, real,	•		CO2			
В		imal & their co		CO2			
C	Legal gates - combinations.		R, AND, XOR etc and their	CO2			
Unit 3	OPERATING						
A			nemory structure, concurrency	CO2			
В			and memory management,	CO2			
Ь		ption and contr		CO2			
С	1	1	stem (Batch operating system,	CO2			
		perating system					
Unit 4		M AND NET					
A		•	s - FAT12, FAT16, FAT32,	CO3			
	NTFS, EXT2,						
В	Structure of fi	le system, inod	e etc.	CO3			
C			luction to Networking types of	CO3			
			AN and related terminologies,				
			es, Hub, bridge).				
		`	, , , , ,				
Unit 5	INTRODUC'	TION TO INT	ERNET				
A	World Wide V	Web, E-mail, ch	at, Search Engine, Network	CO4			
	security- Thre	ats Introduction	n to Security and Security				
	model (CIAtri	iad), Vulnerabil	ities, Introduction to security				
	and security n	nodel.					
В			tion, computer security	CO4			
		-	ponse, who is involved in				
			cident response methodology,				
		sponse strategy		CO4			
С	Investigate the incident, preparing for incident response, overview of pre incident preparation.						
Mode of	Theory						
examination							
Weightage CA MTE ETE							
Distribution 30% 20% 50%							
Text book/s*							



	▼ <b>&gt;</b> B	eyond Boundaries
Other		
References		

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
	gram: FSB	Current Academic Year: 2020						
_	nch: Forensic	Semester: 5 <sup>th</sup>						
Scie		Semester: 2						
1	Course Code							
2	Course Title	Cyber-I Lab						
3	Credits	1						
4	Contact Hours (L-T-P)	0-0-2						
	Course Status	Compulsory						
5	Course	1- Basic knowledge of computer						
	Objective	2- Describes the structure of file system						
		<b>3-</b> Describe Internet security						
6	Course Outcomes	CO1:Basic knowledge of RAM & ROM. CO2:Demonstrate and understanding data representation						
		CO3:Describe internet reading						
		CO4:Examination of Internet fraud						
7	Course Description	After the completion of this course the students will be able basics of computer and Internet security.	to understand					
8	Outline syllabus	1 *	CO Mapping					
	Unit 1	Finding results of different logics gates and their combinations.	CO2					
		Brief Demonstration Experimentation						
	Unit 2	Experimentation  Working with windows files (Creation, modification, CO1						
		deletion, attributes) folders (creation, nesting,						



 				Beyond Boundaries
	attributes).			
	Brief			
	Demonstratio	n		
	Experimentat	ion		
Unit 3			le (creation, modification	
	deletion, a attributes)	ttributes) fo	older (creation, nesting	g
	Brief			
	Demonstratio	n		
	Experimentat	ion		
Unit 4	0	writing data	rage device using windows on floppy, CD, DVD, USI	
	Brief			
	Demonstratio	n		
	Experimentat	ion		
Unit 5	reading writ		orage device using Linux oppy, CD, DVD, USB thuml	
	drive			
	Brief			
	Demonstratio			
	Experimentat			
Mode of	Practical/Viva	a		
examination	G.	1 (777)	Lamp	
Weightage	CA	MTE	ETE	
Distribution	60%	0%	40%	
Text book/s*	-			
Other				
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS	Batch: 2019-2022	
Program: FSB	Current Academic Year: 2020	

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			Beyond Boundaries
	nch: Forensic	Semester:5 <sup>th</sup>	
Scie			
1	Course Code	D. I W	
2	Course Title	Project-II	
3	Credits	1	
4	Contact Hours	2-0-0	
	(L-T-P)		
	Course Status	Compulsory	
5	Course Objective	1. To know about the review of literature	
		2. To know about the research knowledge of	
		particular topic.	
		3. To learn about the paper writing	
6	Course Outcomes	CO1: Understand the review of literature and its	
		Importance.	
		CO2: Understand about their topics	
		CO3: Understand the related works about their topics	
		CO4: Know to write the project and importance of it.	
7	Course	After completion of this project students will be able	
	Description	to understand about research methodology and	
		development in their topics.	
8	Outline syllabus		CO
			Achievement
	Unit 1	Introduction	CO1
		A. Collect the details & theory related to topics	
		B.Formatting	
		C. Writing in your project	
	Unit 2	Review of Literature	CO2
		A. Collection	
		B. Analysis of all Papers regarding Topics	
		C. Include in your project	
	Unit 3	Material and methods	CO2
		A. Decide the population	
		B. Make the pattern for collection	
	77.4.4	C. Collection	804
	Unit 4	<b>Experiments Performed</b>	CO3
		A. Decide the methods	
		B. Instrument Requirements	
	77.4.5	C. Analyse your samples	804
	Unit 5	Finalisation	CO4
		A. Result	
		B. Discussion	
	1	C. Referencing	



Mode of examination	Jury/Practi	Jury/Practical/Viva						
Weightage	CA	CA MTE ETE						
Distribution	60%	0%	40%					
Text book/s*	-	-						
Other References								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Cos												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sc	hool: SAHS	Batch: 2019-2022
Pr	ogram: FSB	Current Academic Year: 2020
Br	anch:	Semester: 6 <sup>th</sup>
Fo	rensic	
Sc	ience	
1	Course	
	Code	
2	Course	Forensic Science-VI
	Title	
3	Credits	3
4	Contact	2-1-0
	Hours	
	(L-T-P)	
	Course	Compulsory
	Type	
5	Course	1-Knowledge of documents examination
	Objective	2- Fingerprint analysis methods
		<b>3-</b> Describes medico-legal aspects of Death
		3-Describes medico-regai aspects of Death
6	Course	CO1:Able to classify all types of fingerprint
	Outcomes	CO2:Able to describe all changes in body after death
		CO3:Able to Examine all types of fraud in documents
		CO4:Able to examine fingerprints
7	Course	After the completion of this course the students will be able to understand the
	Description	examination of documents, handwriting and fingerprint and also about the medico-legal aspects.

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8	Outline syl		CO Mapping
	Unit 1	QUESTIONED DOCUMENTS – I	таррть
	A	Functions of a Forensic Document Examiner: - Required training and education. Collection protocols of writing standards and process of comparison. Various writing features and their estimation. General and individual characteristics of handwriting. Identification of writings. Application of Forensic Stylistics/Linguistics in the identification of writer.	CO3
	В	Examination of built-up documents and determination of sequence of strokes. Determination of age of documents by examining various factors.	CO3
	С	Identificationandcomparison Identificationoftypist, various types of printing processes, printing and machine defects, and alterations in typed text. Various types of typewriting devices:  examination of typescripts:  examination of typescripts:  examination of typewriters with proportional letters pacing, electronic typewriters, dot matrix, inkjet & laser printers, machines used for printing security documents, cheques, and currency notes, etc.	CO3
	Unit 2	QUESTIONED DOCUMENTS – II	
	A	Photocopy&photocopier examination:- photocopieridentification, visual photocopyexamination, photocopyforgery.Paper&watermark examination:- Papersizeandthickness, paperopacity, colourand brightness, understandingwatermarks.Examination of alterations, erasures, overwriting, additions and obliterations	CO3
	В	Deciphermentofsecretwritings,indentations&charred documents. Physical comparisonofdocuments,examinationofsealrubber&other mechanical impressions.	CO3
	С	Examinationofcounterfeitcurrencynotes,Indian Passports/Visas,Stamp Papers,PostalStampsetc. Examinationoffake creditcards and electronic documents.	CO3
	Unit 3	FINGERPRINTS	
	A	Basics of Fingerprints- Introduction and history, with special reference to India. Biological basis of fingerprints. Formation of ridges. Fundamental principles of fingerprinting.	CO1, CO4
	В	Types of fingerprints. Types of Fingerprint patterns. Fingerprint characteristics/minutiae. Plain and rolled fingerprints. Ridge	CO1, CO4



1	T			ond Boundarie			
	counting. Signific	cance of poroscopy	and edgeoscopy.				
С	residue.Latent fin techniques. Mech developing reage. Application of li- of developed enhancement. Fin	ngerprints' detection nanism of detection nts.  ght sources in fing fingerprints. Digingerprinting the december of the decembe	- Constituents of sweat on by physical and chemical in of fingerprints by different gerprint detection. Preservation tal imaging for fingerprin ceased.	CO4			
Unit 4	FORENSIC ME	DICINE -I					
A	Policeinquest,	icalJurisprudence,l Magis Oathandaffirmatio	trate's inquest,	CO2			
В	_	lence:-Medicalcert rstandinglaws ande	ificates, medical reports, dying thics of medical practice.	g CO2			
C	Medicolegalaspects ofdeath:-Diagnosis ofdeath-somatic&molecular,earlyand intermediate changesfollowingdeath,late changes afterdeath-putrefaction,autolysis,bacterialaction, factors affecting these changes. Determinationoftimesincedeath,including byhistopathologicalmethods.						
Unit 5	FORENSIC ME	DICINE -II					
A		ctims and suspects		CO2			
В		ma,heatburns,	ses ofdeath suchas asphyxia starvation,naturaldeath,sudder				
С	Medicolegal aspects ofwounds:-medicaland legaldefinitionofwounds,types ofmechanicalandregionalinjuries,aging ofwounds, differencebetween suicidal,homicidalandaccidentalwounds.						
Mode of	Theory						
examination							
Weightage	CA	MTE	ETE				
Distribution	30%	20%	50%				
Text	-						
book/s*							
Other	-						
References							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												

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		IVER	

CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022						
Pro	gram: FSB	Current Academic Year: 2020						
Bra	nch: Forensic	Semester: 6 <sup>th</sup>						
Scie	ence							
1	Course Code							
2	Course Title	Forensic Science-VI Lab						
3	Credits	2						
4	Contact Hours	0-0-4						
	(L-T-P)							
	Course Status	Compulsory						
5	Course	1-Knowledge of documents examination						
	Objective	2- Fingerprint analysis methods						
		<b>3-</b> Describes medico-legal aspects of Death						
6	Course	CO1:Able to classify all types of fingerprint						
	Outcomes	CO2: Able to describe all changes in body after death						
		,						
		CO3:Able to Examine all types of fraud in documents CO4:Able to examine fingerprints						
		Co in the to examine inigerprints						
7	Course	After the completion of this course the students will be ab	ole to understand					
	Description	the examination of documents, handwriting and fingerprin						
		the medico-legal aspects.						
8	Outline syllabus	3	CO Mapping					
	Unit 1	To record plain and rolled fingerprints.	CO1					
		To identify different fingerprint patterns	CO1					
		To identify Core						
		To identify tri-radii.						
	Unit 2	To record rolled Fingerprints to carry out ridge	CO4					
		tracing and ridge counting.						
		Brief						
		Demonstration						
	TI '4 2	Experimentation	002					
	Unit 3	To identify Handwriting Characters	CO3					
		Brief						



				Beyond Boundaries
	Demonstr	ation		
	Experime	ntation		
Unit 4	To study	natural variat	ion in handwriting	CO3
	Brief			
	Demonstr	ration		
	Experime	ntation		
Unit 5	To compa	are handwritir	ng samples	CO3
	Brief			
	Demonstr	ration		
	Experime			
Mode of	Practical/	Viva		
examination				
Weightage	CA	MTE	ETE	
Distribution	60%	0%	40%	
Text book/s*	-	•	•	
Other	-			
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022
Pro	gram: FSB	Current Academic Year: 2020
Bra	nch: Forensic	Semester: 6 <sup>th</sup>
Scie	ence	
1	Course Code	
2	Course Title	Physics-VI
3	Credits	3
4	Contact	2-1-0
	Hours	
	(L-T-P)	
	Course Type	Compulsory
5	Course	1-Understanding of the basic electrical principles & electronic system
	Objective	2- To give the knowledge about various components among signal conditioning
		3-To make student familiar with most important methods including

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	UN	IVE			

		digitalfilter design	Beyond Boundari					
6	Course Outcomes	CO1:Defines the techniques of modern digital signal processing CO2:Explains the application of sensors in daily life CO3:Design analog signal conditioner CO4:Apply knowledge to design different power supply						
7	Course Description	After the completion of this course the students will be ab understand about the modern digital signalling.	le to					
8	Outline syllab	us	CO Mapping					
	Unit 1	ELECTRONICS						
	A	BasicsofLR,RC,LCRcircuits	CO1, CO2					
	В	Diode and Transistor characteristics	CO1, CO2					
	С	Rectification using diodes, Timercircuits, Printed circuit board and IC manufacturing	CO1, CO2					
	Unit 2	CIRCUITS						
	A	Amplification using an Operational amplifier (OPAMP)	CO1, CO2					
	В	Logicgates AND, OR, NOT, NAND, NOR, XOR gates	CO1, CO3					
	С	Flip-flopsand counters.	CO1, CO2					
	Unit 3	SENSORS AND SIGNALS – I	,					
	A	Temperature sensors: Thermistors, thermocouples, RTD's, Infrared sensors Pressure sensors: Piezoelectric	CO1, CO3					
	В	Proximity and displacement sensors: LVDT, capacitive, magnetic, ultrasonic Acceleration sensors: Gyroscopes, accelerometers	CO1, CO3					
	С	Light sensors (photodiode, photo multiplier tube) Sound sensors (microphone) Touch sensors (capacitive)	CO1, CO3					
	Unit 4	SENSORS AND SIGNALS- II						
	A	Analog signals generated by sensors	CO1, CO3					
	В	Analog to Digital (AtoD) and Digital to Analog (DtoA) convertors	CO1, CO3					
	С	Uses of Amplitude modulated (AM)and Frequency Modulated (FM) signals	CO1, CO3					
	Unit 5	DIGITAL SIGNAL PROCESSING						
	A	Digital signals from analog signals Sampling, audio as 1D signal, image as 2D signal	CO2					



В	Fourier transf	Fourier transforms, Fast Fourier Transform (FFT)  Frequency domain filtering: spectrum, power spectrum, low pass, band pass, high pass filters						
С								
Mode of examination	Theory	1 2 1						
Weightage	CA	MTE	ETE					
Distribution	30%	20%	50%					
Text book/s*	College physi	cs- Serway and	d Vuille, Principles of					
	physics- Halli	day & Resnick	ζ.					
Other	Sear's & Zem	ansky's Unive	rsity physics- Young and					
References	Freedman.							

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022
Prog	gram: FSB	Current Academic Year: 2020
Bra	nch: Forensic	Semester: 6 <sup>th</sup>
Scie	nce	
1	Course Code	
2	Course Title	Physics-VI Lab
3	Credits	2
4	Contact Hours	0-0-2
	(L-T-P)	
	Course Status	Compulsory
5	Course	1-Understanding of the basic electrical principles & electronic system
	Objective	2- To give the knowledge about various components among signal conditioning
		<b>3-</b> To make student familiar with most important methods including digitalfilter design
6	Course	CO1:Defines the techniques of modern digital signal processing
	Outcomes	CO2:Explains the application of sensors in daily life
		CO3:Design analog signal conditioner
		CO4:Apply knowledge to design different power supply

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					Beyond Boundaries						
7	Course	After the com	nletion of this	course the students will be able	e to understand						
'	Description		dern digital sign		to understand						
8	Outline syllabus		icili digital sigi	iumig.	CO Mapping						
	Unit 1		he following	basic op-amp circuits and	CO1						
			peration of ea		COI						
		capitali the o	peration of ca								
		Positive and r	negative Feedba	nck							
		Summing and									
	Unit 2	-		sponse of a common emitter	CO1						
		-	_	to experimentally verify							
		theoretical r	esults.								
		D : C									
		Brief Demonstratio	n								
		Experimentat									
	Unit 3		CO2								
	Omt 3		Draw the waveform and study the circuit of op-amp for getting full gain.								
		ioi getting it									
		Brief									
		Demonstratio									
		Experimentat									
	Unit 4	_		. Power supply using zener	CO3						
		diode and									
		regulation.									
		Brief									
		Demonstratio									
	TI:4 5	Experimentat		handa af anda DC dand	COA						
	Unit 5		rging and disc ie the time cor	charging of series RC circuit	CO4						
		and determin	ie the time con	istant.							
		Brief									
		Demonstratio	n								
		Experimentat									
	Mode of	Practical/Viva									
	examination										
	Weightage	CA	MTE	ETE							
	Distribution	60%	0%	40%							
	Text book/s*	B.Sc. Practica	ıl Physics- Hari	man Singh and PS Hemne.							
	Other	-									
	References										



POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022	
Prog	gram: FSB	Current Academic Year: 2020	
Bran	nch: Forensic	Semester: 6 <sup>th</sup>	
Scien	nce		
1	Course Code		
2	Course Title	Chemistry-VI	
3	Credits	3	
4	Contact	2-1-0	
	Hours		
	(L-T-P)		
	Course Type	Compulsory	
5	Course	<b>1-</b> Provides the principle and Kinetic tools in chemical reactions.	
	Objective	2- Provide the detail of bio-inorganic chemistry	
		<b>3-</b> Study of bio-molecules	
6	Course	CO1:Describe chemical structure, properties and function ofbio-	molecules
	Outcomes	CO2:Explains about half-life reactions.	
		CO3:Explains theories of reaction rates.	
		CO4:Able to explore new area of research in chemistry.	
7	Course	After the completion of this course the students will be able t	to understand
	Description	about the bio molecules and bio-inorganic chemistry.	
8	Outline syllabu		CO Mapping
	Unit 1	CHEMICAL KINETICS -I	
	A	The concept of reaction rates. Effect of temperature,	CO1, CO2
	_	pressure, catalyst and other factors on reaction rates.	
	В	Order and molecularity of a reaction.	CO1, CO2
	С	Derivation of integrated rate equations for zero, first and	CO1, CO2
		second order reactions (both for equal and unequal	
		concentrations of reactants).	
	Unit 2	CHEMICAL KINETICS- II	

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A	Half-life of a reaction. General methods for determination	CO1. CO3
	of order of a reaction.	<b>,</b>
В	Concept of activation energy and its calculation from	CO1, CO3
	Arrhenius equation.	<b>,</b>
С	Theories of Reaction Rates: Collision theory and	CO1, CO3
	Activated Complex theory of bimolecular reactions.	,
	Comparison of the two theories (qualitative treatment	
	only).	
Unit 3	BIO- INORGANIC CHEMISTRY	
A	A brief introduction to bio-inorganic chemistry.	CO1
В	Role of metal ions present in biological systems with	CO1
	special reference to Na+, K+ and Mg2+ ions	
C	Role of Na/K pump; Role of Mg2+ ions in energy	CO1
	production and chlorophyll. Role of Ca2+ in blood clotting,	
	stabilization of protein structures and structural role	
	(bones).	
Unit 4	CARBOHYDRATES	
A	Classification, and General Properties, Glucose and	CO1,CO4
	Fructose (open chain and cyclic structure),	
В	Determination of configuration of monosaccharides,	CO1
	absolute configuration of Glucose and Fructose,	
	Mutarotation, ascending and descending in	
	monosaccharides.	
C	Structure of disacharrides (sucrose, cellobiose, maltose,	CO1
	lactose) and polysacharrides (starch and cellulose)	
	excluding their structure elucidation.	
Unit 5	AMINO ACIDS, PEPTIDES AND PROTEINS	
A	Preparation of Amino Acids: Strecker synthesis, using	CO1
	Gabriel's phthalimide synthesis. Zwitter ion, Isoelectric	
	point and Electrophoresis.	
В	Reactions of Amino acids: ester of -COOH group,	CO1
	acetylation of –NH2 group, complexation with Cu2+ ions,	
	ninhydrin test.	
C	Overview of Primary, Secondary, Tertiary and Quaternary	CO1
	Structure of proteins. Determination of Primary structure of	
	Peptides by degradation Edmann degradation (N-terminal)	
	and C-terminal (thiohydantoin and with carboxypeptidase	
	enzyme). Synthesis of simple peptides (upto dipeptides) by	
	N-protection (t-butyloxycarbonyl and phthaloyl) & C-	
	activating groups and Merrifield solidphase synthesis.	
7.1.0		
Mode of	Theory	
examination		



Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	-			
Other	-			
References				

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022						
	gram: FSB	Current Academic Year: 2020						
-	nch: Forensic	Semester: 6 <sup>th</sup>						
Scien	nce							
1	Course Code							
2	Course Title	Chemistry-VI Lab						
3	Credits	2						
4	Contact Hours (L-T-P)	0-0-4						
	Course Status	Compulsory						
5	Course	1-Provides the principle and Kinetic tools in chemical reactions.						
	Objective	2- Provide the detail of bio-inorganic chemistry						
		<b>3-</b> Study of bio-molecules						
		b stady or sile interesties						
6	Course	CO1:Describe chemical structure, properties and function ofbio	-molecules					
	Outcomes	CO2:Explains about half life reactions.						
		CO3:Explains theories of reaction rates.						
		CO4:Able to explore new area of research in chemistry.						
7	Course	After the completion of this course the students will be able	to understand					
	Description	about the bio molecules and bio-inorganic chemistry.						
8	Outline syllabus		CO Mapping					
	Unit 1	Comparison of the strengths of HCl and H2SO4 by	CO2					
		studying kinetics of hydrolysis of						
		Methyl acetate.						
		Brief						



	, B	eyond Boundaries
	Demonstration	
	Experimentation	
Unit 2	Saponification of ethyl acetate.	CO3
	Brief	
	Demonstration	
	Experimentation	
Unit 3	Identify and separate the sugars present in the given	CO1
	mixture by paper chromatography.	
	Brief	
	Demonstration	
	Experimentation	
Unit 4	Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid,	CO1
	glutamic acid, tyrosine or any other amino acid) by	
	paper chromatography	
	Brief	
	Demonstration	
	Experimentation	
Unit 5	Study the Kinetics of Acid hydrolysis of methyl acetate	CO4
	with hydrochloric acid, volumetrically or conducto- metrically	
	Brief	
	Demonstration	
	Experimentation	
Mode of	Practical/Viva	
examination	Tractical/ viva	
Weightage	CA MTE ETE	
Distribution	60% 0% 40%	
Text book/s*	B.D Khosla- Chemistry Practical book	
Other	Ahluwalia- Chemistry Practical Book	
References	Amuwana- Chemistry Fractical Dook	
References		

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2



Scho	ool: SAHS	Batch: 2019-2022	
Prog	gram: FSB	Current Academic Year: 2020	
Brai	nch: Forensic	Semester: 6 <sup>th</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Zoology-VI	
3	Credits	3	
4	Contact	2-1-0	
	Hours		
	(L-T-P)		
	Course Type	Compulsory	
5	Course	1-Can make interference of some specific random process	
	Objective	2- Understand different behaviour pattern	
		<b>3-</b> Economical uses of different animals in industries.	
6	Course	CO1:Able to describe industrial uses of cattle	
	Outcomes	CO2:Able to describe economical use of bee and silk worms	
		CO3:Demonstrate and understanding of the central concept ofm	odern
		statistical theory and their probable foundation	
		CO4:Select from use and interpret result of principle methods, st	atistical
		interference and designs.	
7	Carrea	After the completion of this course the students will be able	
7	Course Description	After the completion of this course the students will be able t about the biostats & economical zoology.	o understand
8	Outline syllabu		CO Mapping
0	Unit 1	BIOSTATICS	CO Mapping
	A	Data: Primary Data, Secondary data, Frequency	CO3, CO4
	A	distribution and tally marks	CO3, CO4
		Data presentation: Diagrammatic: Histogram and Pie	
		Diagram, Graphical	
	В	Measurement of central tendency: Mean, Median, Mode	CO3, CO4
		Measurement of Variation: Standard deviation, Standard	·
		error	
	С	Test of Significance: Student 't' test	CO3, CO4
	Unit 2	ECONOMIC ZOOLOGY -I	
	A	Bee-keeping and Bee Economy (Apiculture): Varieties of	CO1, CO2
		honey bees and Bee pasturage; Setting up an apiary,	
		Rearing equipments, handling of bees, artificial diet.	
	В	Diseases of honey bee, American and Honey extraction	CO1, CO2
		techniques; Physico-chemical analysis of honey.	
	С	Other beneficial products from bee.	CO1, CO2
	Unit 3	ECONOMIC ZOOLOGY – II	

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			<b>*</b> ***	Beyond Boundaries
A		,	ericulture): Different types of	CO1, CO2
			; Rearing of Bombyx mori -	
			infectants, rearing appliances,	
	black boxing,			
	harvesting of o			
В	Silkworm pes	CO1, CO2		
	and their mana	ngement		
C	Silk reeling te	CO1, CO2		
Unit 4	ANIMAL HU	SBANDRY –	I	
A	Aquaculture I	Brood stock m	anagement; Induced breeding	CO1, CO2
	of fish and	prawn, Manag	gement of hatchery of fish;	
	Management of	of nursery, rear	ing and stocking ponds.	
В			of fish aquarium; Preparation	CO1, CO2
	of compound	diets for fish	h; Role of water quality in	
	aquaculture.			
С	Fish diseases:	Bacterial, vir	al and parasitic; Preservation	CO1, CO2
	and processing	g of harvested f	ish; Fishery by-products.	
Unit 5	ANIMAL HU	SBANDRY- 1	$\Pi$	
A	Dairy/Poultry	Farming: In	troduction; Indigenous and	CO1, CO2
	exotic breeds.			
В	Rearing, housi	ng, feed and ra	tioning.	CO1, CO2
С	Commercial i	importance of	dairy and poultry farming;	CO1, CO2
	Dairy/poultry	farm manage	ement; Visit to any Dairy	
	farm/Poultry f	arm.		
Mode of	Theory			
examination				
Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	-			
Other	-			
References				
	_			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

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Scho	ool: SAHS	Batch: 2019-2022	Beyond Boundaries
Prog	gram: FSB	Current Academic Year: 2020	
	nch: Forensic	Semester: 6 <sup>th</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Zoology-VI Lab	
3	Credits	2	
4	Contact Hours	0-0-4	
	(L-T-P)		
	Course Status	Compulsory	
5	Course	1-Can make interference of some specific random process	
	Objective	2- Understand different behaviour pattern	
		<b>3-</b> Economical uses of different animals in industries.	
		3-Leonomical uses of unferent animals in muustiles.	
6	Course	CO1:Able to describe industrial uses of cattle	
	Outcomes	CO2: Able to describe modstrial uses of cattle	
		CO3: Demonstrate and understanding of the central concept of	modorn
		statistical theory and their probable foundation	modern
		CO4:Select from use and interpret result of principle methods,	statistical
		interference and designs.	statistical
7	Course	After the completion of this course the students will be able	e to understand
'	Description	about the biostats & economical zoology.	
8	Outline syllabus		CO Mapping
	Unit 1	Study of paddy pests and pests of sugarcane.	CO1, CO2
		Brief	
		Demonstration	
		Experimentation	
	Unit 2	Study of some economic importance of Fishes.	CO1, CO2
		Brief	
		Demonstration	
		Experimentation	
	Unit 3	Determination of mean, median, mode.	CO3, CO4
		Brief	
		Demonstration	
		Experimentation	
	Unit 4	Determination of Deviation.	CO3, CO4
		Brief	
		Demonstration	
	TT *4 F	Experimentation	002.004
	Unit 5	Graphical representation of statistical data.	CO3, CO4
		Brief	
		Demonstration	
		Experimentation	



Mode	of Practical	Practical/Viva							
examin	ation								
Weight	age CA	MTE	ETE						
Distrib	ution 60%	0%	40%						
Text bo	ook/s* -								
Other	-								
Refere	nces								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Sch	ool: SAHS	Batch: 2019-2022					
Prog	gram: FSB	Current Academic Year: 2020					
Bra	nch: Forensic	Semester: 6 <sup>th</sup>					
Scie	nce						
1	Course Code						
2	Course Title	Botany-VI					
3	Credits	3					
4	Contact	2-1-0					
	Hours						
	(L-T-P)						
	Course Type	Compulsory					
5	Course	1-Study about techniques and its applications					
	Objective	2- Study about HPLC and Mass spectrometry					
		3-Scientific research on globally relevant problems in crop an	d soil sciences				
6	Course	CO1:To understand the strength limitation and creative use of	of techniques				
	Outcomes	CO2:Able to explain external factors affecting soil					
		CO3:Understand the breath and dept of soil knowledge association discipline.	ciatedwith their				
	CO4:Able to work all techniques like Imaging techniques, Spectrometry, chromatography etc.						
7	Course	After the completion of this course the students will be ab	ole to				
Description understand about the soil and techniques used in botany.							
8	Outline syllabu	is	CO				
	-		Mapping				

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Unit 1	IMAGING AND RELATED TECHNIQUES	Beyond Boundari
A	Principles of microscopy; Light microscopy;	CO1, CO4
	Fluorescence microscopy; Confocal microscopy	
В	Use of fluorochromes: Flow cytometry (FACS)	CO1, CO4
C	Applications of fluorescence microscopy: Chromosome	CO1, CO4
	banding, FISH, chromosome painting; Transmission and	
	Scanning electron microscopy – sample preparation for	
	electron microscopy, cryofixation, negative staining,	
	shadow casting, freeze fracture, freeze etching.	
Unit 2	CELL FRACTIONATION	
A	Differential and density gradient centrifugation, sucrose	CO1, CO4
	density gradient, CsCl <sub>2</sub> gradient	
В	Analytical centrifugation, ultracentrifugation	CO1, CO4
C	Marker enzymes.	CO1, CO4
Unit 3	ANALYTICAL TECHNIQUES	
A	Radioisotopes: Use in biological research, autoradiography, pulse chase experiment.	CO1, CO4
	radiography, pulse chase experiment.	
В	Spectrophotometry: Principle and its application in	CO1, CO4
	biological research.	
С	Chromatography: Principle; Paper chromatography;	CO1, CO4
	Column chromatography, TLC, GLC, HPLC, Ionexchange chromatography; Molecular sieve	
	chromatography; Affinity chromatography.	
Unit 4	CHARACTERIZATION OF PROTEINS AND	
Omt 4	NUCLEIC ACIDS	
A	Mass spectrometry; X-ray diffraction; X-ray	CO1, CO4
<b>.</b>	crystallography	G01 G01
В	Electrophoresis: AGE, PAGE	CO1, CO4
C	Electrophoresis: SDS- PAGE	CO1, CO4
Unit 5	SOIL SCIENCE AND ECOSYSTEM	G02 G02
A	Soil Science: Lithosphere, Soil forming rocks and	CO2, CO3
	minerals, weathering of parent rocks, major processes of	
	soil formation, Different types of soil degradation, Soil	
	conservation and reclamation problem of soil.	
В	Environmental Pollution: Earth environmental	CO2, CO3
	biosphere, Atmosphere pollution, CO <sub>2</sub> and ecosystems,	
	Ozone depletion, water pollution, BOD, Pesticides	
	pollution, radioactive pollution, Problem of soil wastes,	
	Monitoring and control of pollution.	G02 G02
С	Conservation: Major India biomass, conservation of	CO2, CO3



				Beyond Boundari				
	renewable res	renewable resources, causes of extinction, Endangered						
	Indian flora, r	natural reserve	s and germ plasma bank.					
Mode of	Theory							
examination								
Weightage	CA	MTE	ETE					
Distribution	30%	20%	50%					
Text book/s*	-							
Other	-							
References								

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Soh	ool: SAHS	Batch: 2019-2022							
	gram: FSB	Current Academic Year: 2020							
_	nch: Forensic	Semester: 6 <sup>th</sup>							
Scie		Semester: 0							
5CIE	Course Code								
2		Data was VII I als							
2	Course Title	Botany-VI Lab							
3	Credits	2							
4	Contact Hours	0-0-4							
	(L-T-P)								
	Course Status	Compulsory							
5	Course	1-Study about techniques and its applications							
	Objective	2- Study about HPLC and Mass spectrometry							
		<b>3-</b> Scientific research on globally relevant problems in crop and soil sciences							
6	Course	CO1:To understand the strength limitation and creative use of techniques							
	Outcomes	CO2:Able to explain external factors affecting soil							
		CO3:Understand the breath and dept of soil knowledge associated with their							
		discipline.							
		CO4:Able to work all techniques like Imaging techniques, Spectrometry,							
		chromatography etc.							
7	Course	After the completion of this course the students will be able to understand							
	Description	about the soil and techniques used in botany.							
8	Outline syllabus	CO Mapping							



				Beyond Boundaries						
Unit 1	To study bl	otting techr	iques	CO1						
	Southern Bl	Southern Blotting								
	Northern Blotting									
	Western Blo	otting								
Unit 2	To Separat	e nitrogeno	is bases by paper	CO1						
	chromatog	raphy.								
	Brief									
	Demonstrat	ion								
	Experimenta	ation								
Unit 3	To separate	sugars by	Thin layer chromatog	raphy. CO4						
	Brief									
	Demonstrat	Demonstration								
	Experimenta	ation								
Unit 4	To separate	CO4								
	chromatogi									
	Brief									
	Demonstrat	on								
	Experimenta	ation								
Unit 5	Demonstra	tion of ELIS	SA	CO4						
	Brief									
	Demonstrat	on								
	Application	S								
Mode of	Practical/Vi	va								
examination										
Weightage	CA	MTE	ETE							
Distribution	60%	0%	40%							
Text book/s*	-									
Other	-									
References										

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS	Batch: 2019-2022
Program: FSB	Current Academic Year: 2020
<b>Branch: Forensic</b>	Semester: 6 <sup>th</sup>
Science	

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1	Course Code	8	eyond Boundaries
2	Course Title	Cyber-II	
3	Credits	1	
4	Contact	1-0-0	
	Hours		
	(L-T-P)		
	Course Type	Compulsory	
5	Course	1- To provide and understanding computer forensic fundamenta	ılc
	Objective	2- Apply the methods for preservation of digital evidence	113
	J	3-Identify methods for data recovery	
		5-identify methods for data recovery	
6	Course	CO1:Explain the role of digital forensics in the field of informatio	n assurance
	Outcomes	and cyber security.	
		CO2:Illustrate the methods for data recovery, evidence collection	n
		CO3:Summarize duplication and preservation of digital evidence	
		CO4:Create a method for gathering, accessing and applying new	and existing
		legislation and industry trends specific to practice digital forensic	
7	Course	After the completion of this course the students will be able t	o understand
	Description	about the cyber forensic their investigation & examination.	
8	Outline syllabu		CO Mapping
	Unit 1	CYBER FORENSIC	
	A	Introduction to computer /Cyber forensic	CO1, CO2
	В	Cyber forensic steps( identification, seizure, acquisition,	CO1, CO2
		authentication, presentation, preservation) Who is	
		computer forensic expert.	
	C	Cyber forensic investigation process, the goal of the	CO1, CO2
		forensic investigation, why investigate, using email	
		inapporiately, useof internet, email, or Pc in a non work	
	TT 1. A	related properly infraction, auditing vs/ cyber forensic.	
	Unit 2	BIOMETRIC	GO1 GO2
	A	What is Biometric, Use of Biometric, Model of Biometric	CO1, CO3
		system? Various types of Biometric Method, User	
	D	acceptance, Evaluating accuracy.	CO1 CO2
	B	Advantages and disadvantages of biometric.	CO1, CO3
	C	General biometric system (identification and verification),	CO1, CO3
		general architecture, comparison of different biometric technologies, what make biometric difficult.	
$\vdash$	Unit 3	EVIDENCE COLLECTION	
		Volatile Evidence collection	CO2
	A B	Non volatile Evidences collection (safeback,gettime, filet,	CO2
	ט	·	CO2
		and excel, getfree swapfile and getswap, getslack, temporary files).	
	С	Detailed procedure for obtaining a bit stream backup of	CO2
		Detailed procedure for obtaining a bit stream backup of	CO2



		hard drive, file system( details of file system, data structure								
	of file system,	of file system, data recovery in different file system).								
Unit 4	ANALYTICA									
A	Concealment types of crypto public key cry									
В	Electronic	signature, st		ne CO3						
С		es, manipulatin ernate data stre	g file system, data hiding c eam.	on CO3						
Unit 5	CYBER FOR	RENSIC TOO	LS AND UTILITIES							
A		pest: what the i	readth of product, cyber too right incident response tool for							
В		forensic toolki	t, encase, cyber check suite	s, CO1,CO4						
С	Specification 1	for forensic too	l tested.	CO1,CO4						
Mode of examination	Theory									
Weightage	CA	MTE	ETE							
Distribution	30%	20%	50%							
Text book/s*	-									
Other References	-									

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

School: SAHS		Batch: 2019-2022
Program: FSB		Current Academic Year: 2020
<b>Branch: Forensic</b>		Semester: 6 <sup>th</sup>
Scie	nce	
1	Course Code	
2	Course Title	Cyber-II Lab
3	Credits	1

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4	Contact Hours (L-T-P)	0-0-2			Beyond Boundaries					
	Course Status	Compulsory	7							
5	Course Objective	1- To provide and understanding computer forensic fundamentals								
		2- Apply the methods for preservation of digital evidence								
		3-Identify methods for data recovery								
6	Course Outcomes	-		gital forensics in the field of info	ormation assurance					
	Outcomes	and cyber se	•							
				s for data recovery, evidence of						
			•	on and preservation of digital e						
				gathering, accessing and applyinds specific to practice digital f	_					
7	Course			his course the students will b						
	Description	about the cy	ber forensic	their investigation & examination	ation.					
8	Outline syllabus				CO Mapping					
	Unit 1		on, seizure, s	search of digital media.	CO1					
		Brief								
		Demonstrati	ion							
		Application								
	Unit 2	Data Recov	all CO3							
		Disk.								
		Brief								
		Demonstrati	ion							
	TI '4 2	Application	11 D. 1 M.	an a	CO.4					
	Unit 3		nall Disk ME	5K.	CO4					
		Brief								
		Demonstration	ion							
	TT:4 4	Application	- F-: 1	C-114:	CO2					
	Unit 4	Brief	e Evidence	Collection.	CO2					
		Demonstrati	ion							
		Experimenta								
	Unit 5			us Forensic tools like Partit	tion CO2					
	Omt 3	magic, Enc		us Potensic tools like Latti						
		Brief	ase etc.							
		Demonstrati	ion							
		Application								
	Mode of	Practical/Vi								
	examination									
	Weightage	CA	MTE	ETE						
	Distribution	60%	0%	40%						
	Text book/s*	-								



	<b>▼ ≯</b> 8	eyond Boundaries
Other	-	
References		l

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

Scho	ool: SAHS	Batch: 2019-2022	
Prog	gram: FSB	Current Academic Year: 2020	
<b>Branch: Forensic</b>		Semester: 6 <sup>th</sup>	
Scie	nce		
1	Course Code		
2	Course Title	Internship	
3	Credits	1	
4	Contact Days	7	
	Course Status	Compulsory	
5	Course Objective	1. Able to understand the field work	
		2. Able to handle real evidences & Crime Scene	
		3. Able to work in Forensic Labs	
6	Course Outcomes	CO1: Understand the protocols of forensic labs	
		CO2: Understand to handle live cases	
		CO3: Understand to handle live evidences	
		CO4: Understand to examine on crime scene	
7	Course	After completion of this Internship student know the	
	Description	handling and examining of real cases.	
8	Outline syllabus		CO
			Achievement
	Unit 1	<b>Guidelines for Students</b>	
		A. Decide their Divisions in forensic lab for working	CO1, CO2,
		B. Explore the decided division and related cases and	CO3, CO4
		its examination.	
		C. Write the Training report	
	Unit 2	<b>Guidelines for Faculties</b>	
		A. Faculty should perform at least one site visit during	



				Beyond Boundaries
	B. Faculty the basis of C. Faculty	should complete report submitte should provide t	the end term evaluation on d by students. he guidelines of Internship nts and also submit the	
Mode of examination	Practical/V			
Weightage	CA			
Distribution	60%			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
COs												
CO1	2	3	1	3	2	1	2	2	2	2	2	3
CO2	3	3	2	2	3	2	3	3	2	2	3	2
CO3	2	3	2	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2

1-Slight (Low) 2-Moderate (Medium)

3-Substantial (High)