Four-Year Undergraduate Programme

Bachelor of Optometry

Parul Institute of Paramedical & Health Sciences

Faculty of Medicine

Parul University

Vadodara, Gujarat, India

1. Vision of the Department

V1	To establish a develop world class self-reliant institute for imparting Medical and other Health Science education at under-graduate, post-graduate & doctoral levels of the global competence.
V2	To be a centre of excellence to sprout great researchers, technologists in health care system.

2. Mission of the Department

M1	To develop & Train quality health care personnel.
M2	To inculcate high moral, ethical & professional standards of working amongst students.
M3	To ensure skill-based learning for all Students.

3. Program Educational Objectives (PEOs)

PEOs 1	**Excellence in Medical Sciences**	Graduates will develop a strong foundation in medical sciences, integrating disciplinary knowledge, clinical expertise, and problem-solving skills to provide quality healthcare.
PEOs 2	**Professionalism & Ethical Practice**	Graduates will uphold ethical responsibilities, demonstrate effective communication, and work collaboratively in multidisciplinary healthcare teams while ensuring patient-centered care.
PEOs 3	**Lifelong Learning & Research Contribution**	Graduates will continuously advance their skills through professional development, engage in research, and apply evidence-based practices to improve healthcare outcomes.

4. Program Learning Outcomes (PLOs)

PLOs 1	**Disciplinary Knowledge**	Demonstrate comprehensive knowledge of medical sciences, applying theoretical and practical skills to diagnose, treat, and manage conditions within the chosen specialization.
PLOs 2	**Clinical & Technical Skills**	Perform clinical and technical procedures with precision, utilizing medical equipment and diagnostic tools while ensuring safety, emergency preparedness, and patient monitoring.
PLOs 3	**Critical Thinking & Problem-Solving**	Analyze clinical scenarios, evaluate medical data, and apply logical reasoning to develop effective diagnostic, therapeutic, and healthcare solutions.
PLOs 4	**Communication Skills**	Communicate effectively with patients, families, and healthcare teams using verbal, non-verbal, and written methods while maintaining empathy, professionalism, and accurate documentation.
PLOs 5	**Ethics &**	Uphold ethical responsibility, adhere to legal and

	Professionalism	institutional guidelines, and demonstrate integrity, respect, and cultural sensitivity in healthcare settings.
PLOs 6	**Teamwork & Leadership**	Collaborate within multidisciplinary teams, exhibit leadership in crisis management and decision-making, and mentor peers in clinical and technical roles.
PLOs 7	**Digital Literacy**	Utilize healthcare information systems, integrate medical technologies, and stay updated with advancements in digital tools relevant to the specialization.
PLOs 8	**Research & Evidence-Based Practice (EBP)**	Apply research methodologies, utilize evidence-based practices to enhance patient care, and contribute to scientific knowledge through scholarly activities.
PLOs 9	**Lifelong Learning & Professional Development**	Engage in continuous learning, adapt to advancements in medical sciences, and enhance clinical competencies through reflective practice.

5. Program Specific Learning Outcomes (PSLOs)

PSLOs 1	**Clinical Competence & Technological Proficiency**	Graduates will perform precise clinical procedures using advanced medical equipment, diagnostic tools, and healthcare technologies to ensure patient safety and effective treatment.
PSLOs 2	**Critical Thinking & Ethical Decision-Making**	Graduates will analyze complex clinical scenarios, apply logical reasoning, and make informed decisions while adhering to ethical and legal guidelines in healthcare practice.
PSLOs 3	**Leadership, Teamwork & Research Application**	Graduates will collaborate in multidisciplinary teams, exhibit leadership in crisis management, and contribute to healthcare advancements through research and evidence-based practices.

6. Credit Framework

Semester wise Credit distribution of the programme	
Semester-1	24
Semester-2	24
Semester-3	22
Semester-4	24
Semester-5	24
Semester-6	22
Semester-7	22
Semester-8	22
Total Credits:	**184**

Category wise Credit distribution of the programme	
Category	**Credit**
Major Core	96
Minor Stream	32
Multidisciplinary	12
Ability Enhancement Course	10
Skill Enhancement Courses	10
Value added Courses	8
Summer Internship	4
Research Project/Dissertation	12
Total Credits:	**184**

7. Program Curriculum

Semester 1						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	-	MIL-1	2	2	-	-
2	-	University Elective – 1	4	3	2	-
3	19010001SE01	SEC-1: Management of Lifestyle Disorders	2	2	-	-
4	11011401VA01	VAC-1 (Climate change & sustainable environment)	2	2	-	-
5	-	Minor sub – 1(T)	3	3	-	-
6	-	Minor sub – 1(P)	1	-	2	-
7	19010001DS01	Anatomy & Physiology – I(T)	4	4	-	-
8	19010001DS02	Anatomy & Physiology – I (P)	2	-	4	
9	19011001DS05	Visual Optics (T)	3	3	-	-
10	19011001DS06	Visual Optics(P)	1	-	2	-
Total			24	19	10	-
MIL-1						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	00019301AE01	Basic English-I	2	2	-	-
2	00019301AE02	Basic Hindi-I	2	2	-	-
3	00019301AE03	Basic Gujarati-I	2	2	-	-
UE-01						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	19010201UE01	Health Informatics	4	3	2	-
2	06010101UE03	Health care management	4	4	-	-
3	17010101UE01	Medical Law	4	4	-	-
4	09010101UE01	First aid & life support	4	4	-	-
Minor Course-1						
1	19011301AC01	Introduction Of Anaesthesia and Critical Care Technology (T)	3	3	-	-
2	19011301AC02	Introduction Of Anaesthesia and Critical Care Technology (P)	1	-	2	-

3	19010901OT01	Introduction To Operation Theatre Technology (T)	3	3	-	-
4	19010901OT02	Introduction To Operation Theatre Technology (P)	1	-	2	-
5	03010501AM01	Programming in Python (T)	3	3	-	-
6	03010501AM02	Programming in Python (P)	1	-	2	-
7	03011301NT01	Introduction to Nanotechnology and its Applications in Healthcare	4	3	-	1
Semester 2						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
11	-	MIL-2	2	2	-	-
12	-	University Elective – 2	4	4	-	-
13	00019102SE01	SEC-2: Mathematical Aptitude	2	2	-	-
14	00019302VA01	VAC-2 (IPDC including history and culture of India and IKS-I)	2	2	-	-
15	-	Minor sub – 2 (T)	3	3	-	-
16	-	Minor sub – 2 (P)	1	-	2	-
17	19010002DS01	Anatomy & Physiology-II (T)	4	4	-	-
18	19010002DS02	Anatomy & Physiology -II (P)	2	-	4	-
19	19011002DS01	Ocular Anatomy & Physiology (T)	3	3	-	-
20	19011002DS02	Ocular Anatomy & Physiology (P)	1	-	2	-
Total			24	20	8	-
MIL-2						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	00019302AE04	Basic English-II	2	2	-	-
2	00019302AE05	Basic Hindi-II	2	2	-	-
3	00019302AE06	Basic Gujarati-II	2	2	-	-
UE-02						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	10010102UE01	Introduction to Gender, Health and Rights	4	4	-	-
2	19010202UE01	Public Health Nutrition	4	4	-	-
3	15010402UE01	Human Psychology	4	3	2	-

4	07010102UE01	Biomechanics	4	4	-	-
5	09010102UE01	Life style Diseases & Management	4	4	-	-
Minor Course-2						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	19011302AC01	Basic Techniques of Anaesthesia (T)	3	3	-	-
2	19011302AC02	Basic Techniques of Anaesthesia (P)	1	-	2	-
3	19010902OT01	Basics of Surgical Procedures (T)	3	3	-	-
4	19010902OT02	Basics of Surgical Procedures (P)	1	-	2	-
5	03010502AM01	Artificial Intelligence (T)	3	3	-	-
6	03010502AM02	Artificial Intelligence (P)	1	-	2	-
7	03011302NT01	Nanomaterials in Biomedical Applications	4	3	-	1
Semester 3						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
21	-	MEL-1	2	2	-	-
22	-	University Elective 3	4	4	-	-
23	03010503SE01	SEC-3 Artificial intelligence	2	2	-	-
24	00019303VA01	VAC-3 (IPDC including history and culture of India and IKS - 2)	2	2	-	-
25	19010003DS01	Microbiology & Pathology – I (T)	3	3	-	-
26	19010003DS02	Microbiology & Pathology – I (P)	1	-	2	-
27	19011003DS01	Contact Lens (T)	3	3	-	-
28	19011003DS02	Contact Lens (P)	1	-	2	-
29	19011003DS03	Ocular Disease (T)	3	3	-	-
30	19011003DS04	Ocular Disease (P)	1	-	2	-
Total			22	19	6	-
MEL-1						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	00019303AE01	Advanced English-I	2	2	-	-
2	00019303AE02	German-I	2	2	-	-
3	00019303AE03	French-I	2	2	-	-
UE-03						
Sr.	Subject Code	Subject Name	Credit	Lec	La	Tu

No.				t	b	t
1	19010203UE01	Health Research Fundamentals	4	4	-	-
2	17010103UE01	Intellectual Property	4	4	-	-
3	07010103UE01	Occupational Health and ergonomics	4	4	-	-
4	02010103UE01	Yoga and Positive Psychology for Managing Carrier and Life	4	4	-	-
Semester 4						
Sr. No.	Subject Code	Subject Name	Credit	Lec t	La b	Tu t
31	-	MEL-2	2	2	-	-
32	19010004SE01	SEC-4: Health Informatics & Personalised Medicine	2	2	-	-
33	-	VAC - 4: Physical Education	2	2	-	-
34	19011004DS01	Binocular Vision (T)	3	3	-	-
35	19011004DS02	Binocular Vision (P)	1	-	2	-
36	19010004DS01	Microbiology & Pathology-II(T)	3	3	-	-
37	19010004DS02	Microbiology & Pathology-II(P)	1	-	2	-
38	19010004DS03	Applied Medicine & Pharmacology-I(T)	4	4	-	-
39	19010004DS04	Applied Medicine & Pharmacology-I(P)	2	-	4	-
40	-	Minor sub - 3(T)	3	3	-	-
41	-	Minor sub - 3(P)	1	-	2	-
Total			24	19	10	-
MEL-2						
Sr. No.	Subject Code	Subject Name	Credit	Lec t	La b	Tu t
1	00019304AE04	Advanced English-II	2	2	-	-
2	00019304AE05	German-II	2	2	-	-
3	00019304AE06	French-II	2	2	-	-
VAC - 4						
1	00019404VA01	Foundations of Yoga	2	1	2	-
2	00019404VA02	Physical Education and Sports	2	1	2	-
3	00019404VA03	National Cadet Corps (NCC)	2	1	2	-
4	15M10504VA01	Psychology of Stress, Health and Well-being	2	2	-	-
Minor Course - 3						
1	19011304AC01	Essentials of Anesthesia (T)	3	3	-	-

2	19011304AC02	Essentials of Anesthesia I(P)	1	-	2	-
3	19010904OT01	Patient, Staff Safety and Quality Care (T)	3	3	-	-
4	19010904OT02	Patient, Staff Safety and Quality Care (P)	1	-	2	-
5	03010504AM01	Data Science for AI (T)	3	3	-	-
6	03010504AM02	Data Science for AI (P)	1	-	2	-
7	03011304NT01	Nanofabrication Techniques	4	3	-	1
Semester 5						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
42	19010005DS01	Applied Medicine & Pharmacology-II(T)	4	4	-	-
43	19010005DS02	Applied Medicine & Pharmacology-II(P)	2	-	4	-
44	19011005DS01	Low Vision (T)	3	3	-	-
45	19011005DS02	Low Vision (P)	1	-	2	-
46	19011005DS03	Systemic Disease (T)	3	3	-	-
47	19011005DS04	Systemic Disease (P)	1	-	2	-
48	-	Minor sub - 4 (T)	3	3	-	-
49	-	Minor sub – 4 (P)	1	-	2	-
50	-	Minor Sub – 5 (T)	3	3	-	-
51	-	Minor Sub - 5(P)	1	-	2	-
52	-	SEC – 5	2	2	-	-
Total			24	18	12	-
Minor Course - 4						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	19011305AC01	Advanced Anaesthesia Technology	3	3	-	-
2	19011305AC02	Advanced Anaesthesia Technology	1	-	2	-
3	19010905OT01	Principles Of Operation Theatre Management	3	3	-	-
4	19010905OT02	Principles Of Operation Theatre Management	1	-	2	-
5	03010505AM01	Machine Learning	3	3	-	-
6	03010505AM02	Machine Learning	1	-	2	-
7	03011305NT01	Nanofabrication Techniques	4	3	-	1
Minor Course - 5						
Sr.	Subject Code	Subject Name	Credit	Lec	La	Tu

No.				t	b	t
1	19011305AC03	Advanced Critical Care Technology	3	3	-	-
2	19011305AC04	Advanced Critical Care Technology	1	-	2	-
3	19010905OT03	Operation Theatre Technology -I	3	3	-	-
4	19010905OT04	Operation Theatre Technology -I	1	-	2	-
5	03010505AM03	Deep Learning	3	3	-	-
6	03010505AM04	Deep Learning	1	-	2	-
7	03011305NT03	Nanotoxicology and Safety Assessment	4	3	-	1
SEC – 5						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	06010105SE01	Digital Literacy	2	2	-	-
2	06010105SE02	Finance for everyone	2	2	-	-
Semester 6						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
53	00019306AE01	Professional Ethics and Communication	2	2	-	-
54	19011006DS01	Community Optometry and Geriatric Optometry (T)	3	3	-	-
55	19011006DS02	Community Optometry and Geriatric Optometry (P)	1	-	2	-
56	19011006DS03	Professional Practice Management (T)	3	3	-	-
57	19011006DS04	Professional Practice Management (P)	1	-	2	-
58	19011006DS05	Clinical Posting - 1 Contact Lens (Soft) (P)	4	-	8	-
59	19011006IN01	Internship/Mini Project	4	-	8	
60	-	Minor sub - 6	4	3	2	
Total			22	11	22	
Minor Course - 6						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	19011306AC01	Basic And Advanced Anaesthesia and Critical Care	4	-	8	-
2	19010906OT01	Operation Theatre Technology-II	4	-	8	-
3	03010506AM01	Natural Language Processing (T)	3	3	-	-

4	03010506AM02	Natural Language Processing (P)	1	-	2	-
5	03011306NT01	Nanocomposites	4	3	-	1
Semester 7 (Hons. / Hons. With Research)						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
61	19011007DS01	Clinical Posting - Contact Lens (Rgp)	4	-	8	-
62	19011007DS02	Clinical Posting - Ocular Prosthesis	4	-	8	-
63	19011007DS03	Clinical Posting - Cornea	4	-	8	-
64	-	Minor Sub 7: Clinical Posting in Minor / Minor Project (Practical)	4	3	2	-
65	19011007IN01	On Job Training (Practical)	6	-	12	-
66	19011007RP01	Research Project		-		-
		Total	22	3	38	-
Minor Course -7						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	19011307AC01	Advanced Physical Assessment & Critical Care Technology - I	4	-	8	-
2	19010907OT01	Clinics General and Advanced Operation Theatre	4	-	8	-
3	03010507AM01	AI and Machine Learning in Healthcare (T)	3	3	-	-
4	03010507AM02	AI and Machine Learning in Healthcare (P)	1	-	2	-
5	03011307NT01	Nano sensors	4	3	-	1
Semester 8 (Hons. / Hons. With Research)						
Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
67	19011008DS01	Clinical Training - Dispensing Optics (Pediatric)	4	-	8	-
68	19011008DS02	Clinical Training - Dispensing Optics (Geriatric)	4	-	8	-
69	19011008DS03	Clinical Training - Low Vision Rehabilitation	4	-	8	-
70	-	Minor Sub 8: Clinical Posting in Minor / Minor Project (Practical)	4	-	8	-
71	19011008IN01	On Job Training (Practical)	6	-	12	-
72	19011008RP01	Research Project		-		-
		Total	22	-	44	-
Minor Course - 8						

Sr. No.	Subject Code	Subject Name	Credit	Lect	Lab	Tut
1	19011308AC01	Clinics: Pre-Intra-Post-Operative Preparation, Complication and Management	4	-	8	-
2	19010908OT01	Clinics Hospital Operation Management	4	-	8	-
3	03010508AM01	AI and Machine Learning Projects	4	-	8	-
4	03011308NT01	Nanotechnology Project	4	-	8	-

Semester 01

a. Course Name: Basic English-1

b. Course Code: 00019301AE01

c. Prerequisite: Basic Knowledge of LSRW. To provide students with soft skills that complement their skills, making them more marketable when entering the workforce.

d. Rationale: Knowledge of LSRW is essential for Students

e. Course Learning Objective:

CLOBJ 1	Develop basic proficiency in English language skills including reading, writing, speaking, and listening, with an emphasis on comprehension and fluency.
CLOBJ 2	Expand vocabulary through the acquisition of common words and phrases used in everyday communication, including greetings, introductions, and expressions for daily activities.
CLOBJ 3	Gain a solid understanding of basic grammar rules, including sentence structure, verb tenses, parts of speech, and word order, to construct grammatically correct sentences and communicate effectively.
CLOBJ 4	Improve pronunciation and intonation to enhance clarity and intelligibility in spoken English, focusing on accurate articulation of sounds, stress patterns, and rhythm.
CLOBJ 5	Develop confidence and proficiency in engaging in everyday conversations in English, including asking and answering questions, expressing opinions, making requests, and participating in discussions on familiar topics.

f. Course Learning Outcomes:

CLOBJ 1	Understand the importance of creative and critical thinking.
CLOBJ 2	Develop four basic skills (LSRW)
CLOBJ 3	Expand vocabulary with proper pronunciation.
CLOBJ 4	Comprehend the basics of English grammar.
CLOBJ 5	Read & write effectively for a variety of contexts. Develop confidence in speaking skills.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				TE	**CE**	**P**	**Theory**	**P**	
2	**-**	**-**	**2**	**-**	**100**	**-**	**-**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**

1	Listening Skills and Hearing Listening Vs Hearing • Types of listening • Traits of good listener • Barriers of listening	7%	2
2	Listening Practice Listening Practice (Audio & Video)	10%	3
3	Presentation Skills • Defining the purpose of presentation • Presentation strategies • How to make an effective presentation? • Knowing /Analyzing audience • Organizing content and preparing an outline • Traits of a good speaker	3%	1
4	Activity Crazy Scientist	7%	2
5	Speaking Practice Speaking practice (Elocution)	24%	7
6	Reading Skills • Define reading • Reading Strategies • Techniques of reading • Techniques to read faster	3%	1
7	Reading Practice Reading Practice (Reading Comprehension)	13%	4
8	Writing Skills • Develop Writing Skills • 7cs of communication • Techniques of writing better • Identifying common errors in writing	10%	3
9	Paragraph Writing • Introduction of Paragraph Writing • Central components of paragraph development • Techniques for paragraph development	3%	1
10	Writing Practice Writing Practice: • Note making • Picture Description	20%	6
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Understanding and Using English Grammar by Betty Azar & Stacy Hagen | Pearson Education
2.	Business Correspondence and Report Writing by SHARMA, R. AND MOHAN, K.
3.	Communication Skills by Kumar S And Lata P | New Delhi Oxford University Press
4.	Technical Communication: Principles And Practice by Sangeetha Sharma, Meenakshi Raman | Oxford University Press
5.	Practical English Usage by MICHAEL SWAN
6.	A Remedial English Grammar for Foreign Student by F.T. WOOD

7.	On Writing Well by William Zinsser | Harper Paperbacks,2006 | 30th anniversary edition
8.	Oxford Practice Grammar, By John Eastwood | Oxford University Press

Semester 01

a. Course Name: Basic Hindi-I

b. Course Code: 00019301AE02

c. Prerequisite: Basic communication skills in Hindi

d. Rationale: Basic comprehensive skills Hindi

e. Course Learning Objective:

CLOBJ 1	Learn to recognize and write Devanagari script. Understand the basics of Gujarati pronunciation, including consonants, vowels, and pronunciation rules.
CLOBJ 2	Build a foundation of commonly used Gujarati vocabulary for everyday communication.
CLOBJ 3	Develop the ability to engage in simple conversations in Gujarati, including greetings, introductions, and expressing basic needs and preferences.
CLOBJ 4	Learn to read and understand simple texts in Gujarati, including signs, labels, short passages, and basic literature.
CLOBJ 5	Practice writing in Gujarati through exercises such as dictation, composition, and letter/email writing.

f. Course Learning Outcomes:

CLO 1	Read and write Hindi alphabets.
CLO 2	Understand the different sounds on Hindi Phonetics.
CLO 3	To make two to three letter words in Hindi.
CLO 4	To make short/basic sentences in Hindi.
CLO 5	To understand and use daily words in Hindi.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
2	**-**	**-**	**2**	**-**	**100**	**-**	**-**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**
1	• हिंदी वर्णमाला (Hindi Alphabets) Relate with English Alphabets • स्वर (vowel) • व्यंजन (consonant)	13%	4
2	• हिंदी बाररखड़ी (Hindi Phonetics) • संयुक्त शब्द (Joint words) kha, sva etc.	13%	4
3	दो/तीन अक्षर का शब्द िनमार् (two/three letter word formation)	13%	4
4	हिंदी व्याकरर् (Hindi Grammar) • संज्ञा (Noun) • सवर्नाम (Pronoun) • हिया (Verb) • हिया िवशेषर् (Adverb) • िवशेषर् (Adjective)	34%	10

5	हिंदी शब्दावली (Hindi Vocabulary) • संख्या (Numbers) (1 to 50) • सहतता के िदन (Days of the week) • रंग (Colors)	27%	8
	Total	**100%**	**30**

i. Text Book and Reference Book:

1	All in One (English-Gujarati), Manoj Publications
2	Gujarati Barakhadi by Sonika Agrawal, Published by Notion Press
3	Varna Lekhan by Gujarati Books
4	My first Gujarati alphabets by Priyal J., Published by My first Picture Book Inc.

Semester 01

a. Course Name: Basic Gujarati - 1
b. Course Code: 00019301AE03
c. Prerequisite: Basic communication skills in Gujarati
d. Rationale: Basic comprehensive skills Gujarati
e. Course Learning Objective:

CLOBJ 1	Learn to recognize and write Devanagari script. Understand the basics of Gujarati pronunciation, including consonants, vowels, and pronunciation rules.
CLOBJ 2	Build a foundation of commonly used Gujarati vocabulary for everyday communication.
CLOBJ 3	Develop the ability to engage in simple conversations in Gujarati, including greetings, introductions, and expressing basic needs and preferences.
CLOBJ 4	Learn to read and understand simple texts in Gujarati, including signs, labels, short passages, and basic literature.
CLOBJ 5	Practice writing in Gujarati through exercises such as dictation, composition, and letter/email writing.

f. Course Learning Outcomes:

CLO 1	Read and write Gujarati alphabets
CLO 2	Understand the different sounds on Gujarati Phonetics
CLO 3	To make two to three letter words in Gujarati
CLO 4	To make short/basic sentences in Gujarati.
CLO 5	To understand and use daily words in Gujarati

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
2	**-**	**-**	**2**	**-**	**100**	**-**	**-**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**
1	• ગુજરાતી મૂળાક્ષર (Gujarati Alphabets) Relate with English Alphabets • સ્વર (vowel) • વ્યંજન (consonant)	13%	4
2	• બારાક્ષરો (Gujarati Phonetics) • સંયુGત શબ્દો (Joint words) kha, sva etc.	13%	4
3	બે/ત્રણ અક્ષરની શબ્દ રચના (two/three letter word formation)	13%	4
4	ગુજરાતી વ્યાકરણ (Gujarati Grammar) • સંજ્ઞા (Noun) • સવવનામ (Pronoun) • ક્રિયાપદ (Verb) • ક્રિયાક્રિશેષણ (adverb) • વવશેષણ (adjective)	34%	10

5	ગુજરાતી શબ્દભંડોળ (Gujarati Vocabulary) • સંખ્યાઓ (Numbers) (1 to 50) • અઠવાવડયાના દદસો (Days of the week) • રંગો (Colors)	27%	8
	Total	**100%**	**30**

i. Text Book and Reference Book:

1	All in One (English-Gujarati), Manoj Publications
2	Gujarati Barakhadi by Sonika Agrawal, Published by Notion Press
3	Varna Lekhan by Gujarati Books
4	My first Gujarati alphabets by Priyal J., Published by My first Picture Book Inc.

Semester 01

a. Course Name: First Aid and Life Support
b. Course Code: 09010101UE01
c. Prerequisite: Knowledge of Biological Sciences up to 12th science level
d. Rationale: Knowledge about different organs and organ Systems of the body, Basic knowledge about functions of body
e. Course Learning Objective:

CLOBJ 1	Understand the importance of first aid in emergency situations.
CLOBJ 2	Demonstrate the ability to assess the scene of an emergency.
CLOBJ 3	Identify and prioritize different types of injuries and illnesses.
CLOBJ 4	Learn and practice CPR techniques for adults, children, and infants and use of automated external defibrillators (AEDs) and how to use them.
CLOBJ 5	Understand the importance of infection control in wound care.

f. Course Learning Outcomes:

CLO 1	Explain the aims of first aid and the role of a first aider. Discuss the legal aspects of providing first aid, including consent and privacy. Identify the steps involved in dealing with emergencies and conducting a top-to-toe assessment.
CLO 2	Evaluate and provide first aid for fractures and injuries to various body parts. Demonstrate knowledge of dislocations, strains, and sprains. Apply appropriate first aid techniques for different types of injuries.
CLO 3	Recognize respiratory distress and provide appropriate assistance. Identify situations requiring referral to healthcare facilities. Demonstrate skills in managing choking, drowning, and other respiratory issues.
CLO 4	Classify and treat different degrees of burns. Manage burns caused by various sources, including chemicals and heat. Implement first aid measures for burns and related conditions like heat exhaustion and frostbites.
CLO 5	Understand the basics of blood circulation, heart function, and blood pressure. Apply first aid for bleeding and perform CPR effectively. Demonstrate knowledge of responding to shock and chest discomfort.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
4	**-**		**4**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**

1	**Introduction to first aid** • Aims of first aid • The first aider • First aid and the law • Indian good Samaritan protection guidelines • Duty of giving care • Consent of the person in need • Privacy • Negligence • Dealing with an emergency • Top-to-toe assessment • Hygiene and handwashing • First aid overview flowchart	7%	4
2	**Assessment of patients with fractures, wounds, and bleeding** • Brief Anatomy of the skeletal system • Fractures (injuries to bones) • Injuries and fractures to the head, neck and spine • Injuries and fractures to the cheekbone, nose and lower jaw • Fracture of the cheek bone or nose • Fractures of the lower jaw • Injuries to the shoulder, ribs or breastbone • Injuries or fractures of the shoulder • Injuries and fractures of the collarbone • Rib injuries and fractures • Fractures of the breastbone • Injuries to the arm, elbow, wrist, hand or • Injuries and fractures of the arm (upper arm, forearm, wrist) • Injuries and fractures of hand or fingers • Injuries to the pelvis, lower limbs, knee, ankle or feet • Injuries and fractures of the pelvis • Injuries and fractures of the leg (thigh or lower leg) or ankle • Fracture of the knee cap(patella) • Injuries and fractures of foot or toes • Dislocations (injuries to joints) • Strains and sprains (injuries to ligaments, muscles and tendons)	10%	6

3	**Respiratory emergencies** • Respiration • The respiratory system • No breathing or difficult breathing • When to refer the casualty to a healthcare facility • Drowning • Remove the victim out of the water • Strangulation and hanging • Choking • Swelling within the throat • Suffocation by smoke or gases Asthma	10%	6
4	**Care of burns** • The skin • Burn wounds • First, second and third-degree burns • Type of burns by origin • Danger of burns • Dry burns and scalds (burns from flames, hot surfaces, steam, • Care of minor burns (small first and second-degree burns) • Specific burn locations • Electrical burns and electrocution by electricity or Lightning • Chemical burns • Sunburns, snow/welders' eyes, heat exhaustion and heatstroke • Heat exhaustion • Heatstroke • Frostbites • Prevention of burns • Fever • Hypothermia	8%	5
5	**Lifesaving procedures in emergency &shock** • The heart and the blood circulation • Heart and blood circulation • Blood pressure • Pulse • The blood • Chest discomfort • Bleeding • First aid for bleeding (in general) • Resuscitation (basic CPR) • Resuscitation of a person who is not breathing or not breathing normally • Resuscitation of baby/child (less than one year old)	8%	5

6	**Head trauma &stroke** • The nervous system • The central nervous system • The peripheral nervous system (PNS) • Unconsciousness • Head injuries • Concussion • Cerebral compression • Skull fractures • Stroke • Fits–convulsions –seizures	10%	6
7	**Gastro-intestinal tract, diarrhea, food poisoning and diabetes** • Review of anatomy and physiology of gastro-intestinal tract • Diarrhea • Prevent dehydration • Food poisoning • Diabetes • Type1diabetes • Type2diabetes • Gestational diabetes (diabetes during pregnancy) • Diagnosis • Hyperglycemia • Symptoms of hyperglycemic coma or diabetic coma • Hypoglycemia	10%	6
8	**Senses, foreign bodies in eye, ear, nose or skin and swallowed foreign Objects** • Review of anatomy and physiology of the special senses • Foreign body in the eye • Foreign body in the ear • Foreign body in the nose • Foreign body in the skin • Swallowed foreign objects	10%	6

9	**Urinary system, reproductive system and emergency childbirth** • Review of anatomy and physiology of Urinary & Reproductive system • Male reproductive system • Female reproductive system • Pregnancy • Stages of Labour and giving birth • After care of the mother • Medical conditions and pregnancy • Diabetes • High blood pressure • Infections • Prevention of sexually transmitted diseases (STD) • Sexually transmitted infections • Reducing the risk of STDS/STIS • Emergency childbirth	10%	6
10	**Psychological first aid** • Definition of psychological first aid • Traumatic crisis (psychological) shock phase • Reaction phase • Processing phase • Reorientation phase • Behave calmly • Listening to the affected person • Physical contact • Providing psychological first aid to all	7%	4
11	**Specific emergency situations and disaster management** Emergencies at school Emergencies at work Road and traffic accidents Emergencies in rural area Disasters and multiple casualty accidents Emergency triage	10%	6
	Total teaching hours for the academic year	**100%**	**60**

i. T**ext Book and Reference Book:**

1	Manual of FIRST AID: Management of General injuries, Sports injuries and Common Ailments, by Rai P v
2	Textbook on First Aid & Emergency Nursing, by I Clement
3	First Aid Manual, by British Red Cross Society, St. Andrew's Ambulance Assoc and St. John's Ambulance
4	LC Gupta's Manual of First Aid: Management of General Injuries, Sports Injuries and Common Ailments, by Abhitabh Gupta Jitika Royal
5	Essentials of First Aid and CPR, by National Safety Council and Safety Council Natl

Semester 01

a. Course Name: Medical Law
b. Course Code: 17010101UE01
c. Prerequisite: Medical law is a form of law that deals with the medical field. It talk about the responsibilities and duties of medical professionals or students.
d. Rationale: The subject "Medical Law" provides students with a foundational understanding of the legal systems and regulations that govern medical practice in India. By exploring medico-legal frameworks, ethical considerations, and patient management laws, it empowers future professionals to navigate complex legal environments while upholding ethical standards.
e. Course Learning Objective:

CLOBJ 1	Understand the structure and principles of the legal system, including constitutional and judicial frameworks.
CLOBJ 2	Analyze medico-legal aspects such as medical negligence, consumer protection, and the Indian Penal Code's relevant sections.
CLOBJ 3	Evaluate laws governing medical ethics, drug safety, storage, pricing, and regulation.
CLOBJ 4	Interpret patient management laws, including those related to prenatal diagnostics, organ transplantation, mental health, and HIV/AIDS.
CLOBJ 5	Apply legal knowledge to resolve ethical dilemmas and ensure compliance in healthcare operations.

f. Course Learning Outcomes:

CLO 1	The student will have a comprehensive understanding of basic legal framework
CLO 2	The students will have comprehensive understanding and knowledge of various medical laws
CLO 3	The students will have knowledge about the various regulatory laws with regard to the field of health laws
CLO 4	The students will have knowledge about ethics related to medical profession

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
4	**-**		**4**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**
1	Introduction to the Legal System • Law and Legal System • General overview of Constitutional Provisions • Overview of Judicial System • Overview of Civil Procedure Code • Overview of Criminal Procedure Code • Overview of Evidence Law • Overview of Indian Penal Code	25%	15

2	Law Governing Medico Legal Aspects IPC • Indian Evidence act (disclosure of privileged / confidential patient related information before a court of law – under • protest) • Medical Negligence • Consumer Protection Act, 2019 • IPC section 52,80,89,92,93,269 • Adulteration of drugs (IPC Sec 274) • Sales of adulterated drugs (IPC Sec 275) • Sales of drug as different drug or preparation (IPC Sec 276) • Negligent conduct with regard to poisonous substances (IPC Sec 284)	25%	15
3	Laws relating to Medical Profession and Ethics • Indian Medical Council Act • Law Governing Storage / Sale of Drugs and Safe Medication • Laws regulating safety and standard of drugs (Drugs and Cosmetic Act 1940) • Law regulating pricing of Drugs (The Drugs Control Act 1950) • Laws regulating the control of operations relating to narcotic drugs and psychotropic substances (Narcotics and • psychotropic substances Act 1985) • Laws regulating advertising of drugs claiming to have magical properties. (Drugs and magic remedies (objectionable advertisements Act 1954)	25%	15
4	Law Governing to Management of Patients • Laws regulating pre conception and prenatal diagnostic techniques and prohibition of sex selection (PNDT Act 1994 and MTP Act, 1997) • Laws regulating transplantation of organs (Transplantation of Human Organ Act 1994) • Laws relating to STDs (National guidelines for clinical management of HIV / AIDS, NACO, Govt of India.) • The Mental Health Act 1987	25%	15
	Total teaching hours for the academic year	**100%**	**60**

i. T**ext Book and Reference Book:**

1	Law and Medicine By Dr Nandita Adhikari
2	Mulla's Indian Contract Act By Mulla | lexis nexis | 15th, Pub. Year 2015
3	Medical Jurisprudence and Toxicology By Modi

4	The principles of Medical Jurisprudence, Medical and Forensic science and Toxicology By Dr. Parikh and Dr. Mishra
5 **6**	Constitution of India By M.P.Jain Constitution of India By Dr. J.N. Pandey
7	Medical Negligence and compensation By R.K.Bangia

Semester 01

a. Course Name: Health Informatics
b. Course Code: 19010201UE01
c. Prerequisite: Basic knowledge of Digital Health.
d. Rationale: This course is designed to equip novice public health students with the knowledge and skills necessary to deliver efficient informatics-led health care services.
e. Course Learning Objective:

CLOBJ 1	Define health informatics and explain its objectives, uses, and limitations in healthcare systems.
CLOBJ 2	Analyze challenges and advancements in electronic health records and global healthcare standards.
CLOBJ 3	Evaluate and present healthcare data for improved decision-making in healthcare management.
CLOBJ 4	Apply information and communication technologies to enhance public and personal healthcare.
CLOBJ 5	Examine legal, ethical, and governance issues in managing healthcare information.

f. Course Learning Outcomes:

CLO 1	Develop a basic understanding of computer application in patient care and nursing practice.
CLO 2	Apply the knowledge of computer and information technology in public health and healthcare education, practice, administration and research.
CLO 3	Describe the principles of health informatics and its use in developing efficient healthcare.
CLO 4	Demonstrate the use of information system in healthcare settings.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
3	**-**	**2**	**4**	**20**	**20**	**20**	**60**	**30**	**150**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	Content	Weightage	Teaching Hours
1	**Introduction to Health Informatics and Principles** • Introduction to Health Informatics and Principles • Health Informatics-Definition • Health informatics – Needs, objectives and limitations • Use of data, information and knowledge for more effective healthcare and better health • Use of computers in public health • Internet, Literature search • Hospital Management Information System (HMIS) Shared Care	25%	13

2	**Shared Care & Electronic Health Records** • Challenges of capturing rich patient histories in a computable form • Latest global developments and standards to enable lifelong electronic health records to be integrated from disparate systems	25%	10
3	Using Information in Healthcare Management • Components of health Information system • Evaluation, analysis and presentation of healthcare data to inform decisions in the management of health-care • organizations • Use of information and communication technology to improve or enable personal and public healthcare • Introduction to public health informatics and role of public health professionals	25%	12
4	Healthcare Quality & Evidence Based Practice • Information Law & Governance • Use of scientific evidence in improving the quality of healthcare and technical and professional informatics • standards • Ethical-legal issues pertaining to healthcare information in contemporary public health practice	25%	10
	Total teaching hours for the academic year	**100%**	**45**

i. List of Practical

1	1. Introduction to Health Informatics and Principles 1. Use of computers in public health & Internet, Literature search - It describe the application of computer in public health. 2. Hospital Management Information System - Helps to understand the hospital information system.
2	Shared Care & Electronic Health Records 1. Visit of Hospital to rule out the challenges and experience of informatics system.
3	Using Information in Healthcare Management 1. Demonstration of Healthcare management tools - Demonstrate the skills of using data in management of health care
4	Healthcare Quality & Evidence Based Practice 1. Information Law & Governance - Apply the knowledge of the principles of digital ethical and legal issues in public health practice.

j. T**ext Book and Reference Book:**

1	Healthcare Digital Transformation- How Consumerism, Technology and Pandemic are Accelerating the Future Edward W. Marx, Paddy Padmanabhan|2020. (Textbook)
2	Thesaurus of Health Informatics, M.C. Sievert (Textbook)
3	Health Informatics Practical Guide, 8th Edition William Hersh|2022
4	Informatics for Health Professionals Kathleen Mastrian, Dee McGonigle|2019 (Textbook)
5	Evidence-Based Health Informatics E. Ammenwerth, M. Rigby|2016 (Textbook)

Semester 01

a. Course Name: Health Care Management
b. Course Code: 06010101UE03
c. Prerequisite: Student having knowledge about principles of management and general Activities of Hospital
d. Rationale: This subject equips students with essential knowledge of the Indian healthcare system, addressing its structure, challenges, marketing strategies, and recent innovations. By blending theory with practical insights, it prepares learners to navigate and lead effectively in the evolving healthcare industry
e. Course Learning Objective:

CLOBJ 1	Understand the structure, challenges, and growth of India's healthcare sector.
CLOBJ 2	Evaluate healthcare delivery models, insurance systems, and applicable medical laws.
CLOBJ 3	Apply modern marketing strategies, including digital and social media, in healthcare promotion.
CLOBJ 4	Analyze recent trends and technological innovations shaping healthcare operations.
CLOBJ 5	Conduct practical assessments of healthcare institutions through visits and surveys.

f. Course Learning Outcomes:

CLO 1	Define the healthcare sector and its significance in the Indian context.
CLO 2	Analyze the current state of healthcare in India, including growth trends in the industry.
CLO 3	Describe the structure of the healthcare system in India.
CLO 4	Identify and analyze the major issues and challenges faced by the healthcare industry in India.
CLO 5	Understand the concept of public healthcare insurance in India.
CLO 6	Understand the modern era of healthcare marketing, including web-based marketing and social media.
CLO 7	Conduct a patient satisfaction survey and analyze the results.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
4	**-**		**4**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**

1	**Introduction to Healthcare sector** • Historical Background of Healthcare Management in India • Current State of Healthcare in India and Growth in Healthcare Industry • Structure of the Healthcare System • Characteristics of the Health System in India • Issues and Challenges to Healthcare Industry in India Classification of Hospitals • Developments in Public and Private Healthcare • Role of NGOs in health care of India	20%	12
2	**Various models in health care** • Various models in health care delivery in India and abroad • Public Healthcare Insurance in India • Medical Laws applicable to healthcare sector • Healthcare Infrastructure • Role of Hospitals in Healthcare	20%	12
3	**Healthcare Promotion** • Healthcare Promotion • The Marketing Communication Mix • Marketing of Hospitals in the Modern Era • Role of Marketing and PR • Knowledge-based Marketing: Modern Way of Healthcare Marketing – web-based marketing, social media	20%	12
4	**Recent Trends in Healthcare Sector** • Recent Trends in Healthcare Sector • Re-engineering, Tele-medicine, Artificial Intelligence, Euthanasia, Medical Tourism, Outsourcing, Medical • Transcription, Preventive and Social Medicine, Epidemiology. Robotics, integrated health care delivery, PPP models, home care	20%	12
5	**Practical: 1** • Students can visit a hospital (general/specialty) and prepare a report on the department and operations • of the hospital. 2. Students can compare the government hospital with the private hospital and prepare a report on • comparison. 3. Students can carry out patient satisfaction survey.	20%	12
	Total teaching hours for the academic year	**100%**	**60**

i. T**ext Book and Reference Book:**

1	Health Care Management & Administration (English) 01 Edition By S. L. Goel | Deep & Deep Publications Pvt. Ltd, 2004 | 01
2	Information System For Health Care Management, Health Administration Press. By Austin, Charles J. And Stuart B. Boxerman, | Latest Edition

Semester 01

a. Course Name: Management Of Lifestyle Disorders

b. Course Code: 19010001SE01

c. Prerequisite: Knowledge of Basic Biology and Behavioural Science, up to 12th science level.

d. Rationale: A course on lifestyle disorders for students is immensely essential in this today's era of modern life style. This course will inculcate value of health and wellbeing by adopting healthy lifestyle choices, offering doable preventative and management techniques. This course will also provide access to a range of professional opportunities

e. Course Learning Objective:

CLOBJ 1	**Explain the concept of lifestyle diseases and describe the role of modifiable lifestyle factors**—including diet, physical activity, smoking, alcohol consumption, and stress—in the development and prevention of these conditions.
CLOBJ 2	**Identify the causes, risk factors, signs, symptoms, and prevention strategies** for major lifestyle-related diseases such as obesity, hypertension, coronary heart disease, diabetes mellitus, stroke, cancer, PCOS, and drug addiction.
CLOBJ 3	**Analyze the interrelationship between various lifestyle diseases** and their impact on individual and public health, with a focus on comorbid conditions and long-term complications.
CLOBJ 4	**Evaluate evidence-based approaches and public health strategies** for the control and prevention of lifestyle diseases, including health education, behavioral interventions, and policy measures.
CLOBJ 5	**Demonstrate knowledge of stress management techniques and their significance** in promoting mental and physical well-being as part of an integrated lifestyle disease prevention strategy.

f. Course Learning Outcomes:

CLO 1	**Describe** the concept of lifestyle diseases and **list** the major modifiable risk factors contributing to their development.
CLO 2	**Explain** the etiology, risk factors, signs and symptoms, and preventive measures for common lifestyle diseases such as obesity, hypertension, diabetes, and coronary heart disease.
CLO 3	**Apply** knowledge of lifestyle modification strategies to **suggest** preventive measures for managing conditions like PCOS, stroke, and drug addiction.
CLO 4	**Analyze** the relationship between stress and disease development, and **differentiate** between healthy and unhealthy coping mechanisms.
CLO 5	**Evaluate** public health strategies and individual interventions aimed at reducing the burden of lifestyle diseases and **propose** comprehensive management plans.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
2	**-**	**-**	**2**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**

1	• Concept of lifestyle diseases- importance of lifestyle factors in preventing disease development: diet, exercise, smoking, alcohol etc • Causes, risk factors, signs & symptoms, prevention and control • Obesity • Hypertension • Coronary heart disease • Diabetes mellitus	50%	15
2	• Causes, risk factors, signs & symptoms, prevention and control • Drug addiction • Stroke • Cancer • PCOS • Stress Management	50%	15
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1	Lifestyle Diseases: Lifestyle Disease Management, by cliff nyambichu, jeff Lumiri, 2018
2	Lifestyle Medicine for Health and Disease Management by Ziya Altug
3	Lifestyle Medicine by James Rippe, Professor of Medicine, University of Massachusetts Medical School
4	Textbook of Medical Physiology, by Arthur C Guyton, John E Hall Prism Saunders 9th Edion ISBN: 81-7286-034-X.
5	Guide to Prevention of Lifestyle Diseases by R. Kumar, M. Kumar, 2004, Publisher: Deep & Deep Publications

Semester 01

a. Course Name: Climate Change and Sustainable Environment

b. Course Code: 11011401VA01

c. Prerequisite: Shall have the basic knowledge about environmental studies

d. Rationale: Will understand the basic interface between climate change and sustainability.

e. Course Learning Objective:

CLOBJ 1	Understand the scientific principles underlying climate change, including greenhouse gas emissions, global warming potential, and the role of natural and anthropogenic factors.
CLOBJ 2	Analyze the socio-economic impacts of climate change on local and global scales, including effects on communities, economies, ecosystems, and public health.
CLOBJ 3	Evaluate the effectiveness of existing policies, technologies, and initiatives aimed at mitigating climate change and promoting sustainability, considering factors such as feasibility, scalability, and equity.
CLOBJ 4	Apply interdisciplinary approaches to address complex environmental challenges, integrating knowledge from fields such as environmental science, economics, policy analysis, and social justice.
CLOBJ 5	Develop and communicate evidence-based solutions and strategies for advancing sustainability goals, considering the needs and perspectives of diverse stakeholders and fostering collaboration across sectors and disciplines.

f. Course Learning Outcomes:

CLO 1	Identify the complexity and operations of governance systems and processes on international, national, and local levels.
CLO 2	Explain the differences between government and governance and the various ideas and meanings attached to the goal of sustainable development.
CLO 3	Critically analyze policy-making processes in regard to sustainability issues.
CLO 4	Apply high-quality written and verbal communication skills
CLO 5	Work effectively in a team and in tutorial or workshop situations

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**TOTAL**
				T	**CE**	**P**	**Theory**	**P**	
2	**-**	**-**	**2**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**
1	Unit 1: Introduction to Climate Change Global Climate System Climate Change: Causes and Consequences: Global warming, ozone layer depletion, acid rain, and greenhouse effect case studies: nuclear accidents, chemical disasters, and climatic episodes	33%	10

2	Unit 2: Sustainable Development: Sustainable Development Goals: An overview Climate Change and Sustainable Development: National and State Policies Achieving Sustainable Development Goals: Role of Various Stakeholders Building Partnership for Climate Change and Sustainable Development	34%	10
3	Unit 3: Sustainable Approach to Climate Change: Energy Conservation: Use of Renewable energies: Water, Solar, Wind, Tidal, Geothermal Water conservation techniques: Rain Water Harvesting. Environmental Ethics & Public Awareness: Role of various religions and cultural practices in environmental conservation Sustainable Human Development.	33%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1	Climate Change and Sustainable Development: Prospects for Developing Countries by Anil Markandya, Kirsten Halsnæs
2	Climate Change and Sustainable Development Global Prospective by R. K. Mishra, P. s. Janki Krishna & CH. Lakshmi Kumar
3	This Changes Everything: Capitalism vs The Climate by Naomi Klein

Semester 01

a. Course Name: Introduction of Anesthesia and Critical Care Technology (Theory)
b. Course Code: 19011301AC01
c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level
d. Rationale: To address the increasing demand for specialized healthcare professionals capable of administering anesthesia, managing critical care settings, and ensuring patient safety and quality of care in surgical and intensive care settings.
e. Course Learning Objective:

CLOBJ 1	Recognize the significance of the first successful clinical demonstration in the development of anesthesia techniques.
CLOBJ 2	Identify and describe the characteristics, indications, and limitations of inhalational, regional, intravenous, and modern anesthesia techniques.
CLOBJ 3	Perform thorough clinical assessments, including airway, thoracic, abdominal, and neurological assessments, to evaluate patient status in critical care settings.
CLOBJ 4	Demonstrate proficiency in monitoring vital signs such as temperature, SpO2, heart rate, blood pressure, respiratory rate, and urine output to assess patient stability and detect changes in condition.
CLOBJ 5	Demonstrate the ability to perform CPR for adults, children, and infants according to current guidelines, including one- and two-rescuer techniques and apply knowledge of basic life support components and AED use to effectively respond to cardiac arrest and choking incidents

f. Course Learning Outcomes:

CLO 1	Upon completion of the course, students will demonstrate a comprehensive understanding of the historical evolution of anesthesia, including key milestones and the development of different anesthesia techniques.
CLO 2	Graduates will be able to perform thorough clinical assessments in critical care settings, including airway, thoracic, abdominal, and neurological assessments, to accurately evaluate and prioritize patient care.
CLO 3	Students will be proficient in monitoring vital signs such as temperature, SpO2, heart rate, blood pressure, respiratory rate, and urine output, enabling them to detect changes in patient condition and intervene appropriately.
CLO 4	Graduates will possess the knowledge and skills to execute life-saving interventions in emergency situations, including performing CPR for adults, children, and infants, relieving foreign-body airway obstruction, and using an AED effectively.
CLO 5	Upon completion of the course, students will demonstrate the ability to integrate ethical principles and professional standards into their practice, ensuring patient safety, confidentiality, and dignity in anesthesia and critical care settings.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**		**Total**
Lecture Hrs/	**Tutorial Hrs/**	**Lab Hrs/**	**Total Hrs/**	**Credit**	**Internal Marks**	**External Marks**	

Week	Week	Week			T	CE	P	T	P	
3	-	-	3	3	20	20	-	60	-	100

Lect- Lecture, Lab.- Lab, Tut - Tutorial, T - Theory, P - Practical, CE - CE, T - Theory, P – Practical

h. Contents

UNIT	CONTENTS	WEIGHTAGE	HOURS
1.	**INTRODUCTION TO ANESTHESIA** • History of anesthesia • First successful clinical demonstration • Pre-Historic (ether) Era • Inhalational Anaesthetic Era • Regional Anaesthetic Era • Intravenous anaesthetic era • Modern anaesthetic era • Types of Anesthesia	15%	10
2.	**BASIC OF CRITICAL CARE** • What is critical care • Levels of critical care • Clinical Assessment • Airway • Thoracic • Abdominal • Neurological	30%	10
3.	**Vital Signs** • Temperature • SpO2 • Heart Rate • Blood Pressure • Respiratory Rate • Urine Output	15%	10
4.	**BASICS LIFE SUPPORT** • CPR for adults, children, and infants • BLS components • One- and Two Rescuer CPR • AED • Relief of foreign-body airway obstruction (choking) for adults and infants.	40%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Reference Books

1.	Anaesthesia Manual-A. A Pillai
2.	Lee synopsis (Handbook of Anaesthesia)
3.	Clinical Anesthesiology by Morgan
4.	Text Book of anesthesia by Ajay Yadav
5.	Anesthesia equipments and Drugs by AK Paul

Semester 01

a. **Course Name:** Introduction of Anesthesia and Critical Care Technology (Practical)

b. Course Code: 19011301AC02

c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level

d. Rationale: To address the increasing demand for specialized healthcare professionals capable of administering anesthesia, managing critical care settings, and ensuring patient safety and quality of care in surgical and intensive care settings.

e. Course Learning Objective:

CLOBJ 1	Recognize the significance of the first successful clinical demonstration in the development of anesthesia techniques.
CLOBJ 2	Identify and describe the characteristics, indications, and limitations of inhalational, regional, intravenous, and modern anesthesia techniques.
CLOBJ 3	Perform thorough clinical assessments, including airway, thoracic, abdominal, and neurological assessments, to evaluate patient status in critical care settings.
CLOBJ 4	Demonstrate proficiency in monitoring vital signs such as temperature, SpO2, heart rate, blood pressure, respiratory rate, and urine output to assess patient stability and detect changes in condition.
CLOBJ 5	Demonstrate the ability to perform CPR for adults, children, and infants according to current guidelines, including one- and two-rescuer techniques and apply knowledge of basic life support components and AED use to effectively respond to cardiac arrest and choking incidents

f. Course Learning Outcomes:

CLO 1	Upon completion of the course, students will demonstrate a comprehensive understanding of the historical evolution of anesthesia, including key milestones and the development of different anesthesia techniques.
CLO 2	Graduates will be able to perform thorough clinical assessments in critical care settings, including airway, thoracic, abdominal, and neurological assessments, to accurately evaluate and prioritize patient care.
CLO 3	Students will be proficient in monitoring vital signs such as temperature, SpO2, heart rate, blood pressure, respiratory rate, and urine output, enabling them to detect changes in patient condition and intervene appropriately.
CLO 4	Graduates will possess the knowledge and skills to execute life-saving interventions in emergency situations, including performing CPR for adults, children, and infants, relieving foreign-body airway obstruction, and using an AED effectively.
CLO 5	Upon completion of the course, students will demonstrate the ability to integrate ethical principles and professional standards into their practice, ensuring patient safety, confidentiality, and dignity in anesthesia and critical care settings.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**		**Total**
Lecture Hrs/	**Tutorial Hrs/**	**Lab Hrs/**	**Total Hrs**	**Credit**	**Internal Marks**	**External Marks**	

Week	Week	Week			T	CE	P	T	P	
-	-	2	2	1	-	-	20	-	30	50

Lect- Lecture, Lab.- Lab, Tut - Tutorial, T - Theory, P - Practical, CE - CE, T - Theory, P – Practical

h. Practical Content

SR.NO	COMPETENCIES	WEIGHTAGE	HOURS
1.	Identification of anesthesia techniques	20%	5
2.	**Patient Identification** • examination • Percussion • Auscultation • Inspection • Palpation	30%	10
3.	Vital signs Monitoring	20%	5
4.	• BLS • CPR • AED	30%	10
	Total Practical hours for the academic year	**100%**	**30**

i. Reference Books

1.	Anaesthesia Manual-A. A Pillai
2.	Lee synopsis (Handbook of Anaesthesia)
3.	Clinical Anesthesiology by Morgan
4.	Textbook of anesthesia by Ajay Yadav
5.	Anesthesia equipments and Drugs by AK Paul

Semester 01

a. Course Name: Introduction To Operation Theatre Technology (T)
b. Course Code: 19010901OT01
c. Prerequisite: Knowledge of up to 12th science level and must Passed
d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.
e. Course Learning Objective:

CLOBJ 1	To develop skills like how to manage Pre-Operative & Post-operative.
CLOBJ 2	To understand various procedures like bed making, Lifting and Transporting Patients, Bed Side Management.
CLOBJ 3	To know the determinants of Health, Health Indicators of India, Health Team Concept.
CLOBJ 4	To understand the population of India and Family welfare programme in India
CLOBJ 5	To understand the different types, use, care and management of biomedical waste.

f. Course Learning Outcomes:

CLO 1	Know the responsibility of health care personals and hazards faced in the operation theatre & casualty
CLO 2	Understand the different types, use, care and methods of cleaning, composition of dust.
CLO 3	Understand the different types, use, care and management of biomedical waste.
CLO 4	Perform in proper manner all the general surgical procedures like suturing, dressing, related techniques
CLO 5	Helps in various techniques used in operation theatres & casualty

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**MSE**			**ESE**		**Total**
				T	**CE**	**P**	**T**	**P**	
3	**-**	**-**	**3**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**CONTENTS**	**Weightage**	**Teaching Hours**
1	**INTRODUCTION TO HEALTH** • Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept. • National Health Policy • National Health Programmes (Briefly Objectives and scope) • Population of India and Family welfare programme in India.	20%	9

2	**MEDICINE OUTLINE** • Personnel relationships. Bandaging: Basic turns; • Bandaging extremities; Triangular Bandages and their application. • Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, Comfort measures, Aids and rest and sleep. • Lifting and Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel • Chair. Transferring from bed to stretcher. • Bed Side Management: Giving and taking Bed pan, Urinal: Observation of stools, urine. • Observation of sputum, understand use and care of catheters, enema giving. • Methods of Giving Nourishment: Feeding, Tube feeding, drips, transfusion • Care of Rubber Goods • Recording of body temperature, respiration and pulse, Simple aseptic technique, sterilization and disinfection. • Surgical Dressing: Observation of dressing procedures.	10%	9
3	**BASICS OF FIRST AID** • Burns • Cuts • Abrasions • Stings • Splinters • Sprains • Strains And others	10%	9
4	**PARAMEDICAL TRAINING IN OPERATION THEATRE** • Introduction to Allied Healthcare Professions • Introduction to Basic Biology • Basic Understanding of Various Zone Of Operation Theater • Undestanding Of Staffing Pattern • Monitoring in the Operation Theatre • Positioning of Pratient • Instrument planning for various surgical procedure and Auxiliary instrumentation. • Operation Theatre Techniques & Procedures • O.T. environment, control of infection scrubbing, theatre cloths including lead apron and goggles • History, pre-operative., Intra operative & post-operative care • Anaesthesia Service.	30%	9

5	**CSSD PROCEDURE** • Cleaning and dusting - methods of cleaning, composition of dust. • General care and testing of instruments- haemostatic forceps, needle, holders, Knife, blade, scissor, use/ abuse, care during surgery. • Disinfectants of instruments and Sterilization- Definition, Methods cleaning agents • Detergents, Mechanical washing, ultrasonic cleaner, lubrication inspection and pitfalls • Various methods of chemical treatment- formalin, glutaraldehyde etc, thermal. • Hot Air oven- dry heat, Autoclaving, steam Sterilization water etc,. UV treatment. • Instrument's Etching, care of micro surgical and titanium instruments Sterilization of equipment - Arthroscopy, Gastro scope, imago Lamp, Apparatus, suction • Apparatus Anaesthetic equipment including endotracheal tubes - • OT Sterilization including Laminar Air flow	30%	9
	Total teaching hours for the academic year	100%	45

i. Text Book and Reference Book:

1	OPERATION THEATER TECHNIQUE ANESTHESIA AND EMERGENCY CARE FOR TECHNICIANS, NURSES & PARAMEDICSBy Vaishali Mohod
2	Textbook of Operation Theatre Technology By MP Sharma
3	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5	TEXTBOOK OF OPERATION THEATRE TECHNOLOGY By Manjushree Ray

Semester 01

a. Course Name: Introduction To Operation Theatre Technology – I (P)
b. Course Code: 19010901OT02
c. Prerequisite: Knowledge of up to 12th science level and must Passed
d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.
e. Course Learning Objective:

CLOBJ 1	To develop skill like how to manage Preoperative & Post-operative.
CLOBJ 2	To understand various procedure like bed making, Lifting and Transporting Patients, Bed Side Management.
CLOBJ 3	To know the determinants of Health, Health Indicators of India, Health Team Concept.
CLOBJ 4	To understand the population of India and Family welfare programme in India
CLOBJ 5	To understand the different types, use, care and management of biomedical waste.

f. Course Learning Outcomes:

CLO 1	Know the responsibility of health care personals and hazards faced in the operation theatre & casualty
CLO 2	Understand the different types, use, care and methods of cleaning, composition of dust.
CLO 3	Understand the different types, use, care and management of biomedical waste.
CLO 4	Perform in proper manner all the general surgical procedures like suturing, dressing, related techniques
CLO 5	Helps in various techniques used in operation theatres & casualty

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**MSE**			**ESE**		**Total**
				T	**CE**	**P**	**T**	**P**	
-	**-**	**2**	**1**	**-**	**-**	**20**	**-**	**30**	**50**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**
1.	• Students will observe the basic operations of the operation theatre while interacting with the multidisciplinary team members involved in providing optimal care to the patients. • Bandaging • Positioning	50%	10

2.	• Lifting and Transporting Patients • Bed Side Management • Methods of Giving Nourishment • Care of Rubber Goods • Vital Sign	25%	10
3.	• Surgical Dressing • O.T Sterilization • Cleaning and Dusting of Instruments • OT Sterilization	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1	OPERATION THEATER TECHNIQUE ANESTHESIA AND EMERGENCY CARE FOR TECHNICIANS, NURSES & PARAMEDICSBy Vaishali Mohod
2	Textbook of Operation Theatre Technology By MP Sharma
3	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5	TEXTBOOK OF OPERATION THEATRE TECHNOLOGY By Manjushree Ray

Semester 01

a. Course Name: Introduction to Nanotechnology and its Applications in Healthcare
b. Course Code: 03011301NT01
c. Prerequisite: This course will equip the students with the knowledge and skills needed to understand and harness the groundbreaking potential of nanotechnology in revolutionizing healthcare, addressing critical global health challenges, and fostering innovation in the field.
d. Rationale: Nanotechnology is used to conduct sensitive medical procedures. Nanotechnology is showing successful and beneficial uses in the fields of diagnostics, disease treatment, regenerative medicine, gene therapy, dentistry, oncology, the aesthetics industry, drug delivery, and therapeutics.
e. Course Learning Objective:

CLOBJ 1	To Understand the foundational principles of nanotechnology and its application in healthcare, including the manipulation of materials at the nanoscale and the utilization of nanomaterials in various medical contexts such as diagnostics, drug delivery, and regenerative medicine.
CLOBJ 2	To Analyze the role of nanotechnology in addressing critical global health challenges, including infectious diseases, cancer, and degenerative conditions, by exploring case studies and current research advancements in the field.
CLOBJ 3	To Develop critical thinking skills to evaluate the ethical, societal, and environmental implications of nanotechnology in healthcare, considering factors such as safety, accessibility, and equity, and propose strategies for responsible implementation and innovation in this rapidly evolving field.

f. Course Learning Outcomes:

CLO 1	Students will understand the characteristics of, and manipulation of nanoscale materials and how they can be exploited for new applications.
CLO 2	Students will learn about exciting applications of nanotechnology at the leading edge of scientific research.
CLO 3	Students will apply their knowledge of nanotechnology to a topic of personal interest in the use of diagnostic and Nano-medicine purpose.
CLO 4	This is an interdisciplinary and emerging area. This course introduces the students to the new and novel applications to solve biomedical problems through nanotechnology.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**CE**	**P**	**Theory**	**P**	
3	**1**	**-**	**4**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**

1	**Introduction of Nanotechnology:** • Nanoscience, Nanomaterials, differentiate between nano and bulk materials, Classification of Nanostructured materials; Zero-dimension, one dimension, two dimension and three-dimension nanomaterials. • Characteristic properties of materials at the nanoscale; Physical, chemical, optical, mechanical properties of nanomaterials (e.g. carbon nanotube, polymers, Metals and Metal-oxide nanomaterial).	35%	12
2	**Nanomaterials for Healthcare:** • Properties of nanomaterials requirement for healthcare, Types of nanomaterials (organic and inorganic), Interaction of nanomaterials with biological systems, Biocompatibility and toxicity considerations. • Antimicrobial nanoparticles	25%	10
3	**Application of Nanotechnology in healthcare:** • Nanotechnology in drug delivery, Nanoparticles and Nano carriers for drug delivery. • Targeted drug delivery and controlled release systems. • Nano carriers and their advantages, Nano-probes and contrast agents' requirement for medical field, Nanoparticle for cancer therapy.	25%	11
4	**Nanotechnology use for diagnostic:** • Nanotechnology for diagnostic purpose, Point-of-care diagnostics, Nanoparticle for cancer therapy, Hyperthermia and photothermal therapy, Nanoparticle-based imaging agents. • Environmental and safety concerns of nanomaterials. • Regulatory aspects of nanotechnology in healthcare.	15%	12
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Nano: The Essential, Understanding the nanoscience and nanotechnology By T. Pradeep
2.	Application of Nanotechnology in Biomedical Application By Faheem A. Sheikh
3.	Application of Nanomaterials in Human Health By Firdos Alam Khan

Semester 01

a. Course Name: **Programming in Python**
b. Course Code: **03010501AM01**
c. Prerequisite: Basic Programming concepts.
d. Rationale: This subject will help the students to learn various aspects of Python programming

e. Course Learning Objective:

CLO1	Grasp the core concepts of Python programming, including its applications, environment setup, and basic syntax.
CLO2	Develop skills in using conditional statements and loops to create logical program flows
CLO3	Gain proficiency in reading and writing files, and working with structured data formats like CSV and JSON
CLO4	Learn how to write reusable functions, work with Python's built-in data structures
CLO5	Explore advanced data manipulation techniques, numerical computing with NumPy, and dataset handling using Pandas.

f. Course Outcomes:

CO1	Write and execute python code in command line.
CO2	Debug errors in Python Programming.
CO3	Apply concept of object oriented programming to the real life applications.

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs /Week	Tutorial Hrs/ Week	Lab Hrs /Week	Hrs /Week	Credit	T	CE	P	T	P	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	Introduction to Python: Overview of Python and its applications, Setting up the Python environment, Variables, data types, and basic operations, Control structures: if-else statements and loops	25%	11
2	Functions and Modules and Data Structures in Python: Writing and using functions in Python, Introduction to modules and packages, Creating and importing custom modules, Lists, tuples, sets, and dictionaries, List comprehensions and other data manipulation techniques, Working with strings	30%	13
3	File Handling:Reading and writing files in Python, Working with CSV and JSON data formats	15%	09
4	NumPy for Numerical Computing and Data Manipulation with Pandas: Introduction to NumPy arrays and operations, Array slicing and reshaping, NumPy for mathematical computations, Introduction to Pandas DataFrames and Series, Data cleaning, filtering, and aggregation, Merging and joining datasets	30	12
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Fluent Python, 2nd Edition by Luciano Ramalho (TextBook)
2.	Learn Python3 the Hard Way By Zed Shaw
3.	Introducing Python by Lubanovic Bill, O' ReILLY
4.	Beginning Python: Using Python 2.6 and Python 3.1 By James Payne | Wrox Publication

Semester 01

a. Course Name: **Programming in Python Lab**
b. Course Code: **03010501AM02**
c. Prerequisite: Basic Programming concepts.
d. Rationale: This subject will help the students to learn various aspects of Python programming

e. Course Learning Objective:

CLO1	Apply Python syntax and programming concepts through practical exercises to solve real-world problems.
CLO2	Write reusable functions and explore Python modules to optimize code efficiency and organization.
CLO3	Work with file handling techniques for reading, writing, and managing structured data formats like CSV and JSON.
CLO4	Utilize NumPy arrays for mathematical operations, data transformations, and efficient computation handling.
CLO5	Perform data cleaning, filtering, aggregation, and visualization using Pandas to extract meaningful insights.

f. Course Outcomes:

CO1	Write and execute python code in command line
CO2	Debug errors in Python Programming.
CO3	Apply concept of object oriented programming to the real life applications

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs /Week	Tutorial Hrs/ Week	Lab Hrs /Week	Hrs /Week	Credit	T	CE	P	T	P	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	Topics	Weightage	Hours
1	WAP to read and display the following information. Name, Address, Phone no	10%	3
2	WAP to read two numbers from the keyboard and display the larger one on the screen.	05%	3
3	WAP to find, a given number is PRIME or NOT.	10%	3
4	Write a Function to swap values of a pair of integers	10%	3
5	WAP to find N! Using function.	05%	3
6	WAP to print Fibonacci series of ‘n’ numbers, where n is given by the programmer	10%	1
7	WAP to read a set of numbers in an array & to find the largest of them	05%	3
8	WAP to sort a list of names in ascending order	10%	3
9	WAP to read a set of numbers from keyboard & to find the sum of all elements of the given array using a function.	05%	1
10	Calculate area of different geometrical figures (circle, rectangle, square, and triangle).	10%	2
11	WAP to increment the employee salaries on the basis of their designation (Manager-5000, General Manager-10000, CEO20000, worker-2000). Use employee name, id, designation and salary as data member and inc_sal as member function	10%	2
12	Create two classes namely Employee and Qualification. Using multiple inheritance derive two classes Scientist and Manager. Take suitable attributes & operations. WAP to implement this class hierarchy.	05%	1
13	WAP to read data from keyboard & write it to the file. After writing is completed, the file is closed. The program again opens the same file and	05%	2

	reads it.		
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Fluent Python, 2nd Edition by Luciano Ramalho (TextBook)
2.	Learn Python3 the Hard Way By Zed Shaw
3.	Introducing Python by Lubanovic Bill, O' ReILLY
4.	Beginning Python: Using Python 2.6 and Python 3.1 By James Payne | Wrox Publication

Semester 01

a. Course Name: Anatomy & Physiology-I (T)

b. Course Code: 19010001DS01

c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOBJ 1	Explain contributions of organs and systems to the maintenance of homeostasis
CLOBJ 2	Use anatomical terminology to identify and describe locations of major organs of each system covered
CLOBJ 3	Explain interrelationships among molecular, cellular, tissue, and organ functions in each system.
CLOBJ 4	Identify causes and effects of homeostatic imbalances.
CLOBJ 5	Describe the interdependency and interactions of the systems

f. Course Learning Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, analyse information, and solve problems related to anatomy and physiology.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**MSE**			**ESE**		**Total**
				T	**CE**	**P**	**T**	**P**	
4	**-**	**-**	**4**	**20**	**20**	**-**	**60**	**-**	**100**

L- Lectures; T- Tutorial; P- Practical; C- Credit; MSE- Mid-Semester Evaluation, CE- Continuous Evaluation, ESE- End Semester Examination

h. Course Content:

Sr. No.	**PART-A (ANATOMY) Content**	**Weightage**	**Teaching Hours**

1	**Introduction, Terminology and Skeletal System.** • Define anatomical position; anatomical planes & its directional terms; positions; movements. • Enumerate different sub-branches in Anatomy. • Overview of human skeleton; types of bones with examples; types of cartilage with examples; structure and parts of a typical long bone; identify individual bones of the skeleton & their main structural features.	30%	10
2	**Outline of Tissues and Muscular System:** • Differentiate between the various types of tissues. • Classify the muscles based on different criteria, with examples. • Identify major muscles of different regions of the body.	30%	10
3	**Identify and draw the organs of Respiratory tract:** • Know the basic structural features of the organs of respiratory tract. • Structures of heart; identify the major blood vessels.	40%	10
	Total teaching hours for the academic year	**100%**	**30**

	PART-B (Physiology) Content		
4	**Outline of General physiology, Cell physiology, Blood and Immunity:** • Structure of cell • Cell organelles and functions • Biomolecules of the cell • Cellular transport mechanism • Membrane Potentials	30%	10
5	**Unit-2: Outline of Blood:** • Composition of blood. • Functions of blood. • Body fluids and types of fluids compartments. • Coagulation, Platelets and its functions, Anemia, • Blood indices, Anti coagulation. • ESR, WBC and its functions. • Immunity.	30%	10
6	**Outline of Cardiovascular System:** • Structural organization of Cardiovascular System. • Functions of Cardiovascular System. • Cardiac Cycle, ECG, Blood Pressure, Cardiovascular Soak.	40%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1	Garg K, B.D.Chaurasia's Human Anatomy Regional & Applied, Dissection & Clinical. Upper limb & Thorax
2	ANATOMY & PHYSIOLOGY By ROSS AND WILSON
3	General Anatomy by B.D. Chaurasia
4	Principles of anatomy and physiology by Tortora
5	Human anatomy and Physiology with Health Education by Padma B Sanghani

Semester 01

a. Course Name: **Visual Optics (T)**
b. Course Code: 19011001DS05
c. Prerequisite: The prerequisites for visual optics include a strong foundation in mathematics, physics, and optics
d. Rationale: The rationale behind visual optics is to understand the optical principles of the eye and the visual system, and to develop methods for correcting vision disorders

e. Course Learning Objective:

CLO1	Explain the optical components of the human eye, including the cornea, lens, and vitreous humour.
CLO2	Understand the role of each component in focusing light onto the retina and creating a clear image.
CLO3	Understand the design principles and applications of corrective lenses for various refractive errors.
CLO4	Understand chromatic and monochromatic aberrations and their impact on image quality.
CLO5	Define myopia, hyperopia, astigmatism, and presbyopia and their optical causes.

f. Course Outcomes:

CO1	Understand the basic principles of light and its interaction with optical materials.
CO2	Describe the optical components of the human eye and their role in vision.
CO3	Analyse the properties and functions of spectacle lenses and their application in correcting refractive errors.
CO4	Explain the design and fitting of contact lenses for various visual needs.
CO5	Utilize ophthalmic instruments for vision assessment and correction.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
3	-	3	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Visual Optics** 1. Nature of light 2. Electromagnetic spectrum 3. Human vision and optics 4. Geometric Optics 5. Reflection and refraction 6. Thin lens formula 7. The Eye as an Optical System 8. Optics of the cornea, lens, and vitreous Accommodation and its mechanism	30%	15
2	**Refractive errors and management** 1. Myopia, hyperopia, astigmatism, and presbyopia 2. Refraction and focal length calculations	30%	15

	3. Visual Acuity and Refraction 4. Visual acuity testing and interpretation Refraction techniques and prescribing lenses		
3	**Optics of Lenses and properties** 1. Spectacle Lenses 2. Lens materials and designs 3. Single vision and multifocal lenses 4. Chromatic and monochromatic aberrations High-index lenses and aspheric lenses.	40%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Clinical Optics by Andrew R. Elkington, Helena J. Frank, and Michael J. Greaney
2.	Clinical Visual Optics by David A. Atchison and George Smith
3.	Geometrical and Visual Optics: A Clinical Introduction by Steven H. Schwartz and Kenneth J. Ciuffreda.

Semester 01

a. Course Name: **Visual Optics**
b. Course Code: 19011001DS06
c. Prerequisite: The prerequisites for visual optics include a strong foundation in mathematics, physics, and optics
d. Rationale: The rationale behind visual optics is to understand the optical principles of the eye and the visual system, and to develop methods for correcting vision disorders

e. Course Learning Objective:

CLO1	Explain the optical components of the human eye, including the cornea, lens, and vitreous humour.
CLO2	Understand the role of each component in focusing light onto the retina and creating a clear image.
CLO3	Understand the design principles and applications of corrective lenses for various refractive errors.
CLO4	Understand chromatic and monochromatic aberrations and their impact on image quality.
CLO5	Define myopia, hyperopia, astigmatism, and presbyopia and their optical causes.

f. Course Outcomes:

CO1	Understand the basic principles of light and its interaction with optical materials.
CO2	Describe the optical components of the human eye and their role in vision.
CO3	Analyse the properties and functions of spectacle lenses and their application in correcting refractive errors.
CO4	Explain the design and fitting of contact lenses for various visual needs.
CO5	Utilize ophthalmic instruments for vision assessment and correction.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	• Familiarization with ophthalmic instruments used in visual optics. • Handling and calibration of instruments such as phoropters, autorefractors, and keratometer • Practice of objective and subjective refraction techniques. • Determining the refractive error using retinoscopy and subjective refraction.	30%	10
2	• Measuring lens power and verifying the power of prescription lenses. • Identification of lens types and designs. • Fitting single vision and multifocal spectacle lenses on trial frames. • Evaluating the optical performance of different lenses. • Practice of objective and subjective refraction techniques.	30%	10

3	• Determining the refractive error using retinoscopy and subjective refraction. • Visual Acuity and Contrast Sensitivity Testing • Colour Vision Testing • Conducting colour vision tests (Ishihara, Farnsworth D-15) on patients. • Interpretation of colour vision results and their significance. • Practice of direct and indirect ophthalmoscopy. • Examination of the fundus and identification of common ocular conditions	40%	10
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Clinical Optics by Andrew R. Elkington, Helena J. Frank, and Michael J. Greaney
2.	Clinical Visual Optics by David A. Atchison and George Smith
3.	Geometrical and Visual Optics: A Clinical Introduction by Steven H. Schwartz and Kenneth J. Ciuffreda.

Semester 02

a. Course Name: **Basic English - II**
b. Course Code: 00019302AE04
c. Prerequisite: Knowledge of Basic English-I
d. Rationale: Knowledge of Communication is essential for students

e. Course Learning Objective:

CLOBJ 1	Develop basic proficiency in English language skills including reading, writing, speaking, and listening, with an emphasis on comprehension and fluency.
CLOBJ 2	Expand vocabulary through the acquisition of common words and phrases used in everyday communication, including greetings, introductions, and expressions for daily activities.
CLOBJ 3	Gain a solid understanding of basic grammar rules, including sentence structure, verb tenses, parts of speech, and word order, to construct grammatically correct sentences and communicate effectively.
CLOBJ 4	Improve pronunciation and intonation to enhance clarity and intelligibility in spoken English, focusing on accurate articulation of sounds, stress patterns, and rhythm.
CLOBJ 5	Develop confidence and proficiency in engaging in everyday conversations in English, including asking and answering questions, expressing opinions, making requests, and participating in discussions on familiar topics.

f. Course Outcomes:

CLO 1	Construct grammatically correct sentences.
CLO 2	Develop and deliver professional presentation skills
CLO 3	Develop confidence in speaking skills.
CLO 4	Develop the skills of critical thinking.
CLO 5	Compose different types of written communication.

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs /Week	Tutorial Hrs/ Week	Lab Hrs/Week	Hrs /Week	Credit	T	CE	P	T	P	
2	-	-	2	2		100	-	-	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	**Definition, Importance and Process of Communication** Definition of Communication & Importance of Communication Definition and process of communication	7%	2
2	**Levels and Flow of Communication** Levels of Communication Flow of Communication	7%	2
3	**Barriers and features of Effective Communication** Barriers to effective Communication Features of effective Communication	7%	2
4	**Non-verbal Communication and Kinesics** Define non-verbal communication Kinesics	3%	1
5	**Proxemics, Paralinguistic and Chronemics**	3%	1

	Proxemics Paralinguistic Chronemics		
6	**Error Analysis (**Tenses, voices & Reported speech**)**	7%	2
7	**Reading Practice (**Reading Comprehension)	3%	1
8	**Vocabulary Building** Idioms Phrases Synonyms Antonyms	7%	2
9	**Theatrics (Role Play)**	16%	5
10	**Extempore**	16%	5
11	**Application writing**	10%	3
12	**Letter Writing (**Elements, Layouts, Inquiry, Complaint, & Adjustment)	14%	4
	Total	**100%**	**30**

i. Text Book and Reference Book:

1.	Business Correspondence and Report Writing By SHARMA, R. AND MOHAN, K
2.	Practical English Usage by MICHAEL SWAN
3.	A Remedial English Grammar for Foreign Student by F.T. WOOD
4.	On Writing Well by William Zinsser | Harper Paperbacks,2006 | 30th anniversary edition
5.	Oxford Practice Grammar, By John Eastwood | Oxford University Press
6.	Sanjay Kumar, Pushp Lata, Communication Skills, Oxford University Press
7.	Technical Communication: Principles And Practice by Sangeetha Sharma, Meenakshi Raman | Oxford University Press

Semester 02

a. Course Name: **Basic Hindi - II**
b. Course Code: **00019302AE05**
c. Prerequisite: Basic communication skills in Hindi
d. Rationale: Basic comprehensive skills Hindi

e. Course Learning Objective:

CLOBJ 1	Learn to recognize and write Devanagari script. Understand the basics of Hindi pronunciation, including consonants, vowels, and pronunciation rules.
CLOBJ 2	Build a foundation of commonly used Hindi vocabulary for everyday communication.
CLOBJ 3	Develop the ability to engage in simple conversations in Hindi, including greetings, introductions, and expressing basic needs and preferences.
CLOBJ 4	Learn to read and understand simple texts in Hindi, including signs, labels, short passages, and basic literature.
CLOBJ 5	Practice writing in Hindi through exercises such as dictation, composition, and letter/email writing.

f. Course Outcomes:

CLO 1	Read and write Hindi alphabets
CLO 2	Comprehend Hindi language through listening
CLO 3	Introduce self in Hindi language.
CLO 4	Communicate at elementary level in Hindi.
CLO 5	To understand and use daily words in Hindi

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	**Total**
2	-	-	-	2	-	100	-	-	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	उUत शब्दावली (Advanced vocabulary) संख्या (Numbers) (51 onwards) समय (Telling Time) अहिवादन (Greetings)	13%	4
2	श्रवर् कौशल (Listening skills) • लघु कथा ((Short Story) छोटी बातचीत ((Short Conversation)	20%	6

3	बोलने की कुशलताएं (Speaking Skills) • आत्म पररचय (Self Introduction) • ि दन हप ि दन बातचीत (Day to day conversation) वाि ममता (Elocution)	27%	8
4	पढ़ने के कौशल (Reading Skills)	20%	6
	• समझबझू हक पढ़ना (Reading Comprehension) • लघु कथा (Short Story) अखहबा का लेख (Newspaper article)		
5	लेखन कौशल (Writing skills) • आत्म पररचय (Self Introduction) लघु सन्देश (Short message)	20%	6
	Total	**100%**	**30**

i. Text Book and Reference Book:

1.	Hindi for Beginners published by UpToSchoolWorksheets
2.	Hindi Abhyaas Pustika by Seema Verma, Published by Trishala Learning System pvt.
3.	NCERT Workbook of Hindi for Grade-2
4.	Rachnatmak Vyakaran by Suresh Pant and Himani Joshi, Published by Pearson.
5.	Matra Gyan, Published by Wonder House Books
6.	Amoli Hindi Vyakaran by Dr. Nirmal Dalal

Semester 02

a. Course Name: Basic Gujarati-II
b. Course Code: 00019302AE06
c. Prerequisite: Basic communication skills in Hindi
d. Rationale: Basic comprehensive skills Hindi

e. Course Learning Objective:

CLOBJ 1	Learn to recognize and write Devanagari script. Understand the basics of Gujarati pronunciation, including consonants, vowels, and pronunciation rules.
CLOBJ 2	Build a foundation of commonly used Gujarati vocabulary for everyday communication.
CLOBJ 3	Develop the ability to engage in simple conversations in Gujarati, including greetings, introductions, and expressing basic needs and preferences.
CLOBJ 4	Learn to read and understand simple texts in Gujarati, including signs, labels, short passages, and basic literature.
CLOBJ 5	Practice writing in Gujarati through exercises such as dictation, composition, and letter/email writing.

f. Course Outcomes:

CLO 1	Read and write Gujarati alphabets
CLO 2	Comprehend Gujarati language through listening
CLO 3	Introduce self in Gujarati language.
CLO 4	Communicate at elementary level in Gujarati.
CLO 5	To understand and use daily words in Gujarati

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs /Week	Tutorial Hrs/ Week	Lab Hrs /Week	Hrs /Week	Credit	T	CE	P	T	P	
2	-	-	-	2	-	100	-	-	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	અઘરા શબ્દો (Advanced vocabulary) • સંખ્યાઓ (Numbers) (51 onwards) • સમય (Telling time) શુભેચ્છાઓ (Greetings)	13%	4
2	શ્રવણ કૌશલ્ય (Listening Skills) • ટૂંકી વાા્ (Short Story) ટૂંકી વાર્ીીર્ (Short Conversation)	20%	6
3	બોલવાની કુશળતા (Speaking Skills) • પો્નો પરરચય (Self Introduction) • રોરરંદી વાર્ીીર્ (Day to day conversation) વG્ૃત્વ (Elocution)	27%	8

4	વાંચન કુશળતા (Reading Skills) • વાંચન સરમ (reading comprehension) • ટૂંકી વાા્ (Short Story) અખબાર નો લેખ (Newspaper article)	20%	6
5	લેખન કૌશલ્ય (Writing skills)	20%	6
	• પો્નો પરરચય (Self Introduction) ટૂંકો સંદેશ (Short message)		
	Total	**100%**	**30**

i. Text Book and Reference Book:

1.	All in One (English-Gujarati), Manoj Publications
2.	Gujarati Barakhadi by Sonika Agrawal, Published by Notion Press
3.	Varna Lekhan by Gujarati Books
4.	My first Gujarati alphabets by Priyal J., Published by My first Picture Book Inc.

Semester 02

a. Course Name: Introduction to Gender, Health and Rights

b. Course Code: 10010102UE01

c. Prerequisite: Basic understanding of social sciences and a commitment to engaging with issues related to gender and equality.

d. Rationale: The students will be able to learn skills necessary to understand, critique, and contribute to discussions on gender in diverse societal contexts. Provides a comprehensive and in-depth examination of gender-related issues, encompassing theoretical foundations, historical perspectives, and contemporary challenges

e. Course Learning Objective:

CLOBJ 1	Understand the foundational concepts of gender, including the distinction between gender and sex, the dynamics of gender roles, and the influence of patriarchy on societal structures.
CLOBJ 2	Analyze and critique the phenomenon of gender stereotyping, examining its impact on individuals and society, while also exploring feminist perspectives and strategies for challenging stereotypes.
CLOBJ 3	Evaluate the intersectionality of gender and health, considering both biological and social determinants, and recognize the implications for mental health issues within different gender contexts.
CLOBJ 4	Investigate gender disparities in access to healthcare and health outcomes, including the examination of gender-based inequalities, male-female sex ratios, and the impact of societal structures on health provision.
CLOBJ 5	Assess the concept and implementation of gender mainstreaming, tracing its origins, understanding its significance as a paradigm shift in policy-making, and examining the processes involved in integrating gender perspectives into various sectors of society.

f. Course Outcome:

CLO 1	Determine when sex and/or gender are and are not relevant to a health issue
CLO 2	Identify the importance of both sex and gender in health and healthcare.
CLO 3	Recognize the value of bringing multiple disciplines to bear on a given health question.
CLO 4	Imagine how sex/gender can provide innovative approaches to health.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	**-**	**-**	**4**	**4**	**20**	**20**	**-**	**60**	**-**	**100**

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Understanding Gender** Definitions and Concepts: gender and sex Gender roles Masculinity & Femineity Public and Private Distinction Patriarchy	20%	10

2	**Gender Stereotyping -** Stereotyping Feminism Gender Based Violence Case Study	20%	10
3	**Gender and Health** Biological Factors in Health Social Factors in Health Mental Health Issues	20%	10
4	**Gender approaches to health** Gender inequality and health Male Female Sex Ratio Access to Health care	20%	10
5	**Gender Mainstreaming** Concept and Origin Paradigm Shift Process of gender mainstreaming	10%	10
6	**Gender and rights** Origin and concept of rights Constitution and legislative safeguards, Women and rights	10%	10
	Total	**100%**	**60**

i. Text Book and Reference Book:

1.	Handbook on Gender and Health, Edited by Jasmine Gideon, Professor of Global Health and Development, School of Social Sciences, Birkbeck, University of London, UK
2.	Gender Equality and Human Rights, by Dr. Tanmoy Rudra
3.	Gender and Health: The Effects of Constrained Choices and Social Policies, by Chloe E. Bird and Patricia P. Rieker
4.	Gender, health communications and reproductive health in international development, by Dr. Carolina Matos
5.	Women, Gender, And Human Rights: A Global Perspective by Marjorie Agosin

Semester 02

a. Course Name: Life style Diseases & Management
b. Course Code: 09010102UE01Y
c. Prerequisite: Shall have the basic knowledge about lifestyle disease conditions.
d. Rationale: Will gain knowledge regarding lifestyle disease and its management

e. Course Learning Objective:

CLOBJ 1	Define and classify lifestyle diseases, analyze their risk factors, and evaluate their global health impact.
CLOBJ 2	Study cardiovascular diseases, Type 2 diabetes, obesity, and respiratory conditions, focusing on prevention, lifestyle interventions, and pharmacological management.
CLOBJ 3	Develop strategies for healthy dietary patterns, physical activity regimens, smoking cessation, and stress management techniques to prevent and manage lifestyle diseases.
CLOBJ 4	Evaluate the role of medications, adherence factors, emerging technologies, and digital tools in managing lifestyle diseases.
CLOBJ 5	Tailor interventions to cultural sensitivities, promote health equity, and explore government policies and community engagement strategies for lifestyle disease prevention.

f. Course Outcomes:

CLO 1	Obtain knowledge and understanding of health, nutrition, lifestyle and associated diseases
CLO 2	Identify the various causes and danger signs of lifestyle-associated disease such atherosclerosis, hypertension, stroke, diabetes, obesity, and Lung conditions.
CLO 3	Describe the techniques for diagnosing the illnesses and learn the fundamentals of how to interpret test results.
CLO 4	Clearly state the approaches to illness management, prevention, and treatment.
CLO 5	Identify healthy & unhealthy Lifestyle habits. Adopts Healthy Lifestyle for daily living.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Unit 1: Introduction to Lifestyle Diseases** Definition and classification of lifestyle diseases Common risk factors: diet, physical inactivity, tobacco use, alcohol consumption, stress Impact of lifestyle diseases on global health	7%	4
2	**Unit 2: Major Lifestyle Diseases Cardiovascular disease** Atherosclerosis and coronary artery disease Hypertension: causes, consequences, and management Heart failure and its prevention. Type 2 Diabetes Mellitus Pathophysiology and risk factors Blood glucose monitoring and glycemic control Lifestyle interventions and pharmacological management Obesity Causes and mechanisms of obesity Health consequences and comorbidities Weight management	16%	10

	strategies: diet, exercise, behavioral modifications. Respiratory Diseases (e.g., COPD) Relationship between smoking and lung health Breathing exercises and pulmonary rehabilitation Preventive measures and symptom management		
3	**Unit 3: Lifestyle Modifications for Disease Prevention and Management** Healthy dietary patterns and nutrient intake Physical activity guidelines and exercise regimens Smoking cessation and substance abuse interventions Stress management techniques and mindfulness practices	13%	8
4	**Unit 4: Pharmacological Interventions** Role of medications in lifestyle disease management Medication adherence and potential side effects Interaction between lifestyle modifications and drug therapy	12%	7
5	**Unit 5: Monitoring and Assessment** Regular health check-ups and screenings Tracking progress using biomarkers and health metrics Identifying early warning signs and red flags	10%	6
6	**Unit 6: Lifestyle Disease Prevention in Different Age Groups** Pediatric obesity and diabetes prevention adult health promotion: midlife and beyond Geriatric care and addressing age-related health challenges	12%	7
7	**Unit 7: Cultural Sensitivity and Diversity** Tailoring interventions to diverse populations Cultural factors influencing lifestyle choices Addressing disparities in lifestyle disease management	12%	7
8	**Unit 8: Public Health Strategies and Policies** Government initiatives for lifestyle disease prevention Promoting healthy environments and community engagement Advocacy for policy changes and health education campaigns	12%	7
9	**Unit 9: Emerging Technologies and Future Trends** Digital health tools for monitoring and tracking Telemedicine, mHealth and remote patient management	6%	4
	Total	**100%**	**60**

i. Text Book and Reference Book:

1.	Park Textbook of Preventive and Social Medicine, K Park, 21 st Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS (TextBook)
2.	LIFESTYLE DISEASES
3.	Guide To Prevention of Lifestyle Diseases
4.	Brunner & Suddarth's textbook of medical-surgical nursing (TextBook)

Semester 02

a. Course Name: Human Psychology
b. Course Code: 15010402UE01
c. Prerequisite: Shall have the basic knowledge of human biology and English language
d. Rationale: Students will have basic understanding of different concepts of Psychology and various mental processes.

e. Course Learning Objective:

CLOBJ 1	Define and differentiate growth, development, maturation, and evolution, and analyze factors and stages influencing human development
CLOBJ 2	Examine sensory processes, types of attention, and perceptual mechanisms, including depth perception and common visual illusions.
CLOBJ 3	Analyze cognitive processes such as reasoning, decision-making, and strategies for enhancing creative thinking while overcoming barriers.
CLOBJ 4	Investigate key theories like Multiple Intelligence and Emotional Intelligence, alongside major personality approaches and assessment techniques.
CLOBJ 5	Understand gender theories, human sexual behavior, and psychological and physical aspects of sexuality, including challenges such as dysfunctions.

f. Course Outcomes:

CLO 1	Differentiate between scientific and non-scientific information about human behaviour and mental processes.
CLO 2	Describe the role of nature and nurture in the development of human beings.
CLO 3	Explain psychological processes involved in sensation, perception and thinking.
CLO 4	Describe models of personality and its approaches.
CLO 5	Analyze the factors affecting psychological concepts pertaining to sexuality and gender.
CLO 6	Apply the principles of psychology for the modification of their personality.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Unit I Human Development** Meaning, Difference between Growth, Development, Maturation and Evolution Factors Influencing Development Overview of Developmental stages Prenatal stage Infancy Childhood Challenges of Adolescence Adulthood Old Age	17%	10

2	**Unit II Sensation, Attention & Perception** Sensation: Definition, types Attention: Definition, Types	17%	10
	Perception: Figure-Ground perception, perceptual constancies: shape, size, brightness; Depth perception: monocular and binocular cues; illusions		
3	**Unit III Thinking** Nature and Processes Problem Solving Reasoning Decision Making Developing Creative Thinking Barriers to Creative Thinking Strategies for Creative Thinking	17%	10
4	**Unit IV Intelligence** Theories of Intelligence Multiple Intelligence theory Triarchic Theory of Intelligence PASS Model of Intelligence Individual Differences in Intelligence Emotional Intelligence	17%	10
5	**Unit V Personality** Concept of Self and Personality Major Approaches of Personality Trait & Type Approaches Five-Factor Model Psychodynamic Approach Behavioural Approach Humanistic Approach Assessment of Personality Self-report Measures Projective Techniques	16%	10
6	**Unit VI Sexuality and Gender** Physical and psychological side of psychology Gender theories Human sexual behavior Sexual dysfunction and problems	16%	10
	Total	**100%**	**60**

i. Text Book and Reference Book:

1.	Introduction to psychology By Baron R | McGraw Hill Publishing House, New Delhi
2.	Psychology By Ciccarelli, S. K. & Meyer, G. E. (2008), | Pearson Education
3.	Introduction to Psychology By Clifford.T Morgan | Tata Mcgraw Hill
4.	Social Psychology By Baron. R.A., Byrne, D & Bhardwaj. | New Delhi: Pearson

Semester 02

a. Course Name: Biomechanics
b. Course Code: 07010102UE01
c. Prerequisite: There is no Prerequisite to opt this Course
d. Rationale: This course provides an introduction to the fundamental concepts Biomechanics and Kinesiology, focusing on the normal human body and joint mechanics. Students will explore biomechanical principles, identify abnormal biomechanics, learn techniques to analyze biomechanical faults and restore normal biomechanics.

e. Course Learning Objective:

CLOBJ 1	Define key concepts in kinematics and kinetics, including motion, forces, and their translatory and rotational effects
CLOBJ 2	Evaluate the design, properties, and changes in human joints due to disease, injury, exercise, and overuse.
CLOBJ 3	Study muscle structure, tension, classification, and factors affecting function, including immobilization, injury, and aging.
CLOBJ 4	Investigate static and dynamic postures and gait characteristics, focusing on kinetic and kinematic analysis for optimal movement.
CLOBJ 5	Analyze biomechanical principles of the upper and lower limbs, spine, and dysfunctions caused by abnormal biomechanics.

f. Course Outcomes:

CLO 1	Understand key concepts of Kinesiology & Biomechanics
CLO 2	Identify common pathologies and abnormal biomechanics.
CLO 3	Apply principles of biomechanics to sports and rehabilitation
CLO 4	Develop awareness of Biomechanical disorders.
CLO 5	Learn techniques to analyze biomechanical faults and restore normal biomechanics.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
					Internal Marks			**External Marks**		**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Basic concepts of biomechanics** Introduction - Kinematics and Kinetics Kinematics: Description of motion, Introduction to forces, Introduction to Statics & Dynamics, Translatory motion in linear & concurrent force systems, Additional linear force considerations Kinetics: Moment of force, Muscle forces, Torque resisted, Lever systems, Force components, Translatory effects of force components, Total rotation produced by a force	10%	6

2	**Joint structure and function:** Joint design, materials found in human joints, general properties of connective tissue, complexity of human joint design, kinematic chains and joint motion, general changes with disease, injury, immobilization, exercise, and overuse	10%	6
3	**Muscle structure and function:** Elements of muscle structure, muscle tension, classification of muscles, factors affecting muscle function, effects of immobilization, injury, and aging	10%	6
4	**Biomechanics of the posture** Static and dynamic postures, kinetics and kinematics of posture, optimal posture, analysis of standing, sitting and lying posture	10%	6
5	**Biomechanics and gait** Introduction to normal gait (major task of gait & phases of gait cycle), gait terminology, characteristics of normal gait, kinetic and kinematics of gait	10%	6
6	**Overview of biomechanics of upper limb** Biomechanics of Shoulder complex, elbow and hand & wrist	15%	9
7	**Overview of biomechanics of lower limb** Biomechanics of Hip, Knee, ankle & foot	15%	9
8	**Overview of biomechanics of spine** Biomechanics of Cervical, Thorax & lumbar spine	15%	9
9	**Overview of abnormal Biomechanics** Disfunction Produced due to abnormal Biomechanics	5%	3
	Total	**100%**	**60**

i. Text Book and Reference Book:

1.	Joint Structure & Function: comprehensive analysis By P.K.Levangie | Jaypee Brothers Medical Publishers (P) Ltd
2.	Kinesiology: The Mechanics & Patho mechanics of Human Movement By Carol A.Oatis | Lippincott Williams & Wilkins
3.	Brunnstrom's Clinical Kinesiology By Laura K.Smith | Jaypee Brothers Medical Publishers (P) Ltd
4.	Biomechanical Basis of Human Movement By Joseph Hamill | Lippincott Williams & Wilkins
5.	A Text Book of BIOMECHANICS (TextBook) By Arunjit Singh , Pritpal Singh
6.	INTRODUCTORY BIOMECHANICS By Andy Kerr

Semester 02

a. Course Name: **Public Health Nutrition**
b. Course Code: **19010202UE01**
c. Prerequisite: Basic knowledge of Nutrition and Public Health.
Public health nutrition is the field of study that is concerned with promotion. of good health through prevention of nutrition–related illnesses or deficiencies in the population, and the government
d. Rationale: Policies and programmes that are aimed at solving these problems. This course aims to provide an overview of public health nutrition, nutritional problems of public health significance and programmes to tackle nutritional problems.

a. Course Learning Objective:

CLOBJ 1	Explore the history, role of nutrients, nutritional adequacy across life stages, and nutritional status assessment techniques.
CLOBJ 2	Identify the etiology, prevalence, and management of macro- and micronutrient deficiencies, along with the relationship between nutrition and non-communicable diseases.
CLOBJ 3	Examine national and global initiatives, including the UN Decade of Action on Nutrition and Sustainable Development Goals, to promote nutrition-centric development.
CLOBJ 4	Assess factors influencing food security, dietary patterns, and their implications for health and nutrition at individual and societal levels.
CLOBJ 5	Formulate programmatic and community-based approaches, focusing on interventions like food fortification, supplementary feeding, and behavior-change education.

b. Course Outcomes:

CLO 1	Understand the global and national burden of nutritional deficiencies
CLO 2	Identify the determinants for dietary habits and relate these to individual, social, cultural and economic factors
CLO 3	Describe the most important public health nutrition problems in high-income and low-income countries respectively, and discuss long term and short-term countermeasures
CLO 4	Identify and discuss the role and impact of different policy documents, international agreements and regulations of importance for public health nutrition activities on a national and international level
CLO 5	Search and compile scientific material in the field of public health nutrition

c. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	2	5	4	20	20	20	60	30	150

d. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to public health nutrition** History of the development of nutrition science Understanding the role of food and nutrients for health Nutrition Transition:	30%	12

	Demographic, economic transition, poverty alleviation, food consumption patterns Determinants of nutritional status of individual & populations The need and adequacy of nutrients including the nutritional adequacy of various physiological groups according to the life cycle (from preconception to the elderly) Nutritional status assessment –MUAC, Weight for age, Height for age, Weight for height, BMI Definitions of various nutrition and health indicators		
2	**Major nutrition deficiencies as public health challenge** 2.1 Undernutrition: global and Indian prevalence of undernutrition, risk factors consequences 2.2. Major nutritional Problems – etiology, prevalence, clinical manifestations, preventive and therapeutic measures for: Macro and micro nutrient deficiencies. 2.3. Other nutritional problems- etiology, prevalence, clinical manifestations, preventive and therapeutic measures for: lathyrism, dropsy, aflatoxicosis, alcoholism and fluorosis. 2.4. Nutrition and non-communicable diseases – Overweight, obesity and chronic degenerative diseases	30%	12
3	**National nutrition programmes and policies** 3.1. Programmes and policies on nutrition and health (National and Global) 3.2. United Nations (UN) Decade of Action on Nutrition (2016 - 2025) 3.3. Overview of Sustainable Development Goals (SDGs) - keeping Nutrition at centre stage	10%	05
4	**Food and nutrition security** 4.1. Factors affecting food security, indicators and systems (Global & national) 4.2. Identification and measurement of food insecurity (FIA, ISMAP) 4.3. Food production, access, distribution, availability, losses and consumption 4.4. Socio-cultural aspects of dietary patterns and their implications for nutrition and health	10%	05
5	**Approaches and Strategies for improving nutritional status and health** 5.1. Programmatic approaches, their advantages and demerits, feasibility, and available resources 5.2. Health-based interventions, food-based interventions including: Fortification and genetic improvement of foods, supplementary feeding, nutrition education for behaviour change 5.3. Case studies: Community-based preventive and management programmes; screening approaches, etc.	20%	11
	Total	**100%**	**45**

e. List of Practical

Sr.	Topics
1	Public health nutrition Nutritional status assessment –MUAC, Weight for age, Height for age, Weight for height, BMI

2	Nutrition deficiencies as public health challenge 1. Global and Indian prevalence of undernutrition, risk factors consequences. 2. Nutritional problems- aetiology, prevalence, clinical manifestations, preventive and therapeutic measures for: lathyrism, dropsy, aflatoxicosis, alcoholism and fluorosis. 3. Nutrition and non-communicable diseases – Overweight, obesity and chronic degenerative diseases
3	Nutrition programmes and policies 1. Sustainable Development Goals (SDGs) - keeping Nutrition at centre stage 2. Programmes and policies on nutrition and health
4	Food and nutrition security 1. Visit to Public Health Lab, VMC.
5	Approaches and Strategies for improving nutritional status and health 1. Health-based interventions, food-based interventions 2. Case studies: Community-based preventive and management programmes; screening approaches

f. Text Book and Reference Book:

1.	Sharda Gupta, Santosh Jain Passi, Rama Seth, Ranjana Mahna & Seema Puri Kumud Khanna, Nutrition and Dietetics, 2014 (Textbook)
2.	Michael J. Gibney, Barrie M. Margetts, John M. Kearney, Lenore Arab, Public Health Nutrition, Wiley India Pvt. Ltd (Textbook)
3.	Park Textbook of Preventive and Social Medicine, K Park, 21 st Edition, 2011, ISBN-14: 9788190128285, banarsidas bhanot publishers (Textbook)

Semester 02

a. Course Name: Mathematical Aptitude
b. Course Code: 00019102SE01
c. Prerequisite: Basic numeracy skill
d. Rationale: Mathematical aptitude refers to the ability to reason, think critically, and apply mathematical principles to solve problems and make sense of the world around us.

e. Course Learning Objective:

CLOBJ 1	Master core concepts like HCF, LCM, square/cube roots, ratios, and proportions, along with efficient shortcut methods for percentages, averages, and partnerships.
CLOBJ 2	Solve problems involving time and work, distance, boats and streams, mixtures, and logarithms, demonstrating real-world application of mathematical concepts.
CLOBJ 3	Understand progressions (AM, GM, HM), series, interest calculations (simple and compound), profit-loss, quadratic and linear equations, and probability.
CLOBJ 4	Evaluate problems involving mensuration (area, perimeter, volume, surface area) and analyze grouped and ungrouped data using metrics like mean and standard deviation.
CLOBJ 5	Utilize tools like tabulation, bar graphs, pie charts, and line charts for precise data representation and decision-making.

f. Course Outcomes:

CLO 1	Analyse and interpret mathematical problems, devise appropriate strategies, and apply relevant mathematical concepts and techniques to find solutions.
CLO 2	Comprehend and manipulate numerical information effectively, make accurate calculations, and interpret numerical data in various contexts.
CLO 3	Think critically and logically, recognize patterns and relationships, and construct logical arguments using mathematical principles.
CLO 4	Apply these concepts and techniques to solve real-world situations

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
2	-	-	-	2	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Unit-1Numbers, HCF & LCM, Square Root & Cube Root, Ratio & Proportion, Permutations & Combinations, Percentage, Average-Shortcut averages, Partnership, Time -work & distance, Boats & streams, Mixtures, Logarithms	40%	12
2	Unit-2Progression (AM, GM, HM), Series, Interest (S.I. & C.I.) and depreciation rate, Profit-Loss & Discount, Equations (Linear & Quadratic), Probability.	40%	12
3	Unit-3Mensuration I (Area & Perimeter), Mensuration II(Volume & Surface area), Grouped Data, Ungrouped Data (Mean and Standard Deviation) Data interpretation: (Tabulation, Bar Graph, Pie Chart, Line Chart).	20%	6
	Total	**100%**	**30**

i. Text Book and Reference Book:

1.	Quantitative Aptitude for Competitive Examinations (TextBook) By D. Khattar |
	Person Indian Education Service
2.	Verbal Reasoning and Non - Verbal Reasoning (TextBook) By B. S. Sijwali and Indu Sijwali | New Delhi: Arihant
3.	Quantitative Aptitude for Competitive Examinations By R. S. Aggarwal | S. Chand Publishing,

Semester 02

a. Course Name: **IPDC including history and culture of India and IKS-I(T)**

b. Course Code: 00019302VA01

c. Prerequisite: Knowledge of up to 12th science level and must Passed

d. Rationale: IPDC aims to prepare students for the modern challenges they face in their daily lives. Promoting fortitude in the face of failures, Unity amongst family discord, Self-discipline amidst Distractions... and many more priceless lessons.

e. Course Learning Objective:

CLOBJ 1	The course aims to familiarize participants with the foundational principles, major schools of thought, and key figures in Indian philosophy and culture.
CLOBJ 2	Participants will delve into the core concepts, methodologies, and practices of Indian Knowledge Systems (IKS-I).
CLOBJ 3	The course provides insights into the historical context in which Indian philosophy and culture evolved, including the influences of various empires, kingdoms, invasions, and socio-cultural movements.
CLOBJ 4	Participants will explore the role of cultural diplomacy in international relations and its significance in fostering mutual understanding, cooperation, and peaceful coexistence among nations.
CLOBJ 5	In addition to academic knowledge, the course seeks to enhance participants' diplomatic skills, including communication, negotiation, and intercultural competence.

f. Course Outcomes:

CLO 1	To provide students with a holistic value-based education that will enable them to be
CLO 2	successful in their academic, professional, and social lives.
CLO 3	To give the students the tools to develop effective habits, promote personal growth, and
CLO 4	improve their well-being, stability, and productivity.
CLO 5	To allow students to establish a stronger connection with their family through critical

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
2	-	-	2	2	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction and Remaking Yourself** Restructuring Yourself: Students learn how self-improvement enables them to secure a bright future for themselves. They will learn 6 powerful thought-processes that can develop their intellectual, physical, emotional, and spiritual quotients	7%	2
2	**Remaking Yourself** Power of Habit: Students will undergo a study of how habits work, the habits of successful professionals, and the practical techniques that can be used to develop good habits in their life.	7%	2
3	**Learning from Legends**	7%	2

	Tendulkar & Tata: Students will learn from the inspirational lives of India's two legends, Sachin Tendulkar and Ratan Tata. They will implement these lessons through relatable case studies.		
4	**From House to Home** Listening & Understanding: Active listening is an essential part of academic progress and communications. Students will learn to listen with their eyes, ears, mind, and heart.	7%	2
5	**Facing Failures** Welcoming Challenges: This lecture enables students to revisit the way in which they approach challenges. Through the study of successful figures such as Disney, Lincoln and Bachchan, students will learn to face difficulties through a positive perspective.	7%	2
6	**Facing Failures** Significance of Failures: Failure is a student's daily source of fear, negativity, and depression. Students will be given the constructive skills to understand failure as formative learning experiences.	7%	2
7	**My India My Pride** Glorious Past - Part 1: India's ancient Rishis, scholars, and intellectuals have made tremendous. contributions to the world, they developed an advanced, sophisticated culture and civilization which began. thousands of years ago. Students will learn the importance of studying India's glorious past so that they could develop a strong passion and pride for our nation.	7%	2
8	**My India My Pride** Glorious Past - Part 2: Our ancient concepts can be used to seek revolutionary ideas and to generate inspiration. Students will develop a deeper interest in India's Glorious Past – by appreciating the need to read about it, research it, write about it, and share it.	7%	2
9	**Learning from Legends** A.P.J. Abdul Kalam: Dr Kalam's inspirational life displayed legendary qualities which apply to students (1) Dare to Dream (2) Work Hard (3) Get Good Guidance (4) Humility (5) Use Your Talents for the Benefit of Others	7%	2
10	**Soft Skills** Networking & Leadership: Students are taught the means of building a professional network and developing a leadership attitude.	7%	2
11	**Soft Skills** Project Management: Students will learn the secrets of project management through the Akshardham case study. They will then practice these skills through an activity relevant to student life.	6%	2
12	**Remaking Yourself** Handling Social Media: Students will learn how social media	6%	2

	can become addictive and they will imbibe simple methods to take back control.		
13	**Facing Failures** Power of Faith: Students will learn about the power and necessity of faith in our daily lives.	6%	2
14	**From House to Home** Bonding the Family: Students will understand the importance of strong family relationships. They will learn how to overcome the generation gap and connect with their family more.	6%	2
15	**Selfless Service Seva:** Students will learn that performing seva is beneficial to one's health, wellbeing, and happiness. It also benefits and inspires others.	6%	2
	Total	**100%**	**30**

i. Text Book and Reference Book:

1.	**Integrated Personality Development Course (Textbook)** By Bochasanwasi Akshar Purushottam Swaminarayan Sanstha

Semester 02

a. Course Name: **Basic Techniques of Anaesthesia (T)**
b. Course Code: 19011302AC01
c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level and must Passed with semester 1
d. Rationale: To address the increasing demand for specialized healthcare professionals capable of administering anesthesia, managing critical care settings, and ensuring patient safety and quality of care in surgical and intensive care settings.

e. Course Learning Objective:

CLOBJ 1	To get an understanding of different techniques of anesthesia
CLOBJ 2	Students understand the Basic anaesthetic equipment
CLOBJ 3	To explain the rational selection of regional anesthesia techniques and the choice of local anaesthesia.
CLOBJ 4	To understand the depth of general anesthesia and its mechanism
CLOBJ 5	To learn about different drugs commonly used in OT

f. Course Outcomes:

CLO 1	Execute theoretical knowledge and practical skills to administer various anesthesia techniques in simulated and clinical settings.
CLO 2	Critically assess patient histories to make informed decisions regarding the choice of anesthesia, considering indications, contraindications, and potential complications
CLO 3	Evaluate and prioritize patient safety throughout the anesthesia process, from pre-assessment to post-operative care.
CLO 4	Create integrated plans for anesthesia administration considering patient-specific factors, procedural requirements, and safety measures.
CLO 5	Collaborate with other healthcare professionals to address interdisciplinary aspects of anesthesia, fostering effective communication and teamwork in the healthcare setting.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Local Anesthesia** • Introduction and overview • Indication • Local Anesthesia Techniques • Drugs Used In L.A • Contraindication • Complications	15%	09

2	**General Anesthesia** • Introduction about General anesthesia • Indication • Positioning • Phases of G.A	25%	09
	• Contraindication • Complications		
3	**Regional Anesthesia** Spinal Anesthesia • Introduction of Spinal Anesthesia • Indication • Positioning • Technique • Contraindication • Complications	20%	09
4	Epidural Anesthesia • Introduction of Epidural Anesthesia • Indication • Positioning • Technique • Contraindication	20%	09
5	Nerve Blocks • Introduction of Nerve Blocks • Types of Nerve Block • Indication • Positioning • Technique • Contraindication • Complications	20%	09
	Total	**100%**	**45**

i. Text Book and Reference Book:

1.	Anaesthesia Manual-A. A Pillai
2.	Lee synopsis (Handbook of Anaesthesia)
3.	Clinical Anesthesiology by Morgan
4.	Text Book of anesthesia by Ajay Yadav
5.	Anesthesia equipment's and Drugs by AK Paul

Semester 02

a. Course Name: **Basic Techniques of Anaesthesia (P)**
b. Course Code: **19011302AC02**
c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level and must Passed with semester 1
d. Rationale: To address the increasing demand for specialized healthcare professionals capable of administering anesthesia, managing critical care settings, and ensuring patient safety and quality of care in surgical and intensive care settings.

e. Course Learning Objective:

CLOBJ 1	Understand the fundamental principles and concepts of local anesthesia, including its purpose, indications, techniques, and the drugs commonly used.
CLOBJ 2	Demonstrate proficiency in administering local anesthesia through various techniques while ensuring patient safety and comfort.
CLOBJ 3	Identify contraindications and potential complications associated with the use of local anesthesia and develop strategies for their prevention and management.
CLOBJ 4	Gain comprehensive knowledge of general anesthesia, its indications, phases, and the essential considerations in patient positioning during administration.
CLOBJ 5	Develop skills in recognizing and managing complications arising from general anesthesia, thereby ensuring optimal patient outcomes and safety.

f. Course Outcomes:

CLO 1	Students will be able to proficiently administer local anesthesia using appropriate techniques and drugs, ensuring effective pain management during dental procedures.
CLO 2	Students will demonstrate an understanding of the indications, contraindications, and potential complications associated with local anesthesia, enabling them to make informed clinical decisions.
CLO 3	Upon completion of the course, students will exhibit competency in administering general anesthesia, including proper patient positioning and monitoring throughout the anesthesia process.
CLO 4	Students will recognize and appropriately manage complications that may arise during or after general anesthesia, thereby ensuring patient safety and well-being.
CLO 5	Upon completion of the course, students will be able to apply regional anesthesia techniques such as spinal anesthesia, epidural anesthesia, and nerve blocks, understanding their indications, techniques, and potential complications.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	• Local anesthesia techniques • Identification of drugs • Routes of administrations	50%	06

2	• Laryngoscope • ETT • O.T Table	25%	12
	• Bougie • Stylet • Airway Examination • Nerve Stimulator		
3	• Equipment's • Positioning • Spinal needles • Part Preparation • Inspection of the site • Catheter Removal • Epidural Set	25%	12
4	**Nerve Block** • Introduction of Nerve Blocks • Types of Nerve Block • Indication • Positioning • Technique • Contraindication • Complications	20%	10
	Total	**100%**	**40**

i. Text Book and Reference Book:

1.	Anaesthesia Manual-A. A Pillai
2.	Lee synopsis (Handbook of Anaesthesia)
3.	Clinical Anesthesiology by Morgan
4.	Text Book of anesthesia by Ajay Yadav
5.	Anesthesia equipment's and Drugs by AK Paul

Semester 02

a. Course Name: **Basics of Surgical Procedures (T)**

b. Course Code: 19010902OT01

c. Prerequisite: Knowledge of up to 12th science level and must Passed

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOBJ 1	To develop skill like how to manage Preoperative & Post-operative.
CLOBJ 2	To understand various procedure like bed making, Lifting and Transporting Patients, Bed Side Management.
CLOBJ 3	To know the determinants of Health, Health Indicators of India, Health Team Concept.
CLOBJ 4	To understand the population of India and Family welfare programme in India
CLOBJ 5	To understand the different types, use, care and management of biomedical waste.

f. Course Outcomes:

CLO 1	Define the responsibility of health care personals and hazards faced in the operation theatre& casualty
CLO 2	Discuss and explain the different types, use, care and maintenance of the surgical procedures and instruments
CLO 3	Demonstrate the different types, use, care and maintenance of the management of biomedical waste
CLO 4	Analyze the responsibility of health care personals and hazards faced in the operation theatre& casualty
CLO 5	Evaluate the various techniques used in operation theatres& casualty

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**BLOOD TRANSFUSION** • History of discovery of blood groups and genetics of blood groups. • Types of blood groups and Rh factor. • Coombs test. • Collection of blood, its preservation and standardization. • Various types of blood and blood products (Packed cells, PRP, FFP) • Pre-transfusion checks. • Transfusion reactions. • Fluids and electrolytes • Body fluid compartments and the effect of fluid administration on them. • Types of fluids (crystalloids and colloids) and their	33%	15
	chemical composition. Indications of specific fluids and their complications.		
2	**GENERAL SURGICAL PROCEDURE AND PARA-SURGICAL EQUIPMENT** • Operating tables: structure, material used, maintenance, control, Hydraulic system and Electrical system. • Different types of diathermy machine. Monopole, Bipolar, Ligasure, Harmonic Scalpel, CUSA- Principle, hazards, • prevention, functioning and maintenance. • Types of operation lights and light sources: Features, Care, cleaning, sterilization and maintenance. • Operation Theatre sterilization- Different recent advances. • LAR/APR--Positioning of patient, care-Prevention of hazards. • Total thyroidectomy—with emphasis on proper positioning. • Transthoracic esophagectomy—Different approaches. • Venesection and Tracheostomy. • Laparoscopic Cholecystectomy – Pneumoperitoneum - Creation and removing, principles. • Breast surgery. • Positioning of patient for different operations: Problems and hazards. Hypothermia and hyperthermia.	45%	15
3	**COMMON INFECTIONS** • Cellulitis, abscess, carbuncle, gangrene, cold abscess • Wound and wound healing • Wound infection and management • Ulcers and Management • Common neoplastic disorders benign and malignant • Antiseptic Solutions • Dressing material Bandage application	22%	15
	Total	**100%**	**45**

i. Text Book and Reference Book:

1.	Operation theatre technique anaesthesia and emergency care for technicians, nurses & paramedics

2.	By Vaishali Mohod
3.	Textbook of Operation Theatre Technology

Semester 02

a. Course Name: **Basics of Surgical Procedures (P)**

b. Course Code: 19010902OT01

c. Prerequisite: Knowledge of up to 12th science level and must Passed

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOB J 1	To develop skill like how to manage Preoperative & Post-operative.
CLOB J 2	To understand various procedure like bed making, Lifting and Transporting Patients, Bed Side Management.
CLOB J 3	To know the determinants of Health, Health Indicators of India, Health Team Concept.
CLOB J 4	To understand the population of India and Family welfare programme in India
CLOB J 5	To understand the different types, use, care and management of biomedical waste.

f. Course Outcomes:

CLO 1	Define the responsibility of health care personals and hazards faced in the operation theatre& casualty
CLO 2	Discuss and explain the different types, use, care and maintenance of the surgical procedures and instruments
CLO 3	Demonstrate the different types, use, care and maintenance of the management of biomedical waste
CLO 4	Analyze the responsibility of health care personals and hazards faced in the operation theatre& casualty
CLO 5	Evaluate the various techniques used in operation theatres & casualty

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Blood Transfusion	7%	1
2	Suturing	8%	2
3	Wound infection and management	7%	1
4	Ulcers and Management	8%	1
5	Common neoplastic disorders benign and malignant	7%	1
6	Antiseptic Solutions	8%	1
7	Dressing material Bandage application	8%	1
8	General instruments and equipment	7%	1
9	Urology instruments and equipment's maintenance	6%	1

10	Laparotomy instruments and equipment's maintenance	7%	1
11	Sterilization	7%	1
12	OT Fumigation and OT maintenance	7%	1
13	Stock & record maintenance of OT & Recovery	6%	1
14	Record Management: Maintenance of Anaesthesia cards as per	7%	1
	National guidelines.		
	Total teaching hours for the academic year	**100%**	**15**

i. Text Book and Reference Book:

1.	Operation theatre technique anaesthesia and emergency care for technicians, nurses & paramedics
2.	By Vaishali Mohod
3.	Textbook of Operation Theatre Technology

Semester 02

a. Course Name: **Artificial Intelligence (T)**
b. Course Code: 03010502AM01
c. Prerequisite: Basic knowledge of computer
d. Rationale: This subject with help students to understand fundamental concepts of Artificial Intelligence domain

e. Course Learning Objective:

CLOBJ 1	Understand the fundamentals of artificial intelligence, including its definition, history, and various subfields.
CLOBJ 2	Gain proficiency in machine learning techniques, including supervised, unsupervised, and reinforcement learning.
CLOBJ 3	Develop skills in natural language processing (NLP), including text processing, sentiment analysis, and language generation.
CLOBJ 4	Understand the ethical implications of AI technologies, including bias, fairness, and accountability.
CLOBJ 5	Analyze real-world AI applications across various domains, including healthcare, finance, and autonomous systems.

f. Course Outcomes:

CLO 1	Understand AI Problems and Apply Various Techniques for Problem Solving.
CLO 2	Solve Game Playing Problems.
CLO 3	Design Artificial Neural Network.
CLO 4	Understand how Expert System is designed and how Knowledge Engineering works.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction:** Overview and Historical Perspective, • Artificial Intelligence (AI) definition, Goals of AI, History of AI, Applications of AI, Agents, Difference between human intelligence vs. artificial intelligence	10%	7
2	**Agents and Environments:** Agent Terminology, Types of Agents &minuses; Simple Reflex Agents, Model Based Reflex Agents, Goal Based Agents, Nature of Environments, Properties of Environments	25%	10
3	**Search Algorithms:** Terminology, Brute Force Search Strategies − Breadth First Search, Depth First Search. Heuristic Search Strategies, Local Search Algorithms.	25%	10
4	**Fuzzy Logic Systems:** Introduction to Fuzzy Logic and Fuzzy systems, Membership functions, Fuzzification, Defuzzification	20%	9

5	**Neural Networks:** Basic structure of Neural Networks, Neural Network Elements,	20%	9
	Perceptron, Back-propagation, Application of neural network		
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Artificial intelligence: a new synthesis, harcourt publishers by n. J. Nilsson | harcourt publishers clinical ophthalmology: a systematic approach" by jack j. Kanski and brad bowling
2.	Artificial intelligence (textbook)by elaine rich and kevin knight | tata mcgraw-hill
3.	Artificial intelligence: a modern approach by stuart j. Russell and peter norvig | pearson education limited

Semester 02

a. Course Name: **Artificial Intelligence (P)**
b. Course Code: 03010502AM02
c. Prerequisite: Basic knowledge of computer
d. Rationale: This subject with help students to understand fundamental concepts of Artificial Intelligence domain

e. Course Learning Objective:

CLOBJ 1	Understand the fundamentals of artificial intelligence, including its definition, history, and various subfields.
CLOBJ 2	Gain proficiency in machine learning techniques, including supervised, unsupervised, and reinforcement learning.
CLOBJ 3	Develop skills in natural language processing (NLP), including text processing, sentiment analysis, and language generation.
CLOBJ 4	Understand the ethical implications of AI technologies, including bias, fairness, and accountability.
CLOBJ 5	Analyze real-world AI applications across various domains, including healthcare, finance, and autonomous systems.

f. Course Outcomes:

CLO 1	Understand AI Problems and Apply Various Techniques for Problem Solving.
CLO 2	Solve Game Playing Problems.
CLO 3	Design Artificial Neural Network.
CLO 4	Understand how Expert System is designed and how Knowledge Engineering works.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
					Internal Marks			**External Marks**		**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Total Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	a. Write a program to implement Tic Tac Toe game. b. Write a program to implement 8 Puzzle problem. c. Write a program to implement Water Jug Problem. d. Write a program to implement Travelling Salesman Problem	50%	10
2	a. Write a program to implement N Queens Problem. b. Write a prolog program to Calculate Factorial.	25%	10
3	a. Write a prolog program to Create Fibonacci Series. b. Write a prolog program for Temperature Conversion. c. Write a prolog program to Calculate Palindrome. d. Write a prolog program to Create a text file.	25%	10
	Total	**100%**	**30**

i. Text Book and Reference Book:

1.	Artificial intelligence: a new synthesis, harcourt publishers by n. J. Nilsson | harcourt publishers clinical ophthalmology: a systematic approach" by jack j. Kanski and brad bowling
2.	Artificial intelligence (textbook)by elaine rich and kevin knight | tata mcgraw-hill
3.	Artificial intelligence: a modern approach by stuart j. Russell and peter norvig | pearson education limited

Semester 02

a. Course Name: **Nanomaterials for Biomedical applications**

b. Course Code: 03011302NT01

c. Prerequisite: Knowledge of basic principles in chemistry and biology to comprehend the interdisciplinary nature of nanomaterials' interaction with biological systems.

d. Rationale: This course will equip the students with the knowledge and skills needed to understand and harness the ground breaking potential of nanomaterials in revolutionizing the biomedical industry, fostering innovation in the biomedical field.

e. Course Learning Objective:

CLOBJ 1	Understand nanomaterial synthesis, characterization, and manipulation for healthcare applications.
CLOBJ 2	Evaluate nanomaterial strengths, limitations, and uses in healthcare contexts.
CLOBJ 3	Analyze nanomaterial mechanisms in biological systems for optimized biomedical applications.
CLOBJ 4	Anticipate long-term impacts of advanced nanomaterials on healthcare and biology.
CLOBJ 5	Design innovative healthcare solutions using nanomaterial technology

f. Course Outcomes:

CLO 1	Familiarity with working principles, tools and techniques in the field of nanomaterials.
CLO 2	Understand the strengths, limitations and potential uses of nanomaterials in healthcare.
CLO 3	Understand the mechanisms and principles of advanced nanomaterials for different biomedical applications.
CLO 4	Anticipate the long-term impact of the advanced materials on biomedical applications.
CLO 5	Design a solution based on nanomaterial technology for a given need in the field of healthcare and biology.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	1	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Nano biomaterials And Biocompatibility:** Surface and Bulk Properties of Bio materials – Nano biomaterials –Nanoceramics – Nano polymers – Nano Silica – Hydroxy apatite – Carbon Based nanomaterials, Surface modification – Textured and Porous Materials – Surface immobilized biomolecules – Cell-biomaterial interactions – immune response – In Vitro and In Vivo assessment of tissue compatibility	34%	15

2	**Structural & Functional Principles of Bio nanotechnology:** Lipid Bilayers – Liposomes – Endosomes - Phytosomes, Polysaccharides – Peptides –Nucleic acids – DNA scaffolds –Enzymes- Biomolecular motors, Immunotoxins – Membrane	26%	12
	transporters and pumps – Antibodies – monoclonal Antibodies – immunoconjugates – limitations of natural biomolecules		
3	**Nano bio-Analytics:** Luminescent Quantum Dots for Biological Labeling – Nanoparticle Molecular Labels – Surface Biology: Analysis of Biomolecular Structure by Atomic Force Microscopy and Molecular Pulling – Force Spectroscopy – Biofunctionalized Nanoparticles for Surface – Enhanced Raman Scattering and Surface Plasmon Resonance – Bio conjugated Silica Nanoparticles for Bioanalytical Applications	24%	11
4	**Nanomaterials in Tissue Engineering:** Scaffold design and fabrication - Cellular interactions with nanomaterials - Nanomaterials for enhanced tissue regeneration	16%	7
	Total	**100%**	**45**

i. Text Book and Reference Book:

1.	**Nanobiotechnology: Concepts, applications and perspectives** By C.M. Niemeyer, C.A. Mirkin | Wiley India limited., Pub. Year 2004
2.	**Bio nanotechnology: Lessons from Nature** By David S. Goodsell | Wiley-Liss, 2004
3.	**Bio-Nanotechnology: A Revolution in Food, Biomedical and Health Sciences** By Debasis Bagchi, Manashi Bagchi, Hiroyoshi Moriyama, Fereidoon Shahidi | Wiley-Blackwell, Pub. Year 2013
4.	**Biomaterials Science: An Introduction to Materials in Medicine** By Buddy D. Ratner, Allan S. Hoffman, Frederick J. Schoen, Jack E. Lemons | Academic Press, Pub. Year 2012

Semester 02

a. Course Name: **Anatomy & Physiology-II (T)**

b. Course Code: 19010002DS01

c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level and must Passed with **Semester I**

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOBJ 1	Identify and locate major organs, tissues, and cells using correct terminology.
CLOBJ 2	Learn the major prefixes, suffixes, and root words used in anatomical and physiological terminology
CLOBJ 3	Understand the basic principles of common diseases and medical interventions
CLOBJ 4	Analyze the effects of exercise, nutrition, and lifestyle choices on different body systems.
CLOBJ 5	Formulate and test hypotheses about how the body works

f. Course Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, Analysis's information, and solve problems related to anatomy and physiology.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**PART-A (ANATOMY) Content**	**Weightage**	**Hours**
1	**Outline of Gastrointestinal tract and Urinary System:** a. Identify and draw the organs of the gastrointestinal tract. b. Know the basic structural features of the organs of gastrointestinal tract. c. Identify and draw the organs of the urinary tract. d. Know the basic structural features of the organs of urinary tract.	30%	10
2	**Outline of Male Genital tract, Female Genital tract and Endocrine glands:** a. Identify and draw the organs of the male genital tract.	30%	10

	b. Know the basic structural features of the organs of male genital tract. c. Identify and draw the organs of the female genital tract. d. Know the basic structural features of the organs of female genital tract. e. Enumerate different endocrine glands. f. Identify location and basic function of different endocrine glands. g. Know the basic structural features of the organs of urinary tract		
3	**Outline of Nervous System, Special senses and Instruments used in Anatomy:** a. Describe the organization and identify major components of the nervous system. b. Enumerate the cranial nerves. c. Enumerate the special senses. d. Identify and draw the parts of eye and ear. e. Identify the main instruments and functions. f. Understand the principles and technique of x-rays. g. Identify the main x-rays of the human body.	40%	10
	Total teaching hours for the academic year	**100%**	**30**

Sr. No.	PART-B (Physiology) Content	Weightage	Teaching Hours
1	Outline of Respiratory system. a. Structural organization of Respiratory System. b. Transport of Gases. c. Normal Breathing, Abnormal Breathing. d. Structural organization of digestive system. e. Functions of digestive system. f. Movement of digestive system. g. Applied physiology (Diarrhea and Vomiting).	30%	10
2	Outline of Digestive System. a. Structural organization of digestive system. b. Functions of digestive system. c. Movement of digestive system. d. Applied physiology (Diarrhea and Vomiting).	30%	10
3	Outline of Excretory and Endocrine System. a. Gross structural organization of excretory system. b. Functions of Excretory system. c. Regulation of body fluids. d. Applied physiology (Dialysis). e. Functions of Endocrine gland (pituitary, thyroid, parathyroid, adrenal, ovary, testicles).	40%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Ross & Wilson Anatomy and Physiology in Health and Illness by Anne Waugh and Allison Gran
2.	Human Anatomy & Physiology by Elaine N. Marieb and Katja Hoehn
3.	The Anatomy Coloring Book by Wynn Kapit and Lawrence M. Elson
4.	Essential Human Anatomy & Physiology by Elaine N. Marieb and Lori A. Smith
5.	Anatomy & Physiology for Dummies by Erin Odgen

Semester 02

a. Course Name: **Anatomy & Physiology-II (P)**

b. Course Code: 19010002DS02

c. Prerequisite: Knowledge of Anatomy and Physiology up to 12th science level and must Passed with **Semester I**

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities

e. Course Learning Objective:

CLOBJ 1	Identify and locate major organs, tissues, and cells using correct terminology.
CLOBJ 2	Learn the major prefixes, suffixes, and root words used in anatomical and physiological terminology
CLOBJ 3	Understand the basic principles of common diseases and medical interventions
CLOBJ 4	Analyze the effects of exercise, nutrition, and lifestyle choices on different body systems.
CLOBJ 5	Formulate and test hypotheses about how the body works

f. Course Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, Analysis's information, and solve problems related to anatomy and physiology.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	4	4	2	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Digestive & Endocrine system.	50%	10
2	Male & Female Genital system.	25%	10
3	X rays & bones.	25%	10
4	**Total teaching hours for the academic year**	**100%**	**30**

Sr. No.	**PART-B (Physiology) Content**	**Weightage**	**Teaching Hours**
1	Determination of Blood Group.	50%	10
2	Determination of Bleeding Time, Clotting Time.	25%	10
3	Determination of ESR, PCV.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Ross & Wilson Anatomy and Physiology in Health and Illness by Anne Waugh and Allison Gran
2.	Human Anatomy & Physiology by Elaine N. Marieb and Katja Hoehn
3.	The Anatomy Coloring Book by Wynn Kapit and Lawrence M. Elson
4.	Essential Human Anatomy & Physiology by Elaine N. Marieb and Lori A. Smith
5.	Anatomy & Physiology for Dummies by Erin Odgen

Semester 02

a. Course Name: **Ocular Anatomy & Physiology (T)**
b. Course Code: 19011002DS01
c. Prerequisite: Anatomy & physiology of the eye, common eye diseases, neuro-ophthalmic principles, medical history, risk factors.
d. Rationale: Understanding the eye and its functioning to get the broad knowledge about the visual system.

e. Course Learning Objective:

CLO1	Identify and describe the major components of the eye, including the cornea, lens, iris, retina, optic nerve, and other supporting structures.
CLO2	Explain the physiological processes involved in vision, including light refraction, accommodation, and photo transduction.
CLO3	Describe the biochemical composition of ocular tissues, including the cornea, lens, and retina.
CLO4	Understand the functions of each anatomical structure in the visual system and how they work together to form a coherent image.
CLO5	Understand the neural pathways involved in visual perception, from the retina to the visual cortex.

f. Course Outcomes:

CO1	Identify and label the major anatomical structures of the eye and their functions.
CO2	Understand the physiological processes involved in visual perception, including light refraction, accommodation, and visual transduction.
CO3	Describe the biochemical composition of various ocular tissues and their roles in maintaining eye health.
CO4	Describe the microscopic anatomy of various ocular tissues and their adaptations for specialized functions.
CO5	Describe the processes of aqueous humor production, circulation, and drainage, and their role in regulating intraocular pressure.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Ocular Anatomy** 1: Introduction to Ocular Anatomy Overview of the visual system and the eye's place in the body Basic anatomical terminology and concepts 2: External Eye Structures Anatomy of the eyelids, eyelashes, and conjunctiva The lacrimal system and tear production	40%	15

	3: Cornea and Sclera Microscopic anatomy of the cornea and sclera Corneal transparency and refractive properties 4: Anterior Segment and Iris Anatomy of the anterior chamber and angle Structure and function of the iris and pupil 5: Lens and Accommodation Structure and composition of the lens Mechanisms of accommodation and presbyopia 6: Retina and Optic Nerve Layers and cellular organization of the retina Optic nerve head and its clinical significance 7: Choroid and Blood Supply Anatomy and vascular supply of the choroid Importance of ocular blood circulation for retinal health 8: Vitreous Body and Intraocular Pressure Structure and function of the vitreous humor Regulation and clinical relevance of intraocular pressure 9: Developmental Anatomy of the Eye Embryological development of the eye and its structures Congenital anomalies and their impact on vision 10: Ocular Anatomy and Clinical Cases Application of anatomical knowledge in interpreting clinical cases Review and discussion of eye disorders related to the studied structures.		
2	**Ocular Physiology** 1: Introduction to Ocular Physiology Overview of ocular physiology and its role in visual perception Basic physiological concepts and principles 2: Optics of the Eye	40%	15

	Light refraction and the optics of the eye Accommodation and its role in focusing light on the retina 3: Photo transduction and Visual Pigment Photoreceptor cells and their response to light Visual pigment regeneration and adaptation to different light conditions 4: Retinal Circuitry and Neural Processing Organization of retinal layers and cell types Neural processing of visual information in the retina 5: Visual Pathways to the Brain Transmission of visual information from the retina to the brain Visual field organization and binocular vision 6: Visual Acuity and Contrast Sensitivity Factors influencing visual acuity and contrast sensitivity Clinical assessment of visual acuity and contrast sensitivity 7: Colour Vision Physiology of colour vision and the role of cone photoreceptors Colour perception and colour blindness 8: Visual Adaptation and Dark Adaptation Mechanisms of visual adaptation to changing light conditions Dark adaptation and its clinical significance 9: Ocular Physiology and Clinical Cases Application of physiological knowledge in interpreting clinical cases Review and discussion of visual disorders related to ocular physiology.		
3	**Ocular Biochemistry** 1: Introduction to Ocular Biochemistry Overview of ocular anatomy and physiology Introduction to the molecular basis of vision 2: Phototransduction and Visual Pigments	40%	15

	Photoreceptor cells and their role in visual perception Opsins and visual pigment regeneration 3: Biochemical Composition of Ocular Tissues Composition and functions of the cornea, lens, retina, and vitreous humor Extracellular matrix and its role in maintaining ocular structure 4: Antioxidants and Oxidative Stress in the Eye Role of antioxidants in protecting ocular tissues from oxidative damage Mechanisms of oxidative stress and its impact on ocular health 5: Biochemical Basis of Lens Transparency Lens crystalline and their role in maintaining lens clarity Age-related changes in lens proteins and cataract formation 6: Aqueous Humor Dynamics and Glaucoma Biochemical processes involved in aqueous humor production and drainage Glaucoma pathogenesis and the role of intraocular pressure 7: Biochemical Processes in the Retina Photoreceptor cell metabolism and visual signal processing Biochemical basis of retinal degenerative diseases 8: Drug Targets and Therapeutic Approaches Biochemical pathways as potential targets for ocular disease therapies Overview of current and emerging treatments for ocular disorders.		
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease" by Nika Bagheri, Charles Calvo, and Alia Durrani
2.	Clinical Ophthalmology: A Systematic Approach" by Jack J. Kanski and Brad Bowling
3.	Ophthalmic Clinical Procedures: A Multimedia Guide" by Mary A. Dugan.

Semester 02

a. Course Name: **Ocular Anatomy & Physiology (P)**
b. Course Code: **19011002DS02**
c. Prerequisite: Anatomy & physiology of the eye, common eye diseases, neuro-ophthalmic principles, medical history, risk factors.
d. Rationale: Understanding the eye and its functioning to get the broad knowledge about the visual system.

e. Course Learning Objective:

CLO1	Identify and describe the major components of the eye, including the cornea, lens, iris, retina, optic nerve, and other supporting structures.
CLO2	Explain the physiological processes involved in vision, including light refraction, accommodation, and photo transduction.
CLO3	Describe the biochemical composition of ocular tissues, including the cornea, lens, and retina.
CLO4	Understand the functions of each anatomical structure in the visual system and how they work together to form a coherent image.
CLO5	Understand the neural pathways involved in visual perception, from the retina to the visual cortex.

f. Course Outcomes:

CO1	Identify and label the major anatomical structures of the eye and their functions.
CO2	Understand the physiological processes involved in visual perception, including light refraction, accommodation, and visual transduction.
CO3	Describe the biochemical composition of various ocular tissues and their roles in maintaining eye health.
CO4	Describe the microscopic anatomy of various ocular tissues and their adaptations for specialized functions.
CO5	Describe the processes of aqueous humor production, circulation, and drainage, and their role in regulating intraocular pressure.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	● Demonstration and practice of performing an external eye examination ● Examination of corneal transparency and refraction using slit-lamp bio microscopy ● Practicing gonioscopy to assess the angle of the anterior chamber ● Examination of the lens using retro illumination and indirect ophthalmoscopy ● Practice of indirect ophthalmoscopy for retinal examination	50%	10
2	● Interpretation of fundus autofluorescence images to assess choroidal health	25%	10

	● Assessment of pupillary size and symmetry. ● Evaluation of extraocular muscle function by checking for eye movement restrictions or deviations. ● Examination for strabismus (misalignment of the eyes). ● Confrontation visual field testing for gross visual field defects. ● Automated perimetry for more precise visual field mapping (e.g., Humphrey Visual Field).		
3	● Refraction and Assessment of Optical Correction: ● Prescription of corrective lenses (glasses or contact lenses). ● Detailed examination of the anterior segment of the eye (cornea, iris, lens) using a slit lamp biomicroscope. ● Identification of corneal abnormalities, cataracts, and other lens disorders.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease" by Nika Bagheri, Charles Calvo, and Alia Durrani
2.	Clinical Ophthalmology: A Systematic Approach" by Jack J. Kanski and Brad Bowling
3.	Ophthalmic Clinical Procedures: A Multimedia Guide" by Mary A. Dugan.

Semester 03

a. Course Name: **Advanced and Higher English**

b. Course Code: **00019303AE01**

c. Prerequisite: Students should have a strong command of the English language, including grammar, vocabulary, reading comprehension, and writing skills. Students should be able to understand and analyse complex texts, including literary works, academic articles, and other forms of written communication.

d. Rationale: To provide a challenging academic environment where students can deepen their understanding of the English language through the study of complex literary texts, rigorous writing assignments, and in-depth analysis of various forms of written communication.

e. Course Learning Objective:

CLOBJ 1	Develop basic proficiency in English language skills including reading, writing, speaking, and listening, with an emphasis on comprehension and fluency.
CLOBJ 2	Expand vocabulary through the acquisition of common words and phrases used in everyday communication, including greetings, introductions, and expressions for daily activities.
CLOBJ 3	Gain a solid understanding of basic grammar rules, including sentence structure, verb tenses, parts of speech, and word order, to construct grammatically correct sentences and communicate effectively.
CLOBJ 4	Improve pronunciation and intonation to enhance clarity and intelligibility in spoken English, focusing on accurate articulation of sounds, stress patterns, and rhythm.
CLOBJ 5	Develop confidence and proficiency in engaging in everyday conversations in English, including asking and answering questions, expressing opinions, making requests, and participating in discussions on familiar topics.

f. Course Outcomes:

CLO 1	Develop advanced communication skills
CLO 2	Become more proficient in formal writing.
CLO 3	Apply interpersonal communication skills to be more productive at the workplace.
CLO 4	Identify, set and achieve the goals with the help of public speaking.
CLO 5	Use wide range of vocabulary to communicate effectively.

g. Teaching and Examination Scheme

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		TOTAL
				T	**CE**	**P**	**Theory**	**P**	
2	-	-	2	-	100	-	-	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Define Public Speaking Importance of Public speaking Types of Public speaking Techniques to master public speaking	5%	2
2	World's best public speakers (activity based)	10%	5
3	Define Debate vs GD Importance of debate Techniques to master debate	5%	1
4	Debate activity	10%	5
5	Advanced vocabulary building	10%	2

	Homophones Homonyms Analogies		
6	Reading comprehension	10%	2
7	Error Analysis: Para- jumble/sentence completion, confusable sentences, incorrectly spelt words, One word substitute, Cloze Passages	10%	5
8	Report writing	10%	2
9	Memo writing	10%	2
10	Narrative Story Writing	10%	2
11	Tourism Pitch	10%	2
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Business Correspondence and Report Writing SHARMA, R. AND MOHAN, K
2.	Communication Skills, Kumar S And Lata P; New Delhi Oxford University Press
3.	Practical English Usage MICHAEL SWAN
4.	A Remedial English Grammar for Foreign Student F.T. WOOD
5.	On Writing Well William Zinsser; Harper Paperbacks,2006; 30th anniversary edition
	Oxford Practice Grammar, John Eastwood; Oxford University Press
	Quantitative Aptitude for Competitive Examinations Dr. R.S. Aggarwal

Semester 03

a. Course Name: **German - 1**

b. Course Code: **00019303AE02**

c. Prerequisite: Knowledge of Basic Knowledge of English language

d. Rationale: German is the second most commonly used scientific language. Germany is the third largest contributor to research and development and offers research fellowships to scientists from abroad. Developments in media, information and communication technology require multilingual communicators. A wide range of important websites are in German and worldwide, Germany is ranked number 5 in terms of annual publication of new books. Knowledge of German therefore offers you extended access to information. Learning German provides you with an insight into the way of life, and the hopes and dreams of people in German speaking countries, broadening your horizon.

e. Course Learning Objective:

CLOBJ 1	Develop proficiency in basic German vocabulary and grammar to facilitate everyday communication.
CLOBJ 2	Gain cultural understanding and appreciation of German-speaking countries through language immersion activities, such as reading authentic texts and watching German media.
CLOBJ 3	Enhance listening, speaking, reading, and writing skills in German through interactive exercises and assignments.
CLOBJ 4	Acquire the ability to engage in simple conversations, express opinions, and ask questions in German on various topics.
CLOBJ 5	Prepare for real-life situations such as traveling, studying abroad, or interacting with German-speaking individuals in professional contexts.

f. Course Outcomes:

CLO 1	Understand the importance of learning German language
CLO 2	Understand the basic communication in German, can greet someone in German
CLO 3	Can tell and understand the date & time in German
CLO 4	Can introduce oneself and third person also frame basic sentences in German language

g. Teaching and Examination Scheme

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		TOTAL
				T	**CE**	**P**	**Theory**	**P**	
2	-	-	2	-	100	-	-	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Overview of German Language:** History of German language Importance of German Language Why one should Learn German Language?	10%	4

2	**Basics of German: (LSRW)** s Alphabets e Nummeren (Null bis Hundert) e Artikel (Indefinite und Definite) e Grußen	40%	15
	ular und Plural Nomen e Wochetage & Die Monate		
3	**Vocabulary: (LSRW)** Ordinal Nummeren (1 bis 31) Datum Zeit (Offiziel Zeit) äpositionen mit der Zeit Personal Pronomenen (Nominative Case)	20%	5
4	**Simple Communication: (LSRW)** Verben Konjugation, (Hilfs Verben, Regelmaßige und Unregelmaßige verben) Self-Introduction W- Frage und Ja/Nein Frage	30%	6
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Netzwerk A1 Deutsch als Fremdsprache Kursbuch by Stefanie Dengler, Paul Rusch Klett- Langenscheidt
2.	So geht das -1 By Ujjwal Malhotra| Educational Publishers
3.	German in 30 Days by Goyal Saab | Langenscheidt

Semester 03

a. Course Name: **French - 1**
b. Course Code: **00019303AE03**
c. Prerequisite: Knowledge of English Language
d. Rationale: Basic Communication Skills of French Language

e. Course Learning Objective:

CLOBJ 1	Develop proficiency in French pronunciation, vocabulary, and grammar to enable effective communication in everyday situations.
CLOBJ 2	Cultivate an understanding and appreciation of French-speaking cultures through exposure to authentic materials such as literature, films, and music.
CLOBJ 3	Enhance proficiency in listening, speaking, reading, and writing French through a variety of interactive activities and assignments.
CLOBJ 4	Acquire the ability to engage in conversations, express ideas, and communicate effectively in French on a range of topics, both orally and in writing.
CLOBJ 5	Prepare for practical applications of French language skills, such as traveling, studying abroad, or pursuing professional opportunities in French-speaking regions.

f. Course Outcomes:

CLO 1	Introduce self in French.
CLO 2	Greet someone in French.
CLO 3	Tell time in French.
CLO 4	Talk about family (their professions, nationalities, age etc.

g. Teaching and Examination Scheme

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		TOTAL
				T	**CE**	**P**	**Theory**	**P**	
2	-	-	2	-	100	-	-	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Grammar:** Alphabets Numbers Telling time Personal Pronouns Nouns (masculine & feminine nouns, singular and plural nouns) Verbe conjugaisons (être, avoir, s'appeler and "er ending") Adjective possessive (mon, ma, ton, ta, etc.)	33%	10
2	**Listening Skills:** Sounds French Songs Basic Vocabulary (months of the year, days of the week, family members' names, Countries and nationalities, colours, Professions)	17%	5

3	**Speaking Skills:** How to Introduce self? Greetings How to ask and tell time? How to talk about Family?	17%	5
4	**Reading Skills:**		
	a. Samples of: **b.** Self-Introduction My family	33%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Saison 1 Didier
2.	Enchanté 0
3.	Larrouse Dictionnaire de Poche
4.	Larousse French Grammar (Mini) by Paperback
5.	Plaisir D'ecrire by Viral Thakkar, Saraswati House Pvt. Ltd

Semester 03

a. Course Name: **Health Research Fundamentals**

b. Course Code: **19010203UE01**

c. Prerequisite: Basic knowledge of Health and Research.

d. Rationale: The "Health Research Fundamentals" course is designed to provide students with a foundational understanding of the principles and methods of health research. This course is essential for students who plan to pursue careers in public health or related fields, as it equips them with the necessary skills to critically evaluate research findings, design research studies, and contribute to evidence-based practice.

e. Course Learning Objective:

CLOBJ 1	Develop an understanding of the definition, characteristics, and types of health research, and critically assess the role of research in advancing healthcare outcomes.
CLOBJ 2	Formulate research questions and hypotheses, conduct thorough literature reviews, and demonstrate proficiency in navigating and utilizing databases for health research.
CLOBJ 3	Select appropriate research designs, sampling methods, and calculate sample sizes. Measure study variables accurately to ensure the validity and reliability of findings
CLOBJ 4	Create and evaluate tools for data collection, ensuring validity and reliability. Strategically plan and manage research studies to optimize data integrity and study outcomes.
CLOBJ 5	Apply ethical considerations to research studies and demonstrate the ability to prepare concept papers that align with professional and academic standards.

f. Course Outcomes:

CLO 1	Develop an understanding of the definition, characteristics, and types of health research, recognizing its role in advancing knowledge and informing health practice
CLO 2	Formulate clear research questions and hypotheses, conduct comprehensive literature reviews, and select appropriate research designs, sampling techniques, and measurement methods to address research objectives effectively.
CLO 3	Establish an ethical foundation for health research, adhering to principles of research integrity, confidentiality, and participant rights, and demonstrating ethical decision-making in all aspects of research conduct
CLO 4	Communicate research findings effectively to diverse stakeholders through written and oral formats, and prepare concept papers for research projects, demonstrating the ability to articulate research objectives, methodology, and anticipated outcomes clearly

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
					Internal Marks			**External Marks**		**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
3	-	2	5	4	20	20	20	60	30	150

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**Introduction to Health Research** Definition, characteristics & types of health research. Understanding and Formulating the Research Process. The role	15%	6
	of research in health		
2	**Planning Your Research: From Idea to Study** Formulating research questions and hypotheses. Conducting Literature review. Understanding the Databases	30%	14
3	**Incorporating Epidemiology into Research Study Design** Research Designs Sampling and types of sampling Sample size calculations for different study design. Measurement of study variables	25%	12
4	**Fundamentals of Data Collection** Design & Types of Data collection Tool. Validity, Reliability Study plan and management	15%	9
5	**Conducting & writing a research Study** Ethical consideration for Health Research. Preparing a concept paper for research projects	15%	4
	Total teaching hours for the academic year	**100%**	**45**

i. List of Practical

1	**Planning Your Research: From Idea to Study** • Choosing research topics and formulating research questions • Conducting review of literature - Data extraction sheet. • Hypothesis formation: Null & Alternative
2	**Incorporating Epidemiology into Research Study Design** • Sample size calculation.
3	**Fundamentals of Data Collection** • Developing tools using digital platforms: Google Survey, Kobo (Practical) • Preparing a study Plan
4	**Conducting & writing a research Study** • Preparing a concept paper for research projects

j. Text Book and Reference Book:

1.	RESERACH METHODOLOGY (TextBook) By R.Paneerselvam | PHI | 8
2.	Research Methodology: Methods and Techniques (TextBook) By C.R. Kothari | New Age Publishers
3.	Kenneth S. Bordens & Bruce B. Abbitt, "Research Design & Methods, A process approach" McGraw Hill, 8th edition
4.	ABC of Research Methodology and Applied Biostatistics: A Primer for Clinicians and Researchers. By Parikh, M.N. And Gogtay, N

Semester 03

a. Course Name: **Intellectual Property**

b. Course Code: **17010103UE01**

c. Prerequisite: Students should have a basic understanding of creative and innovative processes, familiarity with different types of intellectual property (such as copyrights, trademarks, and patents), and awareness of the significance of IP rights in promoting innovation and protecting creators.

d. Rationale: Studying Intellectual Property (IP) is crucial for students as it helps them understand how IP rights incentivize creativity and innovation, equips them with knowledge to protect their own intellectual contributions, and fosters an appreciation for the legal and economic impacts of IP in various industries.

e. Course Learning Objective:

CLOBJ 1	Analyze the meaning of patents, copyright, trademarks, and other intellectual property rights, and their significance in safeguarding innovation and creativity
CLOBJ 2	Demonstrate proficiency in identifying patentable inventions, navigating the process of obtaining patents, and understanding the rights and remedies available to patent holders in cases of infringement.
CLOBJ 3	Examine the characteristics, rights, and remedies related to copyright and trademarks, including the registration procedures and legal frameworks for protection against infringement.
CLOBJ 4	Develop a comprehensive understanding of specialized intellectual property rights, including geographical indications, designs, integrated circuits layout, and plant varieties, through an overview of relevant legislative acts.
CLOBJ 5	Evaluate real-world scenarios to apply intellectual property laws ethically and effectively, ensuring compliance with global standards and fostering innovation responsibly.

f. Course Outcomes:

CLO 1	Identify the different forms of intellectual property and describe the importance of protection of IP.
CLO 2	List out the criteria/essential requirements of IP protection, duration, rights conferred and remedies provided.
CLO 3	Demonstrate a solid understanding of the key concepts, principles, and categories of intellectual property rights, as well as the legal frameworks that govern them.
CLO 4	Demonstrate ethical awareness and professional responsibility in dealing with intellectual property issues, recognizing the balance between promoting innovation and creativity while respecting the rights of creators, innovators, and the public interest.
CLO 5	Evaluate as against other the international legal framework related to IP protection and articulate the problem areas for the deficiency.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	**PATENT** Introduction to Intellectual Property Law (IPR) Meaning of patent Patentable inventions Procedure for obtaining patent Rights of patent holder Infringement and remedies of patent	25%	15
2	**COPYRIGHT** Introduction, meaning and characteristics of copyright Rights of copyright owner Infringement and remedies of copyright	25%	15
3	**TRADEMARK** Introduction and meaning of trademark Types of trademarks Procedure for registering trademark Infringement and remedies of trademark	25%	15
4	**OTHER IPRGeographical Indications:** Overview on Geographical Indication Act Designs: Overview on Design Act, 2000 Semiconductor Integrated Circuits Layout: Overview on Semiconductor Integrated Circuits Layout Design Act, 2000 Plant Varieties and Farmers' Rights: Overview on Protection of Plant Varieties and Farmers' Rights Act, 2001	25%	15
	Total teaching hours for the academic year	**100%**	**60**

i. Text Book and Reference Book:

1.	Law Relating to Intellectual Property Rights By V K Ahuja | Lexis Nexis
2.	Intellectual Property Rights By P. Narayanan | , Eastern Law House Private Ltd, Pub. Year 2001
3.	The Global Regime for the Enforcement of Intellectual Property Rights By X. Seuba | Cambridge University Press, Pub. Year 2017
4.	Globalizing Intellectual Property Rights By D. Matthews | Routledge, Pub. Year 2003

Semester 03

a. Course Name: **Occupational Health and Ergonomics**

b. Course Code: **07010103UE01**

c. Prerequisite: There is no Prerequisite to opt this Course

d. Rationale: This course provides an introduction to the fundamental concepts of occupational health and ergonomics, focusing on creating safe and healthy work environments. Students will explore ergonomic principles, identify workplace hazards, learn strategies to prevent injuries and enhance employee well-being.

e. Course Learning Objective:

CLOBJ 1	Develop an understanding of the importance and historical evolution of occupational health and ergonomics, recognizing their critical role in improving workplace safety and employee well-being.
CLOBJ 2	Apply knowledge of the musculoskeletal system, biomechanics, and physiological factors to optimize ergonomic designs and workplace interventions.
CLOBJ 3	Evaluate physical, chemical, and biological hazards in the workplace using basic principles of risk assessment and management, ensuring proactive hazard identification and mitigation strategies
CLOBJ 4	Utilize ergonomic principles, including anthropometry, posture, and movement analysis, to assess and redesign workspace layouts, tools, and activities for improved efficiency and health outcomes
CLOBJ 5	Develop and implement occupational health programs and wellness initiatives, including strategies for addressing psychosocial factors and fostering a positive and healthy work environment.

f. Course Outcomes:

CLO 1	Understand key concepts of occupational health and ergonomics and their significance in the workplace.
CLO 2	Identify common workplace hazards and propose basic control measures.
CLO 3	Apply ergonomic principles to evaluate and suggest improvements for basic workspaces.
CLO 4	Develop awareness of musculoskeletal disorders and basic strategies for prevention.
CLO 5	Recognize psychosocial factors affecting employee well-being and suggest simple interventions.
C06	Demonstrate knowledge of occupational health programs and their importance.
C07	Apply basic ergonomic principles to simple case studies.
C08	Conduct basic ergonomic assessments using tools such as the RULA test.
C09	Recognize and address ergonomic issues specific to industrial settings.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**Introduction to Occupational Health and Ergonomics** Definition and importance of occupational health and ergonomics.	10%	6
	Historical development and evolution of occupational health and ergonomics.		
2	**Human Anatomy and Physiology for Ergonomics** Basics of human musculoskeletal system and its functions. Brief overview of biomechanics and physiological factors.	10%	6
3	**Workplace Hazards and Risk Assessment** Introduction to common workplace hazards (physical, chemical, biological). Basic principles of risk assessment and management. **Demonstration:** Identifying and assessing workplace hazards.	15%	9
4	**Ergonomic Principles and Design** Basics of ergonomic design: anthropometry, posture, movement. Introduction to workspace design and tools. Ergonomic evaluation of different activities and tasks	15%	9
5	**Industrial Ergonomics and Musculoskeletal Disorders** Ergonomic challenges and solutions specific to industrial settings. Common musculoskeletal disorders in industrial environments. REBA & RULA demonstration.	15%	9
6	**Psychosocial Factors and Mental Health in the Workplace** Introduction to psychosocial factors affecting well-being. Basic strategies for promoting a positive work environment.	10%	6
7	**Occupational Health Programs and Wellness** Basics of designing and implementing occupational health programs. Introduction to health promotion and wellness initiatives.	10%	6
8	**Case Studies and Modification methods** Analysis of simple ergonomic challenges and solutions. Group discussions: basic ergonomic assessment and solutions for case studies.	15%	9
	Total teaching hours for the academic year	**100%**	**60**

i. Text Book and Reference Book:

1.	Ergonomics in design: methods and techniques handbook 3rd edition By Barry Tillman
2.	Human factors and ergonomics design handbook, third edition By Gavriel salvendy
3.	Introduction to Health and Safety at Work Third edition By Phil Hughes
4.	OCCUPATIONAL THERAPY AND ERGONOMICS By FRANKLIN STEIN, INGRID SODERBACK, SUSAN CUTLER, BARBARA LARSON
5.	Occupational Ergonomics - Theory and Applications By Amit Bhattacharya, James D McGlothin | second
6.	Industrial Therapy (Textbook) By Key PT, Glenda L.

Semester 03

a. Course Name: **Yoga and Positive Psychology for Managing Career and Life**
b. Course Code: **02010103UE01**
c. Prerequisite: shall have the basic knowledge of human biology and English language.
d. Rationale: Students will have basic understanding of different concepts of psychology in Ayurveda for career and life management.

e. Course Learning Objective:

CLOBJ 1	Understand Ayurvedic principles of holistic wellness, including Prakriti (constitution), diet, lifestyle, and self-care practices, to promote physical and mental well-being.
CLOBJ 2	Master yoga techniques such as asanas, pranayama, dhyana, yoga nidra, and Sankalpa setting to achieve balance, stress reduction, and personal growth.
CLOBJ 3	Cultivate gratitude, optimism, and resilience while utilizing mindfulness practices and a strengths-based approach for emotional regulation and personal growth.
CLOBJ 4	Develop personalized self-care plans, Ayurvedic yoga sequences, and actionable goals to seamlessly incorporate wellness practices into everyday routines.
CLOBJ 5	Utilize reflective practices to analyze personal growth and continuously enhance well-being by integrating Ayurvedic principles, yoga, and positive psychology strategies.

f. Course Outcomes:

CLO 1	After Learning the Course, the students shall be able to: Understand the Ayurvedic principles of holistic wellness and their relevance to career and life management.
CLO 2	Utilize yoga practices to enhance mental clarity, emotional balance, and physical vitality.
CLO 3	Apply positive psychology techniques to cultivate resilience, optimism, and personal growth.
CLO 4	Integrate Ayurvedic wisdom, yoga practices, and positive psychology techniques to develop personalized strategies for career success and life satisfaction.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	30	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Ayurvedic Foundations of Wellness** Introduction to Ayurveda Ayurvedic Principles of Holistic Wellness Understanding Prakriti (Constitution) Ayurvedic Diet and Lifestyle for Wellbeing Ayurvedic Self-Care Practices	25%	15
2	**Knowledge on Yoga practices for mind, body and balance** **Asana:** Postures for Balance and Vitality Pranayama: Breathwork for Mental Clarity Dhyana: Meditation for Emotional Balance Yoga Nidra: Deep relaxation for stress reduction Sankalpa setting: Intentions for personal growth	25%	15
3	**positive psychology for personal growth**	25%	15

	Introduction to positive psychology Cultivating Gratitude and Optimism Building resilience in the face of challenges Mindfulness practices for emotional regulation Strengths – Based approach to personal development		
4	**Integration and application** Ayurvedic yoga sequences for specific goals Creating a personalized self- care plan Goal setting and action planning Integrating Ayurvedic principles into daily life Reflective practices for continuous growth	25%	15
	Total teaching hours for the academic year	**100%**	**60**

i. Text Book and Reference Book:

1.	After Learning the Course, the students shall be able to: Understand the Ayurvedic principles of holistic wellness and their relevance to career and life management.
2.	Utilize yoga practices to enhance mental clarity, emotional balance, and physical vitality.
3.	Apply positive psychology techniques to cultivate resilience, optimism, and personal growth.
4.	Integrate Ayurvedic wisdom, yoga practices, and positive psychology techniques to develop personalized strategies for career success and life satisfaction.

Semester 03

a. Course Name: **AI/ Web Development and Designing**

b. Course Code: **03010503SE01**

c. Prerequisite: Data structure, Probability and Statistics, Linear Algebra, Mathematics.

d. Rationale: This course provides a broad introduction to Artificial Intelligence. AI techniques for search and knowledge representation also apply knowledge of AI planning and machine learning techniques to real-world problems.

e. Course Learning Objective:

CLOBJ 1	To understand the foundational principles and algorithms of AI and ML. Students will delve into the core principles underpinning Artificial Intelligence (AI) and Machine Learning (ML), gaining insight into various algorithms and methodologies used in these fields.
CLOBJ 2	To gain proficiency in programming using Python for AI and ML applications. This objective focuses on equipping students with practical programming skills using Python, a widely-used language in AI and ML development.
CLOBJ 3	To learn data pre-processing, exploration, and visualization techniques. They will also learn data exploration methods to uncover patterns and insights, and visualization techniques to present findings effectively using libraries like Pandas, NumPy, Matplotlib, and Seaborn.
CLOBJ 4	To understand model evaluation and selection methods. Evaluating the performance of AI and ML models using appropriate metrics for classification and regression tasks. Students will also learn model selection methods, including train-test splitting and cross-validation, to choose the most suitable model for a given problem.
CLOBJ 5	To apply AI and ML techniques to real-world datasets and understand their ethical implications.

f. Course Outcomes:

CLO 1	Gain foundational knowledge of AI and ML, applicable to various fields
CLO 2	Develop practical programming and data analysis skills
CLO 3	Enhance critical thinking and problem-solving abilities
CLO 4	Understand the potential and limitations of AI and ML technologies
CLO 5	Prepare for a future where AI and ML are increasingly integrated across disciplines

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
2	-	-	2	2	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**UNIT-1 Introduction to AI and ML concepts** Machine Learning algorithms Supervised - Linear Regression, Logistic Regression, Decision Trees, Random Forest, Support Vector Machines (SVM), Naive Bayes, k-Nearest Neighbors (k-NN) Unsupervised - K-Means Clustering, Hierarchical Clustering, Density Based Clustering, Anomaly Detection Techniques,	20%	7
	Reinforcement Learning		
2	**UNIT-2 Programming fundamentals in Python** Syntax, Variables and Data Types, Operators, Control Structures, Functions, Data Structures, Input and Output, Modules and Packages	20%	6
3	**UNIT-3** Data preprocessing and Data analysis Using Python Library (Pandas, NumPy). Data exploration and Visualization Using Python Library (Matplotlib, Seaborn)	20%	7
4	**UNIT-4** Model Evaluation- Classification Metrics, Regression Metrics Model Selection - Train-Test Split, Cross-Validation Methods (K-Fold, Random Sampling, Leave-one out, Hold-Out) Ethical considerations in AI and ML	20%	5
5	**UNIT-5** Training and evaluating models on real-world datasets (e.g., image classification, text analysis)	20%	5
	Total teaching hours for the academic year	**100%**	30

i. Text Book and Reference Book:

1.	"Artificial Intelligence: A Modern Approach" Author: Stuart Russell and Peter Norvig |Publisher: Pearson (Textbook)
2.	"Python Machine Learning" Author: Sebastian Raschka and Vahid Mirjalili | Publisher: Packt
3.	“Machine Learning Yearning" Author: Andrew Ng | Publisher: Deeplearning.ai
4.	“Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" Author: Aurélien Géron | Publisher: O'Reilly Media
5.	“Machine Learning: A Probabilistic Perspective" Author: Kevin P. Murphy | Publisher: The MIT Press

Semester 03

a. Course Name: **VAC-3: IPDC including history and culture of India and IKS - 2**

b. Course Code: **00019303VA01**

c. Prerequisite: IPDC including history and culture of India and IKS-I

d. Rationale: IPDC aims to prepare students for the modern challenges they face in their daily lives. Promoting fortitude in the face of failures, Unity amongst family discord, Self-discipline amidst Distractions... and many more priceless lessons. The course focuses on morality and character development at the core of student growth, to enable students to become self-aware, sincere, and successful in their many roles - as an ambitious student, reliable employee, caring family member, and considerate citizen.

e. Course Learning Objective:

CLOBJ 1	To guide students in setting and achieving future goals through effective visualization, SMART goals, and fostering value-based citizenship for contributing to India's transformation into a developed nation.
CLOBJ 2	To educate students on the detrimental effects of addictions and to promote addiction-free living, enhancing overall health, stress management, and personal well-being through regular exercise, healthy eating habits, and sufficient sleep.
CLOBJ 3	To develop an understanding of selfless service through the analysis of real-world case studies, such as disaster relief efforts.
CLOBJ 4	To cultivate essential teamwork, harmony, and financial planning skills that are crucial for both professional and daily life.
CLOBJ 5	To introduce students to leadership through humility by studying legendary figures who lead without leading and to instill fundamental values of responsibility, integrity, loyalty, sincerity, and punctuality, creating ideal citizens.
CL06	To apply ancient wisdom and practical knowledge to face and overcome modern-day challenges and failures, emphasizing the importance of forgiveness in personal and professional life.
CL07	To provide opportunities for students to seek advice from experienced mentors, helping them navigate daily challenges with wisdom and understanding the impact of social circles on personal development

f. Course Outcomes:

CLO 1	To provide students with a holistic value-based education that will enable them to be successful in their academic, professional, and social lives.
CLO 2	To give the students the tools to develop effective habits, promote personal growth, and improve their well-being, stability, and productivity.
CLO 3	To allow students to establish a stronger connection with their family through critical thinking and development of qualities such as unity, forgiveness, empathy, and effective communication.
CLO 4	To provide students with soft skills that complement their hard skills, making them more marketable when entering the workforce.
CLO 5	To enhance awareness of India’s glory and global values, and to create considerate citizens who strive for the betterment of their family, college, workforce, and nation
CLO 6	To inspire students to strive for a higher sense of character by learning from role models who have lived principled, disciplined, and value-based lives.

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					
Lectur	Tutori	Lab			Internal			External		Total
e Hrs /Week	al Hrs/ Week	Hrs /We ek	Hrs /Week	Credit	Marks			Marks		
					T	CE	P	T	P	
2	-	-	2	2	20	20	-	60	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	**Remaking Yourself: Begin with the End in mind** Students will learn to visualize their future goals and will structure their lives through smart goals to give themselves direction and ultimately take them to where they want to go.	6%	2
2	**Remaking Yourself: Being Addiction-Free** Students will explore the detrimental effects of addictions on one's health, personal life, and family life. They will learn how to take control of their life by becoming addiction free.	6%	2
3	**Selfless Service: Case Study: Disaster Relief** Students will apply previous lessons of seva, to analyse the case study of the Bhuj earthquake relief work.	6%	2
4	**Soft Skills: Teamwork & Harmony** Students will learn the six steps of teamwork and harmony that are essential for students' professional and daily life	6%	2
5	**My India My Pride: Present Scenario** To implement the transformation of India from a developing country into a developed country it is necessary to have a value-based citizen. Students will see how the transformation to a greater India relies on the vision and efforts of themselves as a youth.	6%	2
6	**Learning from Legends: Leading Without Leading** Students will explore a new approach to leadership, through humility.	7%	2
7	**My India My Pride: An Ideal Citizen – 1** Students will learn that to become value-based citizens, they must first develop good values in their lives. They start by exploring the values of responsibility and integrity	7%	2
8	**My India My Pride: An Ideal Citizen – 2** Students will learn that by developing the values of loyalty, sincerity, and punctuality; they become indispensable and can leave a strong impression. They will start developing these values by trying to keep perfection in every small task and by looking at the bigger picture	7%	2
9	**Facing Failures: Timeless Wisdom for Daily Life** Students will learn the role wisdom plays in finding long-term stability. They will use ancient wisdom to solve their modern-day challenges	7%	2
10	**From House to Home: Forgive & Forget** Students will understand the importance and benefits that forgiveness plays in their personal and professional life. They will learn to apply this knowledge in realistic situations.	7%	2

11	**Remaking Yourself: Stress Management** Students will learn to cope with current and future causes of	7%	2
	stress.		
12	**Remaking Yourself: Better Health Better Future** A healthy body prevents disease and stress; increases positivity, productivity, and brainpower. Students will learn to maintain good health through regular exercise, healthy eating habits, and regular and sufficient sleep.	7%	2
13	**Learning from Legends: Words of Wisdom** A panel of learned and experienced mentors will personally answer practical questions that students face in their daily life.	7%	2
14	**Soft Skills: Financial Planning** Students will develop a variety of practical financial skills that prepare them to become financially stable throughout their future careers.	7%	2
15	**Remaking Yourself: Impact of Company and Life After IPDC** Students will understand that the type of company that we keep, has a crucial role in determining who we are and who we will become. They will develop the ability to create a positive environment around them. This concluding lecture encourages students to keep practising these priceless lessons and prepares them for the next steps in their lives.	7%	2
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	**Integrated Personality Development Course (Textbook)** By Bochasanwasi Akshar Purushottam Swaminarayan Sanstha

Semester 03

a. Course Name: **Microbiology & Pathology - I**
b. Course Code: 19010003DS01
c. Prerequisite: Knowledge of up to 12th science level and must Passed with Semester II.
d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOBJ 1	It helps students with thorough knowledge of diseases and techniques used in disease diagnosis.
CLOBJ 2	It helps in explanation of pathologic processes that apply to patients
CLOBJ 3	Also helps in analysis of laboratory and clinical data.
CLOBJ 4	It helps in interpretation of laboratory data for clinical pathologic correlation
CLOBJ 5	The morphology, physiology and pathogenicity of microorganisms and their pathogenic potential that cause disease in man.

f. Course Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, Analysis's information, and solve problems related to anatomy and physiology.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Unit-1: Introduction of pathology:** Definition Types of pathology - histopathology, haematology, chemical etc.	20%	9
2	**Unit-2: Molecular Cell Biology in health &Ageing:** Human Genome Bio membranes- Molecular organization and functions Cellular communications Overview of cell cycle Stem cells & regenerative medicine	10%	9

3	**Unit-3: Outline of Cell injury and pathology:** Normal cell Cell adaptation	10%	9
	Aetiology of cell injury Pathogenesis of cell injury Necrosis and types Gangrene		
4	**Unit-4: Outline of General Bacteriology:** Introduction and Historical background Differences between Prokaryotes and Eukaryotes Morphology and fine structure of Bacteria and Fungi Function and structure of Cell wall, Cell membrane, Flagella and Capsule in bacteria Morphology and Cultivation of Animal viruses Morphology and Replication of Bacteriophage	30%	9
5	**Unit-5: Outline of Microbial Physiology:** Microbial Nutrition: Requirements for growth, Physical requirements, Chemical requirements. Culture media: Aerobic, Anaerobic, Selective, Differential, Enrichment. Microbial growth, Bacterial growth curve, Factors affecting growth Antimicrobial Techniques- Antimicrobial agents (Physical, chemical, radiation).	30%	9
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Microbiology By M.J. Pelczar
2.	Kuby Immunology By Jenni Punt, Sharon Stranford, Patricia Jones, Judy Owen
3.	Prescott's Microbiology By Joanne M. Willey

Semester 03

a. Course Name: **Microbiology & Pathology – I (P)**

b. Course Code: 19010003DS01

c. Prerequisite: Knowledge of up to 12th science level and must Passed with Semester II

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOBJ 1	It helps students with thorough knowledge of diseases and techniques used in disease diagnosis.
CLOBJ 2	It helps in explanation of pathologic processes that apply to patients
CLOBJ 3	Also helps in analysis of laboratory and clinical data.
CLOBJ 4	It helps in interpretation of laboratory data for clinical pathologic correlation
CLOBJ 5	The morphology, physiology and pathogenicity of microorganisms and their pathogenic potential that cause disease in man.

f. Course Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, Analysis's information, and solve problems related to anatomy and physiology.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Simple staining techniques	10%	4
2	Gram staining	10%	4
3	ZN staining	10%	2
4	Preparation of culture media	10%	4
5	Methods of isolation	10%	4
6	Instruments used in microbiology including sterilization equipment	10%	2
7	Microscopic examinations	10%	4
8	Haematological staining	10%	2
9	Cytology staining	10%	2
10	Total cell count	10%	2
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Microbiology By M.J. Pelczar
2.	Kuby Immunology By Jenni Punt, Sharon Stranford, Patricia Jones, Judy Owen
3.	Prescott's Microbiology By Joanne M. Willey

Semester 03

a. Course Name: **Contact Lens (T)**
b. Course Code: 19011003DS01
c. Prerequisite: Healthy eyes & tear production, good hygiene habits, compatible lifestyle.
d. Rationale: Protecting your eye health and ensuring comfortable, successful lens wear.

e. Course Learning Objective:

CLO1	Understand the principles and history of contact lenses, particularly SOFT AND RGP contact lenses.
CLO2	Demonstrate knowledge of the anatomy and physiology of the eye, with a focus on ocular health as it pertains to contact lens fitting.
CLO3	Identify and describe different types of SOFT AND RGP contact lens materials and their properties, including biocompatibility and oxygen permeability.
CLO4	Learn the techniques for fitting SOFT AND RGP contact lenses and selecting appropriate lens parameters based on individual patient needs.
CLO5	Perform pre-fitting evaluation and diagnostic tests to assess the suitability of SOFT AND RGP contact lens wear for patients.

f. Course Outcomes:

CO1	Understand the fundamentals: Demonstrate a comprehensive understanding of the principles, history, and development of contact lenses, with a specific focus on SOFT AND RGP contact lenses.
CO2	Evaluate ocular health: Perform pre-fitting evaluations, including patient history-taking and ocular examinations.
CO3	Choose the most suitable SOFT AND RGP contact lens materials, designs, and parameters based on the patient's refractive error, lifestyle, and specific needs.
CO4	Master the techniques and procedures for fitting SOFT AND RGP contact lenses, ensuring proper alignment, centration, and comfort for the patient.
CO5	Demonstrate knowledge and proficiency in fitting specialized SOFT AND RGP contact lenses, such as toric lenses for astigmatism and multifocal lenses for presbyopia.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Contact Lenses:** • Historical development and evolution of contact lenses. • Types of contact lenses (SOFT AND RGP, hybrid, etc.). • Advantages and disadvantages of SOFT AND RGP contact lenses. • Anatomy and Physiology of the Eye: • Understanding the structure of the eye and its relevance to contact lens fitting.	**30%**	**15**

	• Ocular health and its implications for contact lens wear.		
2	**Assessment and Diagnosis:** • Pre-fitting evaluation of patients, including history-taking and ocular examination. • Diagnostic tests and measurements for fitting SOFT AND RGP contact lenses. • Identification and management of contraindications for contact lens wear. • Contact Lens Complications and Problem-Solving: • Common complications associated with SOFT AND RGP contact lens wear. • Strategies for troubleshooting and resolving fitting issues. • Specialized SOFT AND RGP Contact Lenses: • Toric contact lenses for astigmatism correction. • Multifocal contact lenses for presbyopia correction. • Therapeutic SOFT AND RGP lenses for specific eye conditions.	**30%**	**15**
3	**Pediatric and Geriatric Contact Lens Fitting:** • Considerations for fitting SOFT AND RGP contact lenses in children and older adults. • Advanced Contact Lens Topics: • Legal and Ethical Considerations: • Understanding the legal and ethical responsibilities of contact lens practitioners. • Patient communication and informed consent.	**40%**	**15**
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Contact Lens Practice by Nathan Efron
2.	Clinical Manual of Contact Lenses by Edward S. Bennett and Vinita Allee Henry
3.	Contact Lenses: A Clinical Approach to Fitting by Rupal H. Shah
4.	The Contact Lens Manual: A Practical Guide to Fitting" by Andrew Gasson and Judith A. Morris
5.	Manual of Contact Lens Prescribing and Fitting by Milton M. Hom and Adrian S. Bruce.

Semester 03

a. Course Name: **Contact Lens (P)**
b. Course Code: **19011003DS02**
c. Prerequisite: Healthy eyes & tear production, good hygiene habits, compatible lifestyle
d. Rationale: Protecting your eye health and ensuring comfortable, successful lens wear.

e. Course Learning Objective:

CLO1	Understand the principles and history of contact lenses, particularly SOFT AND RGP contact lenses.
CLO2	Demonstrate knowledge of the anatomy and physiology of the eye, with a focus on ocular health as it pertains to contact lens fitting.
CLO3	Identify and describe different types of SOFT AND RGP contact lens materials and their properties, including biocompatibility and oxygen permeability.
CLO4	Learn the techniques for fitting SOFT AND RGP contact lenses and selecting appropriate lens parameters based on individual patient needs.
CLO5	Perform pre-fitting evaluation and diagnostic tests to assess the suitability of SOFT AND RGP contact lens wear for patients.

f. Course Outcomes:

CO1	Understand the fundamentals: Demonstrate a comprehensive understanding of the principles, history, and development of contact lenses, with a specific focus on SOFT AND RGP contact lenses.
CO2	Evaluate ocular health: Perform pre-fitting evaluations, including patient history-taking and ocular examinations.
CO3	Choose the most suitable SOFT AND RGP contact lens materials, designs, and parameters based on the patient's refractive error, lifestyle, and specific needs.
CO4	Master the techniques and procedures for fitting SOFT AND RGP contact lenses, ensuring proper alignment, centration, and comfort for the patient.
CO5	Demonstrate knowledge and proficiency in fitting specialized SOFT AND RGP contact lenses, such as toric lenses for astigmatism and multifocal lenses for presbyopia.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	• Techniques for fitting SOFT AND RGP contact lenses. • Parameters for lens selection based on individual patient needs.	50%	10
2	• Lens care and maintenance instructions for patients. • Pre-fitting evaluation of patients, including history-taking and ocular examination. • Diagnostic tests and measurements for fitting SOFT AND RGP contact lenses.	25%	10

3	• Identification and management of contraindications for contact lens wear. • Toric contact lenses for astigmatism correction. • Multifocal contact lenses for presbyopia correction. • Therapeutic SOFT AND RGP lenses for specific eye conditions.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Contact Lens Practice by Nathan Efron
2.	Clinical Manual of Contact Lenses by Edward S. Bennett and Vinita Allee Henry
3.	Contact Lenses: A Clinical Approach to Fitting by Rupal H. Shah
4.	The Contact Lens Manual: A Practical Guide to Fitting" by Andrew Gasson and Judith A. Morris
5.	Manual of Contact Lens Prescribing and Fitting by Milton M. Hom and Adrian S. Bruce.

Semester 04

a. Course Name: **Advanced and Higher English - II**

b. Course Code: **00019304AE04**

c. Prerequisite: Knowledge of Advanced English-1

d. Rationale: To provide a challenging academic environment where students can deepen their understanding of the English language through the study of complex literary texts, rigorous writing assignments, and in-depth analysis of various forms of written communication.

e. Course Learning Objective:

CLOBJ 1	Develop basic proficiency in English language skills including reading, writing, speaking, and listening, with an emphasis on comprehension and fluency.
CLOBJ 2	Expand vocabulary through the acquisition of common words and phrases used in everyday communication, including greetings, introductions, and expressions for daily activities.
CLOBJ 3	Gain a solid understanding of basic grammar rules, including sentence structure, verb tenses, parts of speech, and word order, to construct grammatically correct sentences and communicate effectively.
CLOBJ 4	Improve pronunciation and intonation to enhance clarity and intelligibility in spoken English, focusing on accurate articulation of sounds, stress patterns, and rhythm.
CLOBJ 5	Develop confidence and proficiency in engaging in everyday conversations in English, including asking and answering questions, expressing opinions, making requests, and participating in discussions on familiar topics.

f. Course Outcomes:

CLO 1	Identity and develop soft skills required for personal and professional growth.
CLO 2	Develop professional etiquette & desired behavior at the workplace
CLO 3	Speak and participate effectively in oral organizational communication
CLO 4	Improve comprehensive skills for reading.
CLO 5	Know how to be assertive in professional environment

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs /Week	Tutorial Hrs/ Week	Lab Hrs /Week	Hrs /Week	Credit	T	CE	P	T	P	
2	-	-	2	2	-	100	-	-	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	Corporate Etiquette: Tips and guide to develop personality and gain various etiquettes manners, case studies and activities. Telephone etiquette	3%	1
2	Etiquette for foreign business trips	3%	1
3	Etiquette for small talks	3%	1
4	Respecting privacy Learning to say 'No'	3%	1
5	Presentation	33%	10
6	Email etiquettes & writing	7%	2
7	Article writing	7%	2

8	Poster making	7%	2
9	Advertisement design	7%	2
10	Convincing skills	7%	2
11	Insane inventor	4%	2
12	Picture perception	4%	1
13	Book review	4%	1
14	Movie review	4%	1
15	Critical thinking	4%	1
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Business Correspondence and report Writing, Sharma, R. AND Mohan, k.
2.	Communication Skills, Kumar S and Lata P; New Delhi Oxford University Press
3.	Practical English Usage, Michael Swan
4.	A Remedial English Grammar for Foreign Student, F.T. WOOD
5.	On Writing Well, William Zinsser; Harper Paperbacks,2006; 30th anniversary edition
6.	Oxford Practice Grammar, John Eastwood; Oxford University Press

Semester 04

a. Course Name: **German - II**

b. Course Code: **00019304AE05**

c. Prerequisite: Knowledge of Basic German Language Studied in MEL-1

d. Rationale: German is the second most commonly used scientific language. Germany is the third largest contributor to research and development and offers research fellowships to scientists from abroad. Germany awards a generous number of scholarships and other support to study in Germany. Working holiday visas are available for young people from a range country, and special visas are offered to skilled workers and professionals. There are agreements for student exchange between Germany and many countries of the world. Knowing the language of your German business partners improves your relations and therefore your chances for effective communication and success.

e. Course Learning Objective:

CLOBJ 1	Develop proficiency in basic German vocabulary and grammar to facilitate everyday communication.
CLOBJ 2	Gain cultural understanding and appreciation of German-speaking countries through language immersion activities, such as reading authentic texts and watching German media.
CLOBJ 3	Enhance listening, speaking, reading, and writing skills in German through interactive exercises and assignments.
CLOBJ 4	Acquire the ability to engage in simple conversations, express opinions, and ask questions in German on various topics.
CLOBJ 5	Prepare for real-life situations such as traveling, studying abroad, or interacting with German-speaking individuals in professional contexts.

f. Course Outcomes:

CLO 1	Communicate, understand various City Places, Body Parts, Colours, Professions. Can also able to frame the Sentences with the help of Modal Verbs.
CLO 2	Can communicate in German with Friends and in shopping mall and also able ask and guide Directions in German Language.
CLO 3	Can read basic Passages in German
CLO 4	Write basic topics in German.

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs /Week	Tutorial Hrs/ Week	Lab Hrs /Week	Hrs /Week	Credit	T	CE	P	T	P	
2	-	-	2	2	-	100	-	-	-	100

h. Course Content

Sr.	Topics	Weightage	Hours

1	**Grammar and Vocabulary: (LSRW)** Family Colors Clothing Body Parts Professions City Vocabulary Conjunctions	30%	10
	Modal Verbs Possessive Artikel		
2	**Conversation: (LSRW)** Dialogue (Suggested Situation) Asking Directions Conversation between two People Conversation in shopping mall/Shop My Family	30%	6
3	**Reading Skills:(LSRW)** My university My friend Berlin- Haupstadt (Detailed) My Family	20%	6
4	**Writing Skills:(LSRW)** Passage Writing (suggested Topics) My university My Family My Friend Advertisement	20%	8
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Netzwerk A1 Deutsch als Fremdsprache Kursbuch by Stefanie Dengler, Paul Rusch Klett- Langenscheidt
2.	So geht das -1 By Ujjwal Malhotra| Educational Publishers
3.	German in 30 Days by Goyal Saab | Langenscheidt

Semester 04

a. Course Name: **French - II**
b. Course Code: **00019304AE06**
c. Prerequisite: Knowledge of MIL – 1 (French)
d. Rationale: Basic Communication Skills of French Language

e. Course Learning Objective:

CLOBJ 1	Develop proficiency in French pronunciation, vocabulary, and grammar to enable effective communication in everyday situations.
CLOBJ 2	Cultivate an understanding and appreciation of French-speaking cultures through exposure to authentic materials such as literature, films, and music.
CLOBJ 3	Enhance proficiency in listening, speaking, reading, and writing French through a variety of interactive activities and assignments.
CLOBJ 4	Acquire the ability to engage in conversations, express ideas, and communicate effectively in French on a range of topics, both orally and in writing.
CLOBJ 5	Prepare for practical applications of French language skills, such as traveling, studying abroad, or pursuing professional opportunities in French-speaking regions.

f. Course Outcomes:

CLO 1	Talk about future activities and plans.
CLO 2	Ask and respond to questions in French.
CLO 3	Describe feelings in French.
CLO 4	Talk about likes and dislikes.
CLO 5	Talk about future activities and plans.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
2	-	-	2	2	-	100	-	-	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Grammar:** Articles (definite, indefinite and partitive) Prepositions (à, en, au, aux, à la, à l', chez, du, de la, des, d') Les verbs (Present Tense): ir, re, irregular verbs Le futur Proche Poser et Répondez aux questions (Asking Questions) – Qui, Quand, Où, Pourquoi, Quel, Quelle, Quels, Quelles	33%	10
2	**Listening Skills: Basic Vocabular** **a.** Class room objects **b.** Study Subjects **c.** Common nouns of places **d.** Seasons	17%	5
3	**Speaking Skills:** Talking to a French Speaking Stranger. Talking about hobbies. Talking and writing about hobbies.	17%	5
4	**Reading Skills and Writing Skills:** My family	33%	10

	Les dialogues (Talking to a classmate on the 1st day of school/college. / Talking to a friend about your family or vice versa. / Talking and writing about hobbies. / Talking to a French Speaking Stranger.) My hobbies My Best friend		
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Saison 1 Didier
2.	Enchanté 0
3.	Larrouse Dictionnaire de Poche
4.	Larousse French Grammar (Mini) by Paperback
5.	Plaisir D'ecrire by Viral Thakkar, Saraswati House Pvt. Ltd.

Semester 04

a. Course Name: **Health Informatics and Personalized Medicine**

b. Course Code: **19010004SE01**

c. Prerequisite: Foundational Knowledge in Healthcare Systems, Basic Information Technology Skills, Introduction to Biology and Genetics, Statistics and Data Analysis, Programming Skills.

d. Rationale: Integration of Health Informatics and Personalized Medicine, Emphasis on Data Management and Analytics, Focus on Genomics and Biomarkers.

e. Course Learning Objective:

CLOBJ 1	Grasp the basic concepts, history, and importance of health informatics in modern healthcare.
CLOBJ 2	Learn the various types of health information systems and their functionalities, along with the principles of data management in healthcare settings.
CLOBJ 3	Understand the principles of personalized medicine, including genomics, biomarkers, and pharmacogenomics.
CLOBJ 4	Learn to use bioinformatics tools and data analysis techniques to process and interpret healthcare data.
CLOBJ 5	Understand the strategies for implementing health informatics systems and explore emerging technologies and future trends.

f. Course Outcomes:

CLO 1	Define health informatics, explain its evolution, and describe its impact on healthcare delivery and patient outcomes.
CLO 2	Students will demonstrate the ability to identify and describe different health information systems (EHR, EMR, PHR), understand data collection methods, and ensure data quality and governance.
CLO 3	Explain how genomics and biomarkers are used in personalized medicine, discuss the principles of pharmacogenomics, and describe how these elements contribute to individualized patient care.
CLO 4	Students will acquire skills in using bioinformatics tools, data mining, and machine learning algorithms to analyze healthcare data, develop predictive models, and enhance decision-making in clinical settings.
CLO 5	Describe the system development lifecycle, discuss challenges and solutions in implementing health informatics systems, evaluate their impact on healthcare, and identify future trends and ethical considerations in the field.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
2	-	-	2	2	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**Chapter 1: Introduction to Health Informatics** Definition and scope Importance in modern healthcare Types of health information systems (EHR, EMR, PHR) Key components and functionalities	25%	7
2	**Chapter 2: Foundations of Personalized Medicine**	25%	8
	Definition and principles Comparison with traditional medicine Basics of genomics and genetics Role of genomics in personalized medicine Genetic testing and its applications		
3	**Chapter 3: Data Analysis and Bioinformatics** Introduction to bioinformatics Key bioinformatics tools Applications in health informatics Basics of data mining Machine learning algorithms and their applications	25%	8
4	**Chapter 4: Implementation and Future Trends** System development lifecycle Implementation strategies Future directions in health informatics Ethical, legal, and social implications	25%	7
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	"*Health Informatics: An Interprofessional Approach" by Ramona Nelson and Nancy Staggers*
2.	*Biomedical Informatics: Computer Applications in Health Care and Biomedicine" by Edward H. Shortliffe and James J. Cimino*
3.	"*Principles of Biomedical Informatics" by Ira J. Kalet*
4.	"*Genomic and Personalized Medicine: Foundations, Translation, and Implementation" edited by Geoffrey S. Ginsburg and Huntington F. Willard*
5.	"*Data Science for Healthcare: Methodologies and Applications" by Sergio Consoli, Diego Reforgiato Recupero, and Milan Petković*

Semester 04

a. Course Name: Microbiology & Pathology – II (T)

b. Course Code: 19010004DS01

c. Prerequisite: Knowledge of up to 12th science level and must Passed with **Semester III**

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities.

e. Course Learning Objective:

CLOBJ 1	It helps in explanation of pathologic processes that apply to patients
CLOBJ 2	Demonstrate competency in bacterial sampling and culturing techniques and achieving a pure culture of bacteria
CLOBJ 3	To recognize and diagnose common infectious diseases from the clinical presentation and associated microbiology
CLOBJ 4	Describe the epidemiology of infectious agents including how infectious diseases are transmitted
CLOBJ 5	Understand antimicrobial agents and common mechanisms of antimicrobial action and resistance

f. Course Learning Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, Analysis's information, and solve problems related to anatomy and physiology.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
				Internal Evaluation			**ESE**		TOTAL
L	**T**	**P**	**C**	**T**	**CE**	**P**	**Theory**	**P**	
3	-	-	3	20	20	-	60	-	100

L- Lectures; **T-** Tutorial; **P-** Practical; **C-** Credit; **MSE-** Mid-Semester Evaluation, **CE-** Continuous Evaluation, **ESE-** End Semester Examination

h. Course Content:

Sr.	**Topics**	**Weightage**	**Hours**
1	**Unit-1: Immunology:** Introduction to Immunity and Immune system Types of Immunity Innate immunity- Specific features, components of innate immunity, barriers of innate immunity (physical, physiological and biological) Adaptive Immunity- Specific features, types of adaptive immunity, cellular and humoral immunity. Primary and Secondary lymphoid organ. Immunoglobulins- Genes, classes and functions. Hematopoiesis Antigen - Antibody reactions. Different Immunological techniques	20	8
2	**Unit-2: Systemic Bacteriology:** Gram positive cocci: Streptococci, Staphylococci, Pneumococci. Gram negative bacilli: Enterobacteriaceae group	10	7

	Gram positive bacilli: Clostridium Acid fast bacilli: Mycobacterium Bacterial Infection: Types of infection, Etiology, epidemiology, pathogenesis, symptoms and diagnosis of the following- Cholera Typhoid Anthrax Syphilis Tetanus		
3	**Unit-3: Disease and Transmission:** Normal flora of skin, eye, respiratory tract, mouth, intestinal tract, genitourinary tract. Nosocomial Infection: Epidemiology, Mode of transmission and Prevention Viral Infection Hepatitis AIDS, Polio, Foot and Mouth disease Infection by other microorganism: Etiology, epidemiology, pathogenesis, symptoms and diagnosis of the following- Malaria Spirochetes, Candidiasis, Fungal meningitis, Amebiasis	10	8
4	**Unit-4 Outline of Inflammation and wound healing:** Introduction Types of inflammation Regulation of inflammation Regeneration, repair, wound healing, healing in specialized tissues Neoplasia	30	8
5	**Unit-5: Derangement of Homeostasis & Hemodynamic:** Homeostasis Derangements of Body Water- Oedema, effusion, Dehydration, Overhydration Embolism Shock, Thrombosis, Ischemia, Infarction	20	7
6	**Unit-6: Pathological conditions & Diseases:** • Environmental & Nutritional diseases • Genetic & Pediatric diseases • Bleeding disorders • Disorders of Respiratory system, GIT. • Infectious diseases	10	`7
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1	Microbiology By M.J. Pelczar
2	Kuby Immunology By Jenni Punt, Sharon Stranford, Patricia Jones, Judy Owen
3	Prescott's Microbiology By Joanne M. Willey

Semester 04

a. Course Name: Microbiology & Pathology - II (P)

b. Course Code: 19010004DS02

c. Prerequisite: Knowledge of up to 12th science level and must Passed with **Semester III**

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides a strong foundation for various Healthcare disciplines, promotes problem-solving skills, supports innovation, and opens doors to diverse career opportunities

e. Course Learning Objective:

CLOBJ 1	It helps in explanation of pathologic processes that apply to patients
CLOBJ 2	Demonstrate competency in bacterial sampling and culturing techniques and achieving a pure culture of bacteria
CLOBJ 3	To recognize and diagnose common infectious diseases from the clinical presentation and associated microbiology
CLOBJ 4	Describe the epidemiology of infectious agents including how infectious diseases are transmitted
CLOBJ 5	Understand antimicrobial agents and common mechanisms of antimicrobial action and resistance

f. Course Learning Outcomes:

CLO 1	Be able to accurately and confidently use anatomical and physiological terms to describe the human body.
CLO 2	Gain a basic understanding of the major body systems and their roles in maintaining homeostasis.
CLO 3	Gain an understanding of how the structure of different body parts is directly related to their function.
CLO 4	Be able to use your understanding of anatomy and physiology to explain common health phenomena and make informed decisions about your own health.
CLO 5	Improve your ability to think critically, Analysis's information, and solve problems related to anatomy and physiology.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		TOTAL
				T	**CE**	**P**	**Theory**	**P**	
-	-	2	1	-	-	20	-	30	50

L- Lectures; **T-** Tutorial; **P-** Practical; **C-** Credit; **MSE-** Mid-Semester Evaluation, **CE-** Continuous Evaluation, **ESE-** End Semester Examination

h. Course Content:

Sr. No.	**Content**	**Weightage**	**Teaching Hours**
1	Hanging drop preparation	10%	4
2	Isolation and identification of fungi on SDA agar media	10%	4
3	Serological testing	10%	2
4	Culture and drug sensitivity of blood, CSF, body fluids, etc.	10%	4
5	Differential blood count - RBC, WBC	10%	4
6	Cell counts of body fluids and biochemistry	10%	2
7	Semen analysis	10%	4
8	Basic histological techniques	10%	2

9	BT, CT, PT, APTT, INR etc.	10%	2
10	Electrophoresis	10%	2
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1	Microbiology By M.J. Pelczar
2	Kuby Immunology By Jenni Punt, Sharon Stranford, Patricia Jones, Judy Owen
3	Prescott's Microbiology By Joanne M. Willey

Semester 04

a. Course Name: **Foundations of Yoga**

b. Course Code: **00019404VA01**

c. Prerequisite: An open mind, basic health, consistency, a quiet space, comfortable clothing, a yoga mat, proper guidance, and a willingness to connect with your body, breath, and mind.

d. Rationale: The foundation of yoga promotes physical flexibility, mental clarity, emotional resilience, and spiritual growth, fostering a holistic approach to well-being that enhances overall health and encourages a deeper connection between mind, body, and spirit.

e. Course Learning Objective:

CLOBJ 1	Learners will master the sequence, alignment, and relaxation techniques of standing, sitting, supine, and prone yoga postures to enhance flexibility, strength, and balance.
CLOBJ 2	Learners will practice and internalize breathing exercises such as Suryabhedana, Ujjayi, Sitkari, and Nadishuddhi to improve respiratory efficiency and mental focus.
CLOBJ 3	Learners will gain competence in cleansing techniques like Jalaneti, Kapalabhati, and Trataka to purify the body and mind.
CLOBJ 4	Learners will be able to apply relaxation methods, including Yoga Nidra and Breath Awareness, to cultivate mindfulness and reduce stress.
CLOBJ 5	Learners will explore the significance and perform mudras and bandhas to channel energy effectively within the body

f. Course Outcomes:

CLO 1	To introduce students to the basic principles and philosophy of yoga.
CLO 2	To provide an understanding of the physical and mental benefits of yoga.
CLO 3	To teach foundational yoga postures, breathing techniques, and meditation practices.
CLO 4	To cultivate a personal yoga practice that promotes well-being and stress management.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
1	-	2	3	2	40	40	20	60	30	150

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Yoga:** Definition and History of Yoga Different Paths of Yoga (Hatha, Raja, Karma, Bhakti, Jnana) Importance and relevance of Yoga in modern life	20%	3
2	**Philosophy of Yoga:** The Eight Limbs of Yoga (Ashtanga Yoga) Basic concepts of Patanjali's Yoga Sutras Concept of Mind, Body, and Spirit connection	15%	2

3	**Basic Anatomy and Physiology for Yoga:** Understanding the Musculoskeletal System Respiratory and Circulatory Systems in relation to Yoga	20%	3
	Physiological and Anatomical Effects of Asanas on the Human Body		
4	**Introduction to Pranayama and Meditation:** Basics of Pranayama (Breathing Techniques) Introduction to Meditation: Importance and Benefits Techniques for Developing Concentration and Mindfulness	20%	3
5	**Shat chakras**	5%	1
6	**Yoga and Health:** Physical and Mental Health Benefits of Yoga Yoga for Stress Management Yoga and Lifestyle Diseases (e.g., Hypertension, Diabetes)	20%	3
	Total teaching hours for the academic year	**100%**	**15**

i. List of Practical

1	**Warm-up and Preparation:** • Basic Warm-up Exercises • Joint Mobilization and Stretching
2	**Foundational Yoga Postures:** • Standing Postures: Tadasana, Ardhakatichakrasana, Ardhachakrasana,Padahastasana, Trikonasana and Vrikshasana step by step with Sthiti, main procedure, and vishrama. • Sitting Postures: Vajrasana, Suptavajrasana, Shashankasana, Ushtrasana,Marjarasana,Pashchimottanasana, Bhadrasana, Swasthikasana, Siddhasana,Padmasana, Gomukhasana and Ardhamatsyendrasana step by step with Sthiti, main procedure, and vishrama. • Supine Postures: Shavasana, Pavanamuktasana, Sarvangasana, Matsyasana, Halasana, Chakrasana and Setubandhasana step by step with Sthiti, main procedure and visrama • Prone Postures: Bhujangasana, Shalabhasana, Dhanurasana, and Makarasana step by step with Sthiti, main procedure and vishrama. • Introduction to Sun Salutations (Surya Namaskar).
3	**Pranayama Techniques:** • Perform Kumbhakabhedas namely-Suryabhedana, Ujjayi, Sitkari, Sheetali, Bhastrika and Bhramari. • Perform Nadishuddhi Pranayama with inhalation-retention-exhalation in the ratio of 1:4:2 in a comfortable sitting posture.
4	**Shuddhikriya Techniques:** • Perform Jalaneti, Kapalabhati and Trataka
5	**Meditation and Relaxation Techniques:** • Guided Meditation for Beginners • Techniques for Relaxation: Yoga Nidra • Mindfulness Meditation Practice • Breath Awareness Meditation.
6	Mudras and Bandhas

j. Text Book and Reference Book:

1.	A Text book of Sports and Exercise Physiology By Dey, Swapan Kumar | Jaypee Brothers Medical publishers
2.	Competition Level Book of Sports and Games By Dr. A. Mahaboojan, and etal | Lakshya Publisher and Distributor

3.	Exercise, Physiology, Fitness and sports Nutrition By B. Srilakshmi,V.Suganthi and G. Kalaivani Ashok | New AgeInternational Publisher
4.	Health and Physical Education By Puri & Chandra S S | Surjeet Publications
5.	Rules of Games and Sports, Updated Version 2024 By Shrivastava, Singh and Kumar | KSK Publishers and Distributors, Delhi
6.	Sports Nutrition and Weight Management By Prof. V. Satyanarayana | Sports Publications, Delhi
7.	Swasthya Shiksha By Dixit, Suresh | Sports Publications, Delhi
8.	Principles and History of Physical Education By Kamlesh, M.L | New Delhi: Friends Publication
9.	Light on Yoga (TextBook) By B.K.S. Iyengar
10.	The Yoga Sutras of Patanjali (TextBook) By Swami Satchidananda
11.	The Heart of Yoga (TextBook) By T.K.V. Desikachar
12.	Yoga Anatomy (TextBook) By Leslie Kaminoff and Amy Matthews

Semester 04

a. Course Name: **Physical Education and Sports**
b. Course Code: **00019404VA02**
c. Prerequisite: Basic understanding of physical fitness concepts and a willingness to actively participate in physical activities and team-based sports.
d. Rationale: The objective of this course is promoting physical health, enhancing mental well-being, fostering social skills, and encouraging lifelong habits of fitness and teamwork, ultimately contributing to holistic personal development and community cohesion.

e. Course Learning Objective:

CLOBJ 1	Learners will acquire practical knowledge and skills in marking fields and courts, ensuring accurate dimensions and adherence to standards.
CLOBJ 2	Learners will engage in activities that enhance coordination, communication, and teamwork by participating in group games and relay races.
CLOBJ 3	Learners will practice general warm-up, stretching, and cardio exercises to enhance flexibility, respiratory health, and overall physical fitness
CLOBJ 4	Learners will participate in walking, skipping, and running exercises to build endurance and cardiovascular strength.
CLOBJ 5	Learners will refine their fundamental game skills and participate in match practices to strengthen strategy and performance in sports.

f. Course Outcomes:

CLO 1	Learning of New Skills in Games and Sports.
CLO 2	Develop healthy life style practices.
CLO 3	Acquire Knowledge of well- being and physical fitness.
CLO 4	Maintain physical fitness through sports.
CLO 5	Improve skills of critical thinking, creative-thinking, problem-solving, team-work leadership, cooperative Behaviour and technical competencies.
CLO 6	Acquire information of sports initiatives of the Government.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
1	-	2	3	2	40	40	20	60	30	150

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**History and Basic Concept of Sports and Fitness**: Concept of Sports and Fitness Aims and Objectives,Importance of Sports and Fitness Difference between Games and Sports History of Sports Ancient and Modern Olympics Asian Games and Common Wealth Gamesfunctioning	33%	5
2	**Concepts of Physical Fitness and Rules and Techniques of Games:** Concepts of Physical Fitness Fitness Components Meaning and development of strength, speed and accuracy in different physical activities	34%	5

	Sports Nutrition Importance of a Balanced Diet Rules and Techniques (games like Football, Athletics, Kho Kho, Kabaddi, Hockey etc.) Basic concepts and rules of different sports Fundamental Skills of Games and Sports		
3	**Trends in Sports and Fitness:** Personality Development through Sports Team building through Group games General Sports Policies Role of Khel Mahakumbh in Gujarat to promote Sports Careers in Physical Education and Sports	33%	5
	Total teaching hours for the academic year	**100%**	**15**

i. List of Practical

1	**Fundamental Skill Development Activities:** Marking fields or courts on ground, Group Games or Relay Race, Outdoor Games, Fundamental Skill Development Activities: Practicing general warm-up, stretching Practicing cardio and respiratory fitness Walking, Skipping and Running Participate and match practice in Game and Sports.

j. Text Book and Reference Book:

1.	A Text book of Sports and Exercise Physiology By Dey, Swapan Kumar | Jaypee Brothers Medical publishers
2.	Competition Level Book of Sports and Games By Dr. A. Mahaboojan, and etal | Lakshya Publisher and Distributor
3.	Exercise, Physiology, Fitness and sports Nutrition By B. Srilakshmi,V.Suganthi and G. Kalaivani Ashok | New AgeInternational Publisher
4.	Health and Physical Education By Puri & Chandra S S | Surjeet Publications
5.	Rules of Games and Sports, Updated Version 2024 By Shrivastava, Singh and Kumar | KSK Publishers and Distributors, Delhi
6.	Sports Nutrition and Weight Management By Prof. V. Satyanarayana | Sports Publications, Delhi
7.	Swasthya Shiksha By Dixit, Suresh | Sports Publications, Delhi
8.	Principles and History of Physical Education By Kamlesh, M.L | New Delhi: Friends Publication

Semester 04

a. Course Name: **National Cadet Corps (NCC)**
b. Course Code: **00019404VA03**
c. Prerequisite: Student who opt for this course should be physically fit and free from any major ailment.
d. Rationale: The objective of the NCC as a value-added course is to develop character, comradeship, secular outlook, discipline, leadership, and a spirit of adventure among youth.

e. Course Learning Objective:

CLOBJ 1	Understand the history, significance, organizational structure, and functioning of NCC to appreciate its role in national development.
CLOBJ 2	Explore leadership qualities, communication skills, team-building strategies, and management styles for personality development.
CLOBJ 3	Recognize the importance of national integration by understanding cultural diversity and promoting unity.
CLOBJ 4	Familiarize with basic health and hygiene practices, along with first aid and emergency response techniques for better community health.
CLOBJ 5	Gain insight into conservation, sustainable practices, and the role of NCC in promoting environmental protection.
CLOBJ 6	Examine various types of disasters, their impacts, and effective preparedness and response strategies to enhance resilience.
CL07	Investigate the role of NCC in community service and develop strategies to plan and execute impactful social service activities.

f. Course Outcomes:

CLO 1	Demonstrate the ability to work effectively in teams with mutual respect, fostering camaraderie and teamwork
CLO 2	Exhibit self-discipline and adhere to established rules and regulations in various activities, promoting an organized and disciplined approach.
CLO 3	Develop leadership qualities, including decision-making, problem-solving, and the ability to inspire and motivate others.
CLO 4	Understand and respect diverse cultures and religions, promoting unity, harmony, and a secular outlook in all interactions
CLO 5	Engage in activities that enhance physical fitness, environmental awareness, and resilience, fostering a spirit of adventure and sustainable living
CLO 6	Actively participate in community service initiatives, demonstrating social responsibility, empathy, and a commitment to societal well-being.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
1	-	2	2	2	40	40	20	60	30	150

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**Introduction to NCC:** History and significance of NCC, Organizational structure and functioning	14%	2
2	**Leadership and Personality Development:** Leadership qualities and styles, Communication skills, Team	16%	3
	building and management.		
3	**National Integration and Awareness:** Importance of national integration, Cultural diversity and unity	14%	2
4	**Health and Hygiene:** Basic health and hygiene practices, First aid and emergency response	14%	2
5	**Environmental Awareness:** Conservation and sustainable practices, Role of NCC in environmental protection	14%	2
6	**Disaster Management:** Types of disasters and their impact, Preparedness and response strategies	14%	2
7	**Social Service and Community Development:** Role of NCC in community service, Planning and executing social service activities	14%	2
	Total teaching hours for the academic year	**100%**	**15**

i. List of Practical

1	Drill: Basic drill movements, Marching and parade techniques.
2	Physical Fitness: Physical training exercises, Endurance, strength building, and Yogasana.
3	Community Service Projects: Participation in local community service projects, Planning and execution of social activities.

j. Text Book and Reference Book:

1.	Cadet's Hand Book Common Subject, All Wings (in English DGNCC, New Delhi
2.	Cadet's Hand Book Common Subject, All Wings (in Hindi) DGNCC, New Delhi)
3.	Cadet's Hand Book Specialized Subject, All Wings DGNCC, New Delhi

Semester 04

a. Course Name: **Psychology of Stress, Health and Wellbeing**

b. Course Code: **15M10504VA01**

c. Prerequisite: There is no prerequisite

d. Rationale: Mental distress is pervasive, but psychology is increasingly concerned with the improvement of well-being. This course looks at health, stress, happiness, and adjustment, with both challenges and strengths in human behavior. It provides insights that lead to a richer and more satisfying life.

e. Course Learning Objective:

CLOBJ 1	Comprehend the nature and physiology of stress, its impact on health (infectious, non-infectious, and psychological disorders), and the potential for posttraumatic growth.
CLOBJ 2	Explore various coping strategies, including physical, mental, and social approaches, along with mindfulness and the unconscious mechanisms of defensive coping.
CLOBJ 3	Understand the components of happiness, including genetic set-points, socio-economic factors, positive emotions, and sustainable happiness models with intentional activities.
CLOBJ 4	Engage with advanced concepts of happiness, focusing on eudaimonic well-being, self-determination, meaning in life, and the practice of Logo therapy.
CLOBJ 5	Evaluate the significance of positive mental health and well-being by integrating coping mechanisms and happiness practices into daily life.

f. Course Outcomes:

CLO 1	Explain the physiological and psychological processes of stress and its connection to health, trauma, and well-being, including its role in posttraumatic growth.
CLO 2	Implement effective coping strategies, including mindfulness, social support, and physical and mental methods, to address stress and enhance resilience
CLO 3	Differentiate between maladaptive and constructive coping mechanisms, evaluating their impact on psychological well-being and stress recovery.
CLO 4	Assess the influence of socio-economic factors, genetic predispositions, and intentional activities on happiness and sustainable well-being
CLO 5	Develop personalized strategies to cultivate happiness through activities like gratitude expression, identifying strengths, and achieving flow, while avoiding detrimental behaviors such as overthinking.
CLO 6	Design a comprehensive well-being plan integrating the principles of eudaimonic well-being, self-determination, meaning in life, and long-term life goals.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
2	-	-	2	2	40	40	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Stress, Trauma and Health: Nature and physiology of stress Mind-body connections Stress and diseases: Infectious, Non-infectious and	25%	8

	Psychological disorders Stress, trauma and posttraumatic growth Factors influencing stress		
2	Stress and Coping: Types of coping strategies Unconscious mind and defensive coping Characteristics of constructive coping Physical ways of coping Mind-body strategies Mental ways of coping Coping with social support, meaning in life and Mindfulness Positive mental health and well-being	25%	8
3	Psychology of Happiness-I: What is happines and what makes us happy? Socio-economic factors and happiness Positive emotions Genetic set-point and hedonic adaptation Sustainable happiness model and intentional activities Happiness Activities-I	25%	7
4	Psychology of Happiness-II: Happiness Activities-II Concept of eudaimonic well-being, self-determination and motivation Concept of meaning of life Logo therapy	25%	7
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Explain the physiological and psychological processes of stress and its connection to health, trauma, and well-being, including its role in posttraumatic growth.
2.	Implement effective coping strategies, including mindfulness, social support, and physical and mental methods, to address stress and enhance resilience.
3.	Differentiate between maladaptive and constructive coping mechanisms, evaluating their impact on psychological well-being and stress recovery.
4.	Assess the influence of socio-economic factors, genetic predispositions, and intentional activities on happiness and sustainable well-being
5.	Develop personalized strategies to cultivate happiness through activities like gratitude expression, identifying strengths, and achieving flow, while avoiding detrimental behaviors such as overthinking.
6.	Design a comprehensive well-being plan integrating the principles of eudaimonic well-being, self-determination, meaning in life, and long-term life goals.

Semester 04

a. **Course Name:** Applied Medicine & Pharmacology-I (Theory)
b. **Course Code:** 19010004DS03
c. **Prerequisites:** Students need knowledge of basic biology, microbiology, and biochemistry, along with skills in laboratory techniques, critical analysis, and clinical observations.
d. **Rationale:** Understanding immunology, bacteriology, disease transmission, inflammation, homeostasis, and various pathological conditions is crucial for diagnosing and managing infections, immune responses, and systemic disorders effectively.
e. **Course Learning Objective:**

CLOBJ 1	Students will learn all types of Clinical, Para clinical and Surgical Conditions.
CLOBJ 2	Students will understand exact mechanism of all types of important Disease conditions.
CLOBJ 3	Students will able to bifurcate disease conditions into two types of management: Medical and Surgical
CLOBJ 4	To identify a range of drugs used in medicine and discuss their mechanisms of action.
CLOBJ 5	To explain the mechanisms of action and pathology of ethanol and drugs of abuse

f. **Course Learning Outcomes:**

CLO 1	Know the basic pre-clinical - para clinical - clinical subjects
CLO 2	Applied Medicine Is application of Medical Knowledge in Patients for Diagnosis, Treatment & Prevention of Diseases
CLO 3	Students will be able to understand different types of divisions and disease conditions like GENERAL MEDICINE, GENERAL SURGERY, OBGY, PEDIATRIC, ORTHOPEDICS, ANAESTHESIA
CLO 4	Learn about how to take history & communications with patient common symptoms & sign of disease
CLO 5	Applying knowledge of medicines in patient care, evidence-based prescribing

g. **Teaching And Examination Scheme:**

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs./ Week	**Tutorial Hrs./ Week**	**Lab Hrs./ Week**	**Total Hrs./**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

Lect.- Lecture, Lab.- Lab, Tut - Tutorial, T - Theory, P - Practical, CE - CE, T - Theory, P – Practical

h. **Content:**

UNIT	**CONTENTS**	**WEIGHTAGE**	**HOURS**
1	**Unit-1: General Surgery:** History Taking and clinical examination in Surgery (General & local examination) Over view of sign & symptoms of abdominal diseases with figure of abdominal organ and organ wise diseases Visits of OPD, Casualty, OT, wards, laboratory, CSSD etc. Common surgical emergencies like burns,	18%	10

	trauma – abdominal, chest & head, intestinal obstruction & perforation, Appendicitis. Wound, Ulcer, Inflammation, Abscess		
2	**Unit-2: General Medicine:** History taking & clinical examination in Medicine (General & systemic Examination) Overview of Common medical emergencies like poisoning, snake bite, convulsions, MI, status asthmatics, status epileptics, acute LVF, acute pulmonary Embolism, unstable angina, Tension Pneuthorax, Diabetic Ketoacidosis **Overview of** Diabetes, jaundice, Hypertension, Fever, TB, AIDS, Anaemia, RESPIRATORY Diseases	18%	10
3	**Unit-3: OBGY:** History taking & clinical examination in OBGY (General & local examination) Antenatal Care & labour management Bleeding P.V., Leucorrhoea Common emergencies in OBGY Like PPH, APH, Eclampsia.	15%	10
4	**Unit-4: Outline of General Pharmacology:** Introduction Definitions Source of drugs Distribution of drugs	15%	10
5	**Unit-5: Outline of Administration and Fate of Drugs:** ute of drugs administration rm of drugs and dosage sorption and bioavailability of drugs ctors affecting drug metabolism Biotransformation of drugs	17%	10
6	**Unit-6: Outline of Drug Action, Receptors and Excretion:** Methods of prolonging the duration of drug action Site of drug action Mechanism of drug action Adverse drugs reaction in man ±ADR Manifestation of ADR Treatment of drug poisoning Factors modifying the effect of drug Drug receptors Dose response relationship Introduction about excretion of drug Route other than absorption site	17%	10
	Total teaching hours for the academic year	**100%**	**60**

i. Reference Books

1.	**DC Datta' s Textbook of Gynecology** By Hiralal Konar

2.	**Golwalla ' s Medicine for Student** By Aspi F.Golwalla & Sharukh A.Golwalla
3.	**Essentials of Medical Pharmacology** By K.D.Tripathi
4.	**Sharma & Sharma's Principles of Pharmacology** By H. L. Sharma & K.K. Sharma
5.	**Medical Pharmacology** By Padmaja Udaykumar

Semester 04

a. Course Name: Applied Medicine & Pharmacology-I (Practical)
b. Course Code: 19010004DS04
c. Prerequisites: Students need knowledge of basic biology, microbiology, and biochemistry, along with skills in laboratory techniques, critical analysis, and clinical observations.
d. Rationale: Understanding immunology, bacteriology, disease transmission, inflammation, homeostasis, and various pathological conditions is crucial for diagnosing and managing infections, immune responses, and systemic disorders effectively.
e. Course Learning Objective:

CLOBJ 1	Students will learn all types of Clinical, Para clinical and Surgical Conditions.
CLOBJ 2	Students will understand exact mechanism of all types of important Disease conditions.
CLOBJ 3	Students will able to bifurcate disease conditions into two types of management: Medical and Surgical
CLOBJ 4	To identify a range of drugs used in medicine and discuss their mechanisms of action.
CLOBJ 5	To explain the mechanisms of action and pathology of ethanol and drugs of abuse

f. Course Learning Outcomes:

CLO 1	Know the basic pre-clinical - para clinical - clinical subjects
CLO 2	Applied Medicine Is application of Medical Knowledge in Patients for Diagnosis, Treatment & Prevention of Diseases
CLO 3	Students will be able to understand different types of divisions and disease conditions like GENERAL MEDICINE, GENERAL SURGERY, OBGY, PEDIATRIC, ORTHOPEDICS, ANAESTHESIA
CLO 4	Learn about how to take history & communications with patient common symptoms & sign of disease
CLO 5	Applying knowledge of medicines in patient care, evidence-based prescribing

g. Teaching And Examination Scheme:

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs./ Week	**Tutorial Hrs./ Week**	**Lab Hrs./ Week**	**Total Hrs./**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
-	-	4	4	2	-	-	20	-	30	50

Lect.- Lecture, Lab.- Lab, Tut - Tutorial, T - Theory, P - Practical, CE - CE, T - Theory, P – Practical

h. List Of Skills / List of Practical

Sr. No.	**COMPETENCIES**	**WEIGHTAGE**	**HOURS**
1	Definition, sources of drugs and drug development	10%	10
2	Introduction to Clinical pharmacy	10%	10
3	Solid dosage forms	15%	10
4	Liquid dosage forms – oral	10%	10
5	Liquid dosage forms – parenteral	15%	10

6	Liquid dosage form of topical formulations	15%	03
7	Dosage calculation	15%	02
8	Sources of drug information	10%	05
	Total Practical hours for the academic year	**100%**	**60**

i. Reference Books

1.	**DC Datta' s Textbook of Gynecology** By Hiralal Konar
2.	**Golwalla ' s Medicine for Student** By Aspi F.Golwalla & Sharukh A.Golwalla
3.	**Essentials of Medical Pharmacology** By K.D.Tripathi
4.	**Sharma & Sharma's Principles of Pharmacology** By H. L. Sharma & K.K. Sharma
5.	**Medical Pharmacology** By Padmaja Udaykumar

Semester 04

a. Course Name: **Ocular Diseases (T)**
b. Course Code: **19011003DS03**
c. Prerequisite: fundamental knowledge of human anatomy and physiology, particularly of the eye and its associated structures.
d. Rationale: A solid understanding of human anatomy and physiology provides the necessary foundation for comprehending how ocular diseases manifest and progress.

e. Course Learning Objective:

CLO1	Students should gain a deep understanding of the underlying mechanisms and pathophysiology of common ocular diseases, including conditions such as glaucoma, cataracts, age-related macular degeneration (AMD), diabetic retinopathy, and retinal detachment.
CLO2	Students should learn to recognize the signs and symptoms of various ocular diseases through clinical examination, patient history, and diagnostic tests such as visual acuity testing, tonometry, fundoscopic examination, optical coherence tomography (OCT
CLO3	Students should familiarize themselves with the different treatment modalities available for managing ocular diseases, including pharmacological interventions (e.g., eye drops, injections), surgical procedures (e.g., cataract surgery, laser therapy), and non-invasive therapies (e.g., lifestyle modifications, low vision rehabilitation)
CLO4	Students should be able to assess the prognosis of ocular diseases based on factors such as disease severity, progression, response to treatment, and potential complications.
CLO5	Students should learn about preventive measures and risk factors associated with ocular diseases, such as maintaining a healthy lifestyle, regular eye examinations, protective eyewear, and adherence to treatment regimens for systemic conditions that affect the eyes (e.g., diabetes, hypertension).

f. Course Outcomes:

CO1	Students will be able to accurately recognize and diagnose a variety of ocular diseases based on clinical signs, symptoms, patient history, and diagnostic test results.
CO2	Students will develop the ability to formulate evidence-based treatment plans for ocular diseases, considering factors such as disease severity, patient preferences, comorbidities, and available treatment options.
CO3	Students will be able to effectively communicate with patients diagnosed with ocular diseases, providing clear explanations of their condition, treatment options, prognosis, and lifestyle modifications.
CO4	Students will understand the importance of ongoing monitoring and follow-up in the management of ocular diseases, including regular eye examinations to assess disease progression, treatment efficacy, and potential complications.
CO5	Students will be equipped with the knowledge and skills to critically evaluate scientific literature, research findings, and clinical guidelines related to ocular diseases.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**		**Total**
Lecture	**Tutorial Hrs/**	**Lab Hrs**	**Hrs**	**Credit**	**Internal Marks**	**External Marks**	

Hrs /Week	Week	/Week	/Week		T	CE	P	T	P	
-	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	**Common Ocular Disorders** Cataracts Glaucoma Age-related macular degeneration (AMD) Diabetic retinopathy Retinal detachment Conjunctivitis Dry eye syndrome Myopia, hyperopia, astigmatism, and presbyopia.	**30%**	**15**
2	**Ocular Examination Techniques** Visual acuity testing Slit-lamp biomicroscopy Fundoscopy (direct and indirect ophthalmoscopy) Tonometry for intraocular pressure measurement Pupil examination and testing for ocular motility Optical coherence tomography (OCT) Visual field testing Fluorescein angiography A-scan and B-scan ultrasound	**30%**	**15**
3	**Ocular Emergencies and Urgent Care** Acute angle-closure glaucoma Traumatic eye injuries Chemical burns and ocular exposures Medical and surgical interventions Lifestyle modifications and patient education	**40%**	**15**
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Contact Lens Practice by Nathan Efron
2.	Clinical Manual of Contact Lenses by Edward S. Bennett and Vinita Allee Henry
3.	Contact Lenses: A Clinical Approach to Fitting by Rupal H. Shah
4.	The Contact Lens Manual: A Practical Guide to Fitting" by Andrew Gasson and Judith A. Morris
5.	Manual of Contact Lens Prescribing and Fitting by Milton M. Hom and Adrian S. Bruce.

Semester 04

a. Course Name: **Ocular Diseases (P)**
b. Course Code: 19011003DS04
c. Prerequisite: fundamental knowledge of human anatomy and physiology, particularly of the eye and its associated structures.
d. Rationale: A solid understanding of human anatomy and physiology provides the necessary foundation for comprehending how ocular diseases manifest and progress.

e. Course Learning Objective:

CLO1	Students should gain a deep understanding of the underlying mechanisms and pathophysiology of common ocular diseases, including conditions such as glaucoma, cataracts, age-related macular degeneration (AMD), diabetic retinopathy, and retinal detachment.
CLO2	Students should learn to recognize the signs and symptoms of various ocular diseases through clinical examination, patient history, and diagnostic tests such as visual acuity testing, tonometry, fundoscopic examination, optical coherence tomography (OCT
CLO3	Students should familiarize themselves with the different treatment modalities available for managing ocular diseases, including pharmacological interventions (e.g., eye drops, injections), surgical procedures (e.g., cataract surgery, laser therapy), and non-invasive therapies (e.g., lifestyle modifications, low vision rehabilitation)
CLO4	Students should be able to assess the prognosis of ocular diseases based on factors such as disease severity, progression, response to treatment, and potential complications.
CLO5	Students should learn about preventive measures and risk factors associated with ocular diseases, such as maintaining a healthy lifestyle, regular eye examinations, protective eyewear, and adherence to treatment regimens for systemic conditions that affect the eyes (e.g., diabetes, hypertension).

f. Course Outcomes:

CO1	Students will be able to accurately recognize and diagnose a variety of ocular diseases based on clinical signs, symptoms, patient history, and diagnostic test results.
CO2	Students will develop the ability to formulate evidence-based treatment plans for ocular diseases, considering factors such as disease severity, patient preferences, comorbidities, and available treatment options.
CO3	Students will be able to effectively communicate with patients diagnosed with ocular diseases, providing clear explanations of their condition, treatment options, prognosis, and lifestyle modifications.
CO4	Students will understand the importance of ongoing monitoring and follow-up in the management of ocular diseases, including regular eye examinations to assess disease progression, treatment efficacy, and potential complications.
CO5	Students will be equipped with the knowledge and skills to critically evaluate scientific literature, research findings, and clinical guidelines related to ocular diseases.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**		**Total**
Lecture	**Tutorial Hrs/**	**Lab Hrs**	**Hrs**	**Credit**	**Internal Marks**	**External Marks**	

Hrs /Week	Week	/Week	/Week		T	CE	P	T	P	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	Topics	Weightage	Hours
1	**Introduction to common ocular disorders** Demonstrate the proper use of a slit-lamp biomicroscope. Use model eyes to practice external ocular examination techniques.	50%	10
2	**Myopia, hyperopia, astigmatism, and presbyopia** Refractive correction methods (eyeglasses, contact lenses). Practice prescribing corrective lenses based on refractive errors. **Tonometry for measuring intraocular pressure** Pupil assessment and testing for ocular motility	25%	10
3	**Optical coherence tomography (OCT)** Visual field testing Conduct pupil examinations on fellow students. Measure intraocular pressure using a tonometer on model eyes.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Contact Lens Practice by Nathan Efron
2.	Clinical Manual of Contact Lenses by Edward S. Bennett and Vinita Allee Henry
3.	Contact Lenses: A Clinical Approach to Fitting by Rupal H. Shah
4.	The Contact Lens Manual: A Practical Guide to Fitting" by Andrew Gasson and Judith A. Morris
5.	Manual of Contact Lens Prescribing and Fitting by Milton M. Hom and Adrian S. Bruce.

Semester 04

a. Course Name: **Binocular Vision (T)**
b. Course Code: **19011004DS01**
c. Prerequisite: Understanding binocular vision is a basic understanding of the anatomy and physiology of the visual system
d. Rationale: Binocular vision relies on the coordinated function of both eyes and the integration of visual information in the brain.

e. Course Learning Objective:

CLO1	Students should learn about the structures of the eyes, such as the cornea, lens, retina, optic nerve, and visual cortex, and how they work together to facilitate binocular vision.
CLO2	Students should understand how the brain processes visual information from both eyes to create depth perception and stereopsis, including concepts like binocular disparity, convergence, and fusion.
CLO3	Students should learn about the developmental milestones and critical periods during which binocular vision develops in infants and young children, as well as factors that may influence its development, such as visual experience and ocular alignment.
CLO4	Students should understand how binocular vision contributes to tasks such as depth perception, hand-eye coordination, spatial awareness, and perception of motion.
CLO5	Students should be able to recognize and describe conditions such as strabismus (ocular misalignment), amblyopia (lazy eye), and binocular vision dysfunction, as well as their impact on visual function and quality of life.

f. Course Outcomes:

CO1	Students will demonstrate the ability to accurately perceive depth and distance by integrating visual cues from both eyes, including binocular disparity, convergence, and accommodation.
CO2	Students will develop and refine their stereoacuity skills, allowing them to discern fine differences in depth perception and achieve higher levels of stereopsis through practical exercises and assessments.
CO3	Students will be able to recognize common binocular vision disorders such as strabismus, amblyopia, and convergence insufficiency, and employ appropriate diagnostic techniques to assess ocular alignment and visual function
CO4	Students will acquire the knowledge and skills necessary to design and implement tailored treatment plans for individuals with binocular vision disorders, including vision therapy exercises, prismatic corrections, and coordination with other healthcare professionals as needed.
CO5	By critically evaluating research literature and experimental findings in the field of binocular vision, students will demonstrate the ability to assess the validity and significance of scientific evidence, and apply relevant research findings to clinical practice for optimal patient care and outcomes.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	**Introduction to Binocular Vision.** Overview of binocular vision and its significance in visual function. **Binocular Vision and Space perception development.** a) Fusion, diplopia, correspondence. b) Stereopsis, Panum's area, BSV. c) Stereopsis and monocular clues - significance. d) Egocentric location, clinical applications. e) Theories of Binocular vision. f) Relative subjective visual direction. g) Alternation – theory of Binocular Vision. h) Projection theory of Binocular Vision. i) Motor theory of visual orientation. **Summary of Anatomy of Extra Ocular Muscles.** a) Rectii and Obliques, LPS. b) Innervation & Blood Supply. **Physiology of Ocular movements.** a) Center of rotation, Axes of Fick. b) Action of individual muscle. **Laws of ocular motility** a) Donder's and Listing's law b) Sherrington's law c) Hering's law **Uniocular & Binocular movements - fixation, saccadic & pursuits.** a) Version & Vergence. b) Fixation & field of fixation c) Nystagmus.	50%	20
2	**Near Vision Complex** **Accommodation** i) Definition and mechanism (process). ii) Methods of measurement. iii) Stimulus and innervation. iv) Types of accommodation. v) Anomalies of accommodation – aetiology and management. **Convergence** i) Definition and mechanism. ii) Methods of measurement. iii) Types and components of convergence - Tonic, accommodative, fusional, proximal. iv) Anomalies of Convergence – aetiology and management. **Pupillary Construction.** Relation to Accommodation and Convergence. Physiologic significance. Reaction to fusion.	30%	15
3	**Visual Acuity** Definition & basic concepts. Factors of affecting Visual acuity.	20%	10

	Optical effects of spectacles. Aniseikonia **10) Sensory adaptations** Confusion Suppression Abnormal Retinal Correspondence Blind spot syndrome. **11) Amblyopia** Definition & types Investigations Management		
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Contact Lens Practice by Nathan Efron
2.	Clinical Manual of Contact Lenses by Edward S. Bennett and Vinita Allee Henry
3.	Contact Lenses: A Clinical Approach to Fitting by Rupal H. Shah
4.	The Contact Lens Manual: A Practical Guide to Fitting" by Andrew Gasson and Judith A. Morris
5.	Manual of Contact Lens Prescribing and Fitting by Milton M. Hom and Adrian S. Bruce.

Semester 04

a. Course Name: **Binocular Vision (P)**
b. Course Code: **19011004DS02**
c. Prerequisite: Understanding binocular vision is a basic understanding of the anatomy and physiology of the visual system
d. Rationale: Binocular vision relies on the coordinated function of both eyes and the integration of visual information in the brain.

e. Course Learning Objective:

CLO1	Students should learn about the structures of the eyes, such as the cornea, lens, retina, optic nerve, and visual cortex, and how they work together to facilitate binocular vision.
CLO2	Students should understand how the brain processes visual information from both eyes to create depth perception and stereopsis, including concepts like binocular disparity, convergence, and fusion.
CLO3	Students should learn about the developmental milestones and critical periods during which binocular vision develops in infants and young children, as well as factors that may influence its development, such as visual experience and ocular alignment.
CLO4	Students should understand how binocular vision contributes to tasks such as depth perception, hand-eye coordination, spatial awareness, and perception of motion.
CLO5	Students should be able to recognize and describe conditions such as strabismus (ocular misalignment), amblyopia (lazy eye), and binocular vision dysfunction, as well as their impact on visual function and quality of life.

f. Course Outcomes:

CO1	Students will demonstrate the ability to accurately perceive depth and distance by integrating visual cues from both eyes, including binocular disparity, convergence, and accommodation.
CO2	Students will develop and refine their stereoacuity skills, allowing them to discern fine differences in depth perception and achieve higher levels of stereopsis through practical exercises and assessments.
CO3	Students will be able to recognize common binocular vision disorders such as strabismus, amblyopia, and convergence insufficiency, and employ appropriate diagnostic techniques to assess ocular alignment and visual function
CO4	Students will acquire the knowledge and skills necessary to design and implement tailored treatment plans for individuals with binocular vision disorders, including vision therapy exercises, prismatic corrections, and coordination with other healthcare professionals as needed.
CO5	By critically evaluating research literature and experimental findings in the field of binocular vision, students will demonstrate the ability to assess the validity and significance of scientific evidence, and apply relevant research findings to clinical practice for optimal patient care and outcomes.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	4	-	-	20	-	30	50

h. Course Content

Sr.	Topics	Weightage	Hours
1	Overview of binocular vision and its significance in visual function. Techniques for assessing binocular vision status, including cover tests, near point of convergence, and near point of accommodation. Techniques for assessing binocular vision status, including cover tests, near point of convergence, and near point of accommodation.	50%	10
2	Evaluation of fusional vergences (vergence ability) and accommodation (focusing ability). Diagnosis and management of amblyopia (lazy eye) and its relationship with strabismus Diagnosis and management of binocular vision disorders, such as convergence insufficiency, divergence excess, convergence excess, and accommodative anomalies.	25%	10
3	Management strategies for patients with neurological implications on binocular vision Assessment and management of stereopsis-related issues. Co-managing patients with binocular vision disorders alongside ophthalmologists, neurologists, and other specialists**.**	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Contact Lens Practice by Nathan Efron
2.	Clinical Manual of Contact Lenses by Edward S. Bennett and Vinita Allee Henry
3.	Contact Lenses: A Clinical Approach to Fitting by Rupal H. Shah
4.	The Contact Lens Manual: A Practical Guide to Fitting" by Andrew Gasson and Judith A. Morris
5.	Manual of Contact Lens Prescribing and Fitting by Milton M. Hom and Adrian S. Bruce.

Semester 05

a. Course Name: **Applied Medicine & Pharmacology-II (Theory)**

b. Course Code: **19010005DS01**

c. Prerequisite: Students need knowledge of basic biology, microbiology, and biochemistry, along with skills in laboratory techniques, critical analysis, and clinical observations.

d. Rationale: Understanding immunology, bacteriology, disease transmission, inflammation, homeostasis, and various pathological conditions is crucial for diagnosing and managing infections, immune responses, and systemic disorders effectively.

e. Course Learning Objective:

CLOBJ 1	Students will learn all types of Clinical, Para clinical and Surgical Conditions.
CLOBJ 2	Students will understand exact mechanism of all types of important Disease conditions.
CLOBJ 3	Students will able to bifurcate disease conditions into two types of management: Medical and Surgical
CLOBJ 4	To identify a range of drugs used in medicine and discuss their mechanisms of action.
CLOBJ 5	To explain the mechanisms of action and pathology of ethanol and drugs of abuse

f. Course Outcomes:

CLO 1	Know the basic pre-clinical - para clinical - clinical subjects
CLO 2	Applied medicine is application of medical knowledge in patients for diagnosis, treatment & prevention of diseases
CLO 3	Students will be able to understand different types of divisions and disease conditions like general medicine, general surgery, obgy, pediatric, orthopedics, anaesthesia .
CLO 4	Learn about how to take history & communications with patient common symptoms & sign of disease
CLO 5	Applying knowledge of medicines in patient care, evidence-based prescribing

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
4	-	-	4	4	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Unit-1: Orthopaedics:** • History taking, clinical examination in Ortho (General & local examination) • Bone fracture management, arthritis • Plaster & cast application	18%	10

2	**Unit-2: Pediatric:** • History taking, clinical examination in Pediatric (general & systemic) • Overview of Diarrhoea, Fever, Cough, Basic new born care • Common pediatric emergencies with emergency resuscitation	18%	10
3	**Unit-3: Anesthesia:** Overview of Anaesthesia	15%	10
	• Machine & Circuit • Intubation set • CPR		
4	**Unit-4: Outline of drugs acting on different systems:** • Drugs acting on central Nervous System • Drugs acting on Kidney • Drugs acting on GIT • Drugs acting on Respiratory system	15%	10
5	**Unit-5: Outline of CVS, Hormones & antimicrobials:** • Drugs acting on skin & mucous membrane • Hormones & related drugs • Drugs affecting blood & blood formation • Drugs acting on cardiovascular system • Introduction to antimicrobials	17%	10
6	**Unit-6: Outline of Autacoids & miscellaneous:** • Autacoids and related drugs • Antiseptics, Disinfectants, Ecto-parasiticides • Chelating Agents	17%	10
	Total teaching hours for the academic year	**100%**	**60**

i. Text Book and Reference Book:

1.	**DC Datta' s Textbook of Gynecology** By Hiralal Konar
2.	**Golwalla ' s Medicine for Student** By Aspi F.Golwalla & Sharukh A.Golwalla
3.	**Essentials of Medical Pharmacology** By K.D.Tripathi
4.	**Sharma & Sharma's Principles of Pharmacology** By H. L. Sharma & K.K. Sharma
5.	**Medical Pharmacology** By Padmaja Udaykumar

Semester 05

a. Course Name: **Applied Medicine & Pharmacology-II (Practical)**

b. Course Code: **19010005DS02**

c. Prerequisite: Students need knowledge of basic biology, microbiology, and biochemistry, along with skills in laboratory techniques, critical analysis, and clinical observations.

d. Rationale: Understanding immunology, bacteriology, disease transmission, inflammation, homeostasis, and various pathological conditions is crucial for diagnosing and managing infections, immune responses, and systemic disorders effectively.

e. Course Learning Objective:

CLOBJ 1	Students will learn all types of Clinical, Para clinical and Surgical Conditions.
CLOBJ 2	Students will understand exact mechanism of all types of important Disease conditions.
CLOBJ 3	Students will able to bifurcate disease conditions into two types of management: Medical and Surgical
CLOBJ 4	To identify a range of drugs used in medicine and discuss their mechanisms of action.
CLOBJ 5	To explain the mechanisms of action and pathology of ethanol and drugs of abuse

f. Course Outcomes:

CLO 1	Know the basic pre-clinical - para clinical - clinical subjects
CLO 2	Applied medicine is application of medical knowledge in patients for diagnosis, treatment & prevention of diseases
CLO 3	Students will be able to understand different types of divisions and disease conditions like general medicine, general surgery, obgy, pediatric, orthopedics, anaesthesia .
CLO 4	Learn about how to take history & communications with patient common symptoms & sign of disease
CLO 5	Applying knowledge of medicines in patient care, evidence-based prescribing

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	4	4	2	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Introduction to experimental pharmacology	10%	10
2	Adverse drug reaction reporting	10%	10
3	Administer drugs through various routes in stimulated environment using mannequins.	15%	10
4	Introduction to prescription writing	10%	10
5	Prescription: ANS, Autocoids, Respiratory, CVS, Blood, CNS, GIT, Endocrine, Infectious disease.	15%	10

6	Communication with patient- I (on proper use of prescribed medications)	15%	05

7	Communication with patient- II (with empathy and ethics on all aspects of drug use)	15%	02
8	Communication with patient- III (regarding optimal use of	10%	03
	drug therapy, devices and storage of medicines)		
	Total teaching hours for the academic year	**100%**	**60**

i. Text Book and Reference Book:

1.	**DC Datta' s Textbook of Gynecology** By Hiralal Konar
2.	**Golwalla ' s Medicine for Student** By Aspi F.Golwalla & Sharukh A.Golwalla
3.	**Essentials of Medical Pharmacology** By K.D.Tripathi
4.	**Sharma & Sharma's Principles of Pharmacology** By H. L. Sharma & K.K. Sharma
5.	**Medical Pharmacology** By Padmaja Udaykumar

Semester 05

a. Course Name: **Advanced Anaesthesia Technology (T)**

b. Course Code: 19011305AC01

c. Prerequisite: **S**tudents should have a foundational understanding of human anatomy, physiology, and basic pharmacology. Prior exposure to clinical environments and basic medical equipment would be beneficial

d. Rationale: This curriculum is designed to equip medical students and professionals with comprehensive knowledge and practical skills in anesthesia and critical care. Understanding the intricacies of various anesthesia machines, artificial airways, and patient monitoring systems is crucial for ensuring patient safety and effective management during surgical procedures.

e. Course Learning Objective:

CLOBJ 1	Students will learn about the design, operation, and maintenance of anesthesia machines and related equipment.
CLOBJ 2	Students will differentiate among various types of face masks, ET tubes, LMAs, and tracheostomy tubes, understanding their modifications and specific uses.
CLOBJ 3	Students will gain knowledge in TIVA, balanced anesthesia, and the anesthesia triad.
CLOBJ 4	Students will master the use of multi-parameter monitors, interpreting normal values and responding to abnormalities.
CLOBJ 5	Students will learn the types, settings, and modes of operation room ventilators, as well as the complications and general care for patients on ventilators.

f. Course Outcomes:

CLO 1	Graduates will demonstrate a thorough understanding of Boyle's Basic Machine, anesthesia workstations, and AMBU bags, ensuring proper usage and troubleshooting.
CLO 2	Graduates will be able to select and modify face masks, ET tubes, LMAs, and tracheostomy tubes according to patient needs.
CLO 3	Graduates will competently administer TIVA and balanced anesthesia, utilizing the anesthesia triad and nerve stimulators to optimize patient outcomes.
CLO 4	Graduates will accurately monitor and interpret patient vitals using multi-parameter monitors, ensuring timely and appropriate responses to changes.
CLO 5	Graduates will adeptly manage artificial ventilation, adjusting ventilator settings and modes while recognizing and addressing complications.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	3	20	20	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	Boyle's Basic Machine Anesthesia Workstation Face Masks- Types and modifications Artificial Airways-Types and modifications ET Tube- Types and modifications	30%	15
	LMA- Types and modifications Tracheostomy Tubes- Types and modifications AMBU Bag		
2	TIVA: Definition, Drugs used Balanced anaesthesia Anaesthesia triad Combined Spinal Epidural Nerve Stimulators	15%	8
3	Anaesthesia Monitoring Clinical Monitoring Multi parameter monitor: Normal values Arterial blood pressure, NIBP, IBP, Electrocardiogram monitoring SpO2, EtCLO 2, Temperature, FiO2 Urine output	30%	10
4	Artificial Ventilation Operation room Ventilators: Types, Settings, modes Complication in patients on Ventilators General care of patient on Ventilator Ventilator alarms Disinfection and sterilization of ventilators	25%	12
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Anaesthesia Manual-A. A Pillai
2.	Lee synopsis (Handbook of Anaesthesia)
3.	Clinical Anesthesiology by Morgan
4.	Text Book of anesthesia by Ajay Yadav
5.	Anesthesia equipment's and Drugs by AK Paul

Semester 05

a. Course Name: **Advanced Anaesthesia Technology (P)**

b. Course Code: 19011305AC02

c. Prerequisite: **S**tudents should have a foundational understanding of human anatomy, physiology, and basic pharmacology. Prior exposure to clinical environments and basic medical equipment would be beneficial.

d. Rationale: This curriculum is designed to equip medical students and professionals with comprehensive knowledge and practical skills in anesthesia and critical care. Understanding the intricacies of various anesthesia machines, artificial airways, and patient monitoring systems is crucial for ensuring patient safety and effective management during surgical procedures.

e. Course Learning Objective:

CLOBJ 1	Students will learn about the design, operation, and maintenance of anesthesia machines and related equipment.
CLOBJ 2	Students will differentiate among various types of face masks, ET tubes, LMAs, and tracheostomy tubes, understanding their modifications and specific uses.
CLOBJ 3	Students will gain knowledge in TIVA, balanced anesthesia, and the anesthesia triad.
CLOBJ 4	Students will master the use of multi-parameter monitors, interpreting normal values and responding to abnormalities.
CLOBJ 5	Students will learn the types, settings, and modes of operation room ventilators, as well as the complications and general care for patients on ventilators.

f. Course Outcomes:

CLO 1	Graduates will demonstrate a thorough understanding of Boyle's Basic Machine, anesthesia workstations, and AMBU bags, ensuring proper usage and troubleshooting.
CLO 2	Graduates will be able to select and modify face masks, ET tubes, LMAs, and tracheostomy tubes according to patient needs.
CLO 3	Graduates will competently administer TIVA and balanced anesthesia, utilizing the anesthesia triad and nerve stimulators to optimize patient outcomes.
CLO 4	Graduates will accurately monitor and interpret patient vitals using multi-parameter monitors, ensuring timely and appropriate responses to changes.
CLO 5	Graduates will adeptly manage artificial ventilation, adjusting ventilator settings and modes while recognizing and addressing complications.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	2	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	Boyle's Basic Machine Anesthesia Workstation Face Masks- Types and modifications Artificial Airways-Types and modifications ET Tube- Types and modifications	30%	8
	LMA- Types and modifications Tracheostomy Tubes- Types and modifications AMBU Bag		
2	TIVA: Definition, Drugs used Balanced anaesthesia Anaesthesia triad Combined Spinal Epidural Nerve Stimulators	15%	7
3	Anaesthesia Monitoring Clinical Monitoring Multi parameter monitor: Normal values Arterial blood pressure, NIBP, IBP, Electrocardiogram monitoring SpO2, EtCLO 2, Temperature, FiO2 Urine output	30%	8
4	Artificial Ventilation Operation room Ventilators: Types, Settings, modes Complication in patients on Ventilators General care of patient on Ventilator Ventilator alarms Disinfection and sterilization of ventilators	25%	7
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Anaesthesia Manual-A. A Pillai
2.	Lee synopsis (Handbook of Anaesthesia)
3.	Clinical Anesthesiology by Morgan
4.	Text Book of anesthesia by Ajay Yadav
5.	Anesthesia equipment's and Drugs by AK Paul

Semester 05

a. Course Name: **Principles of Operation Theatre Management (T)**

b. Course Code: **19010905OT01**

c. Prerequisite: Knowledge of up to 12th science level and must passed all previous semesters and Human Anatomy and Physiology, Medical Terminology and Aseptic Technique.

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides students with the fundamental knowledge and skills necessary to function effectively in the operating room setting such as Surgical asepsis and infection control, surgical instrumentation, Anesthesia and patient care and surgical procedures.

e. Course Learning Objective:

CLOBJ 1	Understand the core functions and responsibilities of an operating theatre team.
CLOBJ 2	Grasp the principles of aseptic technique and infection control in the operating room.
CLOBJ 3	Apply scheduling and resource management techniques to optimize operating room efficiency.
CLOBJ 4	Analyze factors impacting surgical case flow and identify strategies to minimize delays.
CLOBJ 5	Develop an understanding of legal and ethical considerations in operating room management.

f. Course Outcomes:

CLO 1	Understand the health care system.
CLO 2	Understand the different types of record and report.
CLO 3	Develop skill like how to manage Inventory control and purchase management
CLO 4	In the future, get a better employment opportunity in Hospital like OT assistant, OT Manager or in charge and other various posts.
CLO 5	The programmed reported an increase in their understanding of innovation and entrepreneurship.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**OPERATION THEATRE MANAGEMENT** a. Development of Management: Definitions of Management – Contributions of F.W. Taylor, Henry Fayol and others. b. Functions of Management: Planning Organizing – Directing – Controlling. c. Motivation: Motivation theories – McGregor's theory X and theory Y – Maslow's and Herzberg's theory d. Communication: Types of communication – Barriers of effective communication– Techniques for improved communication. e. Directing: Principles relating to Direction process – Principles and theories of leadership – Leadership Styles	34%	10
	f. Controlling: Span of control – Factors limiting effective span of control g. Co-ordination: Co-ordination and co-operation – Principles of co-ordination – Techniques of co- ordination charts and records		
2	**PERSONAL MANAGEMENT** a. Objective of Personnel Management b. Role of Personnel Manager in an organization Staffing and work distribution techniques c. Job analysis and description d. Recruitment and selection processes e. Orientation and training f. Coaching and counselling g. Disciplining h. Complaints and grievances i. Termination of employees j. Performance appraisal k. Health and safety of employees l. Consumer Protection Act as applicable to health care services.	22%	10
3	**FINANCIAL MANAGEMENT** a. Definition of financial Management b. Profit maximization c. Return maximization d. Wealth maximization e. short term Financing f. Intermediate Financing g. long term Financing h. Leasing as a source of Finance i. Cash and Security Management j. Inventory Management k. Dividend policies l. Valuations of Shares m. Financial Management in a hospital n. Third party payments on behalf of patients. o. Insurance health schemes and policies.	22%	10

4	**STORE AND INVENTORY CONTROL** a. Instrument set assembly and packaging. b. Sterilization services c. Patient equipment cleaning, distribution, and billing d. Case cart system for surgery and/or the delivery room e. Surgical instrument purchasing f. Acquisition of special-order implants and supplies g. Instrument processing within surgery h. Monitoring operating budgets for other departments within the facility	22%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	OPERATION THEATER TECHNIQUE ANESTHESIA AND EMERGENCY CARE FOR TECHNICIANS, NURSES & PARAMEDICS By Vaishali Mohod
2.	Textbook of Operation Theatre Technology By MP Sharma
3.	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4.	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5.	TEXTBOOK OF OPERATION THEATRE TECHNOLOGY By Manjushree Ray

Semester 05

a. Course Name: **Principles of Operation Theatre Management (P)**

b. Course Code: 19010905OT012

c. Prerequisite: Knowledge of up to 12th science level and must passed all previous semesters and Human Anatomy and Physiology, Medical Terminology and Aseptic Technique.

d. Rationale: Basic Operation theatre knowledge is fundamental as it provides students with the fundamental knowledge and skills necessary to function effectively in the operating room setting such as Surgical asepsis and infection control, surgical instrumentation, Anesthesia and patient care and surgical procedures.

e. Course Learning Objective:

CLOB J 1	Understand the core functions and responsibilities of an operating theatre team.
CLOB J 2	Grasp the principles of aseptic technique and infection control in the operating room.
CLOB J 3	Apply scheduling and resource management techniques to optimize operating room efficiency.
CLOB J 4	Analyze factors impacting surgical case flow and identify strategies to minimize delays.
CLOB J 5	Develop an understanding of legal and ethical considerations in operating room management.

f. Course Outcomes:

CLO 1	Understand the health care system.
CLO 2	Understand the different types of record and report.
CLO 3	Develop skill like how to manage Inventory control and purchase management
CLO 4	In the future, get a better employment opportunity in Hospital like OT assistant, OT Manager or in charge and other various posts.
CLO 5	The programmed reported an increase in their understanding of innovation and entrepreneurship.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	The student will be introduced to terminologies, equipment, and techniques used for preparation and management of the OT.	50%	10
2	Clinical visit will include visit to the entire chain of healthcare delivery system –Sub centre, PHC, CHC, SDH, DH and Medical College, private hospitals, dispensaries and clinics.	25%	10
3	Clinical visit to their respective professional department within the hospital.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	OPERATION THEATER TECHNIQUE ANESTHESIA AND EMERGENCY CARE FOR TECHNICIANS, NURSES & PARAMEDICS By Vaishali Mohod
2.	Textbook of Operation Theatre Technology By MP Sharma
3.	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4.	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5.	TEXTBOOK OF OPERATION THEATRE TECHNOLOGY By Manjushree Ray

Semester 05

a. Course Name: **Advanced Critical Care Technology (T)**

b. Course Code: 19011305AC03

c. Prerequisite: Proficiency in using monitoring and diagnostic equipment, familiarity with interpreting data from these equipment's and understanding the implications for patient care is essential.

d. Rationale: Mastery of monitoring and diagnostic equipment ensures accurate assessment and early detection of changes in patient condition, crucial for guiding timely interventions and optimizing outcomes in critically ill patients.

e. Course Learning Objective:

CLOB J 1	Understand the principles and techniques involved in comprehensive patient assessment and monitoring, encompassing vital signs, neurological, cardiovascular, respiratory, renal, and metabolic assessments.
CLOB J 2	Develop proficiency in basic and advanced life support techniques, including management of cardiac arrest, arrhythmias, emergency airway management, and rapid response protocols.
CLOB J 3	Acquire in-depth knowledge of critical conditions such as sepsis, shock, acute respiratory distress syndrome (ARDS), acute coronary syndromes, and stroke, along with evidence-based management strategies.
CLOB J 4	Explore special considerations in critical care, including palliative and end-of-life care, pain management, nutrition in critically ill patients, and critical care considerations in special populations like paediatrics and geriatrics.
CLOB J 5	Gain expertise in the technological applications used in critical care settings, including understanding and operating critical care equipment, ventilator management, use of infusion pumps and syringe drivers, interpretation of monitoring systems, and basics of extracorporeal membrane oxygenation (ECMO) along with safety and maintenance protocols.

f. Course Outcomes:

CLO 1	Students will demonstrate proficiency in conducting comprehensive patient assessments, interpreting monitoring data, and identifying abnormalities indicative of changes in patient condition.
CLO 2	Upon completion of the course, students will be able to effectively apply basic and advanced life support techniques in simulated clinical scenarios, demonstrating competence in managing life-threatening emergencies.
CLO 3	Students will exhibit a deep understanding of critical conditions commonly encountered in critical care settings, applying evidence-based management strategies to stabilize patients and prevent complications.
CLO 4	By the end of the course, students will demonstrate sensitivity to special considerations in critical care, including providing compassionate end-of-life care, managing pain and agitation, addressing nutritional needs, and adapting care for diverse patient populations.
CLO 5	Upon successful completion of the course, students will be proficient in utilizing technological applications in critical care, including operating equipment, managing ventilators, administering medications via infusion pumps and syringe drivers, interpreting monitoring data, and ensuring safety and maintenance of critical care equipment.

g. Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lectur	Tutori	Lab			Internal			External		
e Hrs /Week	al Hrs/ Week	Hrs /We ek	Hrs /Week	Credit	Marks			Marks		
					T	CE	P	T	P	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	Topics	Weightage	Hours
1	a. Patient Assessment and Monitoring b. Vital signs monitoring c. Neurological assessment d. Cardiovascular assessment e. Respiratory assessment f. Renal and metabolic assessment	20%	9
2	a. Advanced Life Support b. Basic and advanced life support techniques c. Management of cardiac arrest and arrhythmias d. Emergency airway management e. Rapid response and code blue	20%	9
3	a. Management of Critical Conditions b. Management of sepsis and shock c. Management of acute respiratory distress syndrome (ARDS) d. Management of acute coronary syndromes e. Management of stroke	20%	9
4	a. Special Considerations in Critical Care b. Palliative and end-of-life care in the ICU c. Management of pain, agitation, and delirium d. Nutrition in the critically ill patient e. Critical care considerations in special populations (e.g., paediatrics, geriatrics)	20%	9
5	a. Technological Applications in Critical Care b. Understanding and operating critical care equipment c. Ventilator management and settings d. Use of infusion pumps and syringe drivers e. Monitoring systems and their interpretation f. Basics of extracorporeal membrane oxygenation (ECMO) g. Safety and maintenance of critical care equipment	20%	9
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	Textbook of Critical Care" by Jean-Louis Vincent and Edward Abraham
2.	Advanced Cardiovascular Life Support (ACLS) Provider Manual" by American Heart Association
3.	Roberts and Hedges' Clinical Procedures in Emergency Medicine" by James R. Roberts and Catherine B. Custalow
4.	Palliative Care Nursing: Quality Care to the End of Life" by Marianne Matzo and Deborah Witt Sherman
5.	Critical Care Nursing: Diagnosis and Management" by Linda D. Urden, Kathleen M. Stacy, and Mary E. Lough

Semester 05

a. Course Name: **Advanced Critical Care Technology (P)**

b. Course Code: 19011305AC04

c. Prerequisite: Proficiency in using monitoring and diagnostic equipment, familiarity with interpreting data from these equipment's and understanding the implications for patient care is essential.

d. Rationale: Mastery of monitoring and diagnostic equipment ensures accurate assessment and early detection of changes in patient condition, crucial for guiding timely interventions and optimizing outcomes in critically ill patients.

e. Course Learning Objective:

CLOBJ 1	Understand the principles and techniques involved in comprehensive patient assessment and monitoring, encompassing vital signs, neurological, cardiovascular, respiratory, renal, and metabolic assessments.
CLOBJ 2	Develop proficiency in basic and advanced life support techniques, including management of cardiac arrest, arrhythmias, emergency airway management, and rapid response protocols.
CLOBJ 3	Acquire in-depth knowledge of critical conditions such as sepsis, shock, acute respiratory distress syndrome (ARDS), acute coronary syndromes, and stroke, along with evidence-based management strategies.
CLOBJ 4	Explore special considerations in critical care, including palliative and end-of-life care, pain management, nutrition in critically ill patients, and critical care considerations in special populations like paediatrics and geriatrics.
CLOBJ 5	Gain expertise in the technological applications used in critical care settings, including understanding and operating critical care equipment, ventilator management, use of infusion pumps and syringe drivers, interpretation of monitoring systems, and basics of extracorporeal membrane oxygenation (ECMO) along with safety and maintenance protocols.

f. Course Outcomes:

CLO 1	Students will demonstrate proficiency in conducting comprehensive patient assessments, interpreting monitoring data, and identifying abnormalities indicative of changes in patient condition.
CLO 2	Upon completion of the course, students will be able to effectively apply basic and advanced life support techniques in simulated clinical scenarios, demonstrating competence in managing life-threatening emergencies.
CLO 3	Students will exhibit a deep understanding of critical conditions commonly encountered in critical care settings, applying evidence-based management strategies to stabilize patients and prevent complications.
CLO 4	By the end of the course, students will demonstrate sensitivity to special considerations in critical care, including providing compassionate end-of-life care, managing pain and agitation, addressing nutritional needs, and adapting care for diverse patient populations.
CLO 5	Upon successful completion of the course, students will be proficient in utilizing technological applications in critical care, including operating equipment, managing ventilators, administering medications via infusion pumps and syringe drivers, interpreting monitoring data, and ensuring safety and maintenance of critical care equipment.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**		**Total**
Lecture	**Tutorial Hrs/**	**Lab Hrs**	**Hrs**	**Credit**	**Internal Marks**	**External Marks**	

Hrs /Week	Week	/Week	/Week		T	CE	P	T	P	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	Topics	Weightage	Hours
1	a. Vital signs monitoring techniques b. Neurological assessment methods c. Cardiovascular assessment skills d. Respiratory assessment procedures e. Renal and metabolic monitoring techniques	20%	6
2	a. Basic life support (BLS) procedures b. Advanced cardiac life support (ACLS) protocols c. Emergency airway management techniques d. Rapid response and code blue scenarios e. Mock code drills for resuscitation	20%	6
3	a. Sepsis management strategies b. Acute respiratory distress syndrome (ARDS) interventions c. Acute coronary syndromes (ACS) care pathways d. Stroke management protocols e. Pediatric and geriatric critical care considerations	20%	6
4	a. Palliative and end-of-life care principles b. Pain management strategies c. Nutritional support practices d. Critical care considerations in special populations e. Ethical dilemmas in critical care	20%	6
5	a. Operating critical care equipment b. Ventilator management and settings c. Use of infusion pumps and syringe drivers d. Monitoring systems interpretation e. Basics of extracorporeal membrane oxygenation (ECMO)	20%	6
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	Textbook of Critical Care" by Jean-Louis Vincent and Edward Abraham
2.	Advanced Cardiovascular Life Support (ACLS) Provider Manual" by American Heart Association
3.	Roberts and Hedges' Clinical Procedures in Emergency Medicine" by James R. Roberts and Catherine B. Custalow
4.	Palliative Care Nursing: Quality Care to the End of Life" by Marianne Matzo and Deborah Witt Sherman
5.	Critical Care Nursing: Diagnosis and Management" by Linda D. Urden, Kathleen M. Stacy, and Mary E. Lough

Semester 05

a. Course Name: **Operation Theatre Technology – I (T)**
b. Course Code: 19010905OT03
c. Prerequisite: Knowledge of up to 12th science level and must passed all previous semesters and Human Anatomy and Physiology, Medical Terminology and Aseptic Technique.
d. Rationale: Basic Operation theatre knowledge -1 lays the groundwork for more advanced courses in surgical technology, sterile processing, and surgical assisting. This course equips students with the knowledge and skills they need to begin their careers as surgical technologists or surgical assistants.

e. Course Learning Objective:

CLOBJ 1	Learn to prepare the operating room for different types of surgeries.
CLOBJ 2	Develop skills to assist surgeons and other healthcare professionals during surgical procedures.
CLOBJ 3	Gain proficiency in maintaining sterile fields and ensuring patient safety throughout surgery.
CLOBJ 4	Comprehend and adhere to ethical and legal considerations in the operating room setting.
CLOBJ 5	Appreciate the importance of patient care and demonstrate empathy towards patients undergoing surgery.

f. Course Outcomes:

CLO 1	Demonstrate aseptic technique to prevent the spread of infection in the operating room
CLO 2	Prepare and maintain the operating room including cleaning, sterilizing, and organizing instruments and equipment.
CLO 3	Assist the surgical team during surgery by providing them with instruments and supplies.
CLO 4	Care for patients before, during, and after surgery
CLO 5	Maintain sterile supplies and equipment and Follow safety protocols in the operating room.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Zoning of OT**,** OT disinfection & sterilization: Cleaning, carbonization, fumigation, fogging Theatre clothes, PPE, Lead aprons, goggles Scrubbing, gowning, gloving Handling of sterilized articles in OT OT table, OT lights, image intensifier: Handling and maintenance	20%	9

2	**Medical Gas** Compressed gas cylinders: Types, sizes, parts	10%	9

	Colour coding different gas cylinder and pipe line system Cylinder storage and handling: Things to remember Medical gas pipe line system and outlets. Diameter index safety system (DISS), and PISS Safety devices in pipe line and cylinders Air compressor Oxygen concentrator: working principal their uses and care		
3	**Oxygen Therapy** Hypoxia and hypoxemia. Clinical signs of hypoxemia. Goals of oxygen therapy. Oxygen therapy devices, Types of oxygen masks Evaluation of patients receiving oxygen therapy Hazards of oxygen therapy	10%	9
4	**Gas administration devices** Anaesthesia masks and Oxygen masks Pressure Regulators, pressure gauges Flow meters, Flow restrictors	30%	9
5	**Injection Techniques** Routes of drug administration Intra muscular and Intra Venous techniques Handling of sterilized syringes and needles. labeling of drugs Disposal of sharps, used syringes, needles	30%	9
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	OPERATION THEATER TECHNIQUE ANESTHESIA AND EMERGENCY CARE FOR TECHNICIANS, NURSES & PARAMEDICS By Vaishali Mohod
2.	Textbook of Operation Theatre Technology By MP Sharma
3.	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4.	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5.	TEXTBOOK OF OPERATION THEATRE TECHNOLOGY By Manjushree Ray

Semester 05

a. Course Name: **Operation Theatre Technology – I (P)**

b. Course Code: 19010905OT04

c. Prerequisite: Knowledge of up to 12th science level and must passed all previous semesters and Human Anatomy and Physiology, Medical Terminology and Aseptic Technique.

d. Rationale: Basic Operation theatre knowledge -1 lays the groundwork for more advanced courses in surgical technology, sterile processing, and surgical assisting. This course equips students with the knowledge and skills they need to begin their careers as surgical technologists or surgical assistants.

e. Course Learning Objective:

CLOBJ 1	Learn to prepare the operating room for different types of surgeries.
CLOBJ 2	Develop skills to assist surgeons and other healthcare professionals during surgical procedures.
CLOBJ 3	Gain proficiency in maintaining sterile fields and ensuring patient safety throughout surgery.
CLOBJ 4	Comprehend and adhere to ethical and legal considerations in the operating room setting.
CLOBJ 5	Appreciate the importance of patient care and demonstrate empathy towards patients undergoing surgery.

f. Course Outcomes:

CLO 1	Demonstrate aseptic technique to prevent the spread of infection in the operating room
CLO 2	Prepare and maintain the operating room including cleaning, sterilizing, and organizing instruments and equipment.
CLO 3	Assist the surgical team during surgery by providing them with instruments and supplies.
CLO 4	Care for patients before, during, and after surgery
CLO 5	Maintain sterile supplies and equipment and Follow safety protocols in the operating room

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Various Techniques of Injection –Advantages and Disadvantages.	50%	10
2	Crystalloids and colloids, Techniques of insertion of peripheral IV line.	25%	10
3	Medical Gas delivery Devices, DISS, PISS, Oxygen concentrator.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	OPERATION THEATER TECHNIQUE ANESTHESIA AND EMERGENCY

	CARE FOR TECHNICIANS, NURSES & PARAMEDICS By Vaishali Mohod
2.	Textbook of Operation Theatre Technology By MP Sharma
3.	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4.	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5.	TEXTBOOK OF OPERATION THEATRE TECHNOLOGY By Manjushree Ray

Semester 05

a. Course Name: **Low Vision**
b. Course Code: **19011005DS01**
c. Prerequisite: Eye anatomy, common eye diseases, low vision assessment, devices & strategies, psychosocial aspects.
d. Rationale: Grasp how vision works, common issues, assess limitations. Connect with patients, teach them to adapt, find solutions.

e. Course Learning Objective:

CLO1	To improve the remaining vision through the use of low vision aids, devices, and rehabilitation techniques, enabling individuals to perform tasks such as reading, writing, and recognizing faces.
CLO2	To promote independence and safety in performing activities of daily living, mobility, and navigation, both indoors and outdoors.
CLO3	To conduct a comprehensive functional vision assessment to determine the level of visual impairment, visual capabilities, and areas where assistance is required.
CLO4	To prescribe and fit appropriate low vision aids, including magnifiers, telescopes, electronic devices, and other assistive technologies tailored to the individual's needs.
CLO5	To provide training and support in using low vision aids effectively and efficiently, ensuring the individual gains confidence in their abilities

f. Course Outcomes:

CO1	Low vision rehabilitation aims to help individuals carry out activities of daily living independently. With training and assistive devices, individuals can regain or maintain their ability to perform tasks like cooking, grooming, managing finances, and other essential activities.
CO2	Orientation and mobility training can empower individuals to move around their environments more confidently and safely. They can learn to use tactile cues and orientation aids, like white canes, to navigate indoor and outdoor spaces independently.
CO3	Through the use of assistive technology and adaptive techniques, individuals with low vision can gain access to digital information, such as reading online content or using smartphones and computers effectively.
CO4	Individuals learn to cope with their visual impairment and gain independence in various activities, their confidence and self-esteem can improve significantly.
CO5	By overcoming challenges related to low vision, individuals can enjoy a better quality of life and maintain an active and engaged lifestyle.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Low Vision:** Definition and classification of low vision. Epidemiology and prevalence of low vision.	30%	15

	Causes and etiology of low vision conditions. **Functional Vision Assessment:** Visual acuity measurement and assessment. Visual field testing and interpretation. Contrast sensitivity evaluation. Assessment of color vision and color perception. Evaluation of glare sensitivity and adaptation. **Low Vision Devices and Aids:** Introduction to low vision aids (optical and non-optical). Magnification devices: magnifiers, telescopes, electronic magnifiers. Non-optical aids: lighting, glare control, reading stands, etc. Electronic and digital assistive technologies for low vision.		
2	**Low Vision Rehabilitation:** Developing personalized low vision rehabilitation plans. Strategies for enhancing functional vision and daily living skills. Training in the use of low vision devices. Coping strategies and psychological aspects of low vision. **Low Vision and Occupational Therapy:** Collaboration with occupational therapists in low vision care. Activities of daily living (ADL) training. Home modifications and environmental adaptations. **Low Vision and Mobility:** Orientation and mobility training for individuals with low vision. Techniques for safe and independent mobility. Cane training and other mobility aids.	30%	15
3	**Low Vision and Educational Support:** Integration of students with low vision into mainstream education. Assistive technologies and resources for students with low vision. **Low Vision and Special Populations**: Low vision management in children. Low vision care for older adults. Low vision and comorbid conditions (e.g., diabetic retinopathy, age-related macular degeneration). **Low Vision and Community Services:** Awareness of community resources and support groups for individuals with low vision. Advocacy for individuals with low vision. **Low Vision Rehabilitation Case Studies:** Analysis and discussion of real-life low vision cases. Developing management plans for various low vision scenarios.	40%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	"Low Vision Rehabilitation: A Practical Guide for Occupational Therapists" by Mitchell Scheiman and Stephen G. Whittaker.
2.	"Understanding Low Vision" by Jack J. Kanski and Brad Bowling.
3.	"Clinical Low Vision" by Eleanor E. Faye and Bruce Rosenthal.

4.	Visual Impairment in Children due to Damage to the Brain" edited by Gordon Dutton and Martin Bax
5.	"Introduction to Low Vision" by Michelle M. Hanratty and Mitchell Scheiman.

Semester 05

a. Course Name: **Low Vision (P)**
b. Course Code: **19011005DS02**
c. Prerequisite: Eye anatomy, common eye diseases, low vision assessment, devices & strategies, psychosocial aspects.
d. Rationale: Grasp how vision works, common issues, assess limitations. Connect with patients, teach them to adapt, find solutions.

e. Course Learning Objective:

CLO1	To improve the remaining vision through the use of low vision aids, devices, and rehabilitation techniques, enabling individuals to perform tasks such as reading, writing, and recognizing faces.
CLO2	To promote independence and safety in performing activities of daily living, mobility, and navigation, both indoors and outdoors.
CLO3	To conduct a comprehensive functional vision assessment to determine the level of visual impairment, visual capabilities, and areas where assistance is required.
CLO4	To prescribe and fit appropriate low vision aids, including magnifiers, telescopes, electronic devices, and other assistive technologies tailored to the individual's needs.
CLO5	To provide training and support in using low vision aids effectively and efficiently, ensuring the individual gains confidence in their abilities

f. Course Outcomes:

CO1	Low vision rehabilitation aims to help individuals carry out activities of daily living independently. With training and assistive devices, individuals can regain or maintain their ability to perform tasks like cooking, grooming, managing finances, and other essential activities.
CO2	Orientation and mobility training can empower individuals to move around their environments more confidently and safely. They can learn to use tactile cues and orientation aids, like white canes, to navigate indoor and outdoor spaces independently.
CO3	Through the use of assistive technology and adaptive techniques, individuals with low vision can gain access to digital information, such as reading online content or using smartphones and computers effectively.
CO4	Individuals learn to cope with their visual impairment and gain independence in various activities, their confidence and self-esteem can improve significantly.
CO5	By overcoming challenges related to low vision, individuals can enjoy a better quality of life and maintain an active and engaged lifestyle.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	• Conduct a comprehensive low vision assessment to determine the individual's visual abilities and needs. • Prescribe and teach the use of various optical aids, such as	50%	10

	magnifiers, telescopes, and electronic magnification devices, to help improve reading, writing, and other daily activities. • Introduce non-optical devices like tactile markers, large-print materials, bold-line paper, and other adaptive tools to enhance independence in daily tasks. • Educate individuals about the importance of good lighting and appropriate contrast to improve visibility of objects and texts. • Introduce and train individuals to use assistive technology, including screen readers, screen magnifiers, and voice-activated devices, to access digital information and navigate technology.		
2	• Help individuals develop skills to navigate their environment safely, including indoor and outdoor mobility training and the use of orientation aids (e.g., white cane). • Provide training to enhance independence in daily tasks such as cooking, grooming, and personal hygiene. • Offer emotional and psychological support to cope with the challenges of low vision and to develop strategies for adaptation. • Suggest modifications to the living and working environments to optimize visual functioning and safety. • Educate individuals about their specific eye condition, prognosis, and available resources.	25%	10
3	• Implement vision training exercises to improve eye movements, visual tracking, and coordination. • Connect individuals with low vision support groups, vocational rehabilitation services, and other community resources. • Introduce alternative techniques, like auditory or tactile cues, to compensate for visual information. • Conduct home visits to assess and address specific challenges in the individual's living environment. • Regularly assess progress and adjust interventions as needed to accommodate changes in vision and lifestyle.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	"Low Vision Rehabilitation: A Practical Guide for Occupational Therapists" by Mitchell Scheiman and Stephen G. Whittaker.
2.	"Understanding Low Vision" by Jack J. Kanski and Brad Bowling.
3.	"Clinical Low Vision" by Eleanor E. Faye and Bruce Rosenthal.
4.	Visual Impairment in Children due to Damage to the Brain" edited by Gordon Dutton and Martin Bax
5.	"Introduction to Low Vision" by Michelle M. Hanratty and Mitchell Scheiman.

Semester 05

a. Course Name: **Systemic Diseases (T)**
b. Course Code: 19011005DS03
c. Prerequisite: To understanding ophthalmic systemic diseases is a foundational knowledge of human physiology and pathology.
d. Rationale: To comprehend how these diseases manifest and progress, it is essential to have a solid understanding of human physiology—the functions of various organ systems and their interactions.

e. Course Learning Objective:

CLO1	Develop a comprehensive understanding of the pathophysiological mechanisms underlying ophthalmic systemic diseases, including how systemic conditions such as diabetes, hypertension, autoimmune diseases, and infectious diseases can impact ocular structures and function.
CLO2	To recognize the ocular signs and symptoms associated with various systemic diseases, as well as understand the diagnostic criteria and evaluation methods used to confirm their presence.
CLO3	Students will acquire the skills necessary to develop and implement evidence-based management strategies for patients with ophthalmic systemic diseases.
CLO4	Students will learn to anticipate and manage potential complications associated with ophthalmic systemic diseases, as well as understand their impact on visual function, quality of life, and overall health outcomes
CLO5	Students will develop effective communication skills to educate patients about the relationship between systemic health and ocular wellness, as well as empower them to adopt preventive measures and adhere to treatment regimens.

f. Course Outcomes:

CO1	Students will demonstrate the ability to recognize the interconnectedness between systemic health and ocular wellness, understanding how systemic diseases can affect the eyes and vice versa.
CO2	Students will be able to identify and diagnose ophthalmic manifestations of systemic diseases in a timely manner
CO3	Students will understand the significance of interdisciplinary collaboration in managing patients with ophthalmic systemic diseases.
CO4	tudents will develop the skills to formulate individualized treatment plans for patients with ophthalmic systemic diseases, taking into account factors such as the severity of systemic disease, ocular involvement, patient preferences, and potential complications.
CO5	Students will be able to educate patients about their ophthalmic systemic diseases, providing clear explanations of the underlying pathology, treatment options, prognosis, and the importance of adherence to prescribed therapies.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**Introduction to Systemic Diseases and Their Impact on the Eye** Overview of common systemic diseases The relationship between systemic health and ocular health Diabetes and the Eye Diabetic retinopathy Diabetic macular edema Cataracts and diabetes Hypertension and Cardiovascular Diseases Hypertensive retinopathy Cholesterol embolism and the eye	30%	15
2	**Autoimmune and Inflammatory Diseases** Rheumatoid arthritis and the eye Systemic lupus erythematosus and ocular manifestations Sjögren's syndrome and ocular surface diseases Neurological Disorders Multiple sclerosis and visual disturbances Myasthenia gravis and ocular involvement Infectious Diseases and the Eye Ocular manifestations of HIV/AIDS Ocular tuberculosis Lyme disease and ocular complications	30%	15
3	**Thyroid Disorders and the Eye** Graves' ophthalmopathy Ocular Side Effects of Medications Drug-induced ocular complications Ocular Screening and Management of Systemic Diseases Importance of regular eye examinations for early detection Collaborative management with other healthcare professionals	40%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	"Low Vision Rehabilitation: A Practical Guide for Occupational Therapists" by Mitchell Scheiman and Stephen G. Whittaker.
2.	"Understanding Low Vision" by Jack J. Kanski and Brad Bowling.
3.	"Clinical Low Vision" by Eleanor E. Faye and Bruce Rosenthal.
4.	Visual Impairment in Children due to Damage to the Brain" edited by Gordon Dutton and Martin Bax
5.	"Introduction to Low Vision" by Michelle M. Hanratty and Mitchell Scheiman.

Semester 05

a. Course Name: **Systemic Diseases (P)**
b. Course Code: 19011005DS04
c. Prerequisite: To understanding ophthalmic systemic diseases is a foundational knowledge of human physiology and pathology.
d. Rationale: To comprehend how these diseases manifest and progress, it is essential to have a solid understanding of human physiology—the functions of various organ systems and their interactions.

e. Course Learning Objective:

CLO1	Develop a comprehensive understanding of the pathophysiological mechanisms underlying ophthalmic systemic diseases, including how systemic conditions such as diabetes, hypertension, autoimmune diseases, and infectious diseases can impact ocular structures and function.
CLO2	To recognize the ocular signs and symptoms associated with various systemic diseases, as well as understand the diagnostic criteria and evaluation methods used to confirm their presence.
CLO3	Students will acquire the skills necessary to develop and implement evidence-based management strategies for patients with ophthalmic systemic diseases.
CLO4	Students will learn to anticipate and manage potential complications associated with ophthalmic systemic diseases, as well as understand their impact on visual function, quality of life, and overall health outcomes
CLO5	Students will develop effective communication skills to educate patients about the relationship between systemic health and ocular wellness, as well as empower them to adopt preventive measures and adhere to treatment regimens.

f. Course Outcomes:

CO1	Students will demonstrate the ability to recognize the interconnectedness between systemic health and ocular wellness, understanding how systemic diseases can affect the eyes and vice versa.
CO2	Students will be able to identify and diagnose ophthalmic manifestations of systemic diseases in a timely manner
CO3	Students will understand the significance of interdisciplinary collaboration in managing patients with ophthalmic systemic diseases.
CO4	tudents will develop the skills to formulate individualized treatment plans for patients with ophthalmic systemic diseases, taking into account factors such as the severity of systemic disease, ocular involvement, patient preferences, and potential complications.
CO5	Students will be able to educate patients about their ophthalmic systemic diseases, providing clear explanations of the underlying pathology, treatment options, prognosis, and the importance of adherence to prescribed therapies.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	Interview techniques for obtaining relevant medical and ocular history from patients with systemic diseases. Identifying red flags and key information related to systemic health. Visual acuity assessment and refraction in patients with systemic diseases. Ophthalmoscopy to evaluate the optic nerve, retina, and blood vessels for signs of ocular involvement. Slit-lamp biomicroscopy for anterior segment evaluation. Fundus examination and classification of diabetic retinopathy. Identification and grading of diabetic macular edema Evaluating other diabetic-related ocular complications (e.g., cataracts). Recognizing hypertensive retinopathy signs through fundus examination. Identifying ocular manifestations related to cardiovascular diseases.	50%	10
2	Detecting ocular surface diseases associated with autoimmune disorders. Recognizing the ocular manifestations of rheumatoid arthritis and systemic lupus erythematosus. Recognizing the ocular manifestations of rheumatoid arthritis and systemic lupus erythematosus. Identifying optic nerve abnormalities related to multiple sclerosis. Recognizing ocular motor disturbances in patients with neurological conditions. Identifying optic nerve abnormalities related to multiple sclerosis. Recognizing ocular motor disturbances in patients with neurological conditions.	25%	10
3	Recognizing signs of ocular infections related to HIV/AIDS. Detecting ocular manifestations of systemic infections like tuberculosis and Lyme disease. Evaluating ocular involvement in patients with Graves' disease. Recognizing thyroid-related eye conditions. Identifying ocular side effects of medications commonly used for systemic diseases. Interdisciplinary case discussions with healthcare professionals from other specialties to develop comprehensive patient management plans. Formulating appropriate management strategies for patients with ocular complications resulting from systemic diseases. Formulating appropriate management strategies for patients with ocular complications resulting from systemic diseases. Understanding when to refer patients to other specialists for further evaluation and treatment. Practicing effective communication skills to explain ocular findings and management plans to patients with systemic diseases.	25%	10

	Providing counseling on the importance of regular eye examinations for early detection and preventive care. Hands-on clinical experience in assessing and managing real patients		
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	"Low Vision Rehabilitation: A Practical Guide for Occupational Therapists" by Mitchell Scheiman and Stephen G. Whittaker.
2.	"Understanding Low Vision" by Jack J. Kanski and Brad Bowling.
3.	"Clinical Low Vision" by Eleanor E. Faye and Bruce Rosenthal.
4.	Visual Impairment in Children due to Damage to the Brain" edited by Gordon Dutton and Martin Bax
5.	"Introduction to Low Vision" by Michelle M. Hanratty and Mitchell Scheiman.

Semester 06

a. Course Name: **Basics and Advanced Anaesthesia and Critical Care**
b. Course Code: 19011306AC01
c. Prerequisite: Student must pass with previously and Students should have a strong foundation in patient assessment, medication administration, and sterile technique.
d. Rationale: The study of anesthesia and critical care provides nurses with the knowledge and skills to care for patients in critical situations. These critical situations can occur in the operating room, intensive care unit (ICU), emergency department, and other areas of the hospital.

e. Course Learning Objective:

CLOBJ 1	Explain the principles and techniques of basic and advanced anesthetic procedures, including airway management, regional anesthesia, intravenous access, and cardiovascular monitoring.
CLOBJ 2	Demonstrate proficiency in using anesthesia-related equipment such as ventilators, hemodynamic monitors, and intravenous access devices in simulated clinical settings.
CLOBJ 3	Apply critical care strategies for managing sepsis, shock, trauma, and renal dysfunction, including fluid resuscitation, vasopressor administration, and renal replacement therapy.
CLOBJ 4	Analyze and interpret patient monitoring data, such as ECG, invasive pressure waveforms, pulmonary function tests, and ultrasound findings, to guide clinical decision-making.
CLOBJ 5	Evaluate and optimize anesthesia and critical care interventions based on patient response, complications, and emerging evidence-based practices to improve patient outcomes.

f. Course Outcomes:

CLO 1	Identify and explain the principles, techniques, and clinical applications of anesthetic and critical care procedures.
CLO 2	Perform and demonstrate essential anesthesia skills, including airway management, mechanical ventilation, vascular access, and regional anesthesia techniques.
CLO 3	Apply evidence-based approaches to manage critically ill patients, including those with sepsis, trauma, renal failure, and cardiovascular instability.
CLO 4	Interpret and analyze clinical monitoring data to assess patient conditions and modify anesthetic or critical care plans accordingly.
CLO 5	Synthesize knowledge of anesthesia and critical care interventions to make informed decisions, troubleshoot complications, and optimize patient safety and outcomes.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**

1	**Unit 1: Basic Anesthetic Techniques**
	• **Airway Management:**
	  o Practicing bag-mask ventilation techniques
	  o Learning laryngoscopy and endotracheal intubation procedures on mannequins
	  o Familiarization with different airway devices (supraglottic airway devices)
	• **Monitoring:**
	  o Setting up and using basic monitoring equipment (pulse oximetry, ECG, non-invasive blood pressure)
	  o Interpreting vital signs during anesthesia
	• **Induction and Maintenance of Anesthesia:**
	  o Understanding different types of anesthetic drugs (inhalational, intravenous)
	  o Practicing safe administration of these drugs on mannequins
	Monitoring depth of anesthesia
		25%	30

2	**Unit 2: Advanced Anesthetic Techniques**
	• **Regional Anesthesia:**
	  o Learning different regional nerve block techniques (peripheral nerve blocks, central neuraxial blocks) on models
	  o Practicing aseptic technique for regional anesthesia procedures
	• **Intravenous Access:**
	  o Mastering techniques for peripheral and central venous access (cannulation) on mannequins
	Understanding complications associated with intravenous access
		25%	30

3	**Unit 3: Critical Care Procedures**
	• **Cardiovascular Monitoring:**
	  o Using advanced hemodynamic monitoring devices (invasive arterial pressure monitoring, central venous pressure monitoring)
	  o Interpreting hemodynamic waveforms
	• **Mechanical Ventilation:**
	  o Setting up and managing mechanical ventilators on mannequins
	  o Understanding different ventilator modes and their applications
	• **Fluid Management and Electrolyte Balance:**
	  o Principles of fluid resuscitation in critically ill patients
		25%	30

	Understanding electrolyte imbalances and their correction		
4	**Unit 4: Sepsis & Shock Management** • Early recognition of sepsis (qSOFA, SIRS criteria). • Fluid resuscitation and vasoactive drug administration. • Point-of-care ultrasound (POCUS) for volume assessment. **Renal Support in Critical Care** • Basics of renal replacement therapy (CRRT, hemodialysis). • Electrolyte management and acid-base correction. **Trauma & Emergency Procedures** • Chest tube insertion (needle thoracostomy, tube thoracostomy). • FAST scan for trauma assessment. Damage control resuscitation principles.	25%	30
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	**To Err Is Human: Building a Safer Health System** by Institute of Medicine (US) Committee on Quality of Health Care in America
2.	**Crossing the Quality Chasm: A New Health System for the 21st Century**by Institute of Medicine (US) Committee on Quality of Health Care in America
3.	**The Checklist Manifesto: How to Get Things Right**by Atul Gawande
4.	**Textbook of Patient Safety and Clinical Risk Management**by Peter Lachman, Lucian Leape, and Ronald S. Braithwaite
5.	**Getting to Resilience: How Healthcare Systems Learn to Thrive in Uncertainty** by Kathleen Sutcliffe and Iris B. Schoonover

Semester 06

a. Course Name: **Operation Theatre Technology - II**

b. Course Code: 19010906OT01

c. Prerequisite: Logical to expect that Operation Theatre Technology - II would build upon the knowledge and skills gained from earlier semesters, particularly subjects like Operation Theatre Technology – I, Pharmacology and Anatomy and Physiology

d. Rationale: Operation Theatre Technology - II is likely to be a more advanced course compared to Operation Theatre Technology - I, focusing on in-depth knowledge and practical skills required for working in an operation theatre like Advanced Surgical Procedures, Anesthesia and Surgical Assisting and Communication and Teamwork.

e. Course Learning Objective:

CLOBJ 1	Apply knowledge of surgical procedures to anticipate instrument and medication needs
CLOBJ 2	Describe the proper functioning and care of surgical instruments and equipment
CLOBJ 3	Identify the different types of anesthesia and their applications
CLOBJ 4	Understand the principles of aseptic technique and sterile field maintenance
CLOBJ 5	Grasp the importance of communication and teamwork in ensuring patient safety during surgery

f. Course Outcomes:

CLO 1	Students will gain in-depth knowledge of sterile technique principles and practices used in various surgical procedures.
CLO 2	Students will learn about the specialized instruments used in various surgical procedures and how to handle them properly.
CLO 3	This includes knowledge of surgical case preparation, intraoperative care, and post-operative care.
CLO 4	The course will explore the specific requirements and protocols for different surgical specialties.
CLO 5	The course will emphasize the importance of professionalism, communication, teamwork, and ethical behavior in the operating room setting.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	● Care and maintenance of ventilators, suction machines, monitoring devices. ● Care, maintenance and operational capabilities of beds, lights and other apparatus. ● Care of unconscious adult and pediatric patients.	35%	40
2	● Physiotherapy techniques, feeding, Ryle's tube insertion and hyperalimentation.	35%	40

	● Suctioning and posturing of semiconscious and unconscious patients.		
3	● Oxygen therapy, maintenance of clear Airway. ● Ventilation of patient in crisis: ● Mouth to mouth. ● Mouth to ET Tube. ● Resuscitator/ bag valve mask assembly	30%	40
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	Operation theater technique anesthesia and emergency care for technicians, nurses & paramedics by vaishali mohod
2.	Textbook of operation theatre technology By mp sharma
3.	Operation theatre: assistant recruitment exam guide By pankaj singhal
4.	Handbook of operation theatre technique details By kilpadi / jaypee brothers
5.	Textbook of operation theatre technology By manjushree ray

Semester 06

a. Course Name: **Community Optometry& Geriatric Optometry (T)**
b. Course Code: **19011006DS01**
c. Prerequisite: Eye anatomy, common eye diseases, low vision assessment, devices & strategies, psychosocial aspects.
d. Rationale: Grasp how vision works, common issues, assess limitations. Connect with patients, teach them to adapt, find solutions.

e. Course Learning Objective:

CLO1	Students will gain an understanding of the diverse eye care needs of populations in community settings, including children, the elderly, underserved communities, and culturally diverse groups.
CLO2	Students will gain practical experience in fitting and managing contact lenses for patients in community settings, including troubleshooting and follow-up care.
CLO3	Students will learn to address age-related eye conditions and vision changes in older adults, understanding the importance of vision care for the elderly.
CLO4	Students will participate in vision screening programs and public health initiatives within the community, promoting eye health and awareness.
CLO5	Students will acquire the skills to conduct pediatric eye exams, identify vision problems in children, and provide appropriate management and referrals.

f. Course Outcomes:

CO1	Students will gain skills in managing low vision patients, prescribing appropriate visual aids, and enhancing the quality of life for individuals with visual impairments.
CO2	Students will demonstrate the ability to provide specialized eye care services to pediatric and geriatric populations, addressing age-specific visual needs and conditions.
CO3	Students will integrate tele optometry and technology to improve access to eye care services, especially in underserved or remote areas.
CO4	Students will adhere to high ethical standards and demonstrate professionalism in all aspects of their practice, ensuring patient confidentiality and informed consent.
CO5	Students will develop a commitment to continuing education and staying updated on advancements in optometry to enhance their knowledge and skills throughout their careers.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	60	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Community Optometry:** Definition and scope of Community Optometry. Role of Community Optometrists in eye care. Epidemiology of Eye Diseases: Prevalence and incidence of common eye conditions in the community.	30%	15

	Risk factors and demographics of eye diseases. Public Health and Preventive Optometry: Importance of preventive eye care in the community. Screening programs and their implementation. Vision Screening: Techniques and protocols for vision screening. Identification of visual impairments and refractive errors.		
2	**Low Vision Services:** Assessment and management of individuals with low vision. Assistive devices and visual aids for the visually impaired. Community-Based Eye Care Programs: Outreach programs for underserved populations. School-based eye care initiatives. Pediatric Optometry: Vision assessment in children. Amblyopia and strabismus management. Geriatric Optometry: Age-related eye conditions and their management. Optometric care for the elderly population.	30%	15
3	**Occupational Optometry:** Occupational vision demands and safety measures. Workplace eye wellness programs. Community Optometry and Public Health Policies: Legal and ethical considerations in community optometry. Health promotion and advocacy for eye care. Interdisciplinary Collaboration: Collaboration with other healthcare professionals and organizations. Integration of optometry into the broader healthcare system. Case Studies and Practical Application: Real-life scenarios and their solutions in community optometry. Clinical training and hands-on experience.	40%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.
4.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
5.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo

Semester 06

a. Course Name: **Community Optometry & Geriatric Optometry (P)**
b. Course Code: **19011006DS02**
c. Prerequisite: Eye anatomy, common eye diseases, low vision assessment, devices & strategies, psychosocial aspects.
d. Rationale: Grasp how vision works, common issues, assess limitations. Connect with patients, teach them to adapt, find solutions.

e. Course Learning Objective:

CLO1	Students will gain an understanding of the diverse eye care needs of populations in community settings, including children, the elderly, underserved communities, and culturally diverse groups.
CLO2	Students will gain practical experience in fitting and managing contact lenses for patients in community settings, including troubleshooting and follow-up care.
CLO3	Students will learn to address age-related eye conditions and vision changes in older adults, understanding the importance of vision care for the elderly.
CLO4	Students will participate in vision screening programs and public health initiatives within the community, promoting eye health and awareness.
CLO5	Students will acquire the skills to conduct pediatric eye exams, identify vision problems in children, and provide appropriate management and referrals.

f. Course Outcomes:

CO1	Students will gain skills in managing low vision patients, prescribing appropriate visual aids, and enhancing the quality of life for individuals with visual impairments.
CO2	Students will demonstrate the ability to provide specialized eye care services to pediatric and geriatric populations, addressing age-specific visual needs and conditions.
CO3	Students will integrate tele optometry and technology to improve access to eye care services, especially in underserved or remote areas.
CO4	Students will adhere to high ethical standards and demonstrate professionalism in all aspects of their practice, ensuring patient confidentiality and informed consent.
CO5	Students will develop a commitment to continuing education and staying updated on advancements in optometry to enhance their knowledge and skills throughout their careers.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Overview of the role and significance of optometrists in community settings. Understanding the diverse populations and eye care needs in the community. Providing comprehensive eye examinations in a community optometry practice.	50%	10

	Assessing visual acuity, refractive errors, and binocular vision. Conducting eye exams for children and identifying common pediatric eye conditions. Referring and managing pediatric patients with specific visual needs. Addressing age-related eye conditions and vision changes in the elderly population. Understanding the importance of vision care for older adults.		
2	Prescribing and fitting low vision aids to enhance visual function. Addressing contact lens-related issues and complications. Diagnosing and managing common eye conditions encountered in the community, such as dry eye, allergic conjunctivitis, and computer vision syndrome Participating in vision screening programs and public health initiatives within the community. Promoting eye health and awareness among the population. Developing cultural competency to provide sensitive and patient - centered care to diverse communities. Understanding the importance of communication and empathy in community optometry practice	25%	10
3	Engaging in community outreach activities to promote eye health and vision care. Collaborating with other healthcare professionals and organizations for comprehensive patient care. Exploring the use of tele optometry and technology in delivering eye care services to remote or underserved communities. Understanding ethical principles and legal obligations in the provision of community optometry services. Complying with relevant regulations and professional guidelines. Understanding the business aspects of community optometry practice, including patient scheduling, billing, and managing inventory. Keeping abreast of the latest advancements and trends in community-based eye care.	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 06

a. Course Name: **Professional Practice Management (T)**
b. Course Code: 19011006DS03
c. Prerequisite: For effective professional practice management is a thorough understanding of business principles and management fundamentals.
d. Rationale: Professional practice management involves overseeing various aspects of a healthcare practice, including financial management, human resources, marketing, operations, and regulatory compliance

e. Course Learning Objective:

CLO1	Learn strategies for managing expenses, optimizing reimbursement, and navigating healthcare reimbursement systems, such as insurance billing and coding
CLO2	Understand principles of employee training, performance evaluation, and professional development to foster a positive work environment and maximize staff productivity
CLO3	Gain an understanding of practice workflow optimization, including appointment scheduling, patient flow management, and efficient use of resources
CLO4	Learn effective communication strategies for engaging with patients, addressing their needs and concerns, and building lasting relationships
CLO5	Develop strategies for maintaining compliance with regulatory requirements, such as HIPAA, OSHA, and CMS guidelines, to minimize legal and financial risks.

f. Course Outcomes:

CO1	Learners will demonstrate the ability to manage the financial aspects of a healthcare practice effectively.
CO2	Learners will acquire skills in recruiting, hiring, and retaining qualified staff members, as well as managing employee performance and professional development.
CO3	Students will demonstrate proficiency in optimizing practice workflows, appointment scheduling, and patient flow management.
CO4	Upon completion of the course, learners will be able to develop and implement effective marketing strategies to attract and retain patients.
CO5	Students will understand the regulatory requirements and accreditation standards governing healthcare practices

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
3	-	-	3	3	20	20	-	20	-	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Optometric Practice**: Overview of the optometric profession, scope of practice, and legal and ethical considerations. **Patient Communication and Counseling**: Developing effective communication skills to interact with patients and provide proper counseling on eye health and	30%	15

	treatment plans. **Medical Records and Documentation:** Understanding the importance of maintaining accurate medical records and proper documentation in an optometric practice.		
2	**Practice Laws and Regulations**: Familiarity with the laws and regulations governing optometry practices in the specific region or country. **Practice Finance and Billing:** Basic principles of managing the financial aspects of an optometry practice, including billing and insurance procedures. **Practice Marketing and Patient Management:** Strategies for marketing an optometry practice and attracting and retaining patients.	30%	15
3	**Human Resource Management**: Introduction to managing staff and personnel in an optometric practice. **Technology in Optometric Practice**: Utilizing modern technologies and digital tools in providing comprehensive eye care. **Business Plan Development:** The process of developing a business plan for an optometric practice. **Practice Growth and Expansion:** Understanding the factors involved in practice growth and potential avenues for expanding the practice.	40%	15
	Total teaching hours for the academic year	**100%**	**45**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 06

a. Course Name: **Professional Practice Management (P)**
b. Course Code: **19011006DS04**
c. Prerequisite: For effective professional practice management is a thorough understanding of business principles and management fundamentals.
d. Rationale: Professional practice management involves overseeing various aspects of a healthcare practice, including financial management, human resources, marketing, operations, and regulatory compliance.

e. Course Learning Objective:

CLO1	Learn strategies for managing expenses, optimizing reimbursement, and navigating healthcare reimbursement systems, such as insurance billing and coding
CLO2	Understand principles of employee training, performance evaluation, and professional development to foster a positive work environment and maximize staff productivity
CLO3	Gain an understanding of practice workflow optimization, including appointment scheduling, patient flow management, and efficient use of resources
CLO4	Learn effective communication strategies for engaging with patients, addressing their needs and concerns, and building lasting relationships
CLO5	Develop strategies for maintaining compliance with regulatory requirements, such as HIPAA, OSHA, and CMS guidelines, to minimize legal and financial risks.

f. Course Outcomes:

CO1	Learners will demonstrate the ability to manage the financial aspects of a healthcare practice effectively.
CO2	Learners will acquire skills in recruiting, hiring, and retaining qualified staff members, as well as managing employee performance and professional development.
CO3	Students will demonstrate proficiency in optimizing practice workflows, appointment scheduling, and patient flow management.
CO4	Upon completion of the course, learners will be able to develop and implement effective marketing strategies to attract and retain patients.
CO5	Students will understand the regulatory requirements and accreditation standards governing healthcare practices

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	2	2	1	-	-	20	-	30	50

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Practice fitting and adjusting eyeglasses for patients based on prescription requirements and facial characteristics. Learn how to use a lensometer to measure the power of eyeglass lenses. Learn about different lens materials, options, and coatings available to improve visual comfort and performance	50%	10

2	Gain experience in helping patients choose appropriate eyeglass frames based on style, fit, and prescription. Hands-on training with software used for appointment scheduling, record-keeping, and billing in optometry practices Practice effective communication skills with patients, including discussing treatment plans, visual needs, and potential risks.	25%	10
3	Learn how to process insurance claims and handle billing procedures in an optometry practice Gain experience in managing inventory for eyeglasses, contact lenses, and other optical products Develop patient education materials and practice educating patients about eye health, visual hygiene, and preventive measures Learn about marketing strategies, patient retention, and business development for an optometry practice	25%	10
	Total teaching hours for the academic year	**100%**	**30**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 06

a. Course Name: **Contact Lens (Soft)**
b. Course Code: **19011006DS05**
c. Prerequisite: **F**or studying soft contact lenses is a foundational understanding of ocular anatomy and physiology
d. Rationale: A solid understanding of ocular anatomy and physiology is essential for comprehending how soft contact lens's function and interact with the eye

e. Course Learning Objective:

CLO1	Understand the principles and history of contact lenses, particularly soft contact lenses.
CLO2	Demonstrate knowledge of the anatomy and physiology of the eye, with a focus on ocular health as it pertains to contact lens fitting.
CLO3	Identify and describe different types of soft contact lens materials and their properties, including biocompatibility and oxygen permeability.
CLO4	Learn the techniques for fitting soft contact lenses and selecting appropriate lens parameters based on individual patient needs.
CLO5	Perform pre-fitting evaluation and diagnostic tests to assess the suitability of soft contact lens wear for patients.

f. Course Outcomes:

CO1	Understand the fundamentals: Demonstrate a comprehensive understanding of the principles, history, and development of contact lenses, with a specific focus on soft contact lenses.
CO2	Evaluate ocular health: Perform pre-fitting evaluations, including patient history-taking and ocular examinations.
CO3	Choose the most suitable soft contact lens materials, designs, and parameters based on the patient's refractive error, lifestyle, and specific needs.
CO4	Master the techniques and procedures for fitting soft contact lenses, ensuring proper alignment, centration, and comfort for the patient.
CO5	Demonstrate knowledge and proficiency in fitting specialized soft contact lenses, such as toric lenses for astigmatism and multifocal lenses for presbyopia.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
					Internal Marks			**External Marks**		
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Contact Lenses:** Historical development and evolution of contact lenses. Types of contact lenses (soft, rigid gas-permeable, hybrid, etc.). Advantages and disadvantages of soft contact lenses. Anatomy and Physiology of the Eye: Understanding the structure of the eye and its relevance to contact lens fitting. Ocular health and its implications for contact lens wear.	20%	20

2	**Contact Lens Materials:** Study of soft contact lens materials and their properties. Material biocompatibility and oxygen permeability. Lens design and power selection. Lens Fitting and Dispensing: Techniques for fitting soft contact lenses. Parameters for lens selection based on individual patient needs. Lens care and maintenance instructions for patients.	20%	30
3	**Assessment and Diagnosis:** Pre-fitting evaluation of patients, including history-taking and ocular examination. Diagnostic tests and measurements for fitting soft contact lenses. Identification and management of contraindications for contact lens wear. Contact Lens Complications and Problem-Solving Common complications associated with soft contact lens wear. Strategies for troubleshooting and resolving fitting issues. Specialized Soft Contact Lenses: Toric contact lenses for astigmatism correction. Multifocal contact lenses for presbyopia correction. Therapeutic soft lenses for specific eye conditions.	20%	20
4	**Pediatric and Geriatric Contact Lens Fitting:** Considerations for fitting soft contact lenses in children and older adults. Advanced Contact Lens Topics: Legal and Ethical Considerations: Understanding the legal and ethical responsibilities of contact lens practitioners. Patient communication and informed consent.	20%	30
5	**Clinical Practicum**: Hands-on training in fitting soft contact lenses on simulated eyes and real patients. Supervised clinical practice with increasing complexity. Contact Lens Care and Compliance: Education on proper contact lens care and hygiene for patients. Promoting patient compliance and follow-up care.	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 07

a. Course Name: **Advanced Physical Assessment & critical Care Technology - I**

b. Course Code: 19011307AC01

c. Prerequisite: Students should have a solid foundation in medical history taking, physical examination techniques, and basic understanding of human anatomy and physiology, along with skills in conducting diagnostic tests and interpreting laboratory results.

d. Rationale: Mastering the assessment of various body systems, including cardiovascular, respiratory, nervous, renal, gastrointestinal, musculoskeletal, reproductive, and endocrine systems, as well as pediatric and geriatric assessments, is essential for providing comprehensive patient care, diagnosing medical conditions, and developing treatment plans tailored to individual patient needs.

e. Course Learning Objective:

CLOBJ 1	Conduct a systematic history-taking and physical examination across various organ systems to aid in clinical assessment.
CLOBJ 2	Interpret key laboratory and diagnostic studies related to cardiovascular, respiratory, neurological, renal, gastrointestinal, musculoskeletal, reproductive, and endocrine systems.
CLOBJ 3	Assess and monitor critically ill patients using appropriate clinical tools, including biochemical markers, imaging studies, and functional assessments.
CLOBJ 4	Perform age-specific assessments, including pediatric growth and development monitoring and geriatric evaluations.
CLOBJ 5	Apply evidence-based approaches to analyzing clinical findings and formulating patient management strategies.

f. Course Outcomes:

CLO 1	Demonstrate proficiency in conducting history-taking and physical examinations for various organ systems.
CLO 2	Analyze laboratory and diagnostic test results to assist in clinical decision-making and patient care.
CLO 3	Utilize monitoring tools such as ECG, ABG, pulse oximetry, and imaging techniques for comprehensive patient evaluation.
CLO 4	Adapt assessment techniques for different patient populations, including pediatric and geriatric patients, ensuring age-appropriate care.
CLO 5	Synthesize clinical data to contribute to the diagnosis and management of patients with multisystem conditions.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction** • History taking • Physical examination	20%	20

	Cardiovascular system • Cardiac history • Physical examination • Cardiac laboratory studies – biochemical markers, hematological studies • Cardiac diagnostic studies – Electrocardiogram, echocardiography, stress testing, radiological imaging		
2	**Respiratory system** • History • Physical examination • Respiratory monitoring – Arterial blood gasses, pulse oximetry, end-tidal carbon dioxide monitoring • Respiratory Diagnostic tests – Chest radiography, ventilation perfusion scanning, pulmonary angiography, bronchoscopy, thoracentesis, sputum culture, pulmonary function test **4. Nervous system** • Neurological history • General physical examination • Assessment of cognitive function • Assessment of cranial nerve function • Motor assessment – muscle strength, power, and reflexes • Sensory assessment – dermatome assessment • Neurodiagnostic studies – CT scan, MRI, PET	20%	20
3	**Renal system** • History • Physical examination • Assessment of renal function • Assessment of electrolytes and acid base balance • Assessment of fluid balance **Gastrointestinal system** • History • Physical examination • Nutritional assessment • Laboratory studies – Liver function studies, blood parameters, stool test • Diagnostic studies – radiological and imaging studies, endoscopic studies	20%	30
4	**Musculoskeletal system** • History • Physical examination – gait assessment, joint assessment, • Laboratory studies – blood parameters (inflammatory enzymes, uric acid)	20%	30

	• Diagnostic studies - Radiological and imaging studies, endoscopic studies **Reproductive system (Male & Female)** • History • Physical examination • Laboratory studies • Diagnostic studies		
5	**Endocrine system** • History, physical examination, laboratory studies, and diagnostic studies of • Hypothalamus and pituitary gland • Thyroid gland • Parathyroid gland • Endocrine gland • Adrenal gland **Assessment of children** • Growth and development • Nutritional assessment • Specific system assessment **Assessment of older adults** • History • Physical assessment • Psychological assessment	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	Textbook of clinical medicine. Dr. oza
2.	Physical Examination and Health Assessment book, javeri.
3.	Medical-Surgical Nursing: Assessment and Management of Clinical Problems, lewis
4.	Orthopedic Physical Assessment, David Magee
5.	Evidence-Based Physical Examination: Best Practices for Health & Well-Being Assessment, KATE Gwalik

Semester 07

a. Course Name: **General and Advanced operation Theatre**

b. Course Code: **19010907OT01**

c. Prerequisite: Student must pass with previously includes a strong foundation in anatomy, physiology, microbiology, and pharmacology. Understanding these core concepts is essential for safe and effective patient care in the operating room.

d. Rationale: The operating room is a unique and complex environment. Practical experience allows students to develop the skills they need to function effectively in this setting, such as scrubbing, gowning, gloving, instrument handling, and assisting the surgical team.

e. Course Learning Objective:

CLOBJ 1	To learn about the OT lights and laminar air flow to prevent from microorganism
CLOBJ 2	How to maintain sterility in operating room
CLOBJ 3	Have practice in techniques of insertions iv cannula and peripheral line
CLOBJ 4	How to manage trolley and maintain sterility
CLOBJ 5	How to Manage the operation theatre room temperature

f. Course Outcomes:

CLO 1	Prepare trolly for different surgical procedure
CLO 2	Able to manage airflow and infection control in operation room
CLO 3	Able to Manage medical gasses delivery
CLO 4	Easy to insert a cannula or peripheral line
CLO 5	Develop skill in identify suture material and techniques

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Preparation for different surgical trolley, Positioning, Part preparation, draping	20%	25
2	Layout of OT, OT lights, laminar airflow	10%	20
3	Medical Gas delivery Devices, DISS, PISS, Oxygen concentrator	10%	25
4	Techniques of insertion of peripheral IV line, Various types of suture material, needles and uses**.**	30%	25
5	Maintenance of Temperature, humidity and sterility	30%	25
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	Operation Theater Technique Anesthesia and Emergency Care for Technicians, Nurses & Paramedics by Vaishali Mohod
2.	Textbook of Operation Theatre Technology By Mp Sharma

3.	Operation Theatre: Assistant Recruitment Exam Guide By Pankaj Singhal
4.	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5.	Textbook of Operation Theatre Technology By Manjushree Ray

Semester 07

a. Course Name: **Contact Lens (RGP)**
b. Course Code: **19011007DS01**
c. Prerequisite: For studying rigid gas permeable (RGP) contact lenses is a fundamental understanding of basic optics and lens materials**.**
d. Rationale: Understanding basic optics, including concepts such as refraction, astigmatism correction, and optical aberrations, is essential for comprehending how RGP lenses correct vision.

e. Course Learning Objective:

CLO1	Understand the principles and history of contact lenses, particularly RGP contact lenses.
CLO2	Demonstrate knowledge of the anatomy and physiology of the eye, with a focus on ocular health as it pertains to contact lens fitting.
CLO3	Identify and describe different types of RGP contact lens materials and their properties, including biocompatibility and oxygen permeability.
CLO4	Learn the techniques for fitting RGP contact lenses and selecting appropriate lens parameters based on individual patient needs.
CLO5	Perform pre-fitting evaluation and diagnostic tests to assess the suitability of RGP contact lens wear for patients.

f. Course Outcomes:

CO1	Understand the principles and history of contact lenses, particularly RGP contact lenses.
CO2	Demonstrate knowledge of the anatomy and physiology of the eye, with a focus on ocular health as it pertains to contact lens fitting.
CO3	Identify and describe different types of RGP contact lens materials and their properties, including biocompatibility and oxygen permeability.
CO4	Learn the techniques for fitting RGP contact lenses and selecting appropriate lens parameters based on individual patient needs.
CO5	Perform pre-fitting evaluation and diagnostic tests to assess the suitability of RGP contact lens wear for patients.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Contact Lenses:** Historical development and evolution of contact lenses. Types of contact lenses (RGP,, hybrid, etc.). Advantages and disadvantages of RGP contact lenses. Anatomy and Physiology of the Eye: Understanding the structure of the eye and its relevance to contact lens fitting. Ocular health and its implications for contact lens wear.	20%	20
2	**Contact Lens Materials:**	20%	30

	Study of RGP contact lens materials and their properties. Material biocompatibility and oxygen permeability. Lens design and power selection. Lens Fitting and Dispensing: Techniques for fitting RGP contact lenses. Parameters for lens selection based on individual patient needs. Lens care and maintenance instructions for patients.		
3	**Assessment and Diagnosis:** Pre-fitting evaluation of patients, including history-taking and ocular examination. Diagnostic tests and measurements for fitting RGP contact lenses. Identification and management of contraindications for contact lens wear. Contact Lens Complications and Problem-Solving: Common complications associated with RGP contact lens wear. Strategies for troubleshooting and resolving fitting issues. Specialized RGP Contact Lenses: Toric contact lenses for astigmatism correction. Therapeutic RGP lenses for specific eye conditions.	20%	20
4	**Pediatric and Geriatric Contact Lens Fitting:** Considerations for fitting RGP contact lenses in children and older adults. Advanced Contact Lens Topics: Legal and Ethical Considerations: Understanding the legal and ethical responsibilities of contact lens practitioners. Patient communication and informed consent.	20%	30
5	**Clinical Practicum**: Hands-on training in fitting RGP contact lenses on simulated eyes and real patients. Supervised clinical practice with increasing complexity. Contact Lens Care and Compliance: Education on proper contact lens care and hygiene for patients. Promoting patient compliance and follow-up care.	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 07

a. Course Name: **Ocular Prosthesis**
b. Course Code: **19011007DS02**
c. Prerequisite: For studying ocular prosthetics is a foundational understanding of ocular anatomy and pathology.
d. Rationale: Involve the fabrication and fitting of artificial eyes or ocular prostheses to replace or restore the appearance of a missing or disfigured eye.

e. Course Learning Objective:

CLO1	Students should be able to describe the anatomy and physiology of the eye, including the structures relevant to ocular prosthetics.
CLO2	Students should learn how to conduct a comprehensive case history interview with patients requiring ocular prostheses, understanding their needs and concerns.
CLO3	Students should acquire proficiency in different impression techniques used to capture accurate socket shape for customized ocular prostheses.
CLO4	Students should gain practical experience in fabricating ocular prostheses, considering materials, color matching, and achieving a natural appearance.
CLO5	Students should learn how to properly fit and adjust ocular prostheses for individual patients, ensuring comfort and optimal aesthetics.

f. Course Outcomes:

CO1	Students should demonstrate clinical competence in assessing, fitting, and managing ocular prostheses for patients, ensuring optimal comfort and appearance.
CO2	Students should prioritize patient-centered care, addressing individual needs, concerns, and preferences while providing ocular prosthetic services.
CO3	Students should exhibit cultural sensitivity, respecting the diverse backgrounds and values of patients, and adapting their approach accordingly.
CO4	Students should effectively communicate with patients, colleagues, and other healthcare professionals involved in the care of patients requiring ocular prostheses.
CO5	Students should adhere to high ethical standards and demonstrate professionalism in all aspects of their practice, ensuring patient confidentiality and informed consent.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Ocular Prosthetics.** Overview of ocular prostheses and their importance in restoring appearance and function. Understanding the different types of ocular prostheses and their applications. **Patient Assessment and Case History.** Learning how to take a comprehensive case history from	20%	20

	patients requiring ocular prostheses. Understanding the emotional and psychological aspects of dealing with patients in need of prosthetic eyes. **Ocular Anatomy and Physiology.** Understanding the anatomy and physiology of the eye to ensure appropriate fitting and comfort of the ocular prosthesis		
2	**Impression Techniques.** Learning various impression techniques to accurately capture the socket shape for customized ocular prostheses. **Ocular Prosthesis Fabrication.** Gaining hands-on experience in fabricating ocular prostheses, including the selection of materials and color matching. **Fitting and Adjustment of Ocular Prostheses.** Learning how to properly fit and adjust ocular prostheses for optimal comfort and appearance.	20%	30
3	**Ocular Prosthesis Insertion and Removal.** Practicing safe and effective techniques for inserting and removing ocular prostheses for patients. **Maintenance and Care of Ocular Prostheses.** Educating patients on proper care and maintenance of their ocular prostheses to ensure longevity and hygiene. **Management of Complications and Challenges.** Understanding potential complications and challenges in fitting and managing ocular prostheses and learning appropriate solutions**.**	20%	20
4	**Patient Counseling and Support.** Developing communication skills to counsel patients and provide emotional support during the process of receiving an ocular prosthesis. **Cosmetic Rehabilitation with Ocular Prostheses.** Learning how to achieve natural-looking cosmetic rehabilitation for patients with a prosthetic eye. **Interdisciplinary Collaboration.** Collaborating with ophthalmologists, surgeons, and other healthcare professionals involved in the care of patients requiring ocular prostheses.	20%	30
5	**Ethical and Professional Standards.** Understanding ethical considerations in providing ocular prosthetic services and maintaining professionalism in patient care. **Emerging Trends and Technology.** Keeping updated on the latest advancements and technologies in ocular prosthetics. **Patient Follow-Up and Long-Term Care.** Learning the importance of long-term follow-up care for patients with ocular prostheses and providing ongoing support.	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark

	Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 07

a. Course Name: **Cornea**
b. Course Code: **19011007DS03**
c. Prerequisite: For understanding the cornea is a basic knowledge of human anatomy, particularly the structure of the eye. This includes understanding the different components of the eye such as the cornea, iris, lens, retina, and optic nerve, as well as their functions and how they work together to facilitate vision.
d. Rationale: Understanding the cornea is important because any abnormalities or diseases affecting it can significantly impact vision quality, potentially leading to visual impairment or blindness.

e. Course Learning Objective:

CLO1	Understand the anatomy and physiology of the cornea and its role in vision.
CLO2	Recognize and diagnose common corneal conditions and external eye diseases.
CLO3	Perform corneal assessments using various diagnostic techniques, including slit lamp biomicroscope and corneal topography.
CLO4	Develop a comprehensive approach to the management of corneal infections and inflammations.
CLO5	Familiarize themselves with contact lens fitting for patients with corneal irregularities.

f. Course Outcomes:

CO1	Perform comprehensive corneal assessments using slit lamp bio microscopy, corneal topography, and other relevant diagnostic techniques.
CO2	Accurately diagnose common corneal conditions and external eye diseases and develop appropriate management plans, including medical treatment and referrals when necessary.
CO3	Demonstrate competence in fitting contact lenses for patients with corneal irregularities and effectively manage contact lens-related complications.
CO4	Comprehend the principles and indications for corneal refractive surgeries like LASIK and PRK
CO5	Apply therapeutic contact lenses and medications to manage and promote healing of corneal conditions and ocular surface diseases.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Cornea and External Eye Diseases** Anatomy and physiology of the cornea and external eye Common corneal conditions and diseases (e.g., keratitis, corneal dystrophies) Corneal wound healing and complications Corneal Diagnostics Techniques for corneal evaluation (e.g., slit lamp	20%	20

	biomicroscopy, specular microscopy) Corneal topography and tomography Pachymetry and endothelial cell analysis Corneal Pathology and Microbiology Understanding corneal infections and inflammations Differentiating between viral, bacterial, and fungal keratitis.		
2	**Medical Management of Corneal Diseases** Pharmacological management of corneal conditions Prescribing and administering medications for corneal infections and inflammations Corticosteroids and their indications and contraindications Corneal Procedures and Surgeries Corneal foreign body removal Amniotic membrane transplantation Limbal stem cell transplantation Penetrating keratoplasty (corneal transplantation) overview Contact Lenses and the Cornea Indications and contraindications for contact lens wear in corneal patients Contact lens fitting for corneal irregularities Management of contact lens-related corneal complication.	20%	30
3	**Corneal Refractive Surgeries** Overview of refractive surgeries like LASIK (Laser-Assisted In Situ Keratomileusis) and PRK (Photorefractive Keratectomy) Preoperative evaluation and postoperative care for refractive surgery patients Managing complications and side effects of refractive surgeries	20%	20
4	**Corneal Trauma** Assessment and management of corneal injuries Ocular emergencies and urgent care for corneal trauma Interdisciplinary Approach Collaboration with other eye care professionals (e.g., ophthalmologists) Integrating corneal care with general eye health Professionalism and Ethics Ethical considerations in cornea practice Communication and patient interaction skills.	20%	30
5	**Corneal and External Eye Therapeutics** Application of therapeutic contact lenses (bandage lenses) for corneal healing Utilizing therapeutic medications and topical agents for corneal conditions Ocular Surface Diseases Dry eye disease and its management Allergic conjunctivitis and its impact on the cornea	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo

3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 08

a. Course Name: Clinics: Pre, Intra & Post-operative preparation, complication and management

b. Course Code: 19011308AC01

c. Prerequisite: Students should have a solid foundation in medical history taking, physical examination techniques, and basic understanding of human anatomy and physiology, along with skills in conducting diagnostic tests and interpreting laboratory results.

d. Rationale: Mastering the assessment of various body systems, including cardiovascular, respiratory, nervous, renal, gastrointestinal, musculoskeletal, reproductive, and endocrine systems, as well as pediatric and geriatric assessments, is essential for providing comprehensive patient care, diagnosing medical conditions, and developing treatment plans tailored to individual patient needs.

e. Course Learning Objective:

CLOBJ 1	Demonstrate proficiency in setting up anesthesia trolleys for general and regional anesthesia, ensuring all essential equipment and drugs are readily available.
CLOBJ 2	Explain the components and significance of informed consent for anesthesia, emphasizing ethical and medico-legal considerations.
CLOBJ 3	Apply safe handling techniques for gas cylinders, including identification, pressure checks, and storage protocols.
CLOBJ 4	Describe and perform appropriate patient positioning for various surgical procedures while preventing positioning-related complications.
CLOBJ 5	Implement best practices for post-anesthesia care, including monitoring, pain management, and handling postoperative complications.

f. Course Outcomes:

CLO 1	Organize and prepare anesthesia equipment and medications for different types of anesthesia.
CLO 2	Justify the importance of informed consent and execute proper documentation procedures.
CLO 3	Apply safety measures in handling medical gases, ensuring proper use and maintenance.
CLO 4	Assess and position patients correctly for different surgical procedures, minimizing risks of complications.
CLO 5	Integrate post-anesthesia care principles to ensure safe recovery and manage common postoperative complications effectively.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Setting Up the Trolley for Anesthesia** **A. General Anesthesia (GA) Trolley Setup** **Essential Equipment:**	20%	24

	• Laryngoscope (with different blade sizes) • Endotracheal tubes (cuffed and uncuffed) • Supraglottic airway devices (LMA, i-gel) • Magill's forceps • Bougie & stylet • Airway adjuncts (nasopharyngeal and oropharyngeal airways) • Breathing circuits (Bain, Jackson-Rees, circle system) • Ambu bag with mask • Syringes for drug administration **Drugs:** • Induction agents (Propofol, Ketamine, Etomidate) • Muscle relaxants (Succinylcholine, Rocuronium) • Opioids (Fentanyl, Morphine) • Emergency drugs (Atropine, Epinephrine, Ephedrine, Naloxone) • Local anesthetics (Lidocaine, Bupivacaine) **B. Regional Anesthesia (RA) Trolley Setup** • Spinal and epidural needles • Sterile gloves, drapes, antiseptic solution • Local anesthetics (Bupivacaine, Ropivacaine) • Nerve stimulator or Ultrasound for peripheral nerve blocks Catheter for continuous epidural anesthesia		
2	**Consent Form for Anesthesia** • Components of an informed consent form: o Patient details & identification o Type of anesthesia planned (GA, RA, MAC) o Risks and benefits explained o Possible complications and alternatives o Signature of patient, anesthetist, and witness • Importance of verbal and written consent **Gas Cylinders Handling** • Identification of different gas cylinders (O2, N2O, CLO 2, medical air). • Color coding and labeling of cylinders. • Checking cylinder pressure and flow rates. Safe handling, storage, and replacement of cylinders.	20%	24
3	**Positioning of Patients for Surgery** • **Supine:** Most common, used for abdominal and cardiac surgeries. • **Prone:** For spinal and posterior fossa surgeries. • **Lateral:** Used in thoracic and kidney surgeries. • **Lithotomy:** Gynecological and urological surgeries.	20%	24

	• **Trendelenburg & Reverse Trendelenburg:** For laparoscopic and head surgeries. **Precautions:** Pressure point padding, avoiding nerve injuries (ulnar, brachial plexus, peroneal).		
4	**Monitoring in PACU & Alarm Settings** • Monitoring parameters: o Heart rate, blood pressure, SpO2, respiratory rate, ECG. o End-tidal CLO 2 (capnography) for ventilated patients. • Setting alarms for: o Low oxygen saturation o Bradycardia & tachycardia o Hypotension & hypertension Pain assessment (VAS scale), temperature monitoring, nausea control.	20%	24
5	**Rapid Sequence Intubation (RSI)** • **Indications:** Full stomach, trauma, emergency surgeries. • **Steps:** o Pre-oxygenation (100% O2 for 3-5 min). o IV induction with etomidate or ketamine. o Administration of succinylcholine or rocuronium. o Cricoid pressure (Sellick maneuver). o Endotracheal intubation and confirmation (capnography, auscultation). **Postoperative Management in PACU** • **Pain Management:** o IV analgesics (Morphine, Paracetamol, NSAIDs). o Regional techniques (epidural, nerve blocks). o Multimodal analgesia. • **Management of Nausea & Vomiting:** o Antiemetics (Ondansetron, Metoclopramide). o Hydration and electrolyte correction. • **Bladder Distension & Urinary Retention:** o Bladder scanning. Catheterization if needed.	20%	24
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	Textbook of Clinical Anesthesiology-Morgan
2.	Drugs & Equipments in anesthesia -Arunkumar Paul,
3.	A practice of Anaesthesia- Wylie & Churchill Davidson's
4.	Short Textbook of Anaesthesia, Ajay Yadav.

5.	Textbook of Anaesthesia Equipments-Dorsch & Dorsch

Semester 08

a. Course Name: **Clinics: Hospital Operation Management**

b. Course Code: 19010908OT01

c. Prerequisite: Successful completion of foundational courses in previous semesters, healthcare systems, and healthcare finance is typically required. These courses provide students with a strong understanding of the healthcare industry's structure, function, and financial operations.

d. Rationale: Students gain hands-on experience with various aspects of hospital operations, such as scheduling, budgeting, staffing, and quality improvement. The clinical setting provides a real-world environment for students to apply the knowledge and skills they have learned in the classroom. Clinical rotations offer opportunities to build relationships with healthcare professionals and potential employers.

e. Course Learning Objective:

CLOBJ 1	This area focuses on understanding the fundamental concepts and key questions related to service management in a hospital setting
CLOBJ 2	the strategies and objectives involved in managing service operations within a hospital
CLOBJ 3	The design aspects of service operations, including the layout, processes, and workflows
CLOBJ 4	Assess the importance of quality management principles in healthcare operations.
CLO5	Analyze the role of information technology in improving healthcare operations.

f. Course Outcomes:

CLO 1	Make strategies for hospital
CLO 2	Able to make decisions for hospital
CLO 3	Work with hospital management staff
CLO 4	Able to make plans for aseptic control
CLO 5	Can design an operation theatre layout

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	Introduction and key questions of service management:	25%	30
2	Strategies and objectives of service operations:	25%	30
3	Design of service operations:	25%	30
4	Planning, scheduling, and control of service operations: l	25%	30
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	Operation theater technique anesthesia and emergency care for technicians, nurses & paramedics by vaishali mohod
2.	Textbook of Operation Theatre Technology By MP Sharma

3.	Operation theatre: assistant recruitment exam guide By pankaj singhal
4.	Handbook of Operation Theatre Technique Details By Kilpadi / Jaypee Brothers
5.	Textbook of operation theatre technology By manjushree ray

Semester 08

a. Course Name: **Dispensing Optics (Paediatrics)**
b. Course Code: **19011008DS01**
c. Prerequisite: Understanding the unique characteristics of children's vision, such as their evolving visual acuity, binocular vision development, and accommodative abilities, is essential for providing appropriate optical solutions tailored to their needs.
d. Rationale: Dispensing optics in paediatrics is crucial for ensuring optimal visual outcomes and promoting healthy visual development in children. The rationale behind this specialization lies in addressing the unique visual requirements and challenges faced by pediatric patients.

e. Course Learning Objective:

CLO1	Students should comprehend the stages of visual development in children, from infancy through adolescence, and understand how it influences the prescription and fitting of eyeglasses.
CLO2	Students should be familiar with common vision conditions affecting children, such as refractive errors, amblyopia, strabismus, and binocular vision anomalies.
CLO3	Students should learn specialized techniques for fitting eyeglasses in infants and young children who are unable to communicate verbally.
CLO4	Students should understand how to select and fit appropriate eyeglass frames for children, considering safety, comfort, and aesthetics.
CLO5	Students should be able to prescribe and fit various types of lenses suitable for pediatric patients, including single vision, bifocal, and progressive lenses.

f. Course Outcomes:

CO1	Students should exhibit proficiency in selecting and fitting suitable eyeglass frames for pediatric patients, considering safety, comfort, and aesthetics.
CO2	Students should be capable of prescribing and fitting various types of lenses, including single vision, bifocal, and progressive lenses, to meet the visual needs of pediatric patients.
CO3	Students should understand the role of eyeglasses in managing amblyopia and strabismus and their impact on visual development.
CO4	Students should develop effective communication skills to interact with pediatric patients and their parents or guardians in a child-friendly and reassuring manner.
CO5	Students should gain knowledge of the principles of fitting contact lenses for older pediatric patients with specific visual needs.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Understanding Pediatric Optometry:** Introduction to the specialty of pediatric optometry and the importance of providing age-appropriate optical services to children**.**	20%	20

	Visual Development in Children: Understanding the stages of visual development in children, from infancy through adolescence**.** **Common Pediatric Vision Conditions:** Learning about common vision conditions in children, such as refractive errors, amblyopia, strabismus, and binocular vision anomalies**.**		
2	**Optical Dispensing for Infants and Young Children:** Special considerations and techniques for optical dispensing in infants and young children who are unable to communicate verbally. **Pediatric Frame Selection and Fitting:** Understanding how to select and fit appropriate eyeglass frames for children, considering safety, comfort, and aesthetics. **Prescribing and Fitting Pediatric Lenses:** Learning about different types of lenses suitable for pediatric patients, including single vision, bifocal, and progressive lenses**.**	20%	30
3	**Vision Care for Children with Special Needs:** Providing optical services to children with special needs, including those with developmental delays or physical challenges**.** **Visual Assessment Techniques for Children:** Learning specialized techniques for assessing visual acuity and refractive errors in young children. **Managing Amblyopia and Strabismus with Optical Devices:** Understanding the role of optical devices in the management of amblyopia and strabismus**.**	20%	20
4	**Patient Communication and Parental Counseling:** Developing effective communication skills to interact with pediatric patients and their parents or guardians. **Pediatric Contact Lens Fitting:** Introduction to the principles of fitting contact lenses in older pediatric patients with specific visual needs. **Safety and Compliance Considerations:** Educating parents and children about proper eyewear usage, safety, and hygiene**.**	20%	30
5	**Ethical and Professional Practice:** Understanding ethical considerations when working with pediatric patients and maintaining professionalism in pediatric optometry. **Interdisciplinary Collaboration:** Collaborating with pediatricians, pediatric ophthalmologists, and other healthcare professionals involved in the care of pediatric patients. **Community Outreach and Vision Screening Programs:** Participating in community-based vision screening programs for children to identify visual issues early on.	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton

2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 08

a. Course Name: **Dispensing Optics in Geriatrics.**
b. Course Code: **19011008DS02**
c. Prerequisite: Understanding dispensing optics in geriatrics is a thorough comprehension of the unique visual changes and ocular conditions associated with aging.
d. Rationale: It lies in addressing the visual challenges and preserving visual function in older adults, thereby enhancing their quality of life and independence.

e. Course Learning Objective:

CLO1	Students should develop specialized skills in assessing visual acuity, contrast sensitivity, visual fields, and other visual functions in older adults.
CLO2	Students should understand the management options for presbyopia and be able to prescribe appropriate multifocal lenses to meet the visual needs of older patients.
CLO3	Students should be familiar with cataracts, their impact on vision, and their co-management with cataract surgeons for optimizing visual outcomes.
CLO4	Students should learn about low vision and how to provide visual rehabilitation options to geriatric patients with significant visual impairment.
CLO5	Students should develop specialized techniques for optical dispensing in geriatric patients, including frame selection, fitting, and adjustments to accommodate individual needs.

f. Course Outcomes:

CO1	Students should understand the role of cataracts in visual impairment and be competent in co-managing cataract patients with cataract surgeons.
CO2	Students should be able to provide visual rehabilitation options and low vision aids to geriatric patients with significant visual impairment, promoting functional independence.
CO3	Students should exhibit proficiency in selecting and dispensing eyeglass frames that suit the needs of older adults, considering safety, comfort, and aesthetics.
CO4	Students should understand AMD and be knowledgeable about strategies for maximizing vision and quality of life for AMD patients.
CO5	Students should develop effective communication skills to interact with elderly patients

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
					Internal Marks			**External Marks**		**Total**
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**T**	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Understanding Age-Related Vision Changes:** Introduction to age-related changes in the visual system, including presbyopia, cataracts, and age-related macular degeneration**.** **Assessment of Visual Function in Geriatric Patients:** Learning specialized techniques for assessing visual acuity, contrast sensitivity, and other visual functions in older adults**.**	20%	20

	Presbyopia Management. Understanding the management of presbyopia, including the selection and fitting of appropriate multifocal lenses.		
2	**Cataract Assessment and Co-Management:** Learning about cataracts, their impact on vision, and co-managing patients with cataract surgeons. **Low Vision and Visual Rehabilitation:** Understanding low vision and providing visual rehabilitation options for older adults with significant visual impairment. **Optical Dispensing for Older Adults:** Special considerations and techniques for optical dispensing in geriatric patients, including frame selection and fitting.	20%	30
3	**Management of Age-Related Macular Degeneration (AMD):** Understanding AMD and its impact on visual function, as well as strategies for maximizing vision in AMD patients**.** **Glaucoma and Intraocular Pressure Management:** Overview of glaucoma and considerations for intraocular pressure management in older adults**.** **Patient Communication and Elderly Care:** Developing effective communication skills to interact with geriatric patients, taking into account potential hearing or cognitive challenges**.**	20%	20
4	**Considerations for Multiple Comorbidities:** Understanding how various health conditions and medications may affect visual function and optical dispensing decisions**.** **Ethical and Professional Practice in Geriatric Optometry:** Adhering to ethical principles when working with geriatric patients and demonstrating professionalism in geriatric optometry**.** **Interdisciplinary Collaboration:** Learning to collaborate with other healthcare professionals involved in the care of older adults, such as geriatricians and ophthalmologists**.**	20%	30
5	**Safety and Compliance in Geriatric Optical Dispensing**: Prioritizing safety and compliance in fitting and managing eyeglasses for older adults. **Community Outreach and Vision Screening** **Programs for Seniors**: Participating in community-based vision screening programs for elderly individuals to identify visual issues early on. **Quality of Life Enhancement:** Understanding how proper optical dispensing can contribute to enhancing the quality of life and independence of older adults.	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.

Semester 08

a. Course Name: **Low Vision Rehabilitation**
b. Course Code: **19011008DS03**
c. Prerequisite: A solid understanding of the anatomy, physiology, and pathology of the visual system. This includes knowledge of various eye conditions and diseases that can cause low vision, such as age-related macular degeneration, diabetic retinopathy, glaucoma, and retinitis pigmentosa.
d. Rationale: Maximizing the remaining vision and functional abilities of individuals with significant visual impairments, thereby enhancing their quality of life and promoting independence.

e. Course Learning Objective:

CLO1	Conduct comprehensive low vision assessments, including visual acuity testing, visual field assessment, and contrast sensitivity evaluation.
CLO2	Demonstrate proficiency in selecting and fitting appropriate low vision aids and devices, such as magnifiers, telescopes, and electronic visual aids.
CLO3	Teach patients compensatory techniques, such as eccentric viewing and scanning strategies, to enhance their functional vision.
CLO4	Recognize the emotional and psychological impact of low vision on patients and their families.
CLO5	Work effectively as part of an interdisciplinary team, collaborating with other healthcare professionals, such as occupational therapists and social workers.

f. Course Outcomes:

CO1	Interpret assessment results accurately to determine the level of visual impairment and identify appropriate low vision rehabilitation strategies.
CO2	Explain the features and benefits of various low vision aids to patients and their families, ensuring informed decision-making
CO3	Design personalized rehabilitation plans to improve patients' functional vision and maximize independence in daily living activities.
CO4	Understand the roles and contributions of each member of the interdisciplinary team and actively engage in productive communication and teamwork.
CO5	Recognize the psychosocial impact of low vision on patients' emotional well-being and quality of life.

g. Teaching and Examination Scheme

Teaching Scheme					**Examination Scheme**					
Lecture Hrs /Week	**Tutorial Hrs/ Week**	**Lab Hrs /Week**	**Hrs /Week**	**Credit**	**Internal Marks**			**External Marks**		**Total**
					T	**CE**	**P**	**T**	**P**	
-	-	8	8	4	-	-	40	-	60	100

h. Course Content

Sr.	**Topics**	**Weightage**	**Hours**
1	**Introduction to Low Vision:** Definition and classification of low vision Prevalence and causes of visual impairment Psychosocial aspects of living with low vision	20%	20
2	**Low Vision Assessment:** Case history taking and patient interview	20%	30

	Visual acuity testing and its limitations Assessment of visual fields and contrast sensitivity Evaluation of functional vision and activities of daily living.		
3	**Low Vision Aids and Devices:** Magnifiers (handheld, stand, electronic) Telescopic aids Non-optical aids (illumination, glare control, etc.) Electronic visual aids and screen magnification Low Vision Rehabilitation Techniques: Training in the use of low vision aids Eccentric viewing and steady eye techniques Contrast enhancement strategies Adaptive techniques for daily living tasks	20%	20
4	**Low Vision Management:** Setting goals and developing a rehabilitation plan Referral and collaboration with other healthcare professionals Counseling and support for visually impaired individuals and their families Low Vision and Special Populations: Pediatrics and low vision Geriatric low vision care Low vision in individuals with comorbidities (e.g., diabetic retinopathy, age-related macular degeneration).	20%	30
5	**Low Vision Community Services:** Introduction to low vision centers and organizations Awareness of community resources and support groups Ethical and Legal Considerations: Confidentiality and patient privacy Informed consent in low vision rehabilitation Understanding disability laws and rights for visually impaired individuals.	20%	20
	Total teaching hours for the academic year	**100%**	**120**

i. Text Book and Reference Book:

1.	"Community Eye Health" edited by Hannah Kuper and Matthew J. Burton
2.	"Optometry: Science, Techniques, and Clinical Management" edited by Mark Rosenfield, Nicola Logan, and Shehzad A. Naroo
3.	"Primary Care Optometry" by Theodore Grosvenor and William Bruce.