SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Category - I Deemed to be University) Porur, Chennai

Cycle 3 accreditation at 'A++' by NAAC

HAND BOOK OF CHOICE BASED CREDIT SYSTEM (CBCS)

FOR

UG AND PG DEGREE PROGRAMS, 2015-16- Part II

CHOICES AND SYLLABUS FOR RESTRUCTURED

GENERIC ELECTIVE,

ABILITY ENHANCEMENT COMPULSORY

&

SKILLS ENHANCEMENT COURSES

Updated upto 2022

A. LIST OF GENERIC ELECTIVE COURSES OFFERED BY SRIHER (DU) DEPARTMENTS TO BE CHOSEN [Credits = 3]				
Sl. No.	**Elective Code**	**Title**	**Department**	**Level (UG/PG)**
1	AGE001	Personality Development and Stress Management	Clinical Psychology	UG
2	AGE003	Organizational Behavior	Clinical Psychology	UG
3	AGE005	First Aid Management & Splinting Techniques	Emergency & Trauma Care Technology	UG
4	AGE006	Airway Management ECG & Emergency Drugs	Emergency & Trauma Care Technology	PG
5	AGE009	Eye Banking	Optometry	UG
7	AGE010	Visual diagnostic for children with special needs	Optometry	UG
8	AGE012	Nutrition Support Techniques	Clinical Nutrition	PG
9	AGE015	Malnutrition and Public Health	Clinical Nutrition	UG
10	AGE016	Basics of Food and Nutrition	Clinical Nutrition	UG
11	AGE028	Noise exposure and its effects	Speech Language & Hearing Science	UG
12	AGE029	Basic concepts in Voice and its efficient use	Speech Language & Hearing Science	UG
13	AGE032	Health Behaviour	Clinical Psychology	UG
14	AGE033	Basic Psychology	Clinical Psychology	UG
15	AGL035	Practice of Yoga	Allied Health Sciences	UG
16	AGL036	Pranayama Exercises	Allied Health Sciences	UG
17	AGE037	Mind Body and Wellness	Mind Body And Life Style Sciences	UG
18	AGE038	WOMEN'S WELLNESS	General Medicine	UG
19	AGE039	Basics of Counseling and Guidance	Clinical Psychology	UG
20	AGE040	Basic Clinical Skills of Visual System	Optometry	UG
21	BGE016	Applied Biotechnology	Biomedical Sciences	UG
22	BGE017	Food Microbiology	Biomedical Sciences	UG
23	BGE029	Plant Tissue Culture Technology	Biotechnology	UG
24	BGE030	Marine Biotechnology	Biotechnology	UG
25	BGE031	Antimicrobial Agents	Biotechnology	PG
26	BGE032	Algal Biotechnology	Biotechnology	UG
27	BGE038	Basic Radiation Biology	Human Genetics	UG
28	BGE039	Basics of Human Genetics	Human Genetics	UG
29	BGE040	Diet and Lifestyle Disorders	Biomedical Sciences	UG
30	BGE041	Biotechnology in Health Care	Biotechnology	UG
31	BGE042	Introduction to Nanosciences	Biotechnology	UG

32	CGE001	Biology and Applications of Tissue Engineering	Centre for Regenerative Medicine & Stem Cell Research	UG
33	EGE001	Introductory Biostatistics	Bioinformatics	UG
34	EGE002	Intermediate Mathematics	Bioinformatics	UG
35	GGE018	Basics of Hospital Management	Management	PG
36	GGE019	Basic Course In Entrepreneurship	Management	UG
37	GGE021	Leadership and Change Management	Management	UG
38	GGE022	Financial management for health care professionals	Management	PG
39	HGE001	Fundamentals of Occupational Health	Environmental Health Engineering	UG
40	HGE002	Biomedical Waste Management	Environmental Health Engineering	UG
41	PGE004	Intellectual Property Rights	Pharmacy	UG
42	PGE007	Pharmacovigilance	Pharmacy	PG
43	SGE001	Exercise Psychology	Sports & Exercise Science	UG
44	SGE002	Exercise Physiology	Sports & Exercise Science	UG
45	SGE003	Advanced Exercise Physiology	Sports & Exercise Science	UG
46	TGE003	Physical Health	Physiotherapy	UG

B. LIST OF ABILITY ENHANCEMENT COURSES OFFERED BY DEPARTMENTS OF THIS DU [Credits = 2]				
S. No.	Elective Code	**Course Name**	**Department**	**Level UG/ PG**
Faculty of Allied Health Sciences				
1	AAE 001	English	English Language Lab	UG
2	AAE 002	English for Clinical Communication	English Language Lab	UG
3	AAE 003	Communication and Soft Skill	English Language Lab	UG
4	AAE 007	Community Medicine	Community Medicine	UG
5	AAE 010	Medical Ethics & Law	General Medicine	UG
6	AAE 011	Essentials of Trauma Life Support	Emergency & Trauma Care Technology	PG
7	AAE 012	Essentials of Cardiac Life Support	Emergency & Trauma Care Technology	PG
8	nil	First Aid and Emergency Care (UAH19AE308 & UPS19AE309)	Emergency & Trauma Care Technology	UG
Faculty of Public Health				
9	HAE 001	Environmental Science	Environmental Health Engineering	UG

C. LIST OF SKILLS ENHANCEMENT COURSES OFFERED BY DEPARTMENTS OF THIS DU TO BE CHOSEN [Credits = 2]				
S. No.	**Elective Code**	**Title**	**Department**	**UG/PG**
Faculty of Allied Health Sciences				
1	ASE 006	Bakery and Confectioneries	Clinical Nutrition	UG
2	ASL014	National service scheme and Nation Building	Community Medicine	UG
3	ASL015	Culinary Skills for optimal nutrition	Clinical Nutrition	UG
4	ASL016	Basic Life Support	Emergency & Trauma Care Technology	UG
5	ASL017	Library Science and E-Resources	Central Library	UG
6	ASL018	Basics of Electronics	Allied Health Sciences	UG
7	ASE019	English For Research Writing	English Language Lab	PG
8	ASL020	Introduction to the principles and practice of infection prevention and control	Microbiology	PG
Faculty of Biomedical Sciences & Technology				
9	BSE 001	Good Laboratory Practices	Biomedical Sciences	UG
10	BSE 003	Fundamentals in Analytical Laboratory Skills	Biomedical Sciences	UG
11	BSL017	Practice and Skills in Medical Transcription	Human Genetics	UG
Faculty of Dental Sciences				
12	DSL001 *	Tooth Wisdom	Dental Sciences	UG
Faculty of Management Sciences				
13	GSL002	Interpersonal Skills	Management	UG
Faculty of Nursing				
14	NSL001	Diabetic foot care	Community Nursing	UG
Faculty of Physiotherapy				
15	TSL001	Ergonomics and Health promotion	Physiotherapy	UG

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="3">Personality Development and Stress Management</td></tr>
<tr><td>2</td><td>Elective Code</td><td>AGE001</td><td>Credits: 3</td><td>Level : UG</td></tr>
<tr><td>3</td><td>Faculty / Dept. offering</td><td colspan="3">Allied Health Sciences / Clinical Psychology</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="3">1. To explore the concept of personality and identify one's personality type
2. To explore the Factors influencing personality development
3. To define stress, identifying one's own stressor
4. To explore the relationship between health, stress and coping
5. To gain an insight about the need for and Importance of soft skills</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="3">This course is designed to identify one's own stressor and learn to manage with positive coping strategies</td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Delivery method</td><td colspan="2"></td><td>Hours per credit</td></tr>
<tr><td colspan="2">• Online Learning
OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• Online Activities including Assessment
OA- Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In person)
• Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30

30
(Including 10 hrs for assessment)

15</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Credit</td><td colspan="2"></td><td>Hours per credit</td></tr>
<tr><td colspan="2">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>30 OL hours = 1
30 OA hours = 1
15 SI hours = 1</td></tr>
<tr><td colspan="2">Total Credit</td><td>3</td></tr>
<tr><td colspan="3">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="3">After the completion of the course, the student will be able to
1. Describe personality and identifying one's own type of personality
2. List the factors influencing the personality development
3. Explain stress, and Identify one's own stressor
4. Describe the relationship between health, stress and coping
5. Cultivate an insight about soft skills, its need and importance</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="3">This course introduces the developmental stages of personality, its types, and traits. Students will be trained to identify their own stressors and learn positive coping mechanisms to overcome it.</td></tr>
</table>

<table>
<tr><td>10</td><td>Assessment</td><td colspan="5">Course Instructors are encouraged to provide equal Weightage to all the Online assessments.
Continuous Assessment (50 Marks) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>Unit – I & II (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td>Test 2</td><td>Unit – III (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td>Test 3</td><td>Unit – IV &V (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td>Assignment 1</td><td>Identifying one's own stressor and explain the ways of managing</td><td>10</td></tr>
<tr><td>Assignment 2</td><td>Positive coping mechanisms of managing stress</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>
Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td>Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>At the end of the module the students will be able to
• Define personality
• Discuss importance of personality development
• List the different types of personality
• Identifying one's own type of personality</td><td>9</td><td>7</td><td>2</td><td>CO1</td></tr>
<tr><td></td><td>UNIT – II</td><td>At the end of the module the students will be able to
• Explain the difference between needs and wants
• Describes environmental influences on personality
• Discuss the role of values, beliefs on personality development</td><td>5</td><td>5</td><td>2</td><td>CO2</td></tr>
<tr><td></td><td>UNIT – III</td><td>At the end of the module the students will be able to
• Explain stress and its types.
• List the various sources of stressors.
• Identify one's own stressor</td><td>5</td><td>6</td><td>3</td><td>CO3</td></tr>
<tr><td></td><td>UNIT – IV</td><td>At the end of the module the students will be able to
• Discuss the relationship among health, stress and coping.
• Explain the impact of stress on physical health</td><td>5</td><td>6</td><td>4</td><td>CO4</td></tr>
<tr><td></td><td>UNIT – V</td><td>At the end of the module the students will be able to
• Explain Soft skills.
• List out the needs and its importance.
• Discuss the various common soft skills</td><td>6</td><td>6</td><td>4</td><td>CO5</td></tr>
<tr><td></td><td></td><td></td><td>30</td><td>30</td><td>15</td><td></td></tr>
</table>

12	**Reference books**	1. Lazarus J Stress Relief and Relaxation Techniques, Viva Book Private limited. 2. Shelly E. Taylor, Health psychology, 7th edition, TATA McGrawHil, New Delhi
13	**Online resources**	1. **Role of soft skills and personality development** http://resjournals.com/ERJ/Pdf/2012/Feb/Kushwaha.pdf 2. **Soft skill module, Effective communication, listening, speaking, writing, interpretation** http://profitt.gatech.edu/drupal/sites/default/files/curriculum/Soft%20Skills%20Track/Soft%20Skills%20Module%2005%20Communication/Soft%20Skills%20Module%205%20Communication.pdf 3. **Personality development** http://abesit.in/wp-content/uploads/2014/05/article-personalitydevelopment.pdf
14	**Syllabus Content:**	**Personality Development and Stress Management (AGE001)**
	Unit 1: Introduction to Personality Development	Developing Personality, Stages of Development, Types of personality, Theories of personality
	Unit 2: How needs impact personality	Maslow's hierarchy of need, Basic Personality Traits; Values, Beliefs, Interactions, Experiences, Environmental influences, the big five dimensions.
	Unit 3: Stress	Causes, effect and types, Stress resistant personalities, Relaxation; training aspects importance and Body works.
	Unit 4: Health stress and coping	Understanding and communicating our health needs, Behavioral and psychological correlates of illness.
	Unit 5: Soft skill	Need and importance, Personality development and soft skills. Effective communication - listening, speaking, writing, interpretation part of soft skills and personality

Dr. NEERADHA CHANDRAMOHAN
Associate Professor & Head
Department of Clinical Psychology,
SRI RAMACHANDRA
Faculty of Allied Health Sciences
SRIHER (DU)
Porur, Chennai-116.
RCI Registration No. [illegible]

AGE001: Personality Development and Stress Management **Generic Elective for UG Programs [Dept. of Clinical Psychology]**														
Course code	Category	Course Title	Credits /Week			**Credits (C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical/ SI		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a+b = 100
											PM= 30%	EST	ESP	PM= 40%
AGE001	GE	**Personality Development and Stress Management**	1	1	1	3	60	15	75	80	50	50	-	100

1	**Name of the course**	**Organizational Behaviour**		
2	**Elective Code**	**AGE003**	**Credits:** 3	**Level : UG**
3	**Faculty / Dept. offering**	Allied Health Sciences / Clinical Psychology		
4	**Course Objective**	1.To Describe about the basics and key concepts related to organizational behaviour and its application in handling people at organizations 2.To classify the evolution of organizational behaviour and to illustrate the relation between various psychological concepts with organizational behavioural 3. To apprehend the various personality factors of the individual in an organization 4.To strengthen the interpersonal relationship in an organization 5.To Manage the stress of an individual in an organization		
5	**Rationale for inclusion**	To explore the various key factors and how these key factors can be applied to acknowledge and enhance efficacy of organization which is more linked with understanding the human behaviour in Organization		
6	**Delivery method**			**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)		30 30 (including 10 hrs for assessment) 15
7	**Credit**			**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction		30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit		**3**
		Credit assigned based on the course objectives and learning outcomes.		
8	**Learning outcomes**	After the completion of the course, the student will be able to 1. Explain the basic concepts of organizational behaviour 2. Interpret the concept of modern management emerged 3. Acknowledge the key concepts of psychology which are applied in organizational behaviour 4. Relate various issues in the organisation such as communication, conflicts and how to address these issues. 5. Define the stress and its coping techniques.		
9	**Summary**	This course introduces the Basic Concepts of Organisation Behaviour , and concepts of modern management,and to identify the various issues in the organization such as communication, conflicts and stress and how to identify these issues in organization.		

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes			**Marks**
		Test 1	Unit – I & II (MCQ's/Fill in the blanks/True or False)			10
		Test 2	Unit – III (MCQ's/Fill in the blanks/True or False)			10
		Test 3	Unit – IV &V (MCQ's/Fill in the blanks/True or False)			10
		Assignment 1	Contributing fields to Organisation Behaviour			10
		Assignment 2	Role of Communication in Organisation Behaviour			10
		IA Total				**50**
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**		**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Discuss the various fields in Organisation behaviour • Explain the Organisation Components that needs to be changed.		7	5	4	CO1
	UNIT – II	At the end of the module the students will be able to • Explain the process of human relationship in organisation behaviour • Discuss the conceptual aspects of organisation behaviour		7	4	4	CO2
	UNIT – III	At the end of the module the students will be able to • Describes the determinants of personality • Explains various theories of learning.		7	4	3	CO3
	UNIT – IV	At the end of the module the students will be able to • Discuss the process of communication • Explain the types of communication		4	4	2	CO4
	UNIT – V	At the end of the module the students will be able to • Explain stress & various stress coping strategies • Differentiate between stress & eustress • Interpret health enhancing, health compromising habits due to stress		5	3	2	CO5
				30	**20**	**15**	

12	**Reference books**	1. Organizational Behavior, 1st ed, Koldalkar, New Age International (P) Limited, Publishers, New Delhi, 2007. 2. Fundamentals of Organizational Behavior, Key Concepts, Skills and Best Practices, 2nd ed. Kreitner, Kinicki and Cole, McGraw-Hill Ryerson, 2007.
13	**Online resources**	1. http://www.scimagojr.com/journalrank.php?category=1407 2. http://www.lib.unb.ca/guides/view/index.php/489
14	**Syllabus Content:**	Organizational Behaviour (AGE003)
	Unit 1: Basics of Organizational Behavior (OB)	Introduction - Definitions - Contributing fields to organizational behaviour and Behaviour model for organizational efficiency-Organizational components that need to be managed
	Unit 2: Evolution of Management Concepts	Classical theories of management- Process management theory - Classical theories - Human relations era, Hawthorne studies, Need Hierarchy Theory, X and Theory Y. Modern management theories: Re-engineering, Bench marking, Empowerment,
	Unit 3: Personality, Learning and Motivation in Organization	Introduction - Determinants of personality - Personality traits The Myers-Briggs Type Indicator (MBTI), Locus of control, Self esteem and self monitoring - Risk taking-Types of personality. Theories of learning-Processes
	Unit 4: Role of Communication in OB	Objectives of communication, Communication Process - Means of communication Structure of communication - Types of communication, Communication network-Barriers to effective communication, Overcoming communication barriers
	Unit 5: Conflict and Stress Management	Definition, Causes of Conflict, Types of Conflict, Conflict Process, Conflict Resolution Model. Stress-Symptoms, General Adaptation Syndrome, Sources of Jobs Stress, Group stressors, Individual Stressors, Stress and Behaviour, Burnout - Causes of Burnout, Prevention of Burnout, Management of stress Individual vs. Organizational level strategies.

Dr. NEERADHA CHANDRAMOHAN
Associate Professor & Head
Department of Clinical Psychology
SRI RAMACHANDRA
Faculty of Allied Health Sciences
SRIHER (DU)
Porur, Chennai - 116
Registration No.

AGE003: Organizational Behaviour **Generic Elective for UG programs [Dept. of Clinical Psychology]**														
Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical(SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a+b = 100
											PM= 30%	EST	ESP	PM= 40%
AGE003	GE	**Organizational Behaviour**	1	1	1	3	60	15	75	80	50	50	-	100

1	**Name of the Course**	First Aid Management & Splinting Techniques	
2	**Elective Code**	AGE005	Credits: 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS.	
4	**Course Objective**	The objective of this course is to enable the students to: 1. Summarize the importance of Basic Life Support. 2. Describe the First aid supplies and the law. 3. Identify the trauma emergencies and relate the severity of hypovolemic shock. 4. Recognize the medical and environmental emergencies and seek medical care immediately. 5. Define the priorities of Triage based on the severity of injury.	
5	**Rationale for inclusion**	This course is designed to introduce the important of first aid and the role of first aid Management.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs)	30 (including 10 hrs for assessment)
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	3
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	After the completion of the course, the student will be able to 1. Describe the purpose of emergency care 2. Identify the emergency situations. 3. Perform first aid Management for the victims.	
9	**Summary**	• Provide appropriate First Aid Care for ill and injured victims • Recognizing the Injury Emergencies & complications • Splinting Techniques for Musculoskeletal injuries • Lifting & Moving Techniques	

T.V. Ramakrishnan

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Medical College & Research Institute
(Deemed to be University)

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes			Marks
		Test 1	CO1 & CO2 (MCQ's/Fill in the blanks/True or False)			10
		Test 2	CO3 (MCQ's/Fill in the blanks/True or False)			10
		Test 3	CO4 & CO5 (MCQ's/Fill in the blanks/True or False)			10
		Assignment 1	Principles of splinting and various techniques of splinting , Types of bandaging and dressing			10
		Assignment 2	Risk factors and clinical symptoms of Myocardial Infarction, Stroke and Seizures			10
		IA Total				50
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Correlate the importance of first aid and its law. • Write the components of first aid kit.	3	2	2	1 &2
	UNIT – II	At the end of the module the students will be able to • Identify the various trauma emergencies and emphasize the importance of Haemorrhage control. • Demonstrate skills on early haemorrhage control and Bandaging, Splinting techniques.	2	3	3	3
	UNIT – III	At the end of the module the students will be able to • Recognize various medical emergencies, provide first aid and seek medical care immediately • Demonstrate appropriate first aid management Skills	5	10	5	4
	UNIT – IV	At the end of the module the students will be able to • Summarize the Dos and Don'ts in first aid Management for snake bite • Explain clearly the preventive measures of Hypo and hyperthermia	10	5	2	4
	UNIT – V	At the end of the module the students will be able to • Illustrate the Principles of Lifting and Moving techniques • Define the priorities of Triage based on the severity of injury	10	10	3	5
			30	**30**	**15**	

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Medical College & Research Institute

12	**Reference books**	Nancy Caroline's Emergency Care in the Streets-8th Edition, Tintinalli's Emergency Medicine-8th Edition
13	**Online resources**	Splinting Techniques- https://www.emedicinehealth.com, First Aid Management- https://en.wikipedia.org https://drive.google.com/file/d/1OLuODV3-G3m0lHtc9xeL4n4Of7lWdK8f/view?usp=sharing https://drive.google.com/file/d/1H_WqfqmvAw4DmB7_MJEZ43qSlWc4xLwU/view?usp=sharing https://drive.google.com/file/d/1845eNsgYUbCSSzRhlwxrnxEyd5g-XNoX/view?usp=sharing
14	**Syllabus Content:**	First Aid Management & Splinting Techniques (AGE005)
	Unit I: Basics of first aid	1.Basic Life Support 2.The importance of first Aid 3.First aid supplies 4.First aid and the law
	Unit II: Trauma Emergencies	1.Wound 2.External bleeding 3.Amputations 4.Impaled objects 5.Internal Bleeding 6.Dressing and Bandages 7.Suspected Fractures & Dislocation 8.Sprain & Strain 9.Splinting – Introduction,Types,Uses, Splinting guidelines, Slings, Procedure, Complications 10.Burns 11.Electrical Injuries
	Unit III: Action at an Emergency and Medical Emergencies	1.Recognizing Emergencies 2.Deciding to act 3.Seeking medical care 4.Rescuer reactions 5.Chest pain 6.Fainting 7.Seizures 8.Low Blood Sugar 9.Breathing difficulties-Asthma, Allergic reactions
	Unit IV Environmental Emergencies	1.Snake bite 2.Hypothermia 3.Hyperthermia 4.Drowning
	Unit V: Rescuing and Moving Injuries	1.Fires 2.Moving victims 3.Motor Vehicle crashes 4.Disaster Management

AGE005: First Aid Management & Splinting Technique

Generic Elective for UG Programs [[Dept. of Emergency & Trauma Care Technology]

Course code	Category	Course Title	Credits /Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical(SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/Viva (c)	a+b = 100
											PM= 30%	EST	ESP	PM= 40%
AGE005	GE	**First Aid Management & Splinting Technique**	1	1	1	3	60	15	75	80	50	50	-	100

1	**Name of the Course**	Airway Management, ECG And Emergency Drugs	
2	**Elective Code**	AGE006	**Credits:** 3
3	**Level**	Any student enrolled in Post Graduate programs under CBCS.	
4	**Course Objective**	The Objective of this course is to enable the students to: 1. Define the basic airway anatomy and physiology. 2. Identify life threatening airway complications and use of appropriate airway techniques and adjuncts. 3. Review the basic knowledge of electrophysiology of heart and normal ECG. 4. Interpret the cardiac arrhythmias and management algorithms. 5. Apply the knowledge of basic pharmacology and common drugs used in the Emergency Department.	
5	**Rationale for inclusion**	This course is designed to introduce the basic concepts of Airway management, Electrocardiogram and medications used in Emergency department which will enable the learners to understand the use of airway equipment, interpretation of cardiac arrest rhythm or life threatening arrhythmias and the indications for administration of emergency medications to critically ill patients.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	**30**
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs)	**30**
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet / Big Blue Button / In Person)	**15**
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	**60**
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	After the completion of the course, the student will be able to: 1. Define basic Airway anatomy and identify life threatening airway problems. 2. Demonstrate the appropriate use of airway maneuvers, able to provide ventilation using Bag Mask ventilation. 3. Explain the basics of ECG and its waveform. 4. Interpret life threatening arrhythmias and its management.	

T.V. Ramakrishnan

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Institute of Higher Education and Research
(Deemed to be University)
Porur, Chennai - 600 116.

		5. Apply the knowledge of basic pharmacology and common drugs used in the Emergency Department.
9	**Summary**	This course introduces the learners to understand the importance of Acute management of critically ill patients and cardiac arrest victims. Students will learn the clinical applications of Airway Management, ECG and Emergency drugs
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks for GE 100 for SE?SL/SE) :

	Course Outcomes	Marks
Test 1	CO1 (MCQ's/Fill in the blanks/True or False)	10
Test 2	CO2 and CO3 (MCQ's/Fill in the blanks/True or False)	10
Test 3	CO4 and CO5 (MCQ's/Fill in the blanks/True or False)	10
Assignment 1	Anatomy of Upper and Lower Airway, Physiology of Respiration, Differences between Adult Vs. Pediatric Airway	10
Assignment 2	Anatomy of Heart, Conduction system of Heart Basic terminologies in pharmacology and pharmacokinetics	10
IA Total		**50**

Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations.

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Describe the basic anatomy and physiology of Airway. • Recognize Airway compromise. • Perform the Basic Airway opening skills – Triple Maneuver.	4	4	2	CO1
	UNIT – II	At the end of the module the students will be able to • Tell the types, indication, contraindications of basic airway adjuncts. • Use of supplementary oxygen and Bag Mask ventilation. • Identify special consideration situations – Difficult Airway, Pediatric airway, Needle cricothyroidotomy.	8	8	4	CO2

	UNIT – III	At the end of the module the students will be able to • Define the basics of anatomy and physiology of the heart • Describe the electrical conduction system of heart and Normal ECG waveform • Identify the cardiac arrest rhythms and management algorithm • Recognize the symptoms of MI and seek medical care immediately	6	6	2	CO3
	UNIT – IV	At the end of the module the students will be able to • Describe the basics of pharmacology and terminologies (pharmacokinetics, Pharmacodynamics, Route of administration) • Classification of Antiarrhythmic drugs and its Uses, Indications, Contraindications, complications and adverse effects – Part I	8	6	2	CO4
	UNIT – V	At the end of the module the students will be able to • Use of Advanced cardiac life support - Indications, Contraindications, complications and adverse effects	4	6	5	CO5
			30	**30**	**15**	
12	**Reference books**	1. Nancy Caroline's Emergency Care in the streets 8th edition 2. Mosby's Paramedic Textbook 4th edition 3. Tintinalli Comprehensive Textbook of Emergency Medicine 8th edition 4. Barbara paramedic practice today 5. Medical Pharmacology – Padmaja Udaykumar 6. ECG made easy – John R. Hampton 7. AHA ACLS algorithm				
13	**Online resources**	1. medscape.com 2. uptodate.com 3. jems.com 4. Airway management academy.com 5. www.trauma.org 6. **Defibrillation :** https://drive.google.com/file/d/1U0_9tfwO8nXoBM_s2xTFa032Bioe1dfV/view?usp=sharing 7. **Cardio version :** https://drive.google.com/file/d/1itu_IbMxlv1s8l5Mj0K_Wal_qi89UKzf/view?usp=sharing 8. **Arrhythmia Recognition:** https://drive.google.com/file/d/15duUEhd7T0AzkCvnt61MB8WrVvA9p1l4/view?usp=sharing 9. **Adult BLS** : https://drive.google.com/file/d/1ycEEL-bvw0CoobLHYFqxjMy4gPiwGPRj/view?usp=sharing 10. **2 Rescuer with BVM :**				

		https://drive.google.com/file/d/1L3hqremIlHJGhMnCCu9g978hoDaIQECA/view?usp=sharing
14	**Syllabus Content**	Airway Management, ECG And Emergency Drugs (AGE006)
	Unit 1: Airway anatomy	Basic anatomy – Physiology - Airway related problems - Airway assessment - Head tilt - Chin lift - Jaw thrust
	Unit 2: Airway equipment & Special considerations	Airway equipment / adjuncts – OPA/NPA, Advanced Airway adjuncts – Introduction – Indications - Contraindications - Procedure - BVM, O2 delivery devicesn-n Special considerations.
	Unit 3: Cardiac Anatomy and Physiology	Basic Anatomy and physiology of Heart - Conduction system of Heart - Normal ECG waveform - Cardiac Arrest Rhythms and Arrhythmia recognition - Myocardial Infarction
	Unit 4: Basics of Pharmacology and Introduction to Emergency Drugs	Basics of Pharmacology - Terminologies - Pharmacokinetics - Pharmacodynamics - Introduction to Emergency Drugs (Indications, Contraindications, complications and adverse effects) - Adrenaline - Amiodarone - Lidocaine - Magnesium sulphate – Adenosine
	Unit 5: Introduction to Emergency Drugs	Introduction to Emergency Drugs (Indications, Contraindications, complications and adverse effects) – Vasopressin - Nor Adrenaline – Dopamine - Atropine

AGE006: Airway Management, ECG & Emergency Drugs

Generic Elective for UG Programs[Dept. of Emergency & Trauma Care Technology]

Course code	Category	Course Title	Credits /Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory/ Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a+b = 100
											PM= 30%	EST	ESP	PM= 40%
AGE006	GE	**Airway Management, ECG & Emergency Drugs**	1	1	1	3	60	15	75	80	50	50	-	100

1	**Name of the Course**	Eye Banking	
2	**Elective Code**	AGE009	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	The objective of this course is to : 1. Describe the anatomy and physiology of cornea and its development 2. Explain the gross corneal abnormalities such as ectasia, degenerations and dystrophies 3. List the organisation structure, the procedure manuals and infrastructure service needed in eye banks 4. State and understand the infection control, safety and waste disposal management followed in eye banks 5. Familiarize the students on the pre-retrieval and donor screening procedures 6. Acquaint the students on the equipment, instrumentation required for retrieval techniques, donor preparation methods and retrieval procedures 7. Explain the tissue evaluation and preservation methods followed in eye banks	
5	**Rationale for inclusion**	This course will provide • Awareness to all health care professionals about the needs and procedures of eye donation to support the nation as it combats corneal blindness. • Adequate knowledge in this would help them monitor the functions of eye banks within an health care organization.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Quiz)	30 (including 10 hrs for assessment)
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In Person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment(20hrs +10hrs) Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	

Dr.SUHAS PRABHAKAR,M.S.

Eye

Page 1

<table>
<tr><td>8</td><td>Learning outcomes</td><td>On successful completion of the course, the students will be able to:
1. Understand the importance of healthy cornea and identify various corneal abnormalities.
2. Articulate the effect of corneal abnormalities leading to visual impairments.
3. List the roles and responsibilities of organisation structure, procedure manuals followed in eye banks and provide awareness on eye donation.
4. List the infection control and safety measures to be followed in eye banks to secure and safe guard the donor cornea.
5. State the steps in donor preparation for collection of donor cornea.
6. Summarize the donor cornea retrieval procedures.
7. List the infrastructure required for the preservation and tissue evaluation of the donor cornea before corneal transplantation.</td></tr>
<tr><td>9</td><td>Summary</td><td>This course will provide
• Thorough knowledge about importance of cornea in the visual system and the need for eye donation.
• Education on effective eye banking procedures like donor eye collection, processing of donor cornea, donor cornea retrieval procedure, tissue preservation and distributing them to trained corneal graft surgeons.</td></tr>
<tr><td>10</td><td>Assessment</td><td>Course Instructors are encouraged to provide equal weightage to all the online assessments.
Continuous Assessment (50 Marks) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>Unit I (MCQ's/ True or false)</td><td>5</td></tr>
<tr><td>Test 2</td><td>Unit II (MCQ's/ True or false)</td><td>5</td></tr>
<tr><td>Test 3</td><td>Unit III (MCQ's/ True or false)</td><td>5</td></tr>
<tr><td>Test 4</td><td>Unit IV (MCQ's/ True or false)</td><td>5</td></tr>
<tr><td>Test 5</td><td>Unit V (MCQ's/ True or false)</td><td>5</td></tr>
<tr><td colspan="2">Individual assignments (Topics will be given)</td><td>10</td></tr>
<tr><td colspan="2">Group assignment (Model on visual system, Retrieval procedures)</td><td>10</td></tr>
<tr><td colspan="2">Presentation</td><td>5</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>
Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td>
<table>
<tr><th>Learning outcomes</th><th>OL</th><th>OA & A</th><th>SI</th><th>SLO-CO mapping</th></tr>
<tr><td>UNIT – I
At the end of the module the students will be able to
• Discuss the anatomical structure of cornea
• Discuss the metabolism, physiology of corneal transparency, corneal permeability and corneal wound healing
• Discuss the important functions of the cornea
• List the various ectatic conditions of cornea
• Discuss various dystrophies of cornea
• Discuss various degenerations of cornea
• Summarize the concept of maintenance of corneal transparency and the factors affecting it.</td><td>6</td><td>6</td><td>3</td><td>CO1 & CO2</td></tr>
</table>
</td></tr>
</table>

	UNIT – II	At the end of the module the students will be able to • State the organisation structure of eye banks • List the activities, documentation and record maintenance of eye banks • Discuss the infrastructure of eye banks for instrument cleaning lab, serology lab, tissue processing lab, evaluation and storage lab • State the calibration and equipments maintenance • Summarize the infection control, safety management and waste disposal techniques of eye banks.	6	6	3	CO3 & CO4
	UNIT – III	At the end of the module the students will be able to • Discuss the standards of eye retrieval procedures • Differentiate the myths and facts about eye donation • State the pre-retrieval procedure • State the donor screening procedures • Elaborate the indication and contraindication of a donor for eye donation	6	6	3	CO5
	UNIT – IV	At the end of the session the students will be able to • Express the various technical procedures for eye retrieval • State the preparation methods, equipments and procedure for whole eye enucleation • State the preparation, equipments and procedure of corneo scleral rim excision • Summarize the donor preparation and the retrieval procedures	6	6	3	CO6
	UNIT – V	At the end of the session the students will be able to • State the importance of tissue evaluation for identifying the healthy corneal tissue • State the various preservation methods followed to store the donor cornea in eye banks • Summarize the importance of tissue processing and preservation of donor cornea in eye banks	6	6	3	CO7
			30	**30**	**15**	

12	**Reference books**	1. Essentials of Eye Banking, A. Panda, 1st ed, CBS Publishers & Distributors; 2005 2. Introduction to Eye Banking: A Handbook and Atlas: a Guide to Eye Bank Techniques, Corneal Evaluation, and Grading, George O. D. Rosenwasser, William J. Nicholson, Pennsylvania State University, 2003 3. Eye Banking : T. Bredehorn, Gernot Duncker, W. John Armitage, 1st ed, S Karger, 2009 4. Postgraduate Ophthalmology, Volume 1 Zia Chaudhuri, Murugesan Vanathi
13	**Online resources**	1. http://npcb.nic.in/writereaddata/mainlinkfile/file176.pdf 2. https://www.youtube.com/watch?v=_aCf0HBVO_g 3. https://www.youtube.com/watch?v=7lBtlGvS1Gc
14	**Syllabus Content:**	Eye Banking (AGE009)
	UNIT - I: Anatomy of the eye and cornea	Brief overview of anatomical structures, blood supply, nerve supply and functions of the cornea and physiology of the corneal transparency maintenance. Corneal diseases such as corneal ectatic conditions, corneal dystrophies and degenerations
	UNIT – II: Infrastructure requirements	An overview on the organisational structure of Eye Banks, roles and responsibilities of people in organisation structure, infrastructure requirements such as physical Space and equipment, maintenance and cleaning, reagents, infection control, safety, and waste disposal
	UNIT - III: Standards for eye retrieval	Overview on pre-recovery procedures, retrieval procedures, screening of donor cornea, indication and contraindication of donors for eye donation.
	UNIT - IV: Technical Procedures	Retrieval procedures such as enucleation and corneo-scleral rim excision, the equipment and instrumentation for retrieval procedures and donor preparation.
	UNIT - V: Tissue evaluation and preservation standards	Aspects of tissue evaluation such as gross examination and with specular microscopy. Preservation methods such as short term preservation, long term preservation, whole globe preservation, sclera preservation.

AGE009: EYE Banking
Generic Elective for UG Programs [Dept. of Optometry]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical(SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a+b =100
											PM=30 %	EST	ESP	PM= 40%
AGE009	GE	**EYE Banking**	1	1	1	3	60	15	75	80	50	50	-	100

1	**Name of the course**	Visual diagnosis for children with special needs	
2	**Elective Code**	AGE010	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	The objective of this course is to: 1. Introduce the visual system and its importance in the development of children across disabilities. 2. Introduce simple and handy ocular examination techniques to differentiate healthy and unhealthy visual system. 3. Explain gross ocular abnormalities and the techniques to identify. 4. Describe the need and strategies for early intervention. 5. List the visual perceptual disorders and the role of vision therapy in its remediation.	
5	**Rationale for inclusion**	Visual sensory experiences are crucial for the development of children. Any deficits in visual experiences are proven to impair the cognitive and social development of children. Those children are also found to face challenges in academics, sports and even in carrying out their activities of daily living. This course will • Develop a realistic self-concept about visual deficits and its impact among students who are likely to be part of the multidisciplinary team. • Encourage the participating students to have an holistic approach while supporting children with special needs	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet / Big Blue Button/ In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 (includes internal assessments) 15 60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	

[redacted]

[redacted]

8	**Learning outcomes**	On successful completion of the course the student should be able to 1. Enunciate the effect of visual impairment on child development 2. Comprehend the difference between normal and deficient visual functioning 3. Identify the common visual deficits experienced by children with special needs 4. Demonstrate competency on the advocacy of early visual intervention, its accessibility and need for integration 5. Differentiate the various components of visual perception and their role in child development
9	**Summary**	This course provides knowledge about the functioning of the visual system and provide a base to work together towards achieving common goals of the multidisciplinary team.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Module	Marks
Test 1	Unit I (MCQ's/ True or false/crossword) - CO1	5
Test 2	Unit II (MCQ's/ True or false/short answer) - CO2	5
Test 3	Unit III (MCQ's/ True or false/class reflections) - CO3	5
Test 4	Unit IV (MCQ's/ True or false/short answer) - CO4	5
Test 5	Unit V (MCQ's/ True or false/short answer) - CO5	5
Group presentation (Topics will be given)		10
Group assignment (Topic will be given)		15
IA Total		**50**

Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations

		Learning outcomes	OL	OA & A	SI	SLO-CO mapping
11	**Course Content and Teaching Method :**					

	UNIT – I	At the end of the module the students will be able to
		• List the different parts and functions of the eye
		• Describe the visual pathway
		• Describe the general and oculo-visual characteristics of children with
		  • Developmental delay
		  • Down syndrome
		  • Autism
		  • Cerebral palsy
		  • ADHD
			6	6	3	CO1

	UNIT – II	At the end of the module the students will be able to • Qualitatively assess the acuity of vision • Qualitatively determine the sensory status of the eye • Qualitatively assess the motor system of the eye • List the common refractive errors • Differentiate between healthy & unhealthy visual system	6	6	3	CO2
	UNIT – III	At the end of the module the students will be able to • List the management options for refractive errors • Identify and name the gross ocular misalignments • Identify and explain the importance of early intervention for amblyopia or Lazy eye • Identify and explain the importance of early intervention for nystagmus	6	6	3	CO3
	UNIT – IV	At the end of the session the students will be able to • Conceptualize the process of visual development • Summarize the need for early intervention • Explain few early intervention strategies and methods	6	6	3	CO4
	UNIT – V	At the end of the session the students will be able to • Describe the 7 components of visual information processing skills • List few vision therapy techniques and their importance in developing visual information processing skills	6	6	3	CO5
			30	**30**	**15**	
12	**Reference books**	1. Optometric management of learning related vision problems – Scheiman and Rouse 2. Visual diagnosis and care of the patient with special needs – Marc B. Taub, Mary Bartuccio, Dominick M Maino 3. Borish clinical refraction; William J. Benjamin, 2 ed, Butterworth-Heinemann; 2006 4. Clinical procedures in primary eye care; David B. Elliot, 4 ed, Saunders Ltd.; 2013				

13	**Online resources**	1. https://www.youtube.com/watch?v=7lBtlGvS1Gc 2. https://www.youtube.com/watch?v=z7NeBs5wNOA 3. https://www.youtube.com/watch?v=csKRVW-HN0E 4. https://www.youtube.com/watch?v=cWlwSv00Wf8 5. https://www.youtube.com/watch?v=eLbmk1Go8YQ 6. https://www.youtube.com/watch?v=UPYqd31hhfE 7. https://www.youtube.com/watch?v=6rbHOAtBNew
14	**Syllabus Content:**	Visual diagnosis for children with special needs (AGE010)
	UNIT - I: Overview of the special population.	Identification of a special child, History, Prevalence of Developmental Delay, Down syndrome, Autism, Cerebral Palsy, ADHD, Signs and symptoms, Causes, Pathophysiology.
	UNIT - II: Comprehensive ocular examination procedures for special children	Vision assessment, Sensory Tests, Motor Tests, Refraction procedures, Ocular Health Assessment.
	UNIT - III: Diagnosis and management options for refractive errors, strabismus and amblyopia	Management principles in myopia, management principles in hyperopia, management principles in astigmatism, management principles in Aphakia in children, management principles in convergent strabismus, management principles in divergent strabismus, management principles in amblyopia, management principles in nystagmus.
	UNIT - IV: Early intervention needs and procedures	Review of the visual development process, need for early intervention, early intervention strategies and methods.
	UNIT - V: Introduction into Visual information processing skills	Importance of visual discrimination, visual memory, visual spatial relationship, visual form constancy, visual sequential memory, visual figure ground, visual closure; Insight into vision therapy in special children.

AGE010: Visual Diagnosis for Children with Special Needs
Generic Elective for UG Programs [Dept. of Optometry]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical / Viva (c)	a+b = 100
											PM=30%	EST	ESP	PM= 40%
AGE010	GE	**Visual Diagnosis for Children with Special Needs**	1	1	1	3	60	15	75	80	50	50	-	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="4">Nutrition Support Techniques</td></tr>
<tr><td>2</td><td>Elective Code</td><td>AGE012</td><td>Credits: 3</td><td>Level : UG</td><td>Category: GE</td></tr>
<tr><td>3</td><td>Faculty / Dept. offering</td><td colspan="4">Allied Health Sciences / Clinical Nutrition</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">The objective of this course is to enable the student to:
1. Recognise the process of nutrition care in a clinical setting.
2. Acquire knowledge on the basic techniques of assessment and estimation of nutritional requirements.
3. Get familiarized with the basic principles and routes of enteraland parenteral nutrition.
4. Acquire knowledge regarding the different enteral and parenteral formulations.
5. Apprehend the complications of specialized nutrition supportand appreciate nutrition support outcomes.</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">This course is designed to enable the student to understand theprocess of nutrition care in the clinical care setting.</td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">• Online Learning
OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• Online Activities including AssessmentOA - Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In-Person)
• Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30

30

15

60</td></tr>
<tr><td colspan="3"></td><td>Hours allocated per credit</td></tr>
<tr><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>30 OL hours = 1
30 OA hours = 1
15 SI hours = 1</td></tr>
<tr><td>7</td><td>Credit</td><td colspan="3">Total Credit</td><td>3</td></tr>
<tr><td colspan="4">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the student should be able to:
1. Explain the need for the specialized nutrition support and the process of nutrition care.
2. Interpret the Nutritional Status of patients.
3. Illustrate the different feeding routes, techniques and devices .
4. Interpret the choice and selection of appropriate enteral or parenteral formulations.
5. Recognize the complications and the impact of appropriate enteral/parenteral nutrition support.</td></tr>
</table>

<table>
<tr><td>9</td><td>Summary</td><td colspan="5">This course introduces the basic concepts of nutrition support through various students centered methods. Students will be enable to comprehend the significance of nutrition support, the various techniques of nutrition support and be an integral part of the health careteam in a clinical setting</td></tr>
<tr><td rowspan="10">10</td><td rowspan="10">Assessment</td><td colspan="5">Course Instructors are encouraged to provide equal Weightage to allthe Online assessments.</td></tr>
<tr><td colspan="5">Continuous Assessment (50 Marks) :</td></tr>
<tr><td></td><td colspan="2">Course Outcomes</td><td colspan="2">Marks</td></tr>
<tr><td>Test 1</td><td colspan="2">CO1</td><td colspan="2">10</td></tr>
<tr><td>Test 2</td><td colspan="2">CO2 & CO3</td><td colspan="2">10</td></tr>
<tr><td>Test 3</td><td colspan="2">CO2, CO3 & CO4)</td><td colspan="2">10</td></tr>
<tr><td>Test 4</td><td colspan="2">CO2, CO3 & CO4, CO5)</td><td colspan="2">10</td></tr>
<tr><td>Assignment</td><td colspan="2">CO1, CO2, CO3 & CO4,CO5</td><td colspan="2">10</td></tr>
<tr><td>IA Total</td><td colspan="2"></td><td colspan="2">50</td></tr>
<tr><td colspan="5">Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td rowspan="6">11</td><td rowspan="6">Course Content and Teaching Method :</td><td>Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td>UNIT – I</td><td>At the end of the module the students will be able to
• Discuss the importance of nutrition support.
• Explain the basic nutritional assessment techniques and estimation of nutritional requirements.</td><td>6</td><td>5</td><td>3</td><td>1 & 2</td></tr>
<tr><td>UNIT – II</td><td>At the end of the module the students will be able to
• Explain the different routes of nutrition support
• Identify the route of nutrition support and relate the rational behind chosing the route</td><td>8</td><td>7</td><td>3</td><td>3</td></tr>
<tr><td>UNIT – III</td><td>At the end of the module the students will be able to
• Discuss different enteral formulations
• Explain the enteral feeding methods and protocols</td><td>5</td><td>6</td><td>3</td><td>4</td></tr>
<tr><td>UNIT – IV</td><td>At the end of the module the students will be able to
• Discuss different pareenteral formulations
• Explain the parenteral feeding methods and protocols</td><td>5</td><td>6</td><td>3</td><td>4</td></tr>
<tr><td>UNIT - V</td><td>At the end of the module the students will be able to
• Interpret the complications during the process of specialised nutrition support
• Relate the impact of nutrition</td><td>6</td><td>6</td><td>3</td><td>5</td></tr>
</table>

		support on to the nutritionalstatus of the patients				
			30	**30**	**15**	
12	**Reference books**	1. Michele Grodner EdD CHES and Sara Long Roth PhD RD LD Nutritional Foundations and Clinical Applications of Nutrition – ANursing Approach, 4th Ed., 2007 2. Srivastava, R.K., Tiwari, B.K., Agarwal, Y, Cuurent Nutritional Therapy Guidelines in Clinical Practices, 2008. Directorate General of Health Services, Ministry of Family Welfare, Govt. of India. 3. Gottschlich,M., Materesse EL., The Science and Practice of Nutrition Support, A case based core curiculum, 1st Ed., 2000 4. Laura E Mataresse – Contemporary Nutrition Practice, 2nd Ed., Saunders, 2003				
13	**Online resources (Open)**	1. ASPEN: https://www.nutritioncare.org/About_Clinical_Nutrition/What_is_Enteral_Nutrition/ 2. BAPEN: https://www.bapen.org.uk/nutrition-support/parenteral-nutrition 3. American College of Gastroenterology https://gi.org/topics/enteral-and-parenteral-nutrition				
14	**Syllabus Content**	**Nutrition Support Techniques (AGE012)**				
	UNIT – I Introduction to Therapeutic Nutrition	Nutrition Care Process, Importance of nutrition support in clinical setting, basic nutritional assessment and estimation of requirements				
	UNIT – II Routes of Nutrition Support	Oral, Enteral and Parenteral – principles, indications, contraindications, nutrition support algorithm,				
	UNIT – III Enteral Nutrition	Definition, type of formulations, method of feeding, feeding devices, tube feeding protocols				
	UNIT – IV Parenteral Nutrition	Definition, type of formulations, routes method of feeding, feeding protocols				
	UNIT- V Complications and Monitoring of Nutrition Suppor	Gastrointestinal, Mechanical, Metabolic, Infectious Prevention and evaluation of nutrition support outcomes, with respect to basic assessment parameters				

AGE012: Nutrition Support Techniques Generic Elective Course for UG programs {Dept. of Clinical Nutrition]														
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory/ Practical (a)	End Semester Assessment		Grand Total
			(OL10	(OA)	Practical(SI)		OL+OA	SI / Practical	Total hours		PM= 30%	Theory (b)	Practical/ Viva (c)	a+b =100
											PM= 30%	EST	ESP	PM=40%
AGE012	GE	Nutrition Support Techniques	1	1	1	3	60	15	75	80	50	50	-	100

<table>
<tr><td>1.</td><td>Name of the course</td><td colspan="4">Malnutrition and Public Health</td></tr>
<tr><td>2</td><td>Elective Code</td><td>AGE015</td><td>Credits : 03</td><td>Level : UG</td><td>Category: GE</td></tr>
<tr><td>3</td><td>Faculty / Dept.</td><td colspan="4">Allied Health Sciences / Clinical Nutrition</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">The objective of this course is to enable the student to:
1. Recognize the concept of public health nutrition and healthcare of the community.
2. Describe the common nutritional problems of the community andtheir etiology, Symptoms, treatment and prevention.
3.State the broad concepts of Mortality, Morbidity and concepts ofFood security in national level to the students.
4. Interpret the nutritional assessment techniques in community
5. Recognize the schemes, programmes and policies of Government ofIndia to Combat Malnutrition and describe the role of epidemiology inPublic health and execute nutrition education techniques in community.</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">This course is designed to develop an understanding the primary role of Nutrition in Public Health. To get familiarized with the nutritional status of the population and understand the widening concept of extension education, nutritional interventions and nutritional policies towards the health of the public.</td></tr>
<tr><td>6</td><td>Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td></td><td></td><td colspan="3">• Online Learning
OL - Online Learning (Vidéo tutorials, Podcasts,External links, Articles, E books)
• Online Activities including Assessment
OA - Online activities (Discussion forum, Reflection,Blogs)
• Synchronous Interaction
SI - Synchronous Interaction (Live interactions throughGoogle meet/ Big Blue Button / In-Person)
• Independent Learning
IL – Independent Learning
**Approximately double theOnline learning hours)</td><td>30

30

15

60</td></tr>
</table>

<table>
<tr><td>7</td><td>Credit</td><td colspan="2"><table>
<tr><td></td><td>Hours allocated per credit</td></tr>
<tr><td>Online Learning</td><td>30 OL hours = 1</td></tr>
<tr><td>Online Activities including Assessment</td><td>30 OA hours = 1</td></tr>
<tr><td>Synchronous Interaction</td><td>15 SI hours = 1</td></tr>
<tr><td>Total Credit</td><td>3</td></tr>
</table></td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="2">On successful completion of the course the students should be able to:
1. Summarise the basic knowledge and skills in public healthnutrition.
2. Articulate the causes, consequences and preventive strategies fornutritional problems in the community.
3. Recognize the concepts of Mortality, Morbidity and food security atNational level.
4. Sketch the techniques of Nutritional Status and Assessment techniques.
5. Paraphrase the role of national and international policies and Programs towards improving nutritional status of people in India. Describe the benefits and effectiveness of food fortification. Summarize epidemiological study designs and its approach in public health nutrition and relate the concept of extension education among the rural mass/community</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="2">This course introduces the basic concepts Malnutrition and Public Health and its schemes, programmes and policies of Government of India to Combat Malnutrition& understand the methods and concepts of Nutrition Education through different audio visual aids.</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="2">Course Instructors are encouraged to provide equal Weightage to all the Online assessments.
Continuous Assessment (50 Marks)<table>
<tr><td></td><td>Course Outcomes</td><td>Marks</td></tr>
<tr><td>Test 1</td><td>CO1 & CO2</td><td>10</td></tr>
<tr><td>Test 2</td><td>CO2 & CO3</td><td>10</td></tr>
<tr><td>Test 3</td><td>CO3 &CO4</td><td>10</td></tr>
<tr><td>Test 4</td><td>CO5</td><td>10</td></tr>
<tr><td>Assignment</td><td>CO1,CO2,CO3,CO4&CO5</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
</table>

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students willbe able to • Describe the concept of health care delivery at different levels in a community.	4	4	2	1
	UNIT – II	At the end of the module the students willbe able to • Summarise the Etiology, public health implications, preventive strategies for CED/PEM, Severe Acute Malnutrition and micronutrient deficiencies. • Describe the major causes and impact of communicable and non-communicable diseases among the public.	6	6	3	2
	UNIT – III	At the end of the module the students willbe able to • Describe the determinants of healthStatus of population and illness anddefine the factors contributing to health promotion and disease prevention. • Explain the concept of Nutrition Security and its role of Food securityin National Development.	4	5	3	3
	UNIT – IV	At the end of the module the students willbe able to • Classify and Interpret Various Nutritional assessment techniques:- Direct and Indirect in public health nutrition	4	5	2	4
	UNIT – V	At the end of the module the students willbe able to Recognise the backgroundobjectives, action plan, targets, operations, achievements and constraints of various National and International Health Programmes.	12	10	5	5

		Discuss the role of fortification at national level and articulate about advantages, techniques and limitations of food fortification. Discuss the role of epidemiological approach in public health nutrition. Explain the role of health education and Communication in public health and describe the tools used in healtheducation.				
			30	**30**	**15**	
12	**Reference books**	1. Public Health Nutrition, Gibney M.J., Margetts, B.M., Kearney, J. M. Arab, I., (Eds), NS Blackwell Publishing, 2004. 2. National Consensus Workshop on Management of SAM children through Medical Nutrition Therapy (2009)-Compendium of Scientific Publications Volume I and II. Jointly organized by AIIMS, Sitaram Bhartia Institute of Science and Research, IAP (Sub specialty chapter on Nutrition), New Delhi. Sponsored by DBT. 3. Park's Textbook of Preventive and Social Medicine, .Park, K, 20th edition.Jabalpur M/s.Banarsidas, 2009.				
13	**Online resources (Open)**	1.http://depts.washington.edu/uwcphn/about/ 2.www.wiley.com/go/buttriss/publichealth 3.www.nutritionsociety.org/publications/nutrition...journals/public-health 4. www.nutritionsociety.org.				
14	**Syllabus Content**	**Malnutrition and Public Health (AGE015)**				
	UNIT – I	Concept of Community Health & Nutrition, Concept of Community-types ofcommunity, factors affecting health of the community. Health Care- Levels of health care- Primary Health Care- Primary health care,health care Delivery, Role of public nutritionist in health care delivery				
	UNIT – II	Nutritional Problem of Community Nutritional and Non- nutritional-Incidence ofnutritional problems, signs, symptoms and Treatment- Protein Energy Malnutrition-Micro Nutrient deficiencies (Vitamin -A, Iron, Iodine and Zinc), Fluorosis. Communicable Diseases -cholera, polio, measles, HIV. Impact of NCD's on public health: Obesity, Hypertension, Coronary Heart Disease, Diabetes, Osteoporosis and Dental Caries				
	UNIT – III	Mortality, Morbidity (Maternal Mortality rate, Infant Mortality Rate, NetReproduction Rate). Under five malnutrition, Causes of malnutrition, consequences of malnutrition, Intervention in malnutrition- Food security-PDS,Food production- Food Pricing				

	UNIT – IV	Method and Assessment of Nutritional Status Identification of risk groups(random and purposive), Direct assessment – Anthropometry, Biochemical estimations, Clinical and Dietary assessment; Indirect Assessment- Food balance sheets
	UNIT-V	**National International Organizations to Combat Malnutrition** a) FAO, WHO, UNICEF, ICMR, CSIR, NIN, CFTRI b) ICDS, Mid-Day Meal Programme, NIPPCDFortification and Enrichment of foods c) Public health nutrition and nutritional epidemiology Nutrition education in community**:-** Methods of nutrition education in community; nutrition demonstration, skits, visual aids.

AGE015: Malnutrition and Public Health

Generic Elective Course for UG programs [Dept. of Clinical Nutrition]

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			(OL)	(OA)	Practical(SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical /Viva (c)	a+b= 100
											PM= 30%	EST	ESP	PM= 40%
AGE015	GE	**Malnutrition and PublicHealth**	1	1	1	3	60	15	75	80	50	50	-	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="4">Basics of Food and Nutrition</td></tr>
<tr><td>2</td><td>Elective Code</td><td>AGE016</td><td>Credits : 3</td><td>Level : UG</td><td>Category: GE</td></tr>
<tr><td>3</td><td>Faculty / Dept. offering</td><td colspan="4">Allied Health Sciences / Clinical Nutrition</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">The objective of this course is to enable the student to:

1. Illustrate the basic terminology and several aspects of food and nutritionand the concept of balanced diet
2. Summarize the Significance of Food Preservation and use of food additives on various food products
3. Summarise the role different foods play in a balanced diet, and theeffects of an unbalanced diet on health
4. Apply basic food principles to practice healthy eating</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">Healthy eating patterns are essential for students to achieve their full academic potential, full physical and mental growth and lifelong health and wellbeing. This course is designed to help students understand the significance of nutrition for optimum health.</td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">• Online Learning
OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• Online Activities including Assessment
OA - Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In-Person)
• Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30

30

15

60</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Credit</td><td colspan="3"></td><td>Hours allocated per credit</td></tr>
<tr><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>30 OL hours = 1
30 OA hours = 1
15 SI hours = 1</td></tr>
<tr><td colspan="3">Total Credit</td><td>3</td></tr>
<tr><td colspan="4">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the student should be able to:

1. Demonstrate basic Nutritional Requirements and Relation of nutrition togood health.
2. Outline effects of food additives on various foods and be able to ApplyFood Safety and Preservation Techniques.</td></tr>
</table>

<table>
<tr><td></td><td></td><td colspan="6">3. Construct basic nutrition knowledge, Methods of Preparation of foodsand the dietary guidelines for making food choices that will promote optimal health.
4. Interpret the function of carbohydrates, fat, proteins, vitamins, minerals,and water and their role in promoting and maintaining health.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="6">This course introduces the basic concepts of Nutrition through various students centered methods. The students will understand the importance of appropriate nutrition choices that are essential for a healthy life.</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="6">Course Instructors are encouraged to provide equal Weightage to all the Onlineassessments.
Continuous Assessment (50 Marks) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>CO-1 & CO-2</td><td>10</td></tr>
<tr><td>Test 2</td><td>CO-3 & CO-4</td><td>10</td></tr>
<tr><td>Test 3</td><td>CO-3 & CO-4</td><td>10</td></tr>
<tr><td>Test 4</td><td>CO-3 & CO-4</td><td>10</td></tr>
<tr><td>Assignment</td><td>CO-1, CO-2, CO-3 & CO-4</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>
Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td>Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>At the end of the module the students will be able to
• Explain the basic terminologies in nutrition
• Summarize the Classification of Food Groups
• Identify the various factors responsible for food choices
• Summarise the different causes of Food Spoilage
• Paraphrase the various methods of Food Preservation</td><td>8</td><td>8</td><td>4</td><td>1 & 2</td></tr>
<tr><td></td><td>UNIT – II</td><td>At the end of the module the students will be able to
• Relate the methods of preparation of various food groups</td><td>8</td><td>7</td><td>3</td><td>3 & 4</td></tr>
<tr><td></td><td>UNIT – III</td><td>At the end of the module the students will be able to
• Interpret the role of Macronutrients in the body
• Explain the functions, deficiency, excess and
• Identify the food sources of macronutrients</td><td>4</td><td>5</td><td>2</td><td>3 & 4</td></tr>
</table>

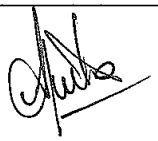
	UNIT – IV	At the end of the module the students will be able to • Connect the functions, Dietary requirements, deficiency and excessive conditions of Vitamins • Identify the food sources of various vitamins.	4	5	3	3 & 4
	UNIT - V	At the end of the module the students will be able to • Connect the functions Dietary requirements, deficiency and excessive conditions of minerals • Identify the food sources of various minerals	6	5	3	3 & 4
			30	**30**	**15**	
12	**Reference books**	**Text Books:** 1. Foods- Nutrition & Health, Vijaya Khader, 1st Edition, Kalyani Publishers / Lyall Bk Depot, 2003. 2. A Textbook on Human Nutrition, Bamji MS, Prahlad Rao N and Reddy V, 3rd Edition, Oxford and IBH Publishing Co., New Delhi, 2010. **Reference Books:** 1. Handbook of Nutrition and Food, Carolyn D. Berdanier, Johanna T. Dwyer, David Heber, 3rd Edition, CRC Press, 2013. 2. Food, Nutrition and Health, Linda Tapsell, Oxford University,2013. 3. Food Science, B.Srilakshmi, 5th Edition, New Age International (P) Limited, 2010. 4. A Handbook of Foods and Nutrition, F.C. Blank, Reena, Agrobios (India), 2009.				
13	**Online resources (Open)**	1. Journal of Nutrition & Food Sciences- https://www.longdom.org/nutrition-food-sciences.html 2. International Journal of Food Sciences and Nutrition- https://www.tandfonline.com/toc/iijf20/current 3. Journal of Human Nutrition and Food Science- https://www.jscimedcentral.com/Nutrition/ 4. Current Nutrition & Food Science- https://benthamscience.com/journals/current-nutrition-and-food-science/				
14	**Syllabus Content**	Basics of Food and Nutrition (AGE016)				
	UNIT – I	Food: Definition of food, nutrition and nutrients- characteristics of good health. Relation of nutrition to good health Optimal Nutrition – Malnutrition – Over and under nutrition Classification of foods: Based on (a) Major nutrient content/ (b) Basic five food group/(c) and functional food group classification, i.e. energy giving foods, Body building foods, protective foods. Food selection: Factors, responsible for food selection Food spoilage, Causes of Food Spoilage Methods of food preservation. Food additives- Classification – colorants, flavour-producing agents and their identification				
	UNIT – II	Different methods of cooking. (a) Cereals, (b) Pulses, (c) Nuts and oil seeds (d) Milk and Milk products,				

		(e) Flesh foods – meat, fish and poultry (f) Eggs (g) Fruits and Vegetables (h) Beverages, (i) Spices and condiments (j) Convenience foods.
	UNIT – III	Carbohydrates, lipids and protein-their role in the body –composition, Classification; functions, dietary sources and daily recommended allowances, excess and deficiency conditions**.**
	UNIT – IV	Classification of Vitamins- Functions- Dietary Requirements, excess and deficiency conditions. Food Sources of Vitamins– stability and Bioavailability of Vitamins– Reasons for losses in foods.
	UNIT- V	Classification of Minerals- Functions- Dietary Requirements, excess and deficiency condition Food Sources of Minerals– Stability and Bioavailability of Minerals Reasons for losses in foods. Importance of water and water balance & Interrelationship between nutrients.

AGE016: Basics of Food and Nutrition
Generic Elective Course for UG programs [Dept. of Clinical Nutirtion]

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			(OL)	(OA)	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM= 30%	EST	ESP	PM= 40%
AGE016	GE	**Basics of Food and Nutrition**	1	1	1	3	60	15	75	80	0	50		100

1	**Name of the course**	**Noise Exposure and its Effects**	
2	**Elective Code**	**AGE028**	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS.	
4	**Course Objective**	1. Understand the impact of noise on hearing 2. Explain the factors influencing noise/music induced hearing loss 3. Summarize the auditory and non-auditory effects of noise 4. List the auditory test used for screening individuals with noise induced hearing loss 5. Emphasize the need for hearing health educational programs and use of hearing protection devices	
5	**Rationale for inclusion**	This course is designed to focus on hearing health promotion and prevention of complications related to excess noise/music exposure among young adults. To sensitize the students regarding increased exposure of music/sound using portable personal listening devices.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 (including 10 hrs for assessment) 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	After the completion of the course, the student will be able to 1. Identify the effects of noise in the community 2. Explain the mechanism of hearing and potential risk to hearing 3. List the harmful/ill effects of noise on human health 4. Recognize the assessment procedure used to test hearing 5. Describe the elements of a noise monitoring program. 6. Cultivate an awareness and responsible listening behavior while hearing music.	
9	**Summary**	The course introduces awareness on risk and prevalence of Noise Induced Hearing Loss (NIHL)/ Music Induced Hearing Loss (MIHL) among young adults. Students will learn appropriate measures to prevent hazardous auditory and non-auditory effects due to exposure to loud music and to raise public awareness about prevention rather than treatment.	



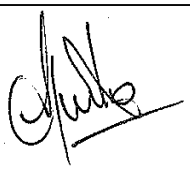
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes			**Marks**
		Test 1	Unit – I & II (MCQ's/Fill in the blanks/True or False)			10
		Test 2	Unit – III (MCQ's/Fill in the blanks/True or False)			10
		Test 3	Unit – IV &V (MCQ's/Fill in the blanks/True or False)			10
		Assignment 1	Sound Level measurements – Field work			10
		Assignment 2	Different types of noise in the community (indoor, outdoor, traffic, aircraft, community, music) – Short presentation in groups			10
		IA Total				**50**
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**		**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to 1. Define noise pollution 2. Discuss importance of hearing 3. List the different types of noise present in the community. 4. Describe the instruments used in the measurement of noise.		9	7	2	CO1
	UNIT – II	At the end of the module the students will be able to 1. Explain the structure and function of human ear. 2. Describes the properties of sound. 3. Discuss the pathophysiology of noise induced hearing loss. 4. Explain recreational noise and its potential risk to hearing		5	5	2	CO2
	UNIT – III	At the end of the module the students will be able to 1. List the auditory and non-auditory effects of noise. 2. Explain the occupational hazards of noise. 3. Discuss the symptoms related to auditory and non-auditory effects of noise		5	6	3	CO3
	UNIT – IV	At the end of the module the students will be able to 1. Interpret the diagnostic tools used to assess hearing. 2. Analyse the pattern of NIHL in audiogram test report.		5	6	4	CO4

	UNIT – V	At the end of the module the students will be able to 1. Define hearing conservation. 2. List out the steps in hearing conservation program. 3. Explain listening behaviors and strategies for prevention of hearing loss. 4. Discuss the common hearing protection devices available in the market.	6	6	4	CO5
			30	**30**	**15**	
12	**Reference books**	1. Rawool.V.W. (2012). Hearing conservation in occupational, recreational, educational and home settings. New York: Thieme. 2. Dobie.R.A. (2001). Medical legal evaluation of hearing loss. II Ed, Delmar Cengage Learning.				
13	**Online resources**	1. Bredekamp (2014), noise induced hearing loss and its prevention, retrieved from http://www.medicinenet.com/noise_induced_hearing_loss_and_its_prevention/article.htm 2. Alberti (2014). The anatomy and physiology of ear and hearing, retrieved from http://www.who.int/occupational_health/publications/noise2.pdf 3. Noise induced hearing loss, (2012), retrieved from http://american-hearing.org/disorders/noise-induced-hearing-loss/ 4. The dangerous decibels class room presentation http://dangerousdecibels.org/education/				
14	**Syllabus Content:**	**Noise Exposure and its Effects (AGE028)**				
	Unit 1: Noise measurements	Definition of noise, various types of noise in community, industry, music, traffic. Instrumentation and procedure for indoor and outdoor noise measurements, Sound Level Meter (SLM), Noise dosimeter and its operations				
	Unit 2: Hearing mechanism	Structures and functions of external, middle and inner ear, properties of sound, pathophysiology of noise induced hearing loss.				
	Unit 3: Auditory and non-auditory effects of noise	Auditory effects of noise on hearing: temporary threshold shift, permanent threshold shift, recovery patterns, and histopathological changes. Non auditory effects of noise on health, sleep disturbance, stress, effect on work and performance, damage risk criteria & occupational hazards of noise.				
	Unit 4: Audiological screening to detect noise induced hearing loss	Pure tone audiometry screening, otoacoustic emissions screening, speech audiometry, analyse the patterns of noise induced hearing loss in audiogram, base line and periodic monitoring assessment				
	Unit 5: Hearing conservation	Definition of hearing conservation, need for hearing conservation programme, steps in hearing conservation programme, ear protective devices (ear plug, ear muffs, helmets, special hearing protectors), noise cancellation headphones.				

AGE028: Noise Exposure and its Effects
Generic Elective Course for UG programs [Dept. of Speech Language & Hearing Science]

Course code	Category	Course Title	Credits /Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
AGE028	GE	**Noise Exposure and its Effects**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the course**	**Basic concepts in voice and its efficient use**	
2	**Elective Code**	**AGE029**	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS.	
4	**Course Objective**	After studying this course, the student should be able to 1. Understand the different systems involved in voice production 2. Explain the factors influencing normal and abnormal voice 3. Summarize vocal techniques and tips for healthy voice 4. Describe the vocal practices to facilitate vocal health 5. Explain the basic concepts or essentials of vocal training	
5	**Rationale for inclusion**	An individual's voice is often a person's identity. It communicates to the listener regarding the individual's biological, psychological, social and cultural attributes. Therefore it is essential to understand the importance of vocal health and find ways to improvise the voice. This course will - provide awareness about the concept of vocal health and different voice disorders - sensitize the students regarding efficient use of vocal apparatus and healthy vocal practices	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 (including 10 hrs for assessment) 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course, the students will be able to 1. Describe the components of respiratory, phonatory and articulatory systems for voice production 2. Explain the concept of normal voice production and list the factors causing voice related problems 3. List simple vocal techniques and vocal hygiene practices to enhance tonal quality,	



		volume & resonance 4. Summarize the healthy vocal practices and self-directed exercises to improve vocal efficiency 5. Explain the importance of awareness, motivation, feedback and practice in vocal training 6.
9	**Summary**	This course provides knowledge about basics of vocal sound production and the concept of vocal health. Students will understand the different voice disorders and vocal practices to be followed to prevent such voice disorders.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

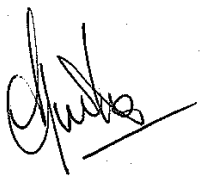
	Module	Marks
Test 1	Unit I (MCQ's/ True or false)	5
Test 2	Unit II (MCQ's/ True or false)	5
Test 3	Unit III (MCQ's/ True or false)	5
Test 4	Unit IV (MCQ's/ True or false)	5
Test 5	Unit V (MCQ's/ True or false)	5
Individual assignments (Topics will be given)		10
Group assignment (Vocal hygiene checklist)		10
Presentation		5
IA Total		**50**

Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to A) List the different systems involved in speech production B) Describe the components of breathing apparatus C) List the muscles involved in breathing D) Differentiate the correct & incorrect posture while speaking E) Explain the factors that influence breathing for speech F) List the components of voice G) Differentiate active & passive articulators H) Identify the place & manner of articulation I) Summarize the resonance & prosodic aspects of speech J) List disorders of speech	9	7	4	CO1

	UNIT – II	At the end of the module the students will be able to A) Describe concept of normal voice B) List different symptoms of voice problems C) Identify the factors causing voice problems D) List the common voice disorders E) Differentiate between healthy &unhealthy vocal habits	6	6	4	CO2
	UNIT – III	At the end of the module the students will be able to A) Describe vocal fatigue & list its components B) List the symptoms of vocal fatigue C) Name the vocal techniques used to enhance tonal quality, volume & resonance D) Summarize concepts in vocal hygiene and prepare a checklist	5	6	3	CO3
	UNIT – IV	At the end of the session the students will be able to A) List the effective vocal practices B) Describe a few common healthy and unhealthy vocal practices with examples C) List few exercises to improve vocal practice and efficiency	5	6	2	CO4
	UNIT – V	At the end of the session the students will be able to A) Explain the aspects of practice, motivation & perseverance in vocal training B) Describe the importance of feedback in vocal training	5	5	2	CO5
			30	**30**	**15**	
12	**Reference books**	1. DeVore, K., &Cookman, S. (2009). The voice book: Caring for, protecting, and improving your voice. Chicago Review Press. 2. Parker, J N., & Parker, P M. (2002). Vocal abuse and misuse. ICON group International 3. Boone, D. R., McFarlane, S. C., Von Berg, S. L., &Zraick, R. I. (2005). The voice and voice therapy.				
13	**Online resources**	1. https://courses.ofcourse.me/Vocal-Branding-How-Your-Voice-Shapes-Your-Communication-Image-Wendy-LeBorgne-TEDxUCincinnati/course-476614 2. https://www.uu.edu/dept/music/library/safety/VocalHealthInformation.pdf 3. https://www.ishaindia.org.in/slps.html 4. https://www.youtube.com/watch?v=1CYrz_GzKh4 5. https://www.youtube.com/watch?v=p_ylzGfHKOs 6. https://www.youtube.com/watch?v=Zo8Ca8wkaoI 7. https://www.youtube.com/watch?v=AibpM9sKdzc				

14	**Syllabus Content:**	**Basic concepts in voice and its efficient use (AGE029)**
	Unit 1: Vocal sound and its production	Brief overview of anatomical structures and functions of breathing apparatus, phonatory apparatus, resonatory apparatus and their coordination, Contrast between speech and song, Voice parameters and their production, Measurement of voice, terminologies and applications.
	Unit 2: Vocal health and voice disorders	Concept of voice use, misuse, abuse and care, professional voice users- risk and effects of training, vocal pedagogy, vocal habits, non-vocal habits, vocal hygiene, voice rest, identification of voice problems, first aid for voice deviances/disorders, health and lifestyle, effects of environment, management options.
	Unit 3: Development of vocal technique	Techniques of breathing and breath support, techniques of voicing, tone quality and volume, techniques of balancing resonance and pitch blends, techniques of good diction, production of vowels, and consonants, application of the techniques in speech and song.
	Unit 4: Vocal practice and use	Building balanced practice routines for speaking and singing, breath control and coordination training, vocal range enhancements, delivery of speech/song, accent, stress, intonation, facial expression, rate and style, vocal ornaments.
	Unit 5: Essentials of vocal training and execution	Aspects of motivation, practice, patience, perseverance, self-analysis, performance anxiety, vocal health check, use of technology such as microphone, feedback devices, mastering of techniques, warming up and cool down techniques, techniques to develop endurance and stamina, aspects related to growth, ageing and the related, general health



AGE029: Basic Concepts in Voice and its efficient use Generic Elective Course for UG programs [Dept. of Speech Language & Hearing Science]														
Course code	Category	Course Title	Credits / Week			**Credits (C)**	Hours/ semester(15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40 %
AGE029	GE	**Basic Concepts in Voice and its efficient use**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the course**	Health Behaviour		
2	**Elective Code**	AGE032	**Credits:** 3	**Level:** UG
3	**Faculty / Dept. offering**	Allied Health Sciences / Clinical Psychology		
4	**Course Objective**	1. To give orientation about the importance of Biopsychosocial (holistic) Model in health and illness 2. To elucidate the impact of stress on the immune system and chronic illness 3. To infer the importance of behavioural and psychosocial factors in developing and maintaining major lifestyle diseases 4. To gain knowledge about psychosocial intervention of major lifestyle diseases 5. To comprehend the methods of health promotion and its application		
5	**Rationale for inclusion**	This course would help the students to interpret the role of psychosocial factors in health and illness and this information could be applied in their clinical training.		
6	**Delivery method**			**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)		30 30 (including 10 hrs for assessment) 15
7	**Credit**			**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction		30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit		**3**
		Credit assigned based on the course objectives and learning outcomes.		
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the impact of behavioural and psychosocial components in developing lifestyle diseases 2. Dicuss the health outcomes of stress and about effective stress management approaches 3. Explain the role of health-related behaviour as the causative factor and curative factor in lifestyle diseases 4. Identify strategies to manage psychosocial risk factors of major lifestyle diseases 5. Explain the role of health enhancing behaviours in prevention of illness and health promotion		
9	**Summary**	This course explains the importance of biopsychosocial model in health and illness. Further, it gives an insight on the importance of healthy life style in the prevention and treatment of chronic illness.		

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes			**Marks**
		Test 1	Unit – I & II (MCQ's/Fill in the blanks/True or False)			10
		Test 2	Unit – III (MCQ's/Fill in the blanks/True or False)			10
		Test 3	Unit – IV &V (MCQ's/Fill in the blanks/True or False)			10
		Assignment 1	Significance of following Biopsychosocial Model in Healthcare settings			10
		Assignment 2	Health enhancing Behaviours - Short presentation in groups (or) Assignment/presentation on constructive stress management strategies, based on personal experiences			10
		IA Total				**50**
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method:**	**Learning outcomes**		**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Define Health Psychology • Discuss oriented about the importance of Biopsychosocial Model		4	5	2	CO1
	UNIT – II	At the end of the module the students will be able to • Discuss the role of stress and personality in lifestyle diseases • Summarize effective stress management strategies		8	8	5	CO2
	UNIT – III	At the end of the module the students will be able to • Explain the significance of Psychosocial factors in the onset and maintenance of CHD • List out the plans to deal with Psychosocial risk factors of CHD		6	5	2	CO3, CO4
	Unit IV	At the end of the module the students will be able to • Explain the significance of Psychosocial factors in the onset and maintenance of Diabetes and Cancer • List out the plans to deal with Psychosocial risk factors of Diabetes and Cancer		7	6	3	CO3, CO4
	Unit V	At the end of the module the students will be able to • Summarize health enhancing behaviours • Describe strategies to improve healthy behaviours including diet, sleep and exercise		5	6	3	CO5
				30	**30**	**15**	

12	**Reference books**	1. Taylor S. E. (2012), Health psychology (7th edition), TATA McGrawHil, New Delhi. 2. Marks D. F., Murray M., Evans B, Willig C, Woodall C. & Sykes C. (2008), Health psychology- theory, research and practice (2nd edition), Sage south Asia Edition. 3. Gatchel R. J., Baum A., & Krantz D. S. (1989). An introduction to health psychology (2nd edition), McGraw Hill, NY. 4. Feldman M. D. & Christensen J. F. (2008). Behavioural medicine – A guide for clinical practice (3rd edition), McGraw Hill, NY.
13	**Online resources**	1. **Global Health (EBSCO)** (//www.google.co.in/search?q=Global+Health+(EBSCO)&rlz=1C1SAVU_enIN566IN566&oq=Global+Health+(EBSCO)&aqs=chrome..69i57.18704j0j8&sourceid=chrome&es_sm=93&ie=UTF-8) 2. **Health news** http://www.health-e.org.za/health-categories/
14	**Syllabus Content:**	**Health Behaviour (AGE032)**
	Unit I: Introduction	Concepts of health –definition of health –determinants of health– health psychology as a field – mind and body relationship – bio-medical model versus bio-psychosocial model
	Unit II: Links between stress, personality and illness	Stress and coping: Stress and stressors – types of stress – stages of stress – Psychoneuroimmunology – health outcomes of stress – coping – coping styles. Personality and illness: Psychosomatic medicine – the four humors and personality – Eysenck's personality dimensions – type A and B personality– locus of control.
	Unit III: Major Life Diseases I	Coronary Heart Disease (CHD): Psychosocial risk factors – modification of risk factors – psychological Intervention of Cardio vascular diseases
	Unit IV: Major Life Diseases II	Diabetes: Types of diabetes – lifestyle changes as a cause for diabetes – management Cancer: Psychological factors related to cancer – cancer related health behaviour – psychological intervention – pain management.
	Unit V: Health Enhancing Behaviours	Promoting health: Role of behaviour in disease and disorder – health related behaviours: healthy diet, sleep and health, benefits of exercise – accident prevention

Dr. NEERADHA CHANDRAMOHAN
Associate Professor & Head
Department of Clinical Psychology,
SRI RAMACHANDRA
Faculty of Allied Health Sciences
SRIHER (DU)
Porur, Chennai - 116.
RCI Registration No. A01410

AGE032: Health Behaviour
Generic Elective Course for UG programs [Dept. of Clinical Psychology]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
AGE032	GE	**Health Behaviour**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the course**	**Basic Psychology**		
2	**Elective Code**	**AGE033**	**Credits:** 3	**Level :** UG
3	**Faculty / Dept. offering**	Allied Health Sciences / Clinical Psychology		
4	**Course Objective**	1. To acknowledge the basic concept of Psychology related to human behavior. 2. To Know the individual difference in learning, memory, intelligence and motivation. 3. To know about the various learning techniques for the individual betterment. 4. To know the relationship between the language and thought. 5. To enhance the Intellectual skills of an individual.		
5	**Rationale for inclusion**	• To comprehend the nature of emotions and its role in human interactions • To enhance the interpersonal relationship		
6	**Delivery method**			**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)		30 30 (including 10 hrs for assessment) 15
7	**Credit**			**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction		30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit		**3**
		Credit assigned based on the course objectives and learning outcomes.		
8	**Learning outcomes**	**After the completion of the course, the student will be able to** 1. Comprehend the nature of emotions and its role in human interactions 2. Discuss the interpersonal relationship 3. Explain various concepts like perception, memory and learning 4. Discuss the Problem solving techniques 5. Describe the role of motivation, Intelligence and attitude in human behaviour.		
9	**Summary**	This course introduces the Basic concepts of psychology related to human behaviour. Student will be able to understand the relationship between brain behaviour mechanism. This course describe the role of motivation, intelligence and attitude in human behaviour.		

<table>
<tr><td>10</td><td>Assessment</td><td colspan="5">Course Instructors are encouraged to provide equal Weightage to all the Online assessments.
Continuous Assessment (50 Marks) :
<table><tr><th></th><th>Course Outcomes</th><th>Marks</th></tr><tr><td>Test 1</td><td>Unit – I & II (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr><tr><td>Test 2</td><td>Unit – III (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr><tr><td>Test 3</td><td>Unit – IV &V (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr><tr><td>Assignment 1</td><td>Relationship between brain and behaviour</td><td>10</td></tr><tr><td>Assignment 2</td><td>Biological motives</td><td>10</td></tr><tr><td>IA Total</td><td></td><td>50</td></tr></table>Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td>Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>At the end of the module the students will be able to
• Explain the models of brain and behaviour
• Describe various methods in psychology</td><td>7</td><td>5</td><td>4</td><td>CO1</td></tr>
<tr><td></td><td>UNIT – II</td><td>At the end of the module the students will be able to
• Explain the sensation, perception and memory
• Classify the methods to improve memory</td><td>7</td><td>4</td><td>4</td><td>CO2</td></tr>
<tr><td></td><td>UNIT – III</td><td>At the end of the module the students will be able to
• Discuss the Physiology of emotions
• Explain the types of learning</td><td>7</td><td>4</td><td>3</td><td>CO3</td></tr>
<tr><td></td><td>UNIT – IV</td><td>At the end of the module the students will be able to
• Explain the relationship between language and intelligence
• Discuss Problem solving techniques</td><td>4</td><td>4</td><td>2</td><td>CO4</td></tr>
<tr><td></td><td>UNIT – V</td><td>At the end of the module the students will be able to
• Discuss Intelligence
• Explain the Motivation of a person</td><td>5</td><td>3</td><td>2</td><td>CO5</td></tr>
<tr><td></td><td></td><td></td><td>30</td><td>20</td><td>15</td><td></td></tr>
</table>

12	**Reference books**	1. James W.Kalat (1996), Introduction to Psychology, 4th edition, Brooks/cole. 2. Robert S Feldman, 2011 Understanding psychology 10th Edition, Mc. Graw Hill publishing company pvt. ltd
13	**Online resources**	1. Psychology Basics http://psychology.about.com/od/psychology101/u/psychology-basics.htm 2. Introduction to psychology http://psych.wisc.edu/braun/281/Outlines.html
14	**Syllabus Content:**	**Basic Psychology (AGE033)**
	Unit 1: Brain and Behaviour	Definition- Methods in psychology- Brief history of psychology and the various perspectives –Models of mind – Brain and Behaviour.
	Unit 2: Sensation, Perception and Memory	Sensation and Perception: Basic concepts in sensation-Absolute threshold, Sensory adaptation- Vision and Hearing perception- Depth Perception, perceptual Constancies- illusions- Attention-determinants of attention Memory: Stages of memory- Kinds of Memory- process of memory- long term memory- Forgetting- Methods for improving memory.
	Unit 3: Emotions and Learning	Emotions -Physiology of Emotion-Autonomic changes-Brain and Emotion arousal-patterns of bodily response Learning –Conditioning – Classical conditioning-Operant conditioning- principles of reinforcement- kinds of reinforcement- Individualized learning
	Unit 4: Language and Thoughts	Language and Thoughts_ -Properties of language- pattern of language development- Mental imagery- Relationship between language and intelligence – Thought process – Concepts –types, processes in concept formation; Problem solving -mental sets , Functional fixedness, Creativity- Nature of Creative thinking.
	Unit 5: Intelligence and Motivation	Intelligence: Nature of Intelligence- Measurement of Intelligence, Characteristics of Intelligence tests, Types of tests. Motivation :Motives , Needs, Drives and incentives- Biological motives- Hunger , thirst, sleep, sex, Stimulus motives , Sensory stimulation, affiliation , achievement, Power , Aggression, Frustration and conflicts of motives.

Dr. NEELAMBIGAI RAMACHANDRAMOHAN
Associate Professor & Head
Department of Clinical Psychology,
SRI RAMACHANDRA
Faculty of Allied Health Sciences
SRIHER (DU)
Porur, Chennai - 116.
RCI Registration No. A01410

AGE033: Basic Psychology **Generic Elective Course for UG programs [Dept. of Clinical Psychology]**															
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
AGE033	GE	**Basic Psychology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the course**	**Practice of Yoga**			
2	**Elective Course Code**	**AGL035**	**Credits: 3**	**Dept of AHS**	**Category: GE**
3	**Level**	Under Graduate programs under CBCS			
4	**Course Objective**	➢ Explain the streams, paths of yoga ➢ Practice and understand the benefits of dynamic exercises and Asanas, ➢ Practice and understand of Pranayama, and Dhayana ➢ Summarize about general guidelines for practicing yoga			
5	**Rationale for inclusion**	Yoga education helps in self discipline and self-control, leading to immense amount of awareness, concentration and higher level of consciousness.			

6	**Delivery Methods**	**Hours/ Credit**
	• OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • OA- Online activities (Discussion forum, Reflection, Blogs) • SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button) • A – Assessment • IL – Independent Learning (**Approximately double the Online learning hours)	30 OL HOURS = 1 CREDIT 30 OA HOURS -= 1 CREDIT 15 SI HOURS = 1 CREDIT

7	**Credit** Credits assigned are based on the course objectives and learning outcomes.	**Activity**	**Hours per credit**
		Online Learning Online Activities Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 30 SI +IL hours = 2
		Total Credits	**2**

8	**Course outcomes**	On successful completion of the course the students should be able to CO1. Describe the guidelines for practicing yoga CO2. Distinguish the streams of yoga CO3. Demonstrate basic asanas CO4. Practice and categorize the dynamic exercise, pranayama, dhayana
9	**Summary**	The course of Yoga for the student should be well formulated in terms of contents, aptness and graded so that what is learnt earlier works hand in glove with what follows.

10	**Assessment** Course Instructors are encouraged to provide Equal Weightage to all the Online assessments	**Continuous Assessment 50 marks**		
		Test 1	CO-1 & CO-2	10
		Test 2	CO-3 & CO-4	10
		Test 3	CO-4	20
		Assignment	CO-1, CO-2 & CO-4	10
		IA Total		**50**
		Summative Assessment : (As per CBCS 2019 Regulations **(Practicals)**		**50**

10	**Course Content and teaching method**					
	Specific Learning Outcomes	OL	OA	SI	A	**SLO-CO mapping**
	UNIT – I 1. Define yoga	**6**	2	3	2	CO1

	2. Discuss the aim and objectives of yoga **3.** Describe the streams of yoga					
	UNIT – II 1. Explain the objectives of asanas 2. Describes the physiological benifits of asanas 3. Discuss the basic rules of practice-do's and don'ts. 4. Differentiate between yoga asanas and physical exercises	8	5	3	3	CO2
	UNIT – III 1. Identify the components of a simplified physical exercises 2. Conduct and practice of suriya namashar and asanas 3. Practice pranayama and dhyana	8	5	3	2	CO3
	UNIT – IV 1. Identify the concepts different types of asnasa. 2. Conduct and practice asanas in standing, sitting, prone and supine postures. 3. Explain the benefits of different asanas.	8	8	6	3	CO44
		30	20	15	10	
11	Reference books 1. Hathapradipika of Swatmaramaji, (Jyotsana- tika), Adyar Library, Madras. Siddhasidhantpaddhati, Lonavla, Yoga Institute Lonavala 2005. 2. Gorakshasatkam, Kaivalyadhama, S.M.Y.M. Samiti, Lonavla. Asana Pranayama & Mudra Bandha Bihar School Of Yoga, Munger, 1969. 3. Therapeutic references in Traditional Yoga Texts, The Lonavla Institute, Lonavla, 2010. Gheranda Samhita Gheranda Samhita Hatha yoga pradeepika Hatha yoga pradeepika					
12	Online resources https://www.gubbworld.com/public/pdfs/yoga_book_pdf.pdf https://yogabog.com/sites/default/files/files/Iyengar_B_K_S__The_Illustrated_Light_On_Yoga.pdf http://index-of.es/z0ro-Repository-3/The-Complete-Idiot's-Guide-to-Yoga/The%20Complete%20Idiot's%20Guide%20to%20Yoga.pdf https://sriyogaashram.com/yoga-books.html AYUSH yoga videos: Director Mdniy –YouTube, Yoga@ Kaivalyadhama- You Tube, SVYASA University – YouTube					

AGL035: Practice of Yoga
Generic Elective Course for UG programs [Dept. of Allied Health Sciences]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
AGL035	GE	**Practice of Yoga**	0.5	0.5	2	3	30	30	60	80	50	--	50	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="4">Pranayama Exercise</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>AGL036</td><td>Category: GE</td><td>Credits: 3</td><td>Dept. of Allied Health Sciences</td></tr>
<tr><td>3</td><td>Level</td><td colspan="4">Under Graduate programs under CBCS</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">➢ Describe the respiratory system
➢ Classify types of breathing
➢ Summarize and practice the practical aspects of pranayama
➢ Practice and understand the dynamic exercise and special pranayama techniques</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">Yoga education can supplement university education. It can prepare the students physically and mentally for the integration of their physical, mental and spiritual. so that the students can become healthier, saner and more integrated members of the society and of the nation.</td></tr>
<tr><td rowspan="2">6</td><td colspan="3">Delivery Methods</td><td colspan="2">hours/credit</td></tr>
<tr><td colspan="3">• OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• OA- Online activities including Assessment (Discussion forum, Reflection, Blogs)
• SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button)
• IL – Independent Learning **Approximately double the Online learning hours)</td><td colspan="2">30 OL HOURS = 1 CREDIT

30 OA HOURS -= 1 CREDIT

15 SI HOURS = 1 CREDIT</td></tr>
<tr><td rowspan="3">7</td><td colspan="2" rowspan="3">Credit
Credits assigned are based on the course objectives and learning outcomes.</td><td>Activity</td><td colspan="2">Hours allocated per credit</td></tr>
<tr><td>Online Learning
Online Activities
Synchronous Interaction</td><td colspan="2">15 OL hours = 0.5
15 OA hours = 0.5
30 SI +IL hours = 2</td></tr>
<tr><td>Total Credits</td><td colspan="2">3</td></tr>
<tr><td>8</td><td>Course outcomes</td><td colspan="4">On successful completion of the course the students should be able to
CO1. Describe the respiratory system and types of breathing
CO2. Distinguish and practice the practical aspects of pranayama
CO3. Demonstrate the special pranayama techniques</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="4">This course introduces the steps of pranayama techniques and will increase life span period and worthy of life.</td></tr>
<tr><td rowspan="8">10</td><td rowspan="8">Assessment
Course Instructors are encouraged to provide equal Weightage to all the Online assessments</td><td colspan="4">Continuous Assessment (50 Marks) :</td></tr>
<tr><td></td><td colspan="2"></td><td>Marks</td></tr>
<tr><td>Test 1</td><td colspan="2">CO-1 & CO-2</td><td>10</td></tr>
<tr><td>Test 2</td><td colspan="2">CO-3</td><td>10</td></tr>
<tr><td>Test 3</td><td colspan="2">CO-1,2,3</td><td>20</td></tr>
<tr><td>Assignment</td><td colspan="2">CO-1, CO-2 & CO-3</td><td>10</td></tr>
<tr><td colspan="3">IA Total</td><td>50</td></tr>
<tr><td colspan="3">Summative Assessment :
As per CBCS 2019 Regulations (Practicals)</td><td>50</td></tr>
<tr><td></td><td colspan="4"></td></tr>
<tr><td>11</td><td colspan="5">Course Content and teaching method</td></tr>
<tr><td rowspan="2"></td><td colspan="2">Specific Learning outcomes</td><td>OL</td><td>OA</td><td>SI</td><td>A</td><td>SLO: CO mapping</td></tr>
<tr><td colspan="2">UNIT I:
Define pranayama
Discuss the Importance of pranayamma
Identify the concepts of prana</td><td>3</td><td>3</td><td>3</td><td>2</td><td>CO1</td></tr>
</table>

	UNIT II: Explain the prerequisites and preparation of pranayama Differentiate the suitable asanas for practicing pranayama	4	4	6	3	CO2
	UNIT III: Identify the practice of puraka, rechaka and kumbhaka Differentiate pranayamam and breathing exercises Understand and Practice sectional breathing	4	4	9	2	CO3
	UNIT IV Identify the concepts specific pranayama techniques Explain and Surya Bhedha, Chandra Bhedana, Ujjayi, Sitali, Sitkari, Bhastrika, Nadi Suddhi, Kapalabhati	4	4	12	3	CO1, 2 & 3
		15	15	30	10	
12	Reference books	1. Hathapradipika of Swatmaramaji, (Jyotsana- tika), Adyar Library, Madras. Siddhasidhantpaddhati, Lonavla, Yoga Institute Lonavala 2005. 2. Gorakshasatkam, Kaivalyadhama, S.M.Y.M. Samiti, Lonavla. Asana Pranayama & Mudra Bandha Bihar School Of Yoga, Munger, 1969. 3. Therapeutic references in Traditional Yoga Texts, The Lonavla Institute, Lonavla, 2010. Gheranda Samhita Gheranda Samhita Hatha yoga pradeepika Hatha yoga pradeepika					
13	Online resources	1. https://dlshq.org/download/pranayama.pdf 2. http://www.yogamdniy.nic.in/WriteReadData/LINKS/16-Pranayam5ac563a2-1930-4f68-b57a-5d56c0a2439d.pdf 3. https://beinks.com/free-download-books-on-yoga/				

AGL036: Pranayama Exercise
Generic Elective Course for UG programs [Dept. of Allied Health Sciences]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours		PM: 30%	Theory (b) EST	Practical/ Viva (c) ESP	a+b=100 PM: 40%
AGL036	GE	**Pranayama Exercise**	0.5	0.5	2	3	30	30	60	80	50	--	50	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="4">Mind Body and Wellness</td></tr>
<tr><td>2</td><td>Elective Code</td><td>AGE037</td><td>Credits: 3</td><td>Dept. of Mind Body & Life Style Sciences</td><td>Category: GE</td></tr>
<tr><td>3</td><td>Level</td><td colspan="4">Any student enrolled in Under Graduate programs under CBCS</td></tr>
<tr><td>4</td><td>Course Objectives</td><td colspan="4">1. Elucidate various causes of stress and its pathophysiology
2. Impart knowledge about the interactions between mind and body whichinfluences health.
3. Train the student on mind body techniques.</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">Stress and burnout are currently seen across all ages. Hence this course is designed to provide an opportunity to the allied practitioners of medicine to acquire an understanding of the impact of stress on human body and the basics of mind- body techniques in relaxation and resilience building</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">• Online Learning
OL- Online Learning (Video tutorials, Podcasts, Externallinks, Articles, E books)
• Online Activities including Assessment
OA- Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI- Synchronous Interaction (Live interactions throughGoogle meet/ Big Blue Button / In person)
• Independent Learning
IL- Independent Learning **Approximately double theOnline learning hours</td><td>30

30
(including 10 hrs forassessment)

15</td></tr>
<tr><td rowspan="3">7</td><td rowspan="3">Credit</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>30 OL hours = 1
30 OA hours = 1
15 SI hours = 1</td></tr>
<tr><td colspan="4">Total Credit</td><td>3</td></tr>
<tr><td colspan="5">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">After the completion of the course, the student will be able to
CO1. Expound pathophysiology of stress and burnout
CO2. Enumerate the various investigative methods to assess stress
CO3. Elucidate the various mind body intervention techniques
CO4. Demonstrate selective mind body techniques.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="4">This course introduces the basics of mind body interaction, stress and its impacts and various methods to handle the situations effectively to bring the best of an individual. Learning from the course Confidence and courage to face the demands of life and the ability to draw inspiration from within oneself</td></tr>
<tr><td>10</td><td>Assessment
Course Instructors are encouraged to provide equal Weightage to all the Online assessments</td><td colspan="4">Continuous Assessment (50 Marks) :</td></tr>
<tr><td colspan="2"></td><td colspan="2">Course Outcomes</td><td>Marks</td></tr>
<tr><td colspan="2">Test 1</td><td colspan="2">Unit – I & II (MCQ’s/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td colspan="2">Test 2</td><td colspan="2">Unit – III, IV & V (MCQ’s/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td colspan="2">Test 3</td><td colspan="2">Unit – VI, VII & VIII (MCQ’s/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td colspan="2">Assignment 1</td><td colspan="2">MBM Self-administered questionnaires</td><td>10</td></tr>
<tr><td colspan="2">Assignment 2</td><td colspan="2">Contemporary topics utilizing MBM techniques</td><td>10</td></tr>
<tr><td colspan="2">IA Total</td><td colspan="2"></td><td>50</td></tr>
<tr><td colspan="4">Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations</td><td>50</td></tr>
</table>

11	**Course Content and Teaching Method :**	**Learning outcomes At the end of this unit student should beable to:**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	• Define Stress • Explain the pathophysiology of stress • Describe the gut brain axis and its role inhealth • Enlist the various Stress Assessmenttechniques	4	4	2	1 & 2
	UNIT – II	• Definition and stages of adolescents • Describe Psychophysiological changes • Enumerate the stressors & causes withspecific reference to adolescents • Describe the impact of stress on adolescents & its management	4	4	3	1
	UNIT – III	• Importance to disciplined daily routine inthe management of Health • Explain the role of healthy diet in mental &physical health • Describe the importance of physical activityin health and disease • Elucidate the importance of sleep in health	4	4	3	1
	UNIT – IV	• Elucidate the importance and role of family,friends and spirituality in good health	4	4	2	1
	UNIT – V	• Define burnout • Expound the impact of burnout on ahealthcare professional	3	3	2	1
	UNIT – VI	• Enlist the various mind body intervention techniques • Explain on these techniques and theirclinical applications	4	4	1	3
	UNIT – VII	• Understand what is yoga and its components • Differentiate between Yogic exercises VsPhysical exercises	4	4	1	3 & 4
		• Different types of Meditation • Understand the role of yoga in the controlof mind and body • Explain the importance of yoga to declutterthe mind • Demonstrate the basic yoga techniques todestress				
	UNIT – VIII	• Explain the regulation of the mind • Understand the science of meditation • Appreciate and practice the principles ofpurity of heart, making wise choices, creating time and designing destiny	3	3	1	3 & 4
			30	**30**	**15**	
12	**Reference books**	Mind Body Medicine, Dr. Venkat Srinivasan				
13	**Online resources**	https://www.who.int/occupational_health/healthy_workplace_framework				
14	**Syllabus Content:**	Mind Body and Wellness (AGE037)				
	UNIT – I Introduction and Pathophysiology of stress	Define Stress, Explain the pathophysiology and effects of stress, Describe the gut brain axis and its role in health, Enlist the various Stress Assessment techniques and stress management				

UNIT – II Stress in adolescents	Definition and stages of adolescents, Describe Psychophysiological changes, Enumerate the adolescent stressors with specific reference to adolescents, Describethe impact of stress on adolescents & its management
UNIT – III Nutrition, Exercise & Sleepin Stress	Explain the role of healthy diet in mental & physical health, Describe the types, importance and benefits of physical activity in health and disease, Elucidate the types, physiological changes and importance of sleep in health
UNIT – IV Family, friends, faith andfido in health	Elucidate the importance and role of family, friends and spirituality in good health
UNIT – V Burnout-The healthcareand perspective	Define burnout, Explain the causes and assessment of Burnout, Expound the impactof burnout on a healthcare professional
UNIT – VI Introduction of mind bodyinterventions	Enlist the various mind body intervention techniques, Explain on these techniquesand their clinical applications
UNIT – VII Yoga and health care	Understand the role of yoga in the control of mind and body, Explain the importanceof yoga to declutter the mind, Demonstrate the basic yoga techniques to destress
UNIT – VIII Heartfulness Meditation	Explain the regulation of the mind, Understand the science of meditation Appreciate and practice the principles of purity of heart, making wise choices,creating time and designing destiny

AGE037: Mind Body and Wellness
Generic Elective Course for UG programs [Dept. of Mind Body & Life Style Sciences]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
AGE037	GE	**Mind Body and Wellness**	1	1	1	3	60	15	75	80	50	50	---	100

1.	**Name of the Course**	Women's Wellness			
2.	**Elective Code**	**AGE038**	**Credits : 3**	**Level : UG**	**Category: GE**
3.	**Faculty/Dept.**	Allied Health Sciences			
4.	**Course Objective**	A structured learning course on women's wellness to understand the basics and key concepts of 1) Healthy woman and phases of a woman's life 2) Emotional and mental health 3) Diseases that affect woman 4) Social and cultural health			
5.	**Rationale for inclusion**	Women constitute nearly 50% of the population. Their biological and physical characteristics as also emotional needs and responses of society are considerably different and health care professionals should know more about their functioning to tailor solutions that cater to their needs.			
6.	**Delivery method**	**Definition**			**Hours per credit**
		• **Online Learning** OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E-books)			30
		• **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs)			30
		• **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet/Big Blue Button/In-person)			15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)			60
7.	**Credits assigned for the course**	Online Learning - 0.5 credits Online Activities including Assessment - 0.5 credits Synchronous Interaction - 2 credits			
		Total Credit			**3 credits**

8.	**Learning outcomes**	On successful completion of the course the students should be able to CO1: Describe the normal changes of menstruation, adolescence and pregnancy CO2: Explain the different types of food and exercise that a woman needs at various stages in life CO3: Distinguish gender discrimination and describe mental diseases CO4: Discuss various medical disorders and cancers in women CO5: Describe the cultural hindrances to women's progress, analyse various women role models and lessons learnt from them
9.	**Summary**	The course, a multidisciplinary one, involving departments of general medicine, obstetrics and gynecology, clinical nutrition, general surgery, sports medicine, management, is offered to UG students of even semesters and deals with specifics of health of women.
10.	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments

Continuous Formative Assessment (100 Marks) :

	Course Outcomes	Marks
Test 1	CO-1	10
Test 2	CO-2 & CO-3	10
Test 3	CO-4	20
Assignment	CO-5	10
	IA Total	**50**

Pattern of End Semester Assessment: As per CBCS,2019 Regulations

11.	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I 1.Anatomy and physiology-menstrual cycle and gynecological health 2. Adolescence 3. Nutrition and health 4. Fitness and health 5. Safe motherhood	1. Describe the phases of menstrual cycle and the hormones responsible for the same 2. List stages of adolescence and changes seen in each phase 3. Define balanced meal and its components 4. Identify role of exercise and types 5. Discuss stages of pregnancy and preconception evaluation	2 2 2	2 2	3 3 3 3	**CO1 and CO2**
	UNIT – II 1. Mental health 2. Gender sensitization	1. Enumerate the types of eating and mental disorders seen in women 2. Discuss the difference in treatment between the genders	1 2	2 2	3 3	**CO2 and**

	UNIT – III 1. Preventive health 2. Chronic medical diseases 3.Cancers in women	1. List the components of preventive health and importance of screening 2.Define, enumerate the symptoms, diagnosis of chronic medical diseases	2 1	2 3	3 3	**CO4**
	UNIT – IV 1. Women role models, leadership skills, 2. Cultural attitudes to women	1. Discuss the importance of role models and lessons learnt from them 2. Describe the cultural hindrances to women's progress and how can they be overcome	2 2	2 2	3 3	**CO5**
		Total	**15**	**15**	**30**	--

12.	**Reference books**	1. Taking charge of your fertility by Toni Weschler 2. Women's health-readings on social , economic and political issues- 6th edition-by Dawna Marie Thomas 3. Women's bodies, women's wisdom- creating physical and emotional health and healing- by Christiane Northrup
13.	**Online resources (Open)**	www.healthywomen.org www.who.int>health topics> women's health
14.	**Syllabus Content :**	
	UNIT – I	
	Anatomy and physiology menstrual cycle and gynecological health	Physical and emotional changes before menarche Physiology and cycles, Ovulation, Premenstrual symptoms Self-hygiene
	Adolescence	Physical growth and changes, Emotional growing up pangs, Peer influences
	Nutrition and health	Balanced diet and general approach to nutrition, Diet during pregnancy and lactation, Diet in adolescence and menopause, Requirements in specific diseases
	Fitness and health	Importance of exercise in maintaining good health, Types of exercise, Exercise in special situations such as osteoporosis, menopause, weight loss etc.
	Safe motherhood	Pre-pregnancy evaluation, Pregnancy and childbirth, Artificial conception, adoption
	UNIT – II	
	Mental health	Women and specific emotional needs, Psychological, mental and eating disorders in women, Steps to maintain emotional health
	Gender Sensitization	Difference in approach between sexes, Basic courtesy and respect

	UNIT – III	
	Preventive health	Types of prevention, Screening for illness, Immunization
	Chronic medical diseases	Chronic medical diseases, Clinical features, diagnosis and treatment of DM/HT/CAD/Osteoporosis
	Cancers in women	Prevention, Screening, Clinical features of common cancers in women CA Breast, CA cervix, CA ovary
	UNIT – IV	
	Women role models, leadership skills	Why do we need role models Case studies of 5 inspiring women
	Cultural attitudes to women	Role of women in society Traditional roles Breaking barriers

Generic Elective Course for UG programs													
Course code	Category	Course Title	Credits /Week		Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA	End Semester Assessment Department		Grand Total
			OL+OA)	SI		OL+OA	SI	Total hours		CIA-Theory / Practical (a) Marks	Theory (b)	Practical/ Viva (c)	a+b= 100
											EST	ESP	
AGE038	GE	Women's Wellness	1	2	3	30	30	60	80	50	50	-	100

****

PRINCIPAL
Sri Ramachandra Faculty of Allied Health Sciences
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116.

1	**Name of the course**	**Basics of Counseling and Guidance**		
2	**Course Code**	**AGE039**	**Credits: 3**	**Level:** PG
3	**Faculty / Dept. offering**	Allied Health Sciences / Clinical Psychology		
4	**Course Objective**	1. To be able to explain the concept of counselling and guidance, and describe various theories about counselling 2. To delineate essential qualification, qualities, role, functions, preparation of professional counsellor, legal and professional ethics in counselling 3. To describe basic counselling skills in counselling 4. To be able to list core skills necessary for counselling 5. To analyze the need for counselling in special settings and across the life span.		
5	**Rationale for inclusion**	This course is designed to introduce the basic concepts and theories underlying counselling and guidance, essential qualification and competence, role and functions of counsellor, professional ethics, skills, will enable the learners to recognize the need for counselling across the life span stages.		
6	**Delivery Methods**			**Hours Per Credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)		**30**
		• **Online activities Including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs)		**30**
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person)		**15**
		• **Independent Learning** IL- Independent Learning **Approximately double the Online learning hours		**60**
7	**Credit**			**Hours per credit**
		Online Learning Online activities Including Assessment Synchronous Interaction		**30 OL hours = 1** **30 OA hours = 1** **15 SI hours = 1**
		Total Credits		**3**
		Credit assigned based on the course objectives and learning outcomes.		
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe counselling and guidance and distinguish them, major theories 2. Explain counsellor preparation, Qualifications, Qualities, role and functions of the counsellor, goals in counselling, legal and professional ethics 3. Discuss the basic and core counselling skills 4. Explain the need for counselling in various life span stages		
9	**Summary**	This course is to enlighten students about counselling and guidance, explain major counselling theories, professional ethics, competence, It also helps in exploring the situations, where the counselling is applicable. To identify the need for counselling across the life span.		

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 marks):				
			Course Outcomes		**Marks**	
		Test 1	**CO1, CO2**		15	
		Test 2	**CO3, CO4**		15	
		Assignment			10	
		Seminar	**CO 1,2,3,4 & 5**		10	
		IA Total			**50**	
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT I:	At the end of the module the students will be able to • Define and differentiate counselling and Guidance (Can be separated) • Explain the theoretical framework such as Psychoanalysis, Person Centred and hierarchy theory of counselling	5	4	2	CO1
	UNIT- II:	At the end of the module the students will be able to • Explain the role of the professional counsellor, competence, roles and responsibilities of a counsellor • Describe the competence of professional counsellor competence, ethical practices (two outcomes).	5	4	2	CO2
	UNIT- III:	At the end of the module the students will be able to • List and illustrate basic skills used in counselling with suitable examples	8	8	4	CO3
	UNIT-IV:	At the end of the module the students will be able to • List and relate the core skills in counselling with suitable examples • Distinguish client skills and counsellors skills	6	8	4	CO4
	UNIT-V:	At the end of the module the students will be able to • State and list the various counselling situations • Relate various life span stage problems and need for the counselling	6	6	3	CO5
			30	**30**	**15**	
12	Reference books	**Text books:** 1. Corey, G. (2004). *Theory and Practice of Counseling and Psychotherapy* (7th ed.). Wadsworth Publishing. 2. Gladding, S.T. (2003). *Counseling: A Comprehensive Profession* (5th edition.). Prentice-Hall Career & Technology. **Reference books:**				

		1. Narayana Rao, S. (2002). Counselling and Guidance (Rev. Second Edition). Tata McGraw-Hill, New Delhi. 2. Thomas, R. Murray. (1990). Counselling and Life Span Development. Sage Publications, New Delhi.
13	Online resources	**Online Resources:** 1. http://www.basic-counseling-skills.com 2. http://www.counsellingtutor.com/basic-counselling-skills
14	**Syllabus Content**	**Basics of Counseling and Guidance (AGE039)**
	UNIT I:	Introduction and definition of Counselling and Guidance, approaches to counselling
	UNIT- II:	Counsellor Preparation, Qualifications, Qualities, role and functions of the counsellor, goals in counselling, legal and professional ethics
	UNIT- III:	Micro skills in Counselling- relationship building strategies and methods: Opening techniques, attending skills- verbal and non-verbal communication, Listening skills: Open questions and closed questions, Encouragement, Paraphrasing, Reflection, Summarization, influencing skills-Reframing, genuineness and Self-disclosure.
	UNIT-IV:	Macro skills in Counselling: empathy, advanced empathy, Confrontation & challenging, Resistance, transference and counter-transference
	UNIT-V:	Counselling situations and Counselling across life-span.

Dr. NEERADHA CHANDRAMOHAN
Associate Professor & Head
Department of Clinical Psychology,
SRI RAMACHANDRA
Faculty of Allied Health Sciences
SRIHER (DU)
Porur, Chennai-116.
RCI Registration No. A01440

AGE039: Basics of Counselling and Guidance **Generic Elective Course for UG programs [Dept. of Clinical Psychology]**														
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
AGE039	GE	**Basics of Counselling and Guidance**	1	1	1	3	60	15	75	80	50	50	---	100

1	Name of the Course	**BASIC CLINICAL SKILLS OF VISUAL SYSTEM**		
2	Elective Code	**AGE040**	Credits: 3	Vide, AC Resolution No. 34.14 dt. 19.08.2021

1	**Name of the Course**	Clinical Examination of Visual System	
2	**Elective Code**	AGE007	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	The core objective of this course is to: 1. Introduce the structural and functional aspects of the visual system. 2. Acquaint with the basic tests of visual function, their documentation and interpretation. 3. Explain the differentiation between healthy and unhealthy visual system. 4. Overview of advanced diagnostic techniques and their significance in eye care. 5. Rationale and methods for treatment with glasses, lenses, etc.	
5	**Rationale for inclusion**	The eyes are the windows to the body. By protecting the eyes, the odds of blindness and vision loss can be reduced. This course will • Provide information on various ocular structures • Create awareness on various ocular disorders • Sensitize health care professionals on what to expect from an eye examination	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Quiz)	30 (including internal assessment)
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course, the students will be able to: 1. Describe the various ocular components and their functions 2. Perform basic eye examination like visual acuity, colour vision 3. Distinguish between healthy and unhealthy ocular system. 4. List the infrastructure required to perform comprehensive ophthalmic assessment 5. Explain the various modalities of treatment and their implications	

Dr.SUHAS PRABHAKAR,M.S
PROFESSOR AND HEAD
Department of Optometry
SRI RAMACHANDRA
Institute of Higher Education and Research
(Deemed to be University)
Porur,Chennai - 600 116

9	**Summary**	This course provides in depth knowledge on structural and functional parts of the eye and also it covers various clinical optometry procedures involving external examination, anterior segment and posterior segment examination, paediatric optometry examination.				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes			**Marks**
		Test 1	Unit I (MCQ's/ True or false)			5
		Test 2	Unit II (MCQ's/ True or false)			5
		Test 3	Unit III (MCQ's/ True or false)			5
		Test 4	Unit IV (MCQ's/ True or false)			5
		Test 5	Unit V (MCQ's/ True or false)			5
		Individual assignments (Video/Seminar/Model making topics will be given)				10
		Group Assignments (Topics will be given)				15
		IA Total				**50**
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Describe the anatomical structures of the eye • Describe the functions of each part of the eye. • Explain the visual pathway • Explain the process of image formation to perception	6	6	3	CO1
	UNIT – II	At the end of the module the students will be able to • Elicit appropriate case history • Assess visual acuity using appropriate tools and techniques • Screen for colour vision deficits • Detect the motor alignment of the eye	6	6	3	CO2
	UNIT – III	At the end of the module the students will be able to • Understand various aspects of observing a patient and their relationship to ocular disorders • Perform a torch light examination to detect abnormalities of the anterior segment of the eye	6	6	3	CO3

	UNIT – IV	At the end of the session the students will be able to • Articulate the infrastructure required to perform an advanced anterior segment evaluation • State the infrastructure required to perform an advanced posterior segment evaluation • State the role of electrophysiological testing in ophthalmic examination	6	6	3	CO4
	UNIT – V	At the end of the session the students will be able to • Describe the various refractive errors of the eye • Explain various sight threatening paediatric disorders • Explain the common geriatric ocular disorders that leads to blindness • List the patient management options • Perform professional communication of the importance of appropriate management of ocular disorders	6	6	3	CO5
			30	**30**	**15**	
12	**Reference books**	1. Comprehensive Ophthalmology – A K Khurana, 5th edition, New Age International Publishers, 2012. 2. Clinical Ophthalmology – Jack J Kanski, 7th edition, Butterworths, 2012 3. Borish's Clinical Refraction - William J. Benjamin, Irvin M. Borish, Butterworth-Heinemann, 2006				
13	**Online resources**	1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4069781/ 2. https://www.youtube.com/watch?v=VdV6cp4jpgA 3. https://www.youtube.com/watch?v=ysk4HLsWZ8M 4. https://www.youtube.com/watch?v=uBzwd0w-Fbk&t=215s 5. https://www.youtube.com/watch?v=2n3J5fCILmk 6. http://www.bedfordshireloc.org/Services/Van_Herick_en.pdf 7. https://www.youtube.com/watch?v=ZD5vzrOlm5c 8. https://www.youtube.com/watch?v=gHW5OYj1Gf8 9. https://www.youtube.com/watch?v=NE7Iw8OHx-Q 10. https://www.youtube.com/watch?v=1e187fLOHMQ&t=7s 11. https://www.youtube.com/watch?v=iPqtoGLAnRY 12. https://www.youtube.com/watch?v=f_rb6FMVHPk 13. https://www.youtube.com/watch?v=wpG62cJMJcE&t=125s				
14	**Syllabus Content:**	Clinical Examination of Visual System (AGE007)				
	UNIT - I Anatomy and physiology of the eye	Overview of the gross anatomy of the eye. Brief outline of the functions of the eye. Insight into how image is formed and object is perceived.				
	UNIT - II: Fundamental optometric examination	Case history. Tools and techniques in distance and near visual acuity measurements. Colour vision testing. Tests of ocular alignment, Tests of refractive error assessment				
	UNIT - III: Basic examination of anterior structures	Importance of observation, various aspects of observing a patients - Mobility, Fixation, head posture, Torch light examination of the lids, cornea, conjunctiva, anterior chamber, lens				

	UNIT - IV: Overview of ocular diagnostics techniques	Introduction to various diagnostic equipments like slitlamp biomicroscope, ophthalmoscope, perimeters, tonometers, ultrasound, electrophysiological tests and their uses in ophthalmic practice
	UNIT - V: Introduction to common eye diseases and their management	Refractive errors, presbyopia, amblyopia, strabismus, nystagmus, cataract, glaucoma, diabetic retinopathy, age related macular degeneration Use of glasses, contact lenses, magnifiers, telescopes, prisms in optometric practice

AGE040: BASIC CLINICAL SKILLS OF VISUAL SYSTEM
Generic Elective Course for UG programs [Dept. of Optometry]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
AGE040	GE	**BASIC CLINICAL SKILLS OF VISUAL SYSTEM**	1	1	1	3	60	15	75	80	50	50	---	100

1	**Name of the Course**	Applied Biotechnology	
2	**Elective Code**	BGE016	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the basics of biotechnology 2. Summarize the applications of biotechniques in various fields 3. Describe the role of microbes and enzymes in commercial biotechnology products 4. Explain the large scale production and associated guidelines and quality control involved in biotechnology products	
5	**Rationale for inclusion**	This course details on various techniques related to medical sciences that play a role in human life. The students would be able to apply the techniques in their field of medical science for understanding the clinical condition, diagnosis and treatment	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the basics of biotechnology 2. Describe various techniques associated with biotechnology 3. Discuss the applications of bio techniques in medical sciences and research	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

9	**Summary**	This course details on the basic biotechnological tools and techniques developed to decipher conditions in medical science which are otherwise tough to comprehend. The students would be able to appreciate the application of these tools in their field of discipline.				
10	**Assessment**	Course Instructors are encouraged to provide equal weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1	10		
		Test 2	CO-2	10		
		Test 3	CO-1, CO-2,CO-3	20		
		Assignment	CO-1, CO-2,CO-3	10		
		IA Total		**50**		
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Explain the importance of waste water treatment 2. Discuss the waste water treatment and disposal methods	5	4	2	1
	UNIT – II	1. Describe the bioremediation techniques 2. Explain the molecular techniques 3. Explain the concept of plasmids	7	8	4	2
	UNIT – III	1. Discuss the importance of enzymes in biotechnology 2. Explain effects of air pollution and ways to treat	6	6	3	3
	UNIT – IV	1.Explain the isolation techniques 2. List industrially important products from microbes	6	6	3	3
	UNIT – V	1. Discuss GMP 2.Discuss the quality and control of food and drugs on large scale	6	6	3	4
			30	**30**	**15**	

12	**Reference books**	1. Industrial and Environmental Biotechnology - Nuzhat Ahmed, Fouad M. Qureshi and Obaid Y. Khan, 2006. Horizon Press. 2. Quality Control for the Food Industry, Krammer, A. and Twigg, B.A. 1970, 3rd Edn. AVI, Westport. 3. Modern Industrial Microbiology & Biotechnology, NdukaOkafor 4. Waste water engineering - treatment, disposal and reuse, Metcalf and Eddy Inc., Tata McGraw Hill, New Delhi. 5. Lows, P. and Ellis H. 1990. Food Processing. Prentice Hall, Reston Virginia, USA
13	**Online resources**	1. https://www.ncbi.nlm.nih.gov 2. www.biospace.com 3. www.nature.com/nbt
14	**Syllabus Content :**	Applied Biotechnology (BGE016)
	UNIT – I: Environmental Biotechnology	Water and waste water treatment process: Drinking water treatment process - disinfection of water,sewage treatment (domestic and industrial waste water)
	UNIT – II: Bioremediation	Concept of bioremediation and biotransformation. Bioremediation of xenobiotics in environment -ecological consideration, decay behavior and degradative plasmids, molecular techniques inbioremediation
	UNIT – III: Role of enzymes and microbes	Biopestisides, bioleaching, biomining, control of air pollution
	UNIT – IV: Industrial Biotechnology	Isolation of industrially important organisms, important commercial products produced bymicroorganisms
	UNIT – V: Food Biotechnology	Microorganisms as food and supplements - production of mushroom and spirulina, assessment ofmicrobiological quality of various foods. Food processing in preservation of food, Quality control andquality assurance in food and pharamaceutical industry, good manufacturing practices inpharmaceutical industry

BGE016: Applied Biotechnology
Generic Elective Course for UG programs [Dept. of Biomedical Science]

Course code	Category	Course Title	Credits /Week				Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)	**Credits(C)**	OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
BGE016	GE	**Applied Biotechnology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Food Microbiology	
2	**Elective Code**	BGE017	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the fundamentals concepts on microbe's and its role associated with food. 2. Describe the techniques involved in preservation of food. 3. Discuss various spoilages caused in food substance and its implications. 4. Describe the association of microbes and their implication in human health. 5. Explain the methods for the microbiological examination of foods; micro biological quality control, and quality schemes.	
5	**Rationale for inclusion**	This course aims to provide instruction in the general principles of food microbiology is also designed to introduce the basic concepts on role of microorganisms in food and the food safety guidelines	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the role of microbe's associated with food and food safety 2. Describe the contamination caused due to microbes in food 3. Explain the food borne illness caused due to the pathogenic microbes in contaminated food	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
Sri RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

9	**Summary**	This course familiarizes students with the importance and the role of microbes in food industries. Student will be competent to classify various techniques involved in the food safety and also know the importance of Food borne illness				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1	10		
		Test 2	CO- 2	10		
		Test 3	CO-3	10		
		Seminar &Assignment	CO-1,CO-2& CO-3	20		
		IA Total		**50**		
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Define the factors affecting the growth of microbes in food 2. Explain the beneficial effects of microbes in food industries	4	4	2	1
	UNIT – II	1. Explain the General Principles of food preservation 2. Describe the aseptic technique followed in food industries to avoid contamination	4	4	2	2
	UNIT – III	1. Discuss the Microbial spoilage of fresh products 2. Discuss the Microbial spoilage of canned foods	8	8	4	2
	UNIT – IV	1. Explain various food products produced by microbial Fermentation 2. Describe the role of microbes in fermentation industries	6	6	3	3
	UNIT – V	1. Describe the food borne illness and intoxication caused by pathogenic organisms 2. Discuss the Food safety and Hygiene	8	8	4	3
			30	**30**	**15**	

12	**Reference books**	1. Food Microbiology. 2nd Edition By Adams 2. Essentials of Food Microbiology. Edited by John Garbult.Arnold International Students Edition. 3. Food Microbiology by Frazier, 4th Ed.
13	**Online resources**	http://www.cold.org.gr/library/downloads/Docs/Handbook%20of%20Food%20Preservation.PDF http://nuristianah.lecture.ub.ac.id/files/2014/09/fundamental-food-microbiology.pdf
14	**Syllabus Content :**	Food Microbiology (BGE017)
	UNIT – I: Food and Microorganisms	Food as a substrate for microorganisms – factors influencing growth of microorganisms: pH, wateractivity, oxidation-reduction potential, nutrient contentMicroorganisms important in food microbiology - Molds, Yeast and Bacteria – General characteristicsand role in food industry
	UNIT – II: Preservation of food	General Principles, concept of growth curve, asepsisMethods of preservation – high temperature, low temperature, drying, food additives, radiation
	UNIT – III: Microbial Spoilage of Food	Contamination, preservation and spoilage of different kinds of foods – Milk & milk products,Vegetables & fruits, Meat and meat products, Canned foods
	UNIT – IV: Food Products of Microbial Fermentations	Microbial culture for food fermentationsProducts of fermentations: bread, beer, wines, vinegar, fermented vegetables – sauerkraut, pickles,fermented dairy products - cheese, oriental foods – soy sauce, tempeh, idli, fermented fish
	UNIT – V: Food and Diseases	Food-borne illness – Botulism, gastroenteritis, Vibrio infection, poisoning, parasitic infections,intoxications – plant, animal and microbialFood sanitation practices, food control

BGE017: **Food Microbiology**
Generic Elective Course for UG programs [Dept. of Biomedical Science]

Course code	Category	Course Title	Credits /Week				Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)	**Credits(C)**	OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
BGE017	GE	**Food Microbiology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Plant Tissue Culture Technology	
2	**Elective Code**	BGE029	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the fundamentals of Plant tissue culture technology 2. Describe and perform aseptic techniques and simple tissue culture techniques	
5	**Rationale for inclusion**	This course is designed to introduce the basic concepts of plant tissue culture technology that would allow learners to understand and apply basic plant tissue culture techniques	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the nuances of different methods used in plant tissue culture 2. Describe the appropriate methods for culturing plant materials 3. Discuss the correct methodology for culturing plants 4. Summarize the application of plant tissue culture techniques	
9	**Summary**	This course introduces the various methods employed in plant tissue culture through do-it yourself practical modules. The students are trained in basic tissue culture methods and their applications. These sessions would enable the students to apply these skills for culturing plants in an appropriate way	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all th Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1 & CO-2	10
Test 2	CO-3	10
Assignment	CO-1, CO-2,CO-3 & CO-4	20
Seminar	CO-1, CO-2,CO-3 & CO-4	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CC mappin**
	UNIT – I	1. Explain the aseptic techniques and their applications 2. List the tissue culture media and its applications 3. Describe the concepts on protoplast, callus and other methods of culturing	5	5	3	1
	UNIT – II	1. Discuss the additional culture techniques 2. Describe cryopreservation and germplasm 3. Explain the concepts on liquid culture, bioreactors and their application	5	5	3	2
	UNIT – III	1. Described the steps involved in plant transformation 2. List the tools used in plant transformation 3. Explain the applications of plant transformation	5	5	3	3
	UNIT – IV	1. Describe preparation of medium for plant tissue culture 2. Explain the Organ and seed initiation methods	5	5	2	3
	UNIT – V	1.Describe Callus induction and propagation 2. Explain DNA isolation from plants	5	5	2	4

	UNIT – VI	1.Explain the analysis of plant DNA with ITS / MATK 2.Describe plant genome analysis methods	5	5	2	4
			30	**30**	**15**	
12	**Reference books**	1. Plant Tissue Culture: An Introductory Text by Bhojwani, Sant Saran, Dantu, Prem Kumar, 2013; Springer India; eBook ISBN; 978-81-322-1026-9 2. Plant Cell Culture Protocols, Methods in Molecular Biology, Volume 877 2012 by Editors: Víctor M. Loyola-Vargas, Neftalí Ochoa-Alejo 2012; DOI - 10.1007/978-1-61779-818-4; Print ISBN: 978-1-61779-817-7				
13	**Online resources**	https://www.youtube.com/watch?v=KF-nlHIMG3g https://www.youtube.com/watch?v=TORRxwbz7aY https://www.youtube.com/watch?v=OJJvghf1E7A				
14	**Syllabus Content :**	Plant Tissue Culture Technology (BGE029)				
	UNIT – I: Introduction to cell and tissue culture	Tissue culture media and aseptic techniques. Initiation and maintenance of callus and suspension cultures. Protoplast isolation, culture and fusion: Selection of hybrid cells and regeneration of hybrid plants: symmetric and asymmetric hybrids, cybrids.				
	UNIT – II: Embryo culture and embryo rescue	Anther, pollen and ovary culture for production of haploid plants and homozygous lines. Cryopreservation, slow growth for germplasm conservation. Liquid Cultures of Plant Cells: Initiation and maintenance of callus and suspension cultures; Bioreactors and their applications.				
	UNIT – III: Plant transformation technology	Outline of transformation technology. Vectors and methods for gene transfer in plants. Markers and reporters used for plant transformation. Applications of transgenic plant technology: insect resistance (Bt genes), Biopharming-Therapeutic proteins in transgenic plants				
	UNIT – IV: Basic methods in Plant Tissue Culture	Preparation of media , Initiation and Organ culture				
	UNIT – V: Advanced methods in Plant Tissue Culture	Callus induction and propagation , DNA isolation from plant tissues				
	UNIT – VI: Experimental Plant Tissue Culture	PCR analysis of plant DNA with ITS primers/ MATK primers, Plant genome analysis- using different genes / regulatory elements				

BGE029: Plant Tissue Culture Technology

Generic Elective Course for UG programs [Dept. of Biotechnology]

Course code	Category	Course Title	Credits /Week				Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)	**Credits (C)**	OL+OA	SI	Total hours			Theory (b)	Practical /Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
BGE029	GE	**Plant Tissue Culture Technology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Marine Biotechnology	
2	**Elective Code**	BGE030	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the marine ecosystem , biological community structure 2. Summarize the marine bioactive products 3. Explain the GE tools and methodologies in marine science 4. Describe the commercial production of marine products	
5	**Rationale for inclusion**	This course is designed to understand the concepts of marine ecosystem which can be used by the learners to apply their acquired knowledge in the subject for any career-related prospects	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	3
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain marine ecosystem 2. List marine biota, marine bioactive products 3. Describe the use of GE tools marine biotechnology to produce commercially important products	
9	**Summary**	On successful completion of the course the student will be able to understand the oceanic environment and the resources it can provide to human beings. Student will be trained to identify marine invertebrates and use biotechnology for marine products development	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
Sri Ramachandra
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1 & CO-2	10		
		Test 2	CO-3	10		
		Group Discussion	CO-1, CO-2&CO-3	20		
		Assignment	CO-1, CO-2&CO-3	10		
		IA Total		**50**		
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Define Marine zonation 2. List the organisms present in marine ecosystem	4	3	2	1
	UNIT – II	1. Explain the biological community structure among marine organisms 2. Describe symbiosis, commensalism and parasitism	5	5	1	1,2
	UNIT – III	1. Discuss about the microenvironments in marine microbiology 2. Describe bioremediation	5	6	3	2
	UNIT – IV	1. Describe and identification and isolation of marine bioactive compounds 2. Discuss the marine pharmaceutical companies and its products	5	5	3	2,3
	UNIT – V	1.Describe the genetic engineering of marine organisms 2. Explain the production and identification of proteins, depsipeptides from invertebrates	6	6	3	3
	UNIT – VI	1.Describe the production and uses of single cell proteins 2. Explain the large-scale production of agar, agarose and carageenans	5	5	3	3
			30	**30**	**15**	

12	**Reference books**	1. Marine Biotechnology: Pharmaceutical and bioactive natural products Vol I: by David H. Attaway, Oskar R. Zaborsky, Plenum Press, New York (ISBN: 0-306-44174-8), 1993 2. Marine Biology- An ecological approach by James Nybakken- 6 thEdn, 2005, Pearson Publishers, Benjamin Cummings, ISBN: 10-0805345825, ISBN: 13-9780805345827..
13	**Online resources**	http://www.marinebiotech.eu http://www.lsi.umich.edu
14	**Syllabus Content :**	Marine Biotechnology (BGE030)
	UNIT – I: Introduction to Marine Biotechnology	Marine Ecosystem, Marine Environment zonation: Pelagic, Benthic, Sub-littoral and Deep-Sea Environments; General classification and taxonomy of marine organisms:Bacteria, fungi, viruses, microalgae, invertebrates and vertebrates.
	UNIT – II: Biological community structure and associations	Symbiosis, commensalism and antagonisms among different groups of organisms
	UNIT – III: Marine microbiology	Microenvironments: Biofilm formation, Biofouling Process, Quorum Sensing (QS); Survival in Adverse Conditions- Barophilic, thermophilic and halophilic, Bioremediation (PAHs, aliphatic hydrocarbons, heavy metals); Marine microbial chemical classes and therapeutic effects
	UNIT – IV: Marine Bioprospecting	Marine organisms: Defense mechanisms (physical, chemical cues and/ or epiphytic load), Types of bioactive compounds with reference to antimicrobial, anticancer, pharmacological- analgesic, histaminic and other properties Isolation and identification of select marine bioactive compounds (alkaloids, flavonoids and polyketides) and depsipeptides. Marine Pharmaceutical companies (PharmaMar, Novartis, Hoffman La Roche, etc) and an overview of their products and their statuses in clinical trials and market.
	UNIT – V: GE Tools and methodologies in marine science	Genetic Engineering of marine organisms: Micro and macroorganisms as research subjects- Transgenic fish: Growth hormone and anti-freeze proteins- methods, stages of transformation, vectors used, design of vectors, Production and identification of proteins and depsipeptides from invertebrates: Sponges, Molluscs and tunicates
	UNIT – VI: Commercial production of marine products	Algal biotechnology- Properties, production and uses of: single cell protein, hydrocolloids (agarose, carrageenan, alginates), pigments (carotenoids and xanthophylls) and other by products

BGE030: Marine Biotechnology

Generic Elective Course for UG programs [Dept. of Biotechnology]

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical /Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
BGE030	GE	**Marine Biotechnology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Antimicrobial Agents	
2	**Elective Code**	BGE031	**Credits:** 3
3	**Level**	Any student enrolled in Post Graduate programs under CBCS	
4	**Course Objective**	1. Describe various types of antibiotics and their mechanism of action. nanomaterials 2. Explain the occurrence of antimicrobial resistance 3. Discuss the mode of therapy: Drug targeting, combined antibiotic therapy or plant products as antimicrobial agents.	
5	**Rationale for inclusion**	This course introduces students to various types of antibiotics and their mechanism of action. It would enable the students to understand the basic concept of antimicrobial resistance and mode of therapy for various disciplines would be discussed for the rational use of antibiotics in the near future.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. List the different types of antibiotics 2. Explain the determination of minimum inhibitory concentration of antibiotics. 3. Describe antimicrobial resistance and its occurrence. 4. Discuss the modes of antibiotic therapy, use of plant products and appropriate antibiotics in future	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

9	**Summary**	This course introduces students to understand the various types of antibiotics and their mode of action. The students gain knowledge on antimicrobial resistance and its occurrence. The students would understand the concepts of all possible modes of therapy for the rational use of appropriate antibiotics in near future.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1 & CO-2	10
Test 2	CO-3	10
Seminar	CO-1, CO-2,CO-3 & CO-4	10
Assignment	CO-1, CO-2,CO-3 & CO-4	20
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA& A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Classify antibiotics 2. Explain the structure and mode of action for different types of antibiotics	5	5	2	1
	UNIT – II	1. Discuss the mechanism of antimicrobial resistance 2. Describe the genetics and biochemical mechanisms of drug resistance	5	4	2	1, 2
	UNIT – III	1. Explain the molecular aspects of drug targeting for antimicrobial resistant organisms	5	6	3	3
	UNIT – IV	1. Define peptide antibiotics and phytochemicals 2. Discuss peptide antibiotics and phytochemicals as antimicrobials	5	4	2	3
	UNIT – V	1. Explain combination therapy and its types 2. Discuss the use of antimicrobials in healthcare system	5	5	3	4
	UNIT – VI	1 Describe growth inhibition assays	5	6	3	4
			30	**30**	**15**	

12	**Reference books**	1. Antimicrobial Agents, 2012 VaraprasadBobbarala. 2. Quality control in Herbal drugs- An approach to evaluation of botanicals. 2002. P K Mukherjee, Business Horizons
13	**Online resources**	http://www.microbiolab-bg.com/CLSI.pdf http://www.gxccl.com/download/upload/CLSIM100.pdf
14	**Syllabus Content :**	Antimicrobial agents (BGE031)
	UNIT – I:	Classification, structure and mode of action of antibacterial, antifungal, antiviral antibiotics
	UNIT – II:	Resistance to antimicrobial drugs, genetics of drug resistance and its spread. Biochemical mechanisms of drug resistance
	UNIT – III:	Molecular principles of drug targeting against antibiotic resistant bacteria
	UNIT – IV:	Peptide antibiotics, Phytochemicals as antimicrobial agents
	UNIT – V:	Combination therapy - additive, synergistic and antagonistic antibiotic
	UNIT – VI:	Growth Inhibition Assays: Antibiotic Sensitivity Assay, Gradient Plate Technique, Minimum Inhibitory Concentration of Antibiotic, Bioautography

BGE031: Antimicrobial Agents
Generic Elective Course for PG programs [Dept. of Biotechnology]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 40%	EST	ESP	PM: 50%
BGE031	GE	**Antimicrobial Agents**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Algal Biotechnology	
2	**Elective Code**	BGE032	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the concepts of taxonomy 2. Explain the production and phytoremediation using algae	
5	**Rationale for inclusion**	This course is designed to understand concepts of marine phycology that can be used by the learners to apply their acquired knowledge for the production of algal products in large-scale	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe micro and macrolagae 2. Explain the importance of algae to humans in a Biotechnology perspective. 3. Discuss the harmful effects of algal blooms	
9	**Summary**	The student will have a thorough understanding on the algal taxonomy, commercially important products and phytoremediation using algae	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1 & CO-2	10		
		Test 2	CO-3	10		
		Group Discussion	CO-1, CO-2,CO-3	20		
		Assignment	CO-1, CO-2,CO-3	10		
		IA Total		**50**		
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA& A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Classify micro and macrolagae 2. Describe dendrogram and phenogram, cluster analysis	5	6	2	1
	UNIT – II	1. List the important products obtained from algae 2. Describe single Cell proteins and its applications	8	5	3	2
	UNIT – III	1. Describe the types of culture media and isolation of microalgae 2. Explain the substrates and production system for SCP	5	6	3	3
	UNIT – IV	1. Describe the large-scale culture of algae 2. Describe biofuels and biofertilizers	4	5	2	3
	UNIT – V	1.List the algae used in phytoremediation 2. Describe dye decoloration and sewage water treatment	3	5	3	4
	UNIT – VI	1.Describe HAB and its health effects to humans 2.Discuss algae as indicator of pollution	5	3	2	4
			30	**30**	**15**	
12	**Reference books**	1. The Algae. Chapman V J (1962). Macmillan & Co. Ltd. 2. Properties and Products of Algae. Zajic, J. E. 1970. Plenum Press, New York. 2. Handbook of Hydrocolloids, Glyn O. Phillips, Peter A. Williams: Carrageenan, Imeson, A.P. FMC Corporation (UK) Ltd, 5, 88-102				

13	**Online resources**	http://www.marinebiotech.eu http://www.lsi.umich.edu
14	**Syllabus Content :**	Algal Biotechnology (BGE032)
	UNIT – I: Taxonomic classification of micro and macrolagae	Taxonomic classification of micro and macroalgae: Habit, habitat and distribution, morphological features (appearance, pigments and life cycle, ecology: Cyanophyta (Spirulina, Nostoc and Anabaena),Xanthophyta, Chlorophyta (Chlorococcus, Hematococcus and Ulva); Phaeophyta (Dictyota and Laminaria); Rhodophyta (Chondrus, Dunaliella and Gracilaria) and fossil algae. Numerical taxonomy of algae: dendrogram and phenogram, cluster analysis
	UNIT – II: Phytoconstituents of algae	Proteins and amino acids, lipids, waxes, glycerol, vitamins, pigments (chlorophylls, carotenoids and phycobiliproteins) and polysaccharides: agar agar, algin and carageenans, Single cell Proteins (SCPs)
	UNIT – III: Algaculture	Isolation of pure microalgal cultures- Types of culture media for microalgae – Isolation of pure cultures – Kinetics and Growth patterns, factors affecting growth (temperature, light, mixing, pH, salinity, oxygen and nutrients), Measurement of algal growth. Substrates and production system for SCP
	UNIT – IV: Production systems for macroalgae	Raceway pond culture and photobioreactors, harvesting- Centrifugation, flocculation and filtration. Extraction and processing of agaragar and carageenans Biofuels: Methane and hydrogen production, energy and chemicals, Biofertilizers: Liquid seaweed fertilizer as phosphate solublizers and nitrogen fixers
	UNIT – V: Phytoremediation	Algae used, remediation methods for treating heavy metals, dye decoloration and sewage water treatment
	UNIT – VI: Algae and pollution	Harmful Algal Bloom (HAB)- red tide and associated hazards- shellfish poisoning, Eutrophication, Algae as indicator of pollution

BGE032 – Algal Biotechnology

Generic Elective Course for UG programs [Dept. of Biotechnology]

Course code	Category	Course Title	Credits /Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
BGE032	GE	**Algal Biotechnology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Basic Radiation Biology	
2	**Elective Code**	BGE038	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain radiation units, interactions and response in a biological system 2. Describe the principle and medical applications of radiation 3. Summarize the safe use of ionizing radiations for the betterment of human life	
5	**Rationale for inclusion**	This course is designed to introduce the basic concepts of radiation biology and safe handling as there is an increased use of radiation based medical applications and mishandling	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain radiation interactions on the cells, tissues and organism 2. Summarize the biological factors that determines the cellular response to IR 3. Describe the safe use of radiation and its application potential	
9	**Summary**	This course introduces the concepts of radiation, basis of its applications and its safe use	

PROF. ARUN DHARMARAJAN
VICE - PRINCIPAL
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1 & CO-2	10
Test 2	CO-3	10
Seminar	CO-1, CO-2,CO-3	10
Assignment	CO-1, CO-2,CO-3	20
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA& A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Explain the basics of radiation and its interactions with bio molecules 2. List the radiation sources and radiochemical events relevant to radiation biology	2	2	1	1
	UNIT – II	1.Describe the effects of radiation at cellular and molecular level 2.Explain the DNA repair pathways	4	4	1	1
	UNIT – III	1.Discuss the biomarkers of radiation exposure 2. Explain dosimetry using CA, MN and mutation assays	5	4	3	1
	UNIT – IV	1.Describe the health effects of whole body radiation exposure 2.Explain the process of radiation induced carcinogenesis	5	4	2	2
	UNIT – V	1.Explain the mechanism of radiation protection 2.Describe the process of Radiosensitization, radiation response	5	5	3	2,3
	UNIT – VI	1.Explain the application of radiation in medicine 2.Describe Radio-diagnosis and Radiation therapy	4	5	3	3

	UNIT – VII	1.List radiation accidents 2.Describe dose response curves and dose estimation	5	6	2	3
			30	**30**	**15**	
12	**Reference books**	1. Radiobiology for the Radiologist, Eric J. Hall, Lippincott Williams & Wilkins, 9th edition, 2019. 2. International Atomic Energy Agency Technical report: Biological Dosimetry: Chromosome aberration analysis for dose assessment, STI/PUB/10/405 (IAEA, Vienna)				
13	**Online resources**	https://www-pub.iaea.org/MTCD/Publications/PDF/TCS-42_web.pdf				
14	**Syllabus Content :**	Basic Radiation Biology (BGE038)				
	UNIT – I: Fundamentals of radiation physics and radiation chemistry	a. Electromagnetic radiation and radioactivity. b. Radiation sources and radionuclides. c. Measurement units of exposed and absorbed radiation. d. Dosimetry e. Interaction of radiation with matter, excitation and ionization f. Radiochemical events relevant to radiation biology g. Interaction of radiation with biomolecules: Nucleic acids, proteins, lipids and carbohydrates				
	UNIT – II: Cellular effects of radiation	a. Effects of ionizing and non-ionizing radiation on cells, DNA, chromosomes and membrane b. Clonogenic cell survival; Concept of RBE and OER c. Recovery from sub-lethal and potentially lethal damage d. Repair of radiation-induced DNA damage; various DNA repair pathways e. Division delay and cell cycle check points f. Radiation-induced cell death; apoptosis, necrosis and autophagy g. Radiation-induced mutation h. Low dose hypersensitivity i. Bystander effects j. Radiation-induced alterations in signal transduction				
	UNIT – III: Radiation-induced cytogenetic damage and biological dosimetry	a. Radiation-induced cytogenetic damage; Chromosome aberrations (CA) and micronuclei formation (MN) b. Dosimetry using CA, MN and mutation assays c. Biomarkers of radiation exposure				
	UNIT – IV: Systemic effects of radiation	a. Acute, delayed and late effects of radiation (with particular reference to nervous system, gastrointestinal and hematopoitic syndrome). b. Radiation-induced carcinogenesis.				
	UNIT – V: Modification of cellular and systemic responses to radiation	a. Protection, mitigation and therapy of radiation damage b. Biological basis of ICRP recommendations c. Radiosensitization of tumors d. Tumor Physiology and Radiation Response e. Immune modulation and radiation response of tumors				

	UNIT – VI: Applications in Radiation Medicine	a. Radiation Therapy: External beam therapy, Brachy therapy and radiosurgery b. Therapeutic nuclear medicine c. Sterilization of medical products
	UNIT – VII: Radiation accidents and dosimeter	a. Radiation accidents – Chernobyl, mayapuri b. Dose response curves c. Dose estimation

BGE038: Basic Radiation Biology

Generic Elective Course for UG programs [Dept. of Human Genetics]

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
BGE038	GE	**Basic Radiation Biology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Basics of Human Genetics	
2	**Elective Code**	BGE039	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the fundamental concepts of Genetics 2. Summarize about the contribution that genes make to the development of diseases 3. Describe the inheritance pattern 4. Explain the prenatal diagnosis methods	
5	**Rationale for inclusion**	Genes are the common factor of the qualities of most human-inherited traits. Study of human genetics can answer questions about human nature, can help understand diseases and the development of effective treatment and help us to understand the genetics of human life.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ in person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain cell division 2. Describe the structure and function of nucleic acids 3. Explain the inheritance patterns and discuss the molecular basis of genetic disorders 4. List the indications for prenatal diagnosis	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

9	**Summary**	The Introduction to Human Genetics is a subject designed to provide students with a solid foundation of basic human genetics. The subject will cover basic genetics principles, such as the structure and function of DNA, genes and chromosomes, focusing on the human context				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1 & CO-2	10		
		Test 2	CO-3	10		
		Seminar	CO-1, CO-2,CO-3 & CO-4	10		
		Assignment	CO-1, CO-2,CO-3 & CO-4	20		
		IA Total		**50**		
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Describe the cell organelles and its functions 2. Explain the stages of Cell division	5	5	1	1
	UNIT – II	1. Describe the structure and functions of DNA and RNA 2. Compare mutations and polymorphisms	5	5	2	2
	UNIT – III	1. Describe the Inheritance pattern 2. List the disease related to single gene mutations	5	5	3	3
	UNIT – IV	1. Explain the basis of common genetic syndromes 2. Describe karyotyping	5	5	3	3
	UNIT – V	1. List the indications for prenatal testing 2. Explain the principles of Genetic counseling	5	5	3	4
	UNIT – VI	1. List the grouping of human chromosomes 2. Explain the Principles of banding	5	5	3	4
			30	**30**	**15**	

12	**Reference books**	1. A guide to genetic counseling, 2nd edition, D.L. Baker, J.L. Schuette and W.R. Uhlmann, Wiley –Leiss Publications 2002. 2. Emery Elements of Medical Genetics, 9th edition, Robert F. Mueller & Ian D. young, Churchill Livingstone, 1995. 3. Medical Genetics, 3rd edition, Lynn B. Jorde, John C. Carey, Michael J. Bamshad, & Raymond L. White, Mosby, 2003.
13	**Online resources**	https://www.genome.gov/about-genomics/teaching-tools/Genomics-Education-Websites https://www.coursera.org/lecture/disease-genes/course-introduction-tXOKM
14	**Syllabus Content :**	Basics of Human Genetics (BGE039)
	UNIT – I: Introduction to cell and chromosomes	Structure and morphology in various types of cells - Biochemical composition - Cellular organelles - Composition and components of nucleus - Chromosomes - Cell division and Mechanics of cell division and regulation
	UNIT – II: Structure and functions of nucleic acids	Deoxy-ribo nucleic acids – ribonucleic acids – functions and their relationship - Types of mutations - Genetic variations and polymorphisms
	UNIT – III: Basis of inheritance	Single gene Mendelian disorders: autosomal dominant, autosomal recessive, X linked dominant and recessive, Y linked, Polygeneic and mitochondrial inheritance
	UNIT – IV: Origin and detection of genetic disorders	Non-disjunction - Chromosomal abnormalities and clinical phenotypes of common genetic syndromes (Down's syndrome, Patua's syndrome, Edward syndrome, Turner syndrome and Klinefelter's syndrome, Cri-du-caht syndrome) - Karyotyping, Neural tube defects.
	UNIT – V: Prenatal Screening and Diagnosis	Indications for prenatal diagnosis, maternal serum screening, ultrasound, prenatal invasive testing. Genetic counseling for prenatal diagnosis - Fetal rights – Regulation and prevention of misuse act 1994.Ethics and genetic counseling
	UNIT – VI: Lab practical's simulations	Cell culture laboratory structure and maintenance, Media composition and preparation, Grouping of human metaphase chromosomes, Principle and application of G-banding, Fluorescence In Situ hybridization (FISH)

BGE039: Basics of Human Genetics

Generic Elective Course for UG programs [Dept. of Human Genetics]

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical /Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
BGE039	GE	**Basics of Human Genetics**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Diet and Lifestyle Disorders	
2	**Elective Code**	BGE040	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Describe the relevance, significance, and implications of lifestyle disorders. 2. Explain the various types and causes of lifestyle disorders 3. Summarize the role of diet in health and disease	
5	**Rationale for inclusion**	Students will be able to understand relevance, significance and implications of lifestyle disorders for the betterment of human life quality	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Discuss various lifestyle disorders. 2. Describe the effect of unhealthy food habits and causes of diseases. 3. Explain the difference between healthy lifestyle and unhealthy lifestyle. 4. Describe the cardiovascular and gastro intestinal disorders	
9	**Summary**	Lifestyle diseases are ailments that are primarily based on the day-to-day habits of people. Habits that detract people from activity and push them towards a sedentary routine can cause several health issues that can lead to chronic non-communicable diseases that can have near life-threatening consequences. Lifestyle diseases are a threat to the socio-economic aspects of nations globally and appropriate actions for their management are the need of the moment. Management of lifestyle diseases includes proper diagnosis,	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
Sri Ramachandra Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

		screening, and treatment of these diseases in addition to providing palliative care for people who require it.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.
		Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1 & CO-2	10
Test 2	CO-3	10
Test 3	CO-1, CO-2&CO-3	20
Assignment	CO-4	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning Outcomes**	**OL**	**OA& A**	**SI**	**SLO-C mapping**
	UNIT – I	1. Explain food groups and balanced Diet 2. Describe the various factors involved in the causes of diseases related to junk food. 3. Discuss anxiety and its effects. 4. Explain the importance of food toxicity and its related disorders	6	7	3	1,2
	UNIT – II	1. Discuss diet and obesity 2. Describethe importance of diet in cancer 3. Explain Diabetes, hypertension, causes and their prevention through dietary modifications	5	6	4	2
	UNIT – III	1. Discuss drug dependence 2. Explain the causes of AIDS 3. Explain the consequences of smoking and alcoholism	6	7	4	3
	UNIT – IV	1. List cardiovascular disorders 2. Define heart attack and stroke	5	5	2	4
	UNIT – V	1. List various GI disorders, their causes and treatment 2. Explain the common ailments their causes and dietary treatment	8	5	2	4
			30	**30**	**15**	

12	**Reference books**	1. Text book of Clinical Biochemistry- Carl. A.Burtis and Edward R. Ashwood 2. 2. Text Book of Medical Biochemistry – Dr. M.N. Chatterjee and RaneShinde 3. P, Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence 4. Biochemistry with Clinical Correlation- Thomas M. Devlin
13	**Online resources**	http://www.dailydiet.in https://www.nhp.gov.in/lifestyle-disorder_mtl
14	**Syllabus Content :**	Diet and Lifestyle Disorders (BGE040)
	UNIT – I: Role of Diet in Healthy Living	Food groups and concept of a balanced diet, Therapeutic Life Style Change Diets, Modern life styles- sedentary and sleeping habits, junk food, and anxiety. Food poisoning, Acidity.
	UNIT – II: Role of Diet in Health and Diseases	Obesity, Cancer, Non-insulin dependent Diabetes mellitus, Hypertension-their causes and prevention through dietary and lifestyle modifications
	UNIT – III: Social health problems	Smoking, alcoholism, drug dependence and AquiredImmuno Deficiency Syndrome (AIDS).
	UNIT – IV: Pathogenesis of Cardiovascular Diseases	Cardiovascular disorders- hyperlipidemia, atherosclerosis, myocardial infarction (heart attack) and stroke
	UNIT – V: Stomach disorders & Common Ailments	Stomach disorders-Gastritis, Ulcer, Amoebiasis, piles, Common ailment-cold, cough, fevers, diarrhoea, constipation- their causes and dietary treatment

BGE040: Diet and Lifestyle Disorders
Generic Elective Course for UG programs [Dept. of Biomedical Science]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practica l/Viva	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
BGE040	GE	**Diet and Lifestyle Disorders**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Biotechnology in Health Care	
2	**Elective Code**	BGE041	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the etiology of the disease and mechanism of drug action. 2. Describe the novel strategies for treatment of diseases 3. Explain the role of biotechnology in healthcare 4. Summarize the role of biotechnology in personal care and cosmetics	
5	**Rationale for inclusion**	Health care biotechnology helps students to understand the pathophysiology and the treatment strategies for various diseases	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the applications of biotechnology in health care 2. Explain the types of novel therapeutic agents 3. Describe novel pharmaceutical agents 4. Discuss biotechnology based treatment modalities in health care	
9	**Summary**	The course is designed for the students to understand the disease etiology, existing treatments and biotechnology based novel strategies to combat the disease. The mechanism of action of therapeutic agents. Newer commercial biotechnological products in market as well as in trials.	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
Sri Ramachandra Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1 & CO-2	10		
		Test 2	CO-3	10		
		Test 3	CO-1,CO-2,CO-3 & CO-4	20		
		Assignment	CO-1,CO-2,CO-3 &CO-4	10		
		IA Total		**50**		
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Discuss the applications of Biotechnology in Industry, Agriculture, Marine 2. Explain the applications of biotechnology in diagnosis and treatment.	5	5	2	1
	UNIT – II	1. Explain endogenous peptide and protein modifications 2. List the types of vaccine Describe the production of peptide based vaccines and antimicrobial peptides	5	5	2	2
	UNIT – III	1. Classify vectors used in gene therapy and discuss its advantages and limitations 2. Discuss the recent development in gene therapy and its application to health care	5	5	3	3
	UNIT – IV	1.Discuss the recombinant and synthetic drugs used in cardiovascular disease 2. Describe the hormones and analogs used for diabetes mellitus	5	5	2	3
	UNIT – V	1.List the Radiosensitizers and Radioprotective agents used in cancer treatment 2.Discuss the advances in Brain-specific drug targeting strategies	5	5	3	3,4

	UNIT – VI	1.Explain the applications of different proteins and enzymes in personal Care 2. Discuss the biotechnology products in skin care and anti-aging	5	5	3	3,4
			30	**30**	**15**	
12	**Reference books**	1. Pharmaceutical Chemistry by Cristine M. Bladon. John Wiley & Sons. Ltd. (2002) 2. Burgerís Medicinal Chemistry and Drug Discovery (5th edition) by Manfred E.Wolf . A Wiley &Sons.Inc. (2000). 3. Drug Targeting Organ- Specific Strategies by GrietjeMolema and Dirk K.F.Meijer. Wiley -VCH. (2002) 4. Biotechnology in Personal Care (Cosmetic Science and Technology) by Raj Lad (Editor), CRC Press; 1 edition (March 6, 2006)				
13	**Online resources**	https://cosmeticsinfo.org https://www.clinicalpharmacology.com/				
14	**Syllabus Content :**	Biotechnology in Health Care (BGE041)				
	UNIT – I: Introduction to Healthcare Biotechnology	Applications of Biotechnology in Industry, Agriculture, Marine and Healthcare, Biotechnology in diagnosis and treatment				
	UNIT – II: Endogenous Peptides and peptide based drugs	Overview – Introduction to endogenous peptide, proteins & modifications. Introduction to vaccine, production of vaccines, peptide based vaccines and antimicrobial peptides				
	UNIT – III: Gene Therapy	Introduction to gene therapy, Classification and types, Vectors used for gene therapy, advantages and disadvantages, applications of gene therapy in health care.				
	UNIT – IV: Cardiovascular Drugs	Cardiovascular disease, synthetic drugs for cardiovascular disease, recombinant drugs for cardiovascular disorders, Drugs for Metabolic Disorders: Pathophysiology of Diabetes Mellitus, hormones and analogs used for diabetes mellitus				
	UNIT – V: Targeted drugs	Radiological Agents for cancer treatment: Radiosensitizers and Radioprotective agents. Cancer vaccines, Basic concepts and novel advances in Brain-specific drug targeting strategies				
	UNIT – VI: Cosmetics & other consumer products	Proteins, Peptides, Enzymes and Their Applications in Personal Care, Biotechnology in Skin Care, anti-aging				

BGE041: Healthcare Biotechnology

Generic Elective Course for UG programs [Dept. of Biotechnology]

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical /Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
BGE041	GE	**Healthcare Biotechnology**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Introduction to Nanosciences	
2	**Elective Code**	BGE042	**Credits:** 3
3	**Level**	Any student enrolled in Undergraduate programs under CBCS.	
4	**Course Objective**	1. Discuss the concepts of nanomaterials, synthesis and its characterization 2. Describe the principle and application of various nanodiagnostic tools 3. Summarize the opportunities of nanotechnologies in daily life	
5	**Rationale for inclusion**	This course introduces students to nanomaterials and their size determination using different techniques and their application in diagnosis. It would enable the students to appreciate the various diagnostic tools developed and their impact on society. Many latest technologies based on nanoparticles would be discussed and this would be highly beneficial to the students	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the basics of nanoparticles 2. Discuss the methods of synthesis of nanoparticles and their characterization using different techniques 3. Describe the appropriate methods for diagnosis of disease/ disorder and treatment 4. Explain the applications of nanoparticles in daily life	
9	**Summary**	This course introduces the basics of nanomaterials. The students are introduced to concepts of protein based and nucleic acid based diagnostic techniques. Applications of nanoparticles in cosmetics and textiles would be discussed.	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes		**Marks**	
		Test 1	CO-1 & CO-2		10	
		Test 2	CO-3		10	
		Assignment	CO-4		20	
		Seminar	CO-1, CO-2,CO-3 & CO-4		10	
		IA Total			**50**	
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA**	**SI**	**SLO-CO mapping**
	UNIT – I	1.Discuss the types of nanomaterials 2.Explain the different synthesis routes of nanomaterials	6	6	3	1
	UNIT – II	1.Describe the size & characterization of synthesised nanomaterials 2. Explain the principle of different methods	6	6	3	1, 2
	UNIT – III	1.Define nanoarrays 2.Explain the application of protein nanoarrays 3.Describe the basic concepts cancer detection using nanoparticles	6	6	3	2
	UNIT – IV	1. Describe the detection of nucleic acids using nanoparticles- Gold nanoparticles, quantum dots and magnetic nanoparticles 2. Define biosensors and the point of care diagnostics using lateral flow immunoassay.	6	6	3	3
	UNIT – V	1.Explain the tissue engineering applications of nanotechnology 2. Describe the application of nanotechnology in cosmetics	6	6	3	4
			30	**30**	**15**	

12	**Reference books**	1. Biological molecules in Nanotechnology by Stephen Lee and Lynn M Savage 2. Nanotechnology – Basic Science & Emerging Technologies by Chapman & Hall/CRC 2002. 3. Nanotechnology by Gregory Timp (Ed), Spring 1998 Ed. L Gorton "Biosensors and Modern Biospecific Analytical Techniques", & Ed. D.Barcelo," Comprehensive Analytical Chemistry", Wilson & Wilson's, 2005. 4. Biomolecule-Based Nanomaterials and Nanostructures ItamarWillner* and BilhaWillner DOI: 10.1021/nl102083j | Nano Lett. 2010, 10, 3805–3815
13	**Online resources**	http://www.iinano.org/research http://www.nanodiainc.com/
14	**Syllabus Content :**	Introduction to Nanosciences (BGE042)
	UNIT – I: Nanoparticles and its synthesis	History of Nanoscience; nanomaterials, Types of nanomaterials (Gold, Silver, Carbon, Ferro magnetic);Quantum dots; Synthesis of nanoparticles – bottom up and top up approaches; chemical methods (sol-gel); physical methods (mechanical milling) and biological methods (green chemistry)
	UNIT – II: Characterization of nanoparticles	Structure and Size characterization of nanoparticles: X-Ray, Electron Microscopy, AFM, Light scattering, UV-Vis spectroscopy
	UNIT – III: Nanomedicine	Nanoarrays; Detection on Microfluidic Chips; Protein Nanobiochip; Biosensors for Molecular Diagnostics; Nanobarcodes Technology; Targeted Drug delivery using nanoparticles; nanoparticles and medical imaging - MRI, cancer, disease detection; 3D printing of organs or implants, Nanotoxicology
	UNIT – IV: Nanodiagnostic	Introduction to nanodiagnostics; Gold nanoparticles; Quantum dots and Magnetic nanoparticles; CNT and their applications; Nanolithography; lab on a chip (LOC),Lateral flow devices for on field detection (Point-of-Care Diagnostics), Colorimetric detection of NA using NPs.
	UNIT – V: Application of nanotechnology	Tissue engineering application – Polymer nanofibers; Bionics– Swim-suits with shark-skin-effect,Soil repellence, Lotus effect - Nano finishing in textiles (UV resistant, antibacterial, hydrophilic, self-cleaning, flame retardant finishes); Cosmetics – Formulation of Gels, Shampoos, Hair-conditioners (Micellar self-assembly and its manipulation) – Sun-screen dispersions for UV protection using Titanium oxide – Color cosmetics

BGE042: Introduction to Nanosciences

Generic Elective Course for UG **programs [Dept. of Biotechnology]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical / Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
BGE042	GE	**Introduction to Nanosciences**	1	1	1	3	60	15	75	80	50	50		100

CGE001: Biology and Applications of Tissue Engineering

Generic Elective Course for UG programs [Centre for Regenerative Medicine & Stem Cell Research]

1.	**Name of the Course**	**Biology and Applications of Tissue Engineering**			
2.	**Elective Course Code**	**CGE001**	**Credits: 3**	**Level: UG**	**Category: GE**
3.	**Faculty/Department**	Faculty of Clinical Research			
4.	**Course Objective**	The objective of this course is to enable the student to: 1. Understand the concepts of tissue engineering, especially the relevance of three dimensional scaffolds, biomolecules and stem cells. 2. Understand recent trends and advances in wound healing and cardiovascular biology.			
5.	**Rationale for inclusion**	Tissue Engineering and Regenerative Medicine is an ever-emerging interdisciplinary field; which combines life sciences, biology and engineering, to augment the repair, replacement and enhancement of diseased and damaged tissues. This course is designed to introduce the field to undergraduates and provide them an insight into the current status across the globe.			
6.	**Delivery method**				**Hours per credit**
		• **Online Learning** OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)			30
		• **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs)			30
		• **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button)			15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)			60
7.	**Credits assigned for the course**	Online Learning - 1 credit Online Activities - 1 credit Synchronous Interaction - 1 credit			
		Total Credit	**3 credits**		
		Credit assigned based on the course objectives and learning outcomes.			

8.	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe the Basic Biology of Tissue Engineering 2. Describe Bio-mimicry and design of biomimetic environment 3. Explain the biology of wound healing and regeneration 4. Explain the applications in skin tissue engineering 5. Explain the applications in cardiovascular tissue engineering
9.	**Summary**	This course provides an overview of fundamental principles and challenges in Tissue Engineering in wound healing and the cardiovascular system.
10.	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks):

		Marks
Test 1	CO-1 & CO-2	10
Test 2	CO-2 & CO-3	10
Test 3	CO-4	10
Test 4	CO-5	10
Assignment	CO-1, CO-2, CO-3, CO-4 & CO-5	10
	IA Total	**50**

Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations

11.	**Course Content and Teaching Method:**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Discuss the History of Tissue engineering and describe the Molecular organization of Cells and tissues	6	6	2	**CO1**
	UNIT – II	At the end of the module the students will be able to • Describe the Morphogenesis and development Cells and summarize the techniques common for Tissue engineering	6	6	3	**CO2**
	UNIT – III	At the end of the module the students will be able to • Describe Biomaterials and their fabrication • Explain 3D scaffolds and the use of Bioreactors	6	6	3	**CO3**
	UNIT – IV	At the end of the module the students will be able to • Recognize the role of the Immune system in healing and regeneration	6	6	3	**CO4**

		• Explain Skin tissue engineering strategies				
	UNIT - V	At the end of the module the students will be able to • Discuss tissue engineering approaches for Heart valves • Discuss Regenerative approaches in the Cardio-vascular System	6	6	4	**CO5**
		Total	**30**	**30**	**15**	
12.	**Reference books**	Principles of Regenerative Medicine, A Atala, R Lanza, JA. Thomson, RM. Nerem, 3rd edition 2019, Elsevier Academic Press Principles of Tissue Engineering - R Lanza, R Langer and J Vacanti 4th Edition, 2014, Elsevier publishers. ISBN: 978-0-12-398358-9				
13.	**Online resources**	www.ibiology.org www.biointeractive.org Tissue Engineering Parts A, B & C Biomaterials Journal of Tissue Engineering and Regenerative Medicine Journal of Stem Cell and Regenerative Medicine				
14.	**Syllabus Content:**					
	UNIT – I	**Basic Biology of Tissue engineering -I** Introduction and history of Tissue Engineering, Molecular organization of cells, Cell Adhesion, migration and Signaling, Overview of the Extracellular Matrix, Composition, Dynamics of the ECM in function.				
	UNIT – II	**Basic Biology of Tissue engineering -II** Morphogenesis and development. Cell fate, Morphology and behavior, Sources of Cells for Tissue Engineering, Basic Principles of Stem cells, Stem cells in Tissue Engineering, Techniques for characterization of cells.				
	UNIT – III	**Bio-Mimicry** Micro and Nanotechnology in tissue engineering, Biomaterial scaffolds and their properties, Fabrication strategies for 3D scaffolds, The design of biomimetic environments; Bioreactors. Culture of cells for Tissue engineering.				
	UNIT – IV	**Applications of Tissue engineering - I** Role of the immune system- in injury, repair and regeneration, Biology of Wound healing in Skin, Recent Advances in skin tissue Engineering. Bioengineered Skin tissue constructs.				
	UNIT – V	**Applications of Tissue engineering - II** Cardiac Homeostasis and repair. Recent Advances in Tissue Engineering the Cardiovascular System. Engineered Heart valves. Vascular tissue engineering.				

CGE001 - Biology and Applications of Tissue Engineering
General Elective Course for UG programs

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA	End Semester Assessment Department		Grand Total
			OL+OA)	Tutorial	SI		OL+OA	SI	Total hours		CIA- Theory / Practical (a) Marks	Theory (b)	Practical / Viva (c)	a+b= 100
												EST	ESP	
CGE 001	GE	Biology and Applications of Tissue Engineering	2	0	1	3	60	15	75	80	50	50	-	100

****

Faculty of Clinical Research

Prof. P. Ramachandran, M.D.(Paed.), DNB (Paed.)
Head, Faculty of Clinical Research
Sri Ramachandra
Institute of Higher Education and Research
(Deemed to be University)
Porur, Chennai - 600 116.

<table>
<tr><td>1.</td><td>Name of the course</td><td colspan="3">Introductory Biostatistics</td></tr>
<tr><td>2.</td><td>Elective Code</td><td>EGE001</td><td>Dept of Bioinformatics</td><td>Credits: 3</td></tr>
<tr><td>3.</td><td>Level</td><td colspan="3">Any UG student</td></tr>
<tr><td>4.</td><td>Course Objective</td><td colspan="3">➢ apply a variety of statistical procedures and tests
➢ use the software independently for the data analysis.
➢ Practice interpretation of the results of statistical procedures and tests
➢ understand the uses, capabilities and limitations of various statistical procedures</td></tr>
<tr><td>5.</td><td>Rationale for inclusion</td><td colspan="3">Statistics is an essential tool for any scholar studying science and allows them to make informed decisions based on data</td></tr>
<tr><td>6.</td><td colspan="2">Delivery Methods (hours/credit)</td><td colspan="2">Hours per Credit</td></tr>
<tr><td></td><td colspan="2">• Contact class/ Online Learning
L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• OA- Online activities (Discussion forum, Reflection, Blogs) / Practical + A - Assessment
• SI- Synchronous Interaction (Live interactions through Google meet/ Moodle)
• IL – Independent Learning **Approximately double the Online learning hours)</td><td colspan="2">30

30 (including 10 hrs assessment)

15</td></tr>
<tr><td>7.</td><td colspan="2">Credit
Credit assigned based on the course objectives and learning outcomes</td><td>Hours per credit</td><td></td></tr>
<tr><td></td><td colspan="2"></td><td>Contact class/ Online Learning</td><td>30 OL hours = 1</td></tr>
<tr><td></td><td colspan="2"></td><td>OA- Online activities including practicals</td><td>30 OA hours = 1</td></tr>
<tr><td></td><td colspan="2"></td><td>SI- Synchronous Interaction</td><td>15 SL hours = 1</td></tr>
<tr><td></td><td colspan="2"></td><td>Total credits</td><td>3</td></tr>
<tr><td>8.</td><td>Learning outcomes</td><td colspan="3">On successful completion of the course the students should be able to:
CO1. understand and apply the Biostatistics
CO2. use the software independently for the data analysis, develop skills in SPSS
CO3. determine the use of appropriate statistical tool
CO4. explain how the central limit theorem applies in inference
CO5. interpret the meaning of confidence intervals in context
CO6. interpret the results of hypothesis tests ¸</td></tr>
<tr><td>9.</td><td>Summary</td><td colspan="3">The learner understands and applies the mathematical concepts. Enables the learner to understand and apply the knowledge gained in statistics to make an informed decision, based on the results of inferential procedures.</td></tr>
<tr><td>10.</td><td>Assessment
(Course Instructors are encouraged to provide equal Weightage to all the Online assessments)</td><td colspan="3">Continuous Assessment (a)</td></tr>
<tr><td></td><td></td><td></td><td>Marks</td></tr>
<tr><td></td><td></td><td>Test 1</td><td>CO-1 & CO-2</td><td>10</td></tr>
<tr><td></td><td></td><td>Test 2</td><td>CO- 2, 3 & 4</td><td>10</td></tr>
<tr><td></td><td></td><td>Test 3</td><td>CO-5, 6</td><td>20</td></tr>
<tr><td></td><td></td><td>Assignment</td><td>CO-1 to 6</td><td>10</td></tr>
<tr><td></td><td></td><td>IA Total</td><td></td><td>50</td></tr>
<tr><td></td><td></td><td colspan="2">Summative Assessment: As per CBCS 2019 Regulations</td><td>50</td></tr>
</table>

11	**Course Content and teaching method**	OL	OA	SI	A	CO: SLO: mapping
	UNIT I: Introduction to Biostatistics Introduction - Graphical representation of data – Data collection - Diagrammatic and Graphical Presentation of data - Types of data - limitations.	**6**		3	2	CO1
	UNIT II: Measure of Central Tendency & Measure of Dispersion Measures of Central Tendency- Mean – Median - Mode - Geometric mean- Harmonic mean for raw data -Measures of dispersion - Quartile deviation, Mean Deviation - Standard Deviation - Coefficient of variation- Range	8		3	3	CO1 &2
	UNIT III: Probability and Probability distributions Probability - Theorems of probability – Baye's Theorem - Probability Distributions - Discrete & Continuous distributions - Binomial Distribution- Poisson Distribution- Normal Distribution.	8		3	2	CO4
	UNIT IV: Correlation & Regression Analysis Correlation Analysis - Types of correlation - Rank Correlation Coefficient - Regression analysis - Types of Regression -Assumptions - Comparison to Correlation.	4		3	1	CO5
	UNIT V: Hypothesis Testing Introduction -Types of sampling – Hypothesis testing - Type of errors –Parametric & Non-parametric tests - Chi-square, t-tests, ANOVA.	4		3	1	CO6
	PRACTICAL (20 HOURS) Computational Statistics: Problem solving using statistical software SPSS/ OPENEPI / Excel.		20		1	CO2 &3
		30	20	15	10	
12	Reference books	1. Don. Mc Neil - Epidemiological Research Methods - Oxford University Press, London. 2. Biostatistics –Principle & Practice – McGraw Hill Education.				
13	Online resources	3. http://www.ats.ucla.edu/stat/. 4. http://www.statsoft.com/textbook/basic-statistics/ 5. SPSS				

EGE001 – Introductory Biostatistics

Generic Elective Course for UG programs [Dept. of Bioinformatics]

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
EGE001	GE	**Introductory Biostatistics**	1	1	1	3	60	15	75	80	50	50	-	100

<table>
<tr><td>1.</td><td>Name of the course</td><td colspan="3">INTERMEDIATE MATHEMATICS</td></tr>
<tr><td>2.</td><td>Elective Code</td><td>EGE002</td><td>Dept of Bioinformatics</td><td>Credits: 3</td></tr>
<tr><td>3.</td><td>Level</td><td colspan="3">Any UG student</td></tr>
<tr><td>4.</td><td>Course Objective</td><td colspan="3">The learner understands and applies the mathematical concepts.</td></tr>
<tr><td>5.</td><td>Rationale for inclusion</td><td colspan="3">Fundamental understanding of quantitative aspects in biology and healthcare</td></tr>
<tr><td rowspan="2">6.</td><td colspan="2">Delivery Methods (hours/credit)</td><td colspan="2">Hours per Credit</td></tr>
<tr><td colspan="2">• Contact class/ Online Learning
L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• OA- Online activities (Discussion forum, Reflection, Blogs) / Practical + A - Assessment
• SI- Synchronous Interaction (Live interactions through Google meet/ Moodle)
• IL – Independent Learning **Approximately double the Online learning hours)</td><td colspan="2">30

30 (including 10 hrs assessment)

15</td></tr>
<tr><td rowspan="5">7.</td><td colspan="2" rowspan="5">Credit
Credit assigned based on the course objectives and learning outcomes</td><td colspan="2"></td><td>Hours per credit</td></tr>
<tr><td colspan="2">Contact class/ Online Learning</td><td>30 OL hours = 1</td></tr>
<tr><td colspan="2">OA- Online activities including practicals</td><td>30 OA hours = 1</td></tr>
<tr><td colspan="2">SI- Synchronous Interaction</td><td>15 SL hours = 1</td></tr>
<tr><td colspan="2">Total credits</td><td>3</td></tr>
<tr><td>8.</td><td>Learning outcomes</td><td colspan="3">On successful completion of the course the students should be able to:
CO1. understand and apply the mathematics to biology
CO2. use the concepts for data analysis, develop skills in Excel
CO3. determine the use of the appropriate tool</td></tr>
<tr><td>9.</td><td>Summary</td><td colspan="3">The learner understands and applies the mathematical concepts. Enables the learner to understand and apply the knowledge gained in statistics to make an informed decision, based on the results of inferential procedures.</td></tr>
<tr><td rowspan="8">10</td><td rowspan="8">Assessment
(Course Instructors are encouraged to provide equal Weightage to all the Online assessments)</td><td colspan="3">Continuous Assessment (a)</td></tr>
<tr><td></td><td></td><td>Marks</td></tr>
<tr><td>Test 1</td><td>CO-1-</td><td>10</td></tr>
<tr><td>Test 2</td><td>CO-2</td><td>10</td></tr>
<tr><td>Test 3</td><td>CO 1-3</td><td>20</td></tr>
<tr><td>Assignment</td><td>CO 1- 3</td><td>10</td></tr>
<tr><td colspan="2">IA Total</td><td>50</td></tr>
<tr><td colspan="2">Summative Assessment (b)
Pattern of Assessment (As per CBCS guidelines)</td><td>50</td></tr>
</table>

11	**Course Content and teaching method**	OL	OA	SI	CO: SLO: mapping
	UNIT I: Linear Algebra Solving of simultaneous equations- Permutation & Combination-Partial fraction - Binomial theorem, exponential and logarithmic series.	**6**	6	3	CO1
	UNIT II: Vector Algebra Introduction to Vector algebra- Types of Vectors – Operation on Vectors – Dot and Cross product of Vectors.	8	6	3	CO1 &2
	UNIT III :Analytical Geometry Introduction to 2D and 3D geometry – Circles – Cone - Spheres.	8	6	3	CO 2,3
	UNIT IV :Calculus Tangent and Normal to the curve - Angle of intersection of two curves - Increasing and decreasing function - Maxima and Minima - Rate of Change in biological calculation.	4	6	3	CO 2,3
	UNIT V :Differential Equation First order and higher degree equation-Second order equation with constant co-efficient – Particular integral of polynomial-Homogeneous equation.	4	6	3	CO 2,3
		30	30	15	
12	Reference books	1. Foundations and Fundamental Concepts of Mathematics (3rd Edition) - Howard Eves 2. Concepts of Modern Mathematics - Ian Stewart 3 3. Introduction to the Foundations of Mathematics: Second Edition - Raymond L. Wilder 4. Essential Calculus with Applications - Richard A. Silverman			
13	Online resources				

EGE002: INTERMEDIATE MATHEMATICS **Generic Elective Course for UG programs [** Dept of Bioinformatics**]**														
Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM: 40%
EGE002	GE	**INTERMEDIATE MATHEMATICS**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the course**	**Basics of Hospital Management**	
2	**Elective Code**	GGE018	**Credits:** 3
3	**Level**	Any student enrolled in Post Graduate programs under CBCS	
4	**Course Objective**	1. To orient the hospital classification and functions 2. To familiarize students with the basics concepts of hospital Management 3. To demonstrate the activities and operations of hospitals	
5	**Rationale for inclusion**	This course is designed to introduce the basic concepts of hospital departments and the managerial practices	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Video tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs)	30
		• **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet / Big BlueButton)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Onlinebarning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able toCO1. Identify the steps in management	
		CO2. Differentiate different clinical and support services and its managerial issues CO3.Explore the managerial issues and solutions for differentancillary and diagnostic services CO4. Apply the safety practices in hospitals	

Dr.K.C.JOHN
Director
SRI RAMACHANDRA
FACULTY OF MANAGEMENT SCIENCES
SRI RAMACHANDRA INSTITUTE OF
HIGHER EDUCATION AND RESEARCH
(Deemed to be University), Porur, Chennai-116.

9	**Summary**	This course introduces the steps in management, managerial issues and different solutions for various departments in hospitals and thesafety practices to be introduced in each hospital				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes		**Marks**	
		Test 1	CO-1 & CO-2 (BL1- remember BL2 Understand)		15	
		Test 2	CO-3 & CO-4 (BL2-UnderstandBL3- Apply)		15	
		Seminar	CO-5 (BL3-Apply BL4- Analyze)		10	
		Assignment	CO-1, CO-2 & CO-4 (BL3-Apply BL4-Analyze)		10	
		IA Total			**50**	
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL hrs**	**OA & A hrs**	**SI hrs**	**SLO-CO mapping**
	UNIT – I	Identify the steps in management	5	5	2	CO1
	UNIT – II	Appraise the managerial issues of OPD, IPD, Operation Theatre, ICUs and Nursing Services	5	5	3	CO2
	UNIT – III	Interpret the administration structure of CSSD, Dietary services and Medical Records Department	5	5	2	CO3
	UNIT – IV	Discuss the significance of House Keeping, Linen and laundry, Engineering services and transport department	5	5	2	CO3
	UNIT - V	Explore the managerial issues and solutions for radiology, laboratory, pharmacy and blood bank	5	5	3	CO3
	UNIT - VI	Analyze the safety practices to mitigate the risk.	5	5	3	CO4
			30	**30**	**15**	

12	**Reference books**	Principles of Management by – Sakthivel Murugan, NewAge International Publishers Hospital Administration – DC Joshi & Mamta Joshi, Jaypee Brothers Medical *Publishers* (P)Ltd
13	**Online resources**	http://www.hospitals-management.com/ http://www.hospitalmanagement.net/
14	**Syllabus Content :**	Basics of Hospital Management (GGE018)
	UNIT – I	**Introduction to Management** Introduction - Definition – Steps - Planning – Organizing – Staffing – Directing – Controlling
	UNIT – II	**Introduction to Clinical service** Types of Hospitals - Organization and administration of various clinical services: Outpatient services – In-patient services - Emergency services - Operation theatres – Nursing services - ICUs.
	UNIT – III	**Hospital Support services** Organization and Administration of various Support services: –CSSD — Diet – Medical records
	UNIT – IV	**Hospital Ancillary Services** Organization and Administration of various Ancillary services: Housekeeping – Linen and Laundry- Engineering services — Transportation
	UNIT – V	**Hospital Diagnostic and Therapeutic services** Organization and Administration of variousDiagnostic and Therapeutic services: Radiology - Laboratory – Pharmacy - Blood bank
	UNIT – VI	**Safety and Risk management** Hospital waste management – Nosocomial infection – Disaster management – Hospital security service - Occupational safety in hospitals

GGE018: Basics of Hospital Management

Generic Elective Course for PG programs [Faculty of Management Sciences**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical /Viva (c)	a+b=100
											PM: 40%	EST	ESP	PM: 50%
GGE018	GE	**Basics of Hospital Management**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the course**	**Basic Course in Entrepreneurship**	
2	**Elective Code**	**GGE019**	**Credit: 3**
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	• To interpret the fit with entrepreneurial ambitions • To identify the problem solving and the target customers • To develop a solution for the customers' problems andproblem solution • To build and demonstrate Minimum Viable Product. • To structure a business model around the problem, customer, and solution and present the Business Model Canvas	
5	**Rationale for inclusion**	The students will learn about venturing their idea.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Video tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15 60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	3
		Credit assigned based on the course objectives and learning outcomes.	

Dr.K.C.JOHN
Director
SRI RAMACHANDRA
FACULTY OF MANAGEMENT SCIENCES
SRI RAMACHANDRA INSTITUTE OF
HIGHER EDUCATION AND RESEARCH
(Deemed to be University), Porur, Chennai-116.

8	**Learning outcomes**	On successful completion of the course the students should be able to CO1. Interpret the foundational experience of the entire cycle of entrepreneurship, through a combination of theory and practice. CO2. Explore the business opportunities and the basics to create launch and manage new businesses. CO3. Apply the knowledge to create a 'campus venture' or a "real" venture of their own to practicethe concepts taught during the program.
9	**Summary**	This course provides holistic development of students to become entrepreneurs and through Learn wise platform students received more insights on entrepreneurship
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1 & CO-2 (BL1-Remember, BL2- Understand)	15
Test 2	CO- 2 & CO-3 (BL2-Understand, BL3-Apply)	15
Seminar	CO-3 (BL3-Apply, BL4- Analyze)	10
Assignment	CO-1, CO-2 & CO-3 (BL3- Apply BL4- Analyze)	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL hrs**	**OA & A hrs**	**SI hrs**	**SLO-CO mapping**
	UNIT – I	Identify the Entrepreneurship opportunities Explore social Entrepreneurship	6	6	3	CO1
	UNIT – II	Develop an ideageneration Explore design thinking process	6	6	3	CO2

	UNIT – III	1. Difference between consumer withcustomer. 2. Interpret the varioustypes of markets 3. Identify the early adopter	6	6	3	CO3
	UNIT – IV	1. Difference between consumer withcustomer. 2. Interpret the various types of markets. 3. Identify the earlyadopter	6	6	3	CO3
	UNIT - V	Outline how theventures position themselves. Discuss on Business regulations ofstarting and operating a business. Prepare the sales plan	6	6	3	CO3
			30	**30**	**15**	
12	**Reference books**	1. Entrepreneurship-Theory and Practice - Raj Shankar 2. Entrepreneurship- P.Narayana Reddy				
13	**Online resources**	1. **Read Forbes article and do Group Discussion** https://www.forbes.com/sites/chrismyers/2015/12/16/find-your-flow-and-success-will- follow/ 2. https://necrophone.com/2014/01/20/effectuation-the-best-theory-of-entrepreneurship- you-actually-follow-whether-youve-heard-of-it-or-not/ 3. https://www.forbes.com/sites/danschawbel/2013/12/17/geoffrey-moore-why-crossing-the- chasm-is-still-relevant				
14	**Syllabus Content :**	Basic Course in Entrepreneurship (GGE019)				
	UNIT – I	What is entrepreneurship – myths about entrepreneurship – impact of an entrepreneur and social entrepreneurship – wealth building and making an impact				
	UNIT – II	What is a business opportunity and how to identify it - Methods for finding and understanding problems - (Observation, Questioning, DT, Jobs to be done (JTBD) - Introduction to Design Thinking - Process and Examples - Generate ideas that are potential solutions to the problem identified				
	UNIT – III	The difference between a consumer and a customer(decision maker); Market Types, Segmentation and Targeting, Defining the personas; Understanding Early Adopters and Customer Adoption Patterns - Identify the innovators and early adopters for start-up - Basics of Lean Approach and Canvas; Types of Business Models(b2b; b2c)				

	UNIT – IV	Introduction to Risks; Identify and document your assumptions (Hypotheses); Identify the riskiest parts of Plan - Develop the Solution Demo - Sizing the Opportunity - Building an MVP (Minimum Viable Product)
	UNIT - V	Positioning – channels and strategy – sales planning – Importance of project management to launch and track progress – Understanding time management, workflow, and delegation of tasks– Business regulation: Basics of business regulations of starting and operating a business - Importance of being compliant and keeping proper documentation

GGE019: Basic Course in Entrepreneurship

Generic Elective Course for UG programs [Faculty of Management Sciences**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
GGE019	GE	**Basic Course in Entrepreneurship**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	**Leadership and Change Management**	
2	**Elective Code**	**GGE021**	**Credits: 3**
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. To demonstrate the knowledge of fundamentals ofhuman behavior and leadership skills 2. To impart know how of managing conflicts to lead theteam effectively 3. To articulate the leadership competencies to manageresistance to change and lead the change successfully	
5	**Rationale for inclusion**	The pace of change is rapid in organization and most of the reasons why firms fail in managing the change are lack of skills in people driving the change. Hence, this course Leadership and Change Management will help the students learn about self-awareness, leadership competencies and nature of organizational change, which in turn will enable the future leaders to manage and lead others through the change successfully.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs)	30
		• **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	

Dr. K. C. JOHN
Director
SRI RAMACHANDRA
FACULTY OF MANAGEMENT SCIENCES
SRI RAMACHANDRA INSTITUTE OF
HIGHER EDUCATION AND RESEARCH
(Deemed to be University), Porur, Chennai-116.

8	**Learning outcomes**	On successful completion of the course the students will be able to CO1. Interpret the importance of human behavior and gain confidence in leadership competencies CO2. Demonstrate the models, theories of leadership and extract the characteristics of successful leaders CO3. Analyze the theoretical approaches of change management CO4. Appraise the structure and culture of the organization to effectively lead others through change
9	**Summary**	This course introduces and provides opportunity to students to explore the leadership competencies, theories and skills to manage the organizational change effectively.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	**Marks**
Test 1	CO-1 & CO-2 (BL1-Remember, BL2-Understand)	15
Test 2	CO-3 & CO-4 (BL2-Understand BL3 –Apply)	15
Assignment	CO-1, CO-2 & CO-3 (BL3-Apply BL4-Analyze)	10
Seminar	CO-1, CO-2, CO-3 & CO-4 (BL3-Apply BL4-Analyze)	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

	Course Content and Teaching Method :	**Learning outcomes**	**OL hrs**	**OA&A hrs**	**SI hrs**	**SLO-CO mapping**
11	UNIT – I	1.Interpret the fundamentals of human behaviour and personality traits 2. Associate self-awareness with emotional intelligence.	6	6	3	CO-1
	UNIT – II	1.Demonstrate the competencies of successful leader 2. Make decisions and develop problem solving skills	6	6	3	CO-1

	UNIT – III	1. Explore the ways of managing conflicts tolead the team 2. Identify and apply effective leadership style 3. Justify the supremacyof ethical leadership	6	6	3	CO-2
	UNIT – IV	1. Determine the organization strategyand the types of organization structure 2. Identify and diagnose the culture of the organization in managing the change	6	6	3	CO-3 & CO-4
	UNIT - V	1.Justify the theories of organizational change in leading through thechange 2.Interpret the model of change	6	6	3	CO-3 & CO-4
			30	**30**	**15**	
12	**Reference books**	1. Northouse, Peter G. (2018). Leadership Theory and Practice,8th Edition. Sage Publications 2. Kotter, John, & Rathgeber, Holger. (2020). Our Iceberg isMelting. Pan Macmillan 3. Beer, M. and N. Nohria. 2000. Breaking the Code of Change. Harvard Business School Press. Cambridge				
13	**Online resources**	1.https://www.ckju.net/en/blog/12-reasons-why-change-management-initiatives-fail-and-how-fix-them/99013 2.https://www.ccl.org/articles/leading-effectively-articles/successful-change-leader/				
14	**Syllabus Content :**	Leadership and Change Management (GGE021)				
	UNIT – I	**UNIT – I – Fundamentals of Human Behaviour** Human behavior – fundamentals – Personality and self – Emotional Intelligence – Self-awareness, Self-Management, Social awareness and relationship management				
	UNIT – II	**UNIT – II – Leadership Competencies** Leadership competencies – Self-confidence - Persuasion – Effective communication- Decision-making – Problem Solving				
	UNIT – III	**UNIT – III – Team Building and Leadership styles** Managing conflicts - Team Building- Leadership styles – Leadership modelsand theories- Ethical leadership				

	UNIT – IV	**UNIT – IV - Introduction to Organization structure & Culture** An introduction to organization structure – diagnosing the organization culture – understanding organization strategy - Nature of organizational change
	UNIT - V	**UNIT – V- Theories and models of Change Management** Theories of change management - sources of resistance to change – Kurt Lewin's change model - Organization fails in implementation of change- Reasons - creating a change culture

GGE021: Leadership and Change Management **Generic Elective Course for UG programs [**Faculty of Management Sciences**]**														
Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM: 40%
GGE021	GE	**Leadership and Change Management**	1	1	1	3	60	15	75	80	50	50		100

GGE022	Financial Management for Health Care Professionals

1	**Name of the Course**	~~Finance for Healthcare Professionals~~	
2	**Elective Code**	**GGE022**	**Credits: 3**
3	**Level**	Any student enrolled in Post Graduate programs under CBCS	
4	**Course Objective**	1. To impart the basics of Accounting and Finance to the participants. 2. To explain the sources and application of funds for running a healthcare organization. 3. To apply the techniques of budgeting, capital budgeting and break even analysis in the practical life situation of healthcare organizations. 4. To evaluate the financial feasibility of business proposal related to healthcare.	
5	**Rationale for inclusion**	The students will learn the art of effective mobilization and usage of funds for establishing and running a healthcareorganization.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Video tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment**OA - Online activities (Discussion forum, Reflection, Blogs)	30
		• **Synchronous Interaction** SI - Synchronous Interaction (Live interactionsthrough Google meet/ Big Blue Button)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	

Dr.K.C.JOHN
Director
SRI RAMACHANDRA
FACULTY OF MANAGEMENT SCIENCES
SRI RAMACHANDRA INSTITUTE OF
HIGHER EDUCATION AND RESEARCH

<table>
<tr><td>8</td><td>Learning outcomes</td><td colspan="5">On successful completion of the course, the students should be able to
CO1. Interpret the basic concepts of accounting and preparation of financial statement through a combination of theory and practice.
CO2. Analyze the different sources of finance and theireffective utilization in the practical life situation of health care organizations.
CO3. Demonstrate the Budget preparation and Break even analysis for a healthcare firm.
CO4. Appraise the financial feasibility of healthcare projects.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="5">This course provides an opportunity to the students a complete understanding of financial feasibility of operating a healthcare related organization.</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="5">Course Instructors are encouraged to provide equalWeightage to all the Online assessments
Continuous Assessment (50 Marks) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>CO-1 & CO-2
(BL 1 Remember and BL2- Understand)</td><td>15</td></tr>
<tr><td>Test 2</td><td>CO-3 & CO-4
(BL 1 and BL2- Remember andUnderstand)</td><td>15</td></tr>
<tr><td>Seminar</td><td>CO-1, CO-2 &CO-3
(BL3 and BL 4- Applyand Analyze)</td><td>10</td></tr>
<tr><td>Assignment</td><td>CO-1 & CO-4
(BL3 and BL 4- Applyand Analyze)</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>
Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method</td><td>Learning outcomes</td><td>OL hrs</td><td>OA&A hrs</td><td>SI hrs</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>• Identify the different terminologies used
• Differentiate the items appearing in the Income statement and Balance Sheet.</td><td>5</td><td>5</td><td>3</td><td>CO1</td></tr>
</table>

	UNIT – II	• Differentiate fixed cost, variable cost of different healthcare services. • Calculate breakeven point for a newly started healthcare firm.	5	5	2	CO2
	UNIT - III	• Prepare the budgetfor operating and maintenance cost of healthcare firms.	5	5	2	CO2
	UNIT – IV	• Classify the sources of working capital finance. • Estimate the working capital requirement of a Hospital.	5	5	2	CO3
	UNIT – V	• Analyze the different sources of long term finance. • Determine the optimum capital structure for a healthcare firm.	5	5	3	CO4
	UNIT - VI	• Justify the financial feasibility of a proposed healthcareproject. • Appraise theworthiness of a healthcare project through Capital budgeting techniques.	5	5	3	CO4
			30	**30**	**15**	
12	**Reference books**	1. Financial Accounting- A Managerial perspective- R. Narayanaswamy- 6th Edition-PHI Learning Pvt. Ltd. 2. Financial Management – I.M.Pandey- Eleventh Edition- Vikas Publishing house. 3. Cost and Management Accounting- M N Arora- 10thEdition- Himalaya Publishing House.				

13	**Online resources**	https://www.icmai.in/upload/Institute/Updates/Guidance-note-on-Healthcare-Sector.pdf https://www.youtube.com/watch?v=N-SumPdb2PI https://www.youtube.com/watch?v=2bEQa0V9558
14	**Syllabus Content**	Finance for Healthcare Professionals (GGE022)
	UNIT – I Basics of Accounting	Terminologies used in Accounting- Accounting Cycle- Accounting Equation- Basic Understanding and Analysisof Financial Statements
	UNIT – II Break Even Analysis	Marginal Costing: Application of Break Even Analysis, Cost-Volume Profit Analysis, Break Even Charts and Profit Charts for Healthcare firms.
	UNIT-III Budgeting	Objectives of Budget- Classification of Budget-Preparation of Budget-Importance of Budgeting inhealthcare
	UNIT – IV Short term sources of Finance	Meaning of Working Capital-Sources of Working Capital Financing-Management of WorkingCapital in Healthcare Organizations
	UNIT – V Long term sources of Finance	Nature of long term finance- Common Stock, Preferred Stock, Debt Financing
	UNIT-VI Financial Feasibility of Healthcare Project	Estimating the Healthcare Project cost and revenue-Operation and Maintenance cost- Capital Budgeting Techniques- Net Present Value, Internal Rate of Returnand Payback Period

GGE022: Financial Management for Health Care Professionals

Generic Elective Course for PG **programs [**Faculty of Management Sciences**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 40%	EST	ESP	PM:50%
GGE021	GE	**Leadership and Change Management**	1	1	1	3	60	15	75	80	50	50		100

<table>
<tr><td>1</td><td>Name of the Course</td><td colspan="3">Fundamentals of Occupational Health</td></tr>
<tr><td>2</td><td>Elective Code</td><td>HGE001</td><td colspan="2">Credits: 3</td></tr>
<tr><td>3</td><td>Level</td><td colspan="3">Any student enrolled in an Under Graduate program under CBCS</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="3">To provide the students with
1. A comprehensive overview of major occupational and environmental risk factors that affect human health
2. Global and national perspectives on a range of hazards encountered in community and workplace settings, and the consequent health burdens
3. An orientation on relevant regulatory frameworks for prevention and control of such occupational exposures</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="3">Gaining knowledge on common sources, routes of exposure, mechanisms of health effects of occupational and environmental hazards, and control measures will enable the learners to apply the principles of occupational health in safeguarding human health in occupational settings.</td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Delivery method</td><td colspan="2"></td><td>Hours per credit</td></tr>
<tr><td colspan="2">• Online Learning
OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)</td><td>30</td></tr>
<tr><td colspan="2">• Online Activities including Assessment
OA - Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In person)
• Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30
15
60</td></tr>
<tr><td colspan="2"></td><td></td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Credit</td><td colspan="2"></td><td>Hours per credit</td></tr>
<tr><td colspan="2">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>30 OL hours = 1
30 OA hours = 1
15 SI hours = 1</td></tr>
<tr><td colspan="2">Total Credit</td><td>3</td></tr>
<tr><td colspan="3">Credit assigned based on the course objectives and learning outcomes</td></tr>
</table>

S. R.

Dr. S. SANKAR
Professor & Head
Department of Environmental Health Engineering
Faculty of Public Health
Sri Ramachandra Institute of Higher Education and Research
(Deemed to be University)
Porur, Chennai - 600 116

<table>
<tr><td>8</td><td>Learning outcomes</td><td colspan="6">On successful completion of the course the students should be able to
1. Understand the link between occupation and health.
2. Recognize sources, pathways and health effects associated with major categories environmental and occupational risk factors.
3. Develop an understanding of attributable health burdens from these risk factors at global and national scales.
4. Outline the important legislative and regulatory provisions concerning environmental and occupational hazards.
5. Apply the principles of occupational health in safeguarding human health in occupational settings.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="6">This course introduces the learners to the major occupational and environmental hazards that pose health risks for the exposed populations, and trains to recognize and control these hazards thereby safeguarding occupational health.</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="6">Course Instructors are encouraged to provide equal Weightage to all the Online assessments.
Continuous Assessment (50 Marks) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>CO-1 & CO-2</td><td>10</td></tr>
<tr><td>Test 2</td><td>CO-3</td><td>10</td></tr>
<tr><td>Test 3</td><td>CO-1, CO-2, CO-3 & CO-4</td><td>20</td></tr>
<tr><td>Assignment</td><td>CO-5</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>
Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method</td><td>Learning outcomes</td><td>OL hrs</td><td>OA & A hrs</td><td>SI hrs</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>Gain insight into and understand the link between occupation and health</td><td>6</td><td>4</td><td>3</td><td>1</td></tr>
<tr><td></td><td>UNIT – II</td><td>Recognize sources, pathways and health effects associated with major categories environmental and occupational risk factors</td><td>7</td><td>5</td><td>3</td><td>2</td></tr>
<tr><td></td><td>UNIT – III</td><td>Apply the principles of occupational health in safeguarding human health in occupational settings</td><td>7</td><td>5</td><td>3</td><td>5</td></tr>
<tr><td></td><td>UNIT – IV</td><td>Understand attributable health burdens from these risk factors at global and national scales</td><td>4</td><td>4</td><td>2</td><td>3</td></tr>
</table>

	UNIT – V	Outline the important legislative and regulatory provisions concerning environmental and occupational hazards	3	6	2	4
	UNIT – VI		3	6	2	
			30	**30**	**15**	
12	**Reference books**	1. Occupational and Environmental Medicine, Joseph LaDou, 3rd Edition 2002 2. Environment and Occupational medicine, William N. Rom 2nd Edition. 1992 3. Occupational Health, Barry S. Levy, David H. Wegman, 4th Edition, 2000. 4. OSH for Development, By Kaj Elgstrand and Nils F. Petersson (editors)				
13	**Online resources**	1. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TOXLINE 2. http://toxnet.nlm.nih.gov/ 3. http://www.remm.nlm.gov/ 4. http://tools.niehs.nih.gov/wetp/ 5. http://www.cdc.gov/niosh/topics/industries.html 6. http://www.cdc.gov/niosh/idlh/intridl4.html				
14	**Syllabus Content**	Fundamentals of Occupational Health (HGE001)				
	UNIT – I The Occupation and Health Connection	• Historical perspectives • Impact of occupational factors on health • Link between occupation and health • The Global agenda (ILO, WHO, Millennium Development Goals) • The Indian agenda (Five Year Plan) • Role of environmental and occupational health professionals				
	UNIT – II Overview of Occupational Health Hazards	• Overview of occupational safety and health hazards • Overview of common occupational diseases • Status of occupational health in the World and in India • Medical surveillance • Ethics and code of good practices in occupational safety and health				
	UNIT – III Overview of Industrial Hygiene and Safety	• Recognition, evaluation and control of occupational hazards: Chemical, Physical, Biological, Ergonomic, Psychological • Introduction to industrial safety: Mechanical safety, Electrical safety, Material handling, Industrial accidents				
	UNIT – IV Global and National Environmental Burden of Disease	• Occupational risk factors • Burden of disease attributable to major occupational risk factors • Occupational attributable fraction by disease • Preventing disease through healthy environments				
	UNIT – V Standards and Guidelines for Safety and Health	• Overview of legal framework of OSH in India • Factories Act, 1948, other important legislations: • OSHA, EU Standards • ACGIH, International conventions, WHO Healthy Worker Agenda				

	UNIT – VI Environmental Acts and Guidelines	• Environment Protection Act, The National Environment Tribunal Act, The National Environment Appellate Authority Act, The Public Liability Insurance Act, US Environment Protection Act • Introduction to Environment Management Systems • ISO 14001, OSHAS 18001

HGE001: Fundamentals of Occupational Health

Generic Elective Course for UG programs [Dept. of Environmental Health Engineering**]**

Course code	Category	Course Title	Credits /Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM:40%
HGE001	GE	**Fundamentals of Occupational Health**	1	1	1	3	60	15	75	80	50	50		100

1	**Name of the Course**	Biomedical Waste Management	
2	**Elective Code**	HGE002	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Introduce the fundamentals of Biomedical Waste Management (BMW) 2. Provide necessary knowledge to understand the steps involved in BMW (from source to disposal)	
5	**Rationale for inclusion**	This course is designed to introduce the basic concepts of the practice of Biomedical Waste Management in health care settings which will enable the learners to apply the principles of BMW in environmental and occupational health protection.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet / Big Blue Button / In person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 30 SI hours = 2.0
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe the principles of BMW management practices. 2. Explain the environmental and occupational hazards of improper management of BMW. 3. Demonstrate the practice of BMW management principles 4. Apply the knowledge in strategizing proper practice of BMW in Healthcare.	

Dr. S. SANKAR
Professor & Head
Department of Environmental Health Engineering
Faculty of Public Health
Sri Ramachandra Institute of Higher Education and Research
(Deemed to be University)
Porur, Chennai - 600 116.

9	**Summary**	This course introduces the steps of BMW through various student-centred methods. Student will be trained to identify the best practices of BMW in healthcare sector and to adopt and implement those practices in their jobs.				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes		**Marks**	
		Test 1	CO-1 & CO-2		10	
		Test 2	CO-3 & CO-4		10	
		Test 3	CO-5		20	
		Assignment	CO-1, CO-3 & CO-5		10	
		IA Total			**50**	
		Summative Assessment : Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL hrs**	**OA & A hrs**	**SI hrs**	**SLO-CO mapping**
	UNIT – I	1. Define Hospital Biomedical Waste 2. Discuss the Importance of BMW management	3	3	6	1
	UNIT – II	1. Explain the rules and guidelines for BMW management 2. Differentiate various steps in BMW management clearly	3	3	6	2
	UNIT – III	1. Delineate the various steps in BMW management 2. Describe the principle behind the steps in BMW management	3	3	6	3
	UNIT – IV	1. Identify the scientific concepts behind source reduction and waste reduction 2. Explain various methods/strategies of waste prevention	3	3	6	4
	UNIT – V	1. Describe standard treatment and disposal methods 2. Discuss various disposal techniques in BMW	3	3	6	5
			15	**15**	**30**	

12	**Reference books**	1. Reinhardt, Peter A., and Judith G. Gordon. 1991. Infectious and medical waste management. Chelsea, Mich: Lewis Publishers 2. Bio-medical waste management", Environmental Management and Policy Research Institute, Bangalore, 2004 3. *"Guidelines* for management of liquid waste streams in biomedical waste", Sri Ramachandra Medical College & Research Institute, Porur, Chennai, 1999 4. "Southern regional conference on bio-medical waste management" Tamilnadu Pollution Control Board, Chennai, 1999. 5. "Manual on hospital waste management", Central Pollution Control Board, Delhi, 2000 6. "Bio-medical waste", Toxics Link — Factsheet, Number, 21, 22, 23, 24. 2004 7. "Understanding and Simplifying Bio-Medical Waste Management"(Training Manual)
13	**Online resources**	https://noharm-global.org/issues/global/projects-and-case-studies https://www.who.int/news-room/fact-sheets/detail/health-care-waste https://www.who.int/water_sanitation_health/medicalwaste/058to060.pdf https://www.who.int/water_sanitation_health/medicalwaste/en/guidancemanual1.pdf https://www.intechopen.com/books/current-topics-in-public-health/health-care-waste-management-public-health-benefits-and-the-need-for-effective-environmental-regulat https://bmcresnotes.biomedcentral.com/articles/10.1186/s13104-019-4316-y https://apps.who.int/iris/bitstream/handle/10665/328146/9789241516228-eng.pdf
14	**Syllabus Content :**	Biomedical Waste Management (HGE002)
	UNIT – I Introduction to Hospital Waste	• Definition Classification ofhospital wastes • Types and composition: Types of solids, liquids, sharps, blood and blood tissue, radioactive material, biological and chemical material • Hospital effluents: Nature and composition, Levels of Generation in a small clinic, nursing home, small and large hospitals, Storage of hospital waste; Types of bags and containers used for storage
	UNIT – II Biomedical Waste Management Guideline	• Requirement • Documentation of Biomedical waste types and guidelines • Bio medical wastes (Management & Handling) Rules, 1998; and amendments
	UNIT – III Principles of Biomedical Waste Management	• Segregation of biomedical waste • Handling and transport of hospital waste Authorization and accidental spilling i Methods / treatments required for disposal of pathogens • Waste disposal methods Techniques of waste management • Protocols for HW management

	UNIT – IV Waste prevention	• Waste reduction activities • Waste recycling
	UNIT – V Biomedical Waste Treatment Facility	• Introduction, location, land requirements, Coverage area, types of equipment, • Infrastructure requirements, • Record keeping, • Waste collection, transport 'and storage facilities, • Precautions required

HGE002: Biomedical Waste Management

Elective Course for UG programs [Dept. of Environmental Health Engineering**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM:40%
HGE002	GE	**Biomedical Waste Management**	0.5	0.5	2	3	30	30	60	80	50	50	--	100

1.	**Name of the Course**	Intellectual Property Rights	
2.	**Elective Code**	PGE004	**Credits:** 3
3.	**Level**	Any student enrolled in Under Graduate Programs under CBCS	
4.	**Course Objective**	1. Understand the basic aspects of Intellectual Property Rights 2. Know the laws, Agreements, Treaties and Conventions relating to Intellectual Property Rights. 3. Acquire comprehensive knowledge on patents in India and abroad and its registration aspects. 4. Recognize new developments in IPR and their role in contributing to organizational competitiveness. 5. Realize the applications of IPR in various sectors and their contribution in upgradation of technology from academics to industry.	
5.	**Rationale for inclusion**	This course is designed to introduce the basic concepts of Intellectual Property Rights which will enable the learners to apply the principles of IPR to get statutory rights that allow originators deed their inventions or innovations exclusively for a particular period of time.	
6.	**Delivery Methods**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 (Including 10 hrs for assessment) 15 60
7.	**Credit**		**Hours per credit**
		Online Learning	30 OL hours = 1
		Online Activities including Assessment	30 OA hours = 1
		Synchronous Interaction	15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes	
8.	**Learning outcomes**	On successful completion of the course the students should be able to 1. Illustrate the concept and fundamentals of various IPR's 2. Define and differentiate patent and other IPR's glossary. 3. Explain the provisions, rules and guidelines under Patent Act 1970. 4. Identify different types of Intellectual Properties (IPs), the right of ownership, scope of protection as well as the ways to create and to extract value from IP. 5. Recognize the crucial role of IP in organizations of different industrial and health care sectors for the purposes of product and technology development.	
9.	**Summary**	This course addresses major intellectual property rights. Student will be trained to know about the merits and demerits of different strategies for protecting intellectual property and to promote the protection of	

Dr. R. CHITRA, M.Pharm., Ph.D
PRINCIPAL i/c
Sri Ramachandra Faculty Of Pharmacy
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116

31/08/2021

		intellectual property.
10.	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments
		Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	Unit – I & II (MCQ's/Fill in the blanks/True or False)	10
Test 2	Unit – III & IV (MCQ's/Fill in the blanks/True or False)	10
Test 3	Unit – IV &V (MCQ's/Fill in the blanks/True or False)	10
Assignment 1	Definition and Types of IPR and their role in research and organizational competitiveness.	10
Assignment 2	Patent Act 1970 and its amendments, patent filing procedure in India.	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment : As per CBCS 2019 Regulations

11.	**Course Content and teaching method**	**Learning outcomes**	**OL**	**OA &A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to 1. Define the intellectual and artistic works. 2. Compare intellectual property rights and industrial property rights. 3. Recognize various kinds of works.	6	6	3	1
	UNIT – II	At the end of the module the students will be able to 1. Apply the fundamental legal principles relating to patent. 2. Explain Patent Act and other Acts related to IPR. 3. Apply the law relating to Intellectual Property and Competition in India. 4. Discuss the important Agreements, Treaties and Conventions relating to Intellectual Property Rights.	6	6	3	2 & 3
	UNIT – III	At the end of the module the students will be able to 1. Differentiate patentable and non - patentable matters in India. 2. Outline/Explain the process of patenting and development. 3. Discuss about drafting of Patent and Patent Prosecution in India and Abroad. 4. Explain patent right and its scope	6	6	3	3
	UNIT – IV	At the end of the module the students will be able to know 1. Discuss the new developments in IPR.	6	6	3	4

		2. Develop concept for the protecting their idea. 3. Apply the major role of trademarks and industrial designs in modern business, and identify the need for their protection. 4. Explain the concept of Copyright, its ownership, assignment, infringement and remedies.				
	UNIT- V	At the end of the module the students will be able to 1. Apply the application of IPR to different activities. 2. Analyze the interface between Intellectual Property Rights and Competition Law in India. 3. Apply IP Issues in Technology Transfer, Industry Academic Collaboration.	6	6	3	5
			30	**30**	**15**	
12.	**Reference books**	1. Ahuja, V K. (2017). Law relating to Intellectual Property Rights. India, IN: Lexis Nexis. 2. Kompal Bansal & Parshit Bansal, Fundamentals of IPR for Beginner's, 1st Edition, BS Publications, 2016. 3. Ramappa,T., —Intellectual Property Rights Under WTO, 2nd Edition, S Chand, 2015.				
13.	**Online resources**	1. World Intellectual Property Organisation (https://www.wipo.int/about-ip/en/) 2. Office of the Controller General of Patents, Designs & Trademarks (http://www.ipindia.nic.in/) 3. Subramanian, N., & Sundararaman, M. (2018). Intellectual Property Rights – An Overview. Retrieved from http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf 2. 4. World Intellectual Property Organisation. (2004). WIPO Intellectual property Handbook. Retrieved from https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf				
14.	**Syllabus Content**	Intellectual Property Rights (PGE004)				
	UNIT – I Concepts of Intellectual Property	Define the intellectual and artistic works, Differentiate intellectual property rights and industrial property rights, various kinds of works.				
	UNIT – II Patent Law and Act	Fundamental legal principles relating to patent, Patent Act and other Acts related to IPR, law relating to Intellectual Property and Competition in India, Agreements, Treaties and Conventions relating to Intellectual Property Rights.				
	UNIT – III Patentability Criteria	Patentable and non -patentable matters in India, process of patenting and development, drafting of Patent and Patent Prosecution in India and Abroad, patent right and its scope.				
	UNIT – IV Types of IPR	New developments in IPR, protecting their idea, trademarks and industrial designs in modern business and their protection. Copyrights, its ownership, assignment, infringement and remedies.				
	UNIT- V IPR in different sectors	Application of IPR to different activities, interface between Intellectual Property Rights and Competition Law in India, IP Issues in Technology Transfer, Industry Academic Collaboration.				

PGE004: Intellectual Property Rights

Elective Course for UG programs [Faculty of Pharmacy**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM:40%
PGE004	GE	**Intellectual Property Rights**	1	1	1	3	60	15	75	80	50	50	--	100

1.	**Name of the Course**	Pharmacovigilance	
2.	**Elective Code**	PGE007	**Credits:** 3
3.	**Level**	Any student enrolled in Post Graduate Programs under CBCS	
4.	**Course Objective**	1. Understand the basic concepts in pharmacovigilance 2. Explain the mechanism, predisposing factors and causality assessment for ADR 3. Describe the process for drug safety data generation 4. Explain the principles and various methods of signal detection in pharmacovigilance 5. List the reporting requirements and international collaborations in pharmacovigilance	
5.	**Rationale for inclusion**	This course is designed to introduce the concept and activities in pharmacovigilance which will enable the students to generate the safety data and signal detection for medication use.	
6.	**Delivery Methods**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / Inperson) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 (Including 10 hrs for assessment) 15 60
7.	**Credit**		**Hours per credit**
		Online Learning	30 OL hours = 1
		Online Activities including Assessment	30 OA hours = 1
		Synchronous Interaction	15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes	
8.	**Learning outcomes**	On successful completion of the course the students should be able to 1. Apply the basic concept of pharmacovigilance in adverse drug reaction reporting. 2. Generate the safety data and can perform the signal detection and causality assessment independently 3. Distinguish regulatory and safety reporting requirements in the pre-marketing, pre-approval and post marketing surveillance 4. Apply the suitable pharmacovigilance method for signal detection 5. Know the reporting requirements, auditing procedure and international collaborations in pharmacovigilance	

Dr.K.CHITRA,M.Pharm.,Ph.D.,
PRINCIPAL i/c
Sri Ramachandra Faculty Of Pharmacy
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116

3/08/2021

9.	**Summary**	This course covers the drug safety aspects and their monitoring, as well as proactive strategies for risk management to improve patient safety. Students will be trained in the clinical settings for adverse drug reaction monitoring and reporting.				
10.	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments				
		Continuous Assessment (50 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	Unit – I & II (MCQ's/Fill in the blanks/True or False)	10		
		Test 2	Unit – III & IV (MCQ's/Fill in the blanks/True or False)	10		
		Test 3	Unit – IV &V (MCQ's/Fill in the blanks/True or False)	10		
		Assignment 1	History, development and pharmacovigilance program of India (PvPi)	10		
		Assignment 2	Various methods of signal detection in pharmacovigilance	10		
		IA Total		**50**		
		Summative Assessment: **Pattern of Assessment : As per CBCS 2019 Regulations**				
11.	**Course Content and teaching method**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to 1. Define Pharmacovigilance 2. Discuss the importance and global perspectives of pharmacovigilance 3. Explain the standard regulatory terminologies used 4. Explain the pharmacovigilance program of India (PvPI)	6	6	3	CO1
	UNIT – II	At the end of the module the students will be able to 1. Define adverse drug reaction 2. Explain the ADR classification, mechanism and predisposing factors 3. Discuss the various scales used for causality assessment of ADR	6	6	3	CO2
	UNIT – III	At the end of the module the students will be able to 1. Know the drug safety data generation process from preclinical, clinical and post approval phase 2. Discuss regulatory aspects in safety data generation 3. Explain the drug safety data management 4. know the ICH guideline for pharmacovigilance	6	6	3	CO3

	UNIT – IV	At the end of the module the students will be able to know the 1. Principles of signal detection 2. Spontaneous reporting system, 3. Case reports & Case series, 4. Stimulated reporting 5. Sentinel sites 6. Drug event monitoring and registries, 7. Cross sectional study 8. Case control study, cohort study and Targeted clinical investigations	6	6	3	CO4
	UNIT- V	At the end of the module the students will be able to 1. Know the Reporting requirements and expedited Reporting and key Data Elements for Inclusion in expedited Reports. 2. Explain the auditing and inspection procedures 4. Know the collaboration activities of Pharmacovigilance with WHO, ICH, CIOMS and CDSCO	6	6	3	CO5
			30	**30**	**15**	
12.	**Reference books**	1. Textbook of Pharmacovigilance by SK Gupta. Publisher: Jaypee Brothers, Medical Publishers Pvt. Limited 2. Stephens' Detection of New Adverse Drug Reactions by John Talbot, Patrick Waller. Publisher: John Wiley & Sons 3. Mann's Pharmacovigilance, 3rd Edition by Elizabeth B. Andrews and Nicholas Moore. ISBN-13: 9780470671047 4. An Introduction to Pharmacovigilance by Patrick Waller. 2nd edition Publisher: Wiley-Blackwell, ISBN: 978-1-119-28978-4				
13.	**Online resources**	1. Pharmacovigilance journal database: https://www.longdom.org/pharmacovigilance.html 2. Pharmacovigilance program of India: https://www.ipc.gov.in/PvPI/adr.html				
14.	**Syllabus Content**	Pharmacovigilance (PGE007)				
	UNIT – I Introduction to Pharmacovigilance	Define Pharmacovigilance, history and development, importance and global perspectives of pharmacovigilance, standard regulatory terminologies used in pharmacovigilance, pharmacovigilance program of India (PvPI)				
	UNIT – II Introduction to adverse drug reactions and ADR assessment	Define adverse drug reaction, ADR classification, mechanism and predisposing factors, various scales used for causality assessment of ADR				
	UNIT – III Safety data generation	Drug safety data generation process from preclinical, clinical and post approval phase, regulatory aspects in safety data generation, drug safety data management, ICH guideline for pharmacovigilance				

	UNIT – IV Principles and various methods of signal detection in pharmacovigilance	Principles for signal detection, Spontaneous reporting system, case reports & Case series, stimulated reporting, sentinel sites, drug event monitoring and registries, cross sectional study, case control study, cohort study and Targeted clinical investigations
	UNIT- V Reporting Requirements, Auditing and Inspection and International collaborations	Reporting requirements and expedited reporting, key Data Elements for Inclusion in expedited Reports, auditing and inspection procedures, collaboration activities of Pharmacovigilance with WHO, ICH, CIOMS and CDSCO

PGE007: Pharmacovigilance

Elective Course for PG programs [Faculty of Pharmacy**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b=100
											PM: 40%	EST	ESP	PM:50%
PGE007	GE	**Pharmacovigilance**	1	1	1	3	60	15	75	80	50	50	--	100

1	**Name of the Course**	**Exercise Psychology**	
2	**Elective Code**	**SGE001**	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate and Post Graduate programs under CBCS.	
4	**Course Objective**	The objective of this course is to enable the student to: 1. Interpret the basic concepts of exercise psychology. 2. Relate individual differences in relation to physical self-concept. 3. Transfer the concepts of exercise psychology to mental health promotion. 4. To empower the students with different psychological techniques for exercise adherence. 5. Extract the barriers and communicate psychological benefits of exercising for quality of life.	
5	**Rationale for inclusion**	This course is designed to articulate the benefits of exercise on physical and mental health.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 (including 10 hrs for assessment) 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment (20hrs+10 hrs) Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the student should be able to: 1. Value the significance of exercise psychology for mind body harmony. 2. Infer relevence of inividual differences and self-perception. 3. Relate exercise benefits for self-care,mental health. 4. Devise different psychological approaches for exercise adherence. 5. Transfer exercise psychology concepts into application for developing quality of life.	

Prof. JOLLY ROY
MA(Psy), MSW(Psychiatry),Ph.D
Principal
Sri Ramachandra Faculty of Sports & Exercise Sciences
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116.

9	**Summary**	This course introduces the basic concepts of exercise psychology and its benefits in fitness and health promotion. Students will be equipped to use different psychological skills and techniques for lifestyle/ behaviour changes.				
10	**Assessment**	Course Instructors are encouraged to provide equal weightage to all the Online assessments.				
		Continuous Assessment (50 Marks) :				
			Course Outcomes			**Marks**
		Test 1	Unit – I & II (MCQ's/Fill in the blanks/True or False)			10
		Test 2	Unit – III,IV,V (MCQ's/Fill in the blanks/True or False)			10
		Assignment 1	Variations in exercise adherenec in changing times. (Traditional/ Contemporary/ New Normal)			10
		Assignment 2	Personal experiences of exercising.			10
		Seminar 1 (Total 20 students. 4 students will pick one topic)	1.Physical fitness component & framework. 2.Pysical self-concept and body image. 3.Exercise impact on mental health promotion. 4.Behaviour change for exercise adherence. 5.Cultural barriers for exercising.			10
		IA Total				**50**
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Identify the components of fitness that will contribute to good physical and mental health. • Describe foundation for fitness activities • Interpret Fitness behaviour as a function of person & environment.	4	6	3	CO1
	UNIT – II	At the end of the module the students will be able to • Locate individual difference based on psychological factors • Estimate sub-domains of Physical self-description • Discuss body image in relation to eating disorder	6	6	3	CO2
	UNIT – III	At the end of the module the students will be able to • Explain the social, Psychological and environmental antecedents of being physically active • Formulate exercise regime to alleviate distress and promote well being • Modify lifestyle for behaviour change.	6	6	3	CO3

Prof. JOLLY ROY
MA(Psy), MSW(Psychiatry),Ph.D
Principal
SRI RAMACHANDRA

	UNIT – IV	At the end of the module the students will be able to • Distinguish acquisition and maintanence of exercise behaviour • Determine past reinforcements in the present environment. • Design goal setting plan for individuals	7	6	3	CO4
	UNIT – V	At the end of the module the students will be able to • Categorize different psychological barriers for exercising • Examine socio-cultural influence in implementing behaviour change • Establish novel methods to promote exercise in "New Normal context".	7	6	3	CO5
			30	**30**	**15**	
12	**Reference books**	1. Foundations of Sport Psychology – Robert S. Weinberg and Daniel Gould 2. Sport Psychology Concepts and Applications – Richard H. Cox 3. Applied Sport Psychology Personal Growth to Peak Performance – Jean M. Williams and Vikki Krane 4. Dosil, J. (2011). *The Sport Psychologist's Handbook*. Chichester, West Sussex, England: John Wiley.				
13	**Online resources**	1. www.issponline.org 2. International Journal of Sport & Exercise Psychology. International Journal of Sport and Exercise Psychology: Vol 19, No 3 (tandfonline.com) 3. Journal of Applied Sport Psychology Taylor & Francis Online: Peer-reviewed Journals (tandfonline.com) 4. Case studies in sport and Exercise psychology Case Studies in Sport and Exercise Psychology | Association for Applied Sport Psychology				
14	**Syllabus Content**	Exercise Psychology (SGE001)				

14	**Syllabus Content**	Exercise Psychology (SGE001)
	Unit I: Introduction to Exercise and Physical Fitness.	- Physical fitness, health and its components - Fitness activity pyramid - Framework for fitness Psychology
	Unit II: Exercise and Self-Perception.	- Individual difference in relation to fitness - Physical Self-concept, Self-efficacy & Self-esteem - Body image and eating disorder
	Unit III: Exercise and Mental Health	- Anxiety & Depression - Distress and well-being - Sleep, Fatigue & Low energy
	Unit IV: Motivation and Exercise Adherence	- Introduction to exercise adherence and associated problems - Behavioural approaches to exercise adherence - Goal-setting as a technique of motivation
	Unit V: Exercise and Quality of life	-Barriers for exercising -Cultural influence on behaviour change - Environment and exercise (Normal/Pandemic/epidemic situation)

SGE001: Exercise Psychology **Elective Course for UG programs [**Faculty of Sports & Exercise Science**]**														
Course code	Category	Course Title	Credits /Week			**Credits (C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM:40%
SGE001	GE	**Exercise Psychology**	1	1	1	3	60	15	75	80	50	50	--	100

1	**Name of the course**	**Exercise Physiology**	
2	**Elective Code**	**SGE002**	**Credits:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS.	
4	**Course Objective**	The objective of this course is to enable the student to: 1. To describe the various exercise induced cardio respiratory changes. 2. To describe the skeletal muscle responses during exercise and recovery. 3. To understand the concepts of fatigue. 4. To illustrate the basic concepts of cardiopulmonary exercise testing.	
5	**Rationale for inclusion**	This course is designed to articulate the benefits of exercise on physiological changes.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs)	30
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	-
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment (20hrs+10 hrs) Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the student should be able to: 1. Recognize the physiological changes in cardio respiratory system produced during exercise. 2. Define lung capacities and volumes and appraise pulmonary exercise adaptations. 3. Understand the skeletal muscle response and regulation during exercise and recovery. 4. Explain the concepts of fatigue and, central and peripheral control of exercise. 5. Implement the potential uses of cardiopulmonary exercise testing.	
9	**Summary**	1. This course introduces exercise induced cardio respiratory changes and provide an understanding of the skeletal muscle responses during exercise. 2. The students will be provided an understanding of the concepts of fatigue and recovery 3. Students will be equipped to demonstrate the concepts of cardiopulmonary exercise testing.	

Prof. SOLLY ROY
MA(Psy), MSW(Psychiatry),Ph.D
Principal
Sri Ramachandra Faculty of Sports & Exercise Sciences
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116.

<table>
<tr><td>10</td><td>Assessment</td><td colspan="4">Course Instructors are encouraged to provide equal weightage to all the Online assessments.
Continuous Assessment (50 Marks) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>CO1 & CO2(MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td>Test 2</td><td>CO3, CO4 & CO5 (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td>Assignment 1</td><td>Journal club pertaining to units</td><td>10</td></tr>
<tr><td>Assignment 2</td><td>Journal club pertaining to units</td><td>10</td></tr>
<tr><td>Seminar 1
(Total 20 students.
4 students will pick one topic)</td><td>1. Cardiac responses to exercise
2. Respiratory responses to exercise
3. Skeletal muscle response to exercise
4. The brain as the regulator of exercise
5. Cardiopulmonary tests</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>50</td></tr>
</table>
Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td>Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>At the end of the module the students will be able to
• Defines the heart function and peripheral circulatory, normal blood pressure range, hypertension adaptations
• Explains the effect of heart rate, cardiac output, stroke volume, blood pressure and blood flow distributions during exercise</td><td>6</td><td>6</td><td>3</td><td>CO1</td></tr>
<tr><td></td><td>UNIT – II</td><td>At the end of the module the students will be able to
• Discusses the basics of pulmonary gaseous exchange
• Demonstrates understanding of lung volumes and capacities
• Sketches the integration and regulation of ventilation during exercise</td><td>6</td><td>6</td><td>3</td><td>CO2</td></tr>
<tr><td></td><td>UNIT – III</td><td>At the end of the module the students will be able to
• Demonstrates understanding of the skeletal muscle structure and function
• Distinguishes between cardiac muscle, skeletal muscle and smooth muscle
• Describes the mechanical and chemical events during muscle action
• Classifies the types of muscle fibres and their recruitment
• Defines hypertrophy, hyperplasia and atrophy</td><td>6</td><td>6</td><td>3</td><td>CO3</td></tr>
</table>

	UNIT – IV	At the end of the module the students will be able to • Describes neuromotor system organization • Sketches neuromuscular junction and neuromotor unit • Demonstrates understanding of the concepts of fatigue and its causes • Explains the central governor theory	6	6	3	CO4
	UNIT – V	• Evaluates pretest environment and athlete preparation • Demonstrates understanding of testing concepts aerobic capacity, anaerobic capacity and oxygen consumption • Examines the indication and contraindication of exercise testing • Constructs cardiopulmonary tests • Defines obstructive and restrictive diseases • Designs sports specific testing protocol (sample test)	6	6	3	CO5
			30	**30**	**15**	
12	**Reference books**	1. George Brooks, Thomas Fahey, Kenneth Baldwin. Exercise Physiology: Human Bioenergetics and Its Applications. (4th Edition). 2. Jack H. Wilmore, David L. Costill. Physiology of Sport and Exercise. (3rd Edition). 3. Katch and Katch Exercise Physiology				
13	**Online resources**	1. Journal of Applied Physiology 2. American Society of Exercise Physiologists :: Journal of Exercise Physiology (asep.org) 3. Medicine & Science in Sports & Exercise (lww.com)				
14	**Syllabus Content:**	Exercise Physiology (SGE002)				
	UNIT – I: Cardiac response to exercise	Heart function and peripheral circulatory, normal blood pressure range, hypertension adaptations - Effect of heart rate, cardiac output, stroke volume, blood pressure and blood flow distributions during exercise				
	UNIT - II: Respiratory response to exercise	Basics of pulmonary gaseous exchange - Lung volumes and capacities - Integration and regulation of ventilation during exercise				
	UUNIT - III: Skeletal muscle response	Skeletal muscle structure and function - Distinguishes between cardiac muscle, skeletal muscle and smooth muscle - Mechanical and chemical events during muscle action - Types of muscle fibres and their recruitment - Definition of hypertrophy, hyperplasia and atrophy				
	UNIT - IV: The brain as a regulator of exercise	Neuromotor system organization - Neuromuscular junction and neuromotor unit - Concepts of fatigue and its causes - Central and peripheral fatigue model - Central governor theory				
	UNIV - V: Cardiopulmonary exercise testing	Pretest environment and athlete preparation - Testing concepts aerobic capacity, anaerobic capacity and oxygen consumption - Indication and contraindication of exercise testing - Cardiopulmonary tests - Obstructive and restrictive diseases - Sports specific testing protocol				

SGE002 – Exercise Physiology

Elective Course for UG programs [Faculty of Sports & Exercise Science**]**

Course code	Category	Course Title	Credits /Week			**Credits (C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/Viva (c)	a+b=100
											PM: 30%	EST	ESP	PM:40%
SGE002	GE	**Exercise Physiology**	1	1	1	3	60	15	75	80	50	50	--	100

1	**Name of the Course**	**Advanced Exercise Physiology**	
2	**Elective Code**	**SGE003**	**Credits:** 3
3	**Level**	Any student enrolled in Post Graduate programs under CBCS.	
4	**Course Objective**	The objective of this course is to enable the student to: 1. To describe the various exercise induced cardio respiratory changes. 2. Understand the skeletal muscle responses during exercise and recovery. 3. To define the body fluid response and regulations 4. To understand the concepts of fatigue and its causes 5. To demonstrate the concepts of cardiopulmonary exercise testing.	
5	**Rationale for inclusion**	This course is designed to articulate the benefits of exercise on physiological changes.	
6	**Delivery method**		**Hours per credit**
		Online Learning OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In person) **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment (20hrs+10 hrs) Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the student should be able to: 1. Recognize the physiological changes in cardiac system produced during exercise. Defining lung capacities and volumes and appraise pulmonary exercise adaptations. 2. Infer the acid base regulation in the body. 3. Demonstrate understanding of the skeletal muscle response and regulation during exercise and recovery. 4. Explain the concepts of fatigue and central and peripheral control of exercise. 5. Develop the potential uses of cardiopulmonary exercise testing.	
9	**Summary**	1. This course introduces exercise induced cardio respiratory changes and provides an understanding of the skeletal muscle responses during exercise and recovery. 2. The students will be provided with the understanding of body fluid regulations and concepts of fatigue.	

Prof. JOLLY ROY
MA(Psy), MSW(Psychiatry),Ph.D
Principal
Sri Ramachandra Faculty of Sports & Exercise Sciences
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
Porur, Chennai - 600 116.

<table>
<tr><td></td><td></td><td colspan="5">3. Students will be equipped to demonstrate the concepts of cardiopulmonary exercise testing.</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="5">Course Instructors are encouraged to provide equal weightage to all the Online assessments.</td></tr>
<tr><td></td><td></td><td colspan="5">Continuous Assessment (50 Marks) :</td></tr>
<tr><td></td><td></td><td></td><td colspan="3">Course Outcomes</td><td>Marks</td></tr>
<tr><td></td><td></td><td>Test 1</td><td colspan="3">CO1 & CO2 (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td></td><td></td><td>Test 2</td><td colspan="3">CO3,CO4 & CO5 (MCQ's/Fill in the blanks/True or False)</td><td>10</td></tr>
<tr><td></td><td></td><td>Assignment 1</td><td colspan="3">Journal article discussion pertaining to the units</td><td>10</td></tr>
<tr><td></td><td></td><td>Assignment 2</td><td colspan="3">Journal article discussion pertaining to the units</td><td>10</td></tr>
<tr><td></td><td></td><td>Seminar 1
(Total 20 students.
4 students will pick one topic)</td><td colspan="3">1. Cardiac responses to exercise
2. Respiratory responses to exercise
3. Skeletal muscle response to exercise
4. The brain as the regulator of exercise
5. Cardiopulmonary tests</td><td>10</td></tr>
<tr><td></td><td></td><td>IA Total</td><td colspan="3"></td><td>50</td></tr>
<tr><td></td><td></td><td colspan="5">Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations</td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td colspan="2">Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td colspan="2">At the end of the module the students will be able to
• Defines the heart function and peripheral circulatory adaptations
• Explains the effect of heart rate, cardiac output, stroke volume, blood pressure and blood flow distributions during exercise
• Demonstrates understanding of the importance of maintenance of blood pressure, hypertension and exercise response.
• Reports the integration and regulation of ventilation during exercise</td><td>6</td><td>6</td><td>3</td><td>CO1</td></tr>
<tr><td></td><td>UNIT – II</td><td colspan="2">At the end of the module the students will be able to
• Demonstrates understanding of the skeletal muscle structure and function
• Distinguishes between cardiac muscle, skeletal muscle and smooth muscle
• Discusses the mechanical and chemical events during muscle action
• Differentiates muscle fibres and their recruitment
• Defines hypertrophy, hyperplasia and atrophy</td><td>6</td><td>6</td><td>3</td><td>CO2</td></tr>
</table>

	UNIT – III	At the end of the module the students will be able to • Classifies fluid compartments of the body • Relates water distribution at rest and during exercise • Describes renal buffer system • Respiratory limitations of exercise • Infer pH maintenance • Relates electrolyte loss and replacement	6	6	3	CO3
	UNIT – IV	At the end of the module the students will be able to • Demonstrates understanding of neuromotor system and organization of neuromuscular junction and neuromotor unit • Describes the concepts of fatigue and its causes • Explains the models of central and peripheral fatigue • Applies the central governor theory	6	6	3	CO4
	UNIT – V	At the end of the module the students will be able to • Evaluates pretest environment and athlete preparation • Demonstrates understanding of testing concepts aerobic capacity, anaerobic capacity and oxygen consumption • Examines the indication and contraindication of exercise testing • Constructs cardiopulmonary tests • Defines obstructive and restrictive diseases • Designs sports specific testing protocol(sample test)	6	6	3	CO5
			30	**30**	**15**	
12	**Reference books**	1. George Brooks, Thomas Fahey, Kenneth Baldwin. Exercise Physiology: Human Bioenergetics and Its Applications. (4th Edition). 2. Jack H. Wilmore, David L. Costill. Physiology of Sport and Exercise. (3rd Edition). 3. Katch and Katch Exercise Physiology 4. ACSM's Advanced Exercise Physiology				
13	**Online resources**	1. Journal of Applied Physiology 2. American Society of Exercise Physiologists :: Journal of Exercise Physiology (asep.org) 3. Medicine & Science in Sports & Exercise (lww.com)				
14	**Syllabus Content:**	Advanced Exercise Physiology (SGE003)				
	UNIT - I: Cardiac response to exercise	Heart function and peripheral circulatory adaptations - Effect of heart rate, cardiac output, stroke volume, blood pressure and blood flow distributions during exercise - The importance of maintenance of blood pressure, hypertension and exercise response - Integration and regulation of ventilation during exercise				

	UNIT - II: Respiratory response to exercise	Skeletal muscle structure and function - Distinguishes between cardiac muscle, skeletal muscle and smooth muscle - Mechanical and chemical events during muscle action - Differentiates muscle fibres and their recruitment - Definition of hypertrophy, hyperplasia and atrophy
	UNIT - III: Skeletal muscle response	Classification of fluid compartments of the body - Relates water distribution at rest and during exercise - Renal buffer system - Respiratory limitations of exercise - pH maintenance - Electrolyte loss and replacement
	UNIT - IV: The brain as a regulator of exercise	Neuromotor system and organization of neuromuscular junction and neuromotor unit - Concepts of fatigue and its causes - Central and peripheral fatigue model - Central governor theory
	UNIT - V: Cardiopulmonary exercise testing	Evaluation of pretest environment and athlete preparation - Testing concepts aerobic capacity, anaerobic capacity and oxygen consumption - Indication and contraindication of exercise testing - Cardiopulmonary tests - Obstructive and restrictive diseases - Designs sports specific testing protocol(sample test)

SGE003: Advanced Exercise Physiology **Elective Course for PG programs [**Faculty of Sports & Exercise Science**]**														
Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 40%	EST	ESP	PM:50%
SGE003	GE	**Advanced Exercise Physiology**	1	1	1	3	60	15	75	80	50	50	--	100

1	**Name of the course**	Physical Health	
2	**Elective Code**	TGE003	**Credit:** 3
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Introduce the components of Physical Health and factors influencing physical health 2. Provide necessary skills to understand the factors, assess the components and its role in maintenance and promotion of Physical health	
5	**Rationale for inclusion**	This is designed the learners to understand the effects of exercise on various systems of the body, various the factors affecting Physical health and their significance for a having good Physical health	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs)	30
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet / Big Blue Button / In person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 30 OA hours = 1 15 SI hours = 1
		Total Credit	**3**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Discuss the methods to promote physical health 2. Define the concept of physical health and physical activity 3. Explain the functioning of musculoskeletal, cardiorespiratory and neurological system relevant to physical health and physical activity. 4. List the common attributes of physical health and describe their assessment 5. Describe the effects of physical activity on human body 6. Explain factors influencing Physical health	

N Venkatesh

R. Sivakumar

Dr N. VENKATESH, PhD.,
Professor & Course Chairman
Faculty of Physiotherapy
SRIHER (DU)
Institute of Higher Education & Research
(Deemed to be University)
Porur, Chennai - 600116.

9	**Summary**	This course introduces the student to fundamentals of anatomy and physiological functioning of the human body and its response to exercises. Various intrinsic and extrinsic factors influencing physical health and strategies to promote physical health are explained. The learner is given the knowledge to understand the importance of physical health and practice well-being.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1 & CO-2	10
Test 2	CO-3 & CO-4	10
Test 3	CO-5 & CO-6	20
Assignment	CO-3, CO-4,CO-5 & CO-6	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Define terms related to physical health 2. Explain the anatomy and physiology of musculoskeletal, cardio respiratory and neurological system related to physical activity.	6	6	3	1,2
	UNIT – II	1. Explain the common attributes of Physical health 2. Explain the methods to assess the attributes of Physical health	6	6	3	3
	UNIT – III	1. Explain the physiological change in Musculoskeletal system, Cardio respiratory System and Neurological System due to physical activity 2. Describe the therapeutic benefits of physical activity	6	6	3	2,4
	UNIT – IV	1. List factors affecting Physical Health 2. Explain the factors affecting physical health 3. Discuss the strategies to promote physical health.	6	6	3	5,6

	UNIT – V	1. Explain the theories of aging relevant to physical health 2. Describe the effect of aging on Musculoskeletal system, Cardio respiratory System and Neurological System and its impact on physical health	6	6	3	5,6
			30	**30**	**15**	
12	**Reference books**	1. Samson Wright, Cyril Arthur Keele, Eric Neil, Samson Wright's applied physiology, Oxford publication, 15th edition, 2015 2. William D. McArdle, Frank I. Katch, Victor L. Katch, Essentials of Exercise Physiology, Lippincott Williams & Wilkins, 2006 3. Dena Gardiner M. Principles of Exercise Therapy, Fourth Edition, CBS Publication 2000				
13	**Online resources**	1. https://www.acsm.org/read-research/trending-topics-resource-pages/physical-activity-guidelines 2. https://openstax.org/books/anatomy-and-physiology/pages/1-1-overview-of-anatomy-and-physiology#:~:text=Whereas%20anatomy%20is%20about%20structure,support%20the%20functions%20of%20life.				
14	**Syllabus Content :**	Physical Health (TGE003)				
	UNIT – I	Physical Health-Technical Terms-Overview of fundamental anatomy and physiology of Musculoskeletal system, Cardio respiratory System and Neurological System				
	UNIT – II	Body Mass Index, Skin fold measurements, waist circumference, Body fat analysis, Physical activity-Muscle strength, endurance and flexibility-Assessment and significance				
	UNIT – III	Physiological Changes and therapeutic benefits of physical activity/ exercises on various systems of the body (Includes-Musculoskeletal system, Cardio respiratory System and Neurological System)				
	UNIT – IV	Factors: Pain-Physiology - Posture-Nutrition- Psycho social aspects-Impact of various factors on Physical health, Physical health promotion strategies				
	UNIT – V	Aging-Definition, theories and effects on different systems of the body (Includes-Musculoskeletal system, Cardio respiratory System and Neurological System)				

R. Arockiamary

TGE003 – Physical Health

Elective Course for UG programs [Faculty of Physiotherapy**]**

Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA – Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a+b= 100
											PM: 30%	EST	ESP	PM:40%
TGE003	GE	**Physical Health**	1	1	1	3	60	15	75	80	50	50	--	100

B. LIST OF ABILITY ENHANCEMENT COURSES OFFERED BY DEPARTMENTS OF THIS DU [Credits = 2]				
Faculty of Allied Health Sciences				
S. No.	Elective Code	**Course Name**	**Department**	**Level UG/ PG**
1	AAE 001	English	English Language Lab	UG
2	AAE 002	English for Clinical Communication	English Language Lab	UG
3	AAE 003	Communication and Soft Skill	English Language Lab	UG
4	AAE 007	Community Medicine	Community Medicine	UG
5	AAE 010	Medical Ethics & Law	General Medicine	UG
6	AAE 011	Essentials of Trauma Life Support	EMERGENCY & TRAUMA CARE TECHNOLOGY	PG
7	AAE 012	Essentials of Cardiac Life Support	EMERGENCY & TRAUMA CARE TECHNOLOGY	PG
8	nil	First Aid and Emergency Care (UAH19AE308 & UPS19AE309)	EMERGENCY & TRAUMA CARE TECHNOLOGY	UG
Faculty of Public Health				
9	HAE 001	Environmental Science	Environmental Health Engineering	UG

Curriculum Delivery method [Hours per credit]

- **Online Learning [30 h= 1 credit]**
  OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
- **Online Activities including Assessment [30 h= 1 credit]**
  OA - Online activities (Discussion forum, Reflection, Blogs)
- **Synchronous Interaction [15 h= 1 credit]**
  SI - Synchronous Interaction (Live interactions through Google meet/ Big BlueButton / In-person)
- **Independent Learning [60 h= 1 credit]**
  IL – Independent Learning **Approximatelydouble the Online learning hours)

<table>
<tr><td>1</td><td>Name of the Course</td><td colspan="4">English</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>AAE001</td><td>Credits: 2</td><td>Dept. : English Language Lab</td><td>Category: AE</td></tr>
<tr><td>3</td><td>Level</td><td colspan="4">Any student enrolled in Under Graduate programs under CBCS.</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">LEARNING OUTCOME: This course is designed to help the students to
CO1. Build spoken and written English competency needed to function effectively in academic setup.
CO2. Develop favourable attitude towards learning of English and build motivation for life- long learning.
CO3. Develop and integrate the use of four language skills to enhance competencies.
CO4. Speak and write grammatically correct sentences in English.
CO5. Use Medical Terminology and enhance lexical skills</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">This course is designed to build spoken and written English competency of the students needed to function effectively in academic setup.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Delivery Method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">Online Learning
OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
Online Activities including Assessment
OA- Online activities (Discussion forum, Reflection, Blogs)
Synchronous Interaction
SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person)
Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30

30

15

30</td></tr>
<tr><td>7</td><td>Credit</td><td colspan="3"></td><td>Hours allocated per credits</td></tr>
<tr><td></td><td></td><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>15 OL hours = 0.5
15 OA hours = 0.5
15 SI hours = 1</td></tr>
<tr><td></td><td></td><td colspan="3">Total Credits</td><td>2</td></tr>
<tr><td></td><td></td><td colspan="4">Credit assigned based on the course objectives and learning outcomes</td></tr>
</table>

<table>
<tr><td>8</td><td>Learning outcomes</td><td colspan="5">On successful completion of the course the students should be able to
Speak and write grammatically correct sentences in English.
Develop effective writing skills.
Build fluency in English</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="5">This course introduces the steps to develop, practice English language skills needed to effectively perform in academic set up</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="5">Continuous Assessment (100 Marks)<table><tr><td></td><td>Course Outcomes</td><td>Marks</td></tr><tr><td>Test 1</td><td>CO 1, 2,3,4 and 5</td><td>20</td></tr><tr><td>Test 2</td><td>CO 5</td><td>20</td></tr><tr><td>Test 3</td><td>CO 1, 2,3,4 and 5</td><td>20</td></tr><tr><td>Test 4</td><td>CO 1, 2,3,4 and 5</td><td>20</td></tr><tr><td>Test 5</td><td>CO 1, 2,3,4 and 5</td><td>20</td></tr><tr><td>IA Total</td><td></td><td>100</td></tr></table></td></tr>
<tr><td>11</td><td>Course Content and Teaching Method:</td><td colspan="2">Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT - I
GRAMMAR</td><td colspan="2">The students will be able to
Acquire knowledge about the types of grammatical problems in common to ESL Learners
Use the grammatical feature of Parts of speech in Sentences Structures
Add question tags to the given stem.
Recapitulate the questioning words.
Use various tenses appropriately in speech and writing.
Identify and write effectively following the rules of concordance.</td><td>3</td><td>3</td><td>3</td><td>CO 1, 2,3,4 and 5</td></tr>
</table>

	UNIT - II **VOCABULARY**	*The students will be able to* • *Learn the usage of word formation – adjectives/ adverbs/ nouns/ verbs.* • *Learn the meaning of the basic medical term.* • *Recognize to differentiate through meaning and spell words in* homophone *sets.* • *Understand the language characteristics of "idiom"* • *Learn Phrasal verbs to discuss the day to day issues .* • *Learn the meanings of some common English language idioms and figurative interpretations*	3	3	3	CO 5
	UNIT - III **WRITING SKILLS**	At the end of the module the students will *be able to* • *Identify the basic format of the formal letter which includes appropriate greetings, subject and tone.* • *Draft sample letters for official purpose related to students.* • *Understand the purpose and benefits of effective note making.* • *Employ strategies before, during and after taking notes.* • *Identify the main points and supportive points.* • *Create complete paragraphs using topic sentences, and sentences with supporting details.* • *Apply the concepts of* coherence *and* cohesion *in developing paragraph*	3	3	3	CO 1, 2,3,4 and 5

	UNIT – IV **SPOKEN COMMUNICATION**	*The students will be able to* • *Develop ability to express language skills needed for various day to day context.* • *Build body language appropriate to suit group discussion and presentation* • *Express reasoning skills, Flexibility, Leadership qualities, Initiative, Ability to work in a team, Listening skills, Assertiveness during group discussion.* • *Determine key telephone etiquette to develop communication skills.* • *Learn the steps of opening to closing a telephonic conversation* • *Apply listening techniques for improved understanding.*	3	3	3	CO 1, 2,3,4 and 5
	UNIT - V **LISTENING and READING SKILLS**	*The students will be able to* • *Develop active listening skill to acquire information* • *Apply listening techniques to elicit answers* • *Appreciate and Assimilate new ideas in to the lives.* • *Read to develop critical thinking skills* • *Use resources to increase vocabulary and gain deeper understanding* • *Take notes and make use of them in answering questions about the passage.*	3	3	3	CO 1, 2,3,4 and 5
			15	**15**	**15**	

12	**Reference books**	**Textbook Recommended:** Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200) English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers. (Approx. Cost Rs. 150) **"**The Gifts that Nobody wants" by Dr. Paul Brand and Mr. Philip Yancey **References:** High School English Grammar and Composition by Wren & Martin. J. C. Nesfield, English Grammar Composition & Usage, Macmillan India Limited. Practical English Usage, Michael Swan Speak in English, Lakshminarayanan.K.R A handbook of pronunciation of English words, J. Sethi and J.V. Jindal, Eastern Economy Edition. Practical Communication By Abraham Benjamin Samuel
13	**Online Resources**	http://www.letterwritingguide.com/ http://www.englishchick.com/grammar/
14	**Syllabus Content**	**English (AE001)**
	UNIT – I **GRAMMAR**	Remedial Grammar : Parts of speech; Types of sentences, question tags Modal verbs Tenses Concordance
	UNIT – II **VOCABULARY**	Word formation – prefixes and suffixes Medical terminology Words often misused or confused Idioms and phrases Phrasal Verbs
	UNIT – III **WRITING SKILLS**	Letter writing - permission, leave and other official letters Note making methods Jumbled sentences - cohesion Paragraph Writing
	UNIT – IV **SPOKEN COMMUNICATION**	Pronunciation of commonly mispronounced words Day to day conversation Telephonic conversations Group Discussions

	UNIT – V **READING and LISTENING SKILLS**	General Listening comprehension PRESCRIBED READING PASSAGES Extracts from "The Gifts that Nobody wants" by Dr. Paul Brand and Mr. Philip Yance Chapter3 & 4 (P 27- 59) Poetry PAPER BOATS by Rabindranath Tagore

AAE001: English **Ability Enhancement Course for UG programs under CBCS [English Language Lab]**															
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - (a) MARKS	End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OL+OA	Practical / SI	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40%	EST	ESP	PM: 40%
AAE001	AE	**English**	0.5	0.5	1	2	30	30	60	80	100	-	-	100

<table>
<tr><td>1</td><td>Name of the Course</td><td colspan="4">English for Clinical Communication</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>AAE002</td><td>Credits: 2</td><td>Dept: English Language Lab</td><td>Category: AE</td></tr>
<tr><td>3</td><td>Level</td><td colspan="4">Any student enrolled in Under Graduate programs under CBCS with a clinical practice.</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">This course is designed to help the students to
CO1. Communicate effectively and appropriately in context of their respective professional setting.
CO2. Speak and write grammatically correct sentences in their clinical context.
CO3. Develop effective writing skills in preparation of clinical reports.
CO4. Build verbal fluency in English needed for clinical interactions.
CO5. Use Medical Abbreviation and Medical Idioms</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">This course is designed to build spoken and written English competency of the students needed to function effectively in clinical setup.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Delivery Method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">Online Learning
OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
Online Activities including Assessment
OA- Online activities (Discussion forum, Reflection, Blogs)
Synchronous Interaction
SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person)
Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30

30

15</td></tr>
<tr><td rowspan="3">7</td><td rowspan="3">Credit
Credit assigned based on the course objectives and learning outcomes</td><td colspan="3"></td><td>Hours allocated per credits</td></tr>
<tr><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>15 OL hours = 0.5
15 OA hours = 0.5
15 SI hours = 1</td></tr>
<tr><td colspan="3">Total Credits</td><td>2</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the students should be able to
Speak and write grammatically correct sentences in English.
Develop effective writing skills needed for clinical report writing.
Build fluency in English needed for clinical interactions</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="4">This course introduces the steps to develop, practice English language skills needed to effectively perform in academic set up.</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Assessment</td><td colspan="4">Continuous Assessment (100 Marks)</td></tr>
<tr><td></td><td colspan="2">Course Outcomes</td><td>Marks</td></tr>
</table>

		Test 1	CO 1, 2 and 3	20
		Test 2	CO 1, 2,3,4 and 5	20
		Test 3	CO 1, 2,3,4 and 5	20
		Test 4	CO 1, 2,3,4 and 5	20
		Test 5	CO 1, 2 and 3	20
		IA Total		**100**

11	**Course Content and Teaching Method:**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT - I **GRAMMAR**	*The students will be able to* • *Acquire knowledge about the types of grammatical problems in common to ESL Learners .* • *Use various tenses appropriately in speech and writing.* • *Identify and write effectively following the rules of concordance*. • Identify and correct the grammatical errors in	3	3	3	CO 1, 2,3
	UNIT - II **VOCABULARY**	*The students will be able to* • *Learn the usage of medical abbreviations.* • *Learn the meaning of the basic medical term.* • *Learn Phrasal verbs to discuss the day to day issues* • *Learn the meanings of some common English medical dioms and figurative interpretations*	3	3	3	CO 1, 2,3,4 and 5
	UNIT - III **WRITING SKILLS**	At the end of the module the students will be able to • *Identify the basic format of the reference letter which includes appropriate greetings, subject and tone.* • *Draft sample letters for public forums* • *Employ strategies to convert image sequence into paragraph defining a procedure* • *Apply the concepts of* coherence *and* cohesion *in developing paragraph*	3	3	3	CO 1, 2,3,4 and 5

	UNIT – IV **SPOKEN COMMUNICATION**	*The students will be able to* • *Develop ability to express language skills needed for various clinical interactions* • *Build body language appropriate to suit group discussion and presentation* • *Express reasoning skills, Flexibility, Leadership qualities, Initiative, Ability to work in a team, Listening skills, Assertiveness during group discussion.* • *Determine key telephone etiquette to develop communication skills.* • *Learn the steps of opening to closing a telephonic conversation* • *Apply listening techniques for improved understanding.*	3	3	3	CO 1, 2,4 and 5
	UNIT - V **LISTENING and READING SKILLS**	*The students will be able to* • *Develop active listening skill to acquire information* • *Apply listening techniques to elicit answers* • *Appreciate and Assimilate new ideas in to the lives.* • *Read to develop critical thinking skills* • *Use resources to increase vocabulary and gain deeper understanding* • *Take notes and make use of them in answering questions about the passage.*	3	3	3	CO 1, 2 and 3
			15	**15**	**15**	

12	**Reference books**	**Textbook Recommended:** Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw – Hill Publishing Company Limited, New Delhi. (Approx. Cost Rs. 200) English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers. (Approx. Cost Rs. 150) References: High School English Grammar and Composition by Wren & Martin. J. C. Nesfield, English Grammar Composition & Usage, Macmillan India Limited. English for Nurses by Sharma Lohumi, Elsevier India Pvt. Ltd. Professional English for Medicine, Eric H. Glendinning Ron Howard, Cambridge Publication. Career English for Nurses by Selva Rose, Orient Black Swan. Malcolm Goodale, Professional Presentations, Cambridge University Press. Practical Communication By Abraham Benjamin Samuel.
13	**Online Resources**	http://www.letterwritingguide.com/ http://www.englishchick.com/grammar/
14	**Syllabus Content**	**English for Clinical Communication (AAE002)**
	UNIT – I **APPLIED GRAMMAR**	Identifying errors in sentences - word order, tenses, Prepositions Transformation of sentences : Reported , Voice USAGE : Either …or…, Neither… nor…, So… that…, Such… that…, Not only… but also…, unless…
	UNIT – II **VOCABULARY**	Abbreviations in Medical field Medical idioms & Phrases
	UNIT – III **WRITING SKILLS**	Letter writing - Letter to the editor Creative writing – invite, posters Essay writing
	UNIT – IV **SPOKEN COMMUNICATION**	Telephone etiquette Importance of Stress, Intonation and rhythm Speaking : - Describing simple process - Filling a form etc., - Asking and answering questions -Debate/Oral Reporting
	UNIT – V **READING and LISTENING SKILLS**	Listening Prescribed Reading Extracts - *Alcohol Abuse* - *Faith can help you help*

AAE002: English for Clinical Communication **Ability Enhancement Course for UG programs under CBCS [English Language Lab]**														
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)					End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OI+OA	Practical / SI	Total hours	Attendance (%)	CIA - (a) MARKS	Theory (b)	Practical/ Viva (c)	a+c = 100
											PM: 40%	EST	ESP	PM: 40%
AAE002	AE	**English for Clinical Communication**	0.5	0.5	1	2	30	30	60	80	100	-	-	100

<table>
<tr><td>1</td><td>Name of the Course</td><td colspan="4">Communication and Soft Skills</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>AAE003</td><td>Credits: 2</td><td>Dept.: English Language Lab</td><td>Category: AE</td></tr>
<tr><td>3</td><td>Level</td><td colspan="4">Any student enrolled in Under Graduate programme under CBCS.</td></tr>
<tr><td>4</td><td>Course Objectives</td><td colspan="4">The objective of the course is to enable the students
CO1. Demonstrate essential soft skills needed for workplace environment and enhance self.
CO2. Understand the importance of soft skills through individual and group activities
CO3. Manage conflict by applying appropriate problem solving skills.
CO4. Enable active participation in group discussion / meetings / interviews and presentations.
CO5. Strengthen professional written and oral communication.</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">The course will prepare students to strengthen their personality.</td></tr>
<tr><td rowspan="4">6</td><td rowspan="4">Delivery Method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">Online Learning
OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
Online Activities including Assessment
OA- Online activities (Discussion forum, Reflection, Blogs)
Synchronous Interaction
SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person)
Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>30

30

15

60</td></tr>
<tr><td rowspan="3">7</td><td rowspan="3">Credit</td><td colspan="3"></td><td>Hours allocated per credits</td></tr>
<tr><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>15 OL hours = 0.5
15 OA hours = 0.5
15 SI hours = 1</td></tr>
<tr><td colspan="3">Total Credits</td><td>2</td></tr>
<tr><td colspan="5">Credit assigned based on the course objectives and learning outcomes</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">• On successful completion of the course the students should be able to
• Foster healthy attitude.
• Develop effective inter and intra personal skills to be an effective individual to collaborate with team.
• Communicate effectively in both academic and professional setup.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="4">This course would help every individual to groom their self and find their identity and also would help them in engaging in team activities with positivity.</td></tr>
<tr><td rowspan="4">10</td><td rowspan="4">Assessment</td><td colspan="4">Continuous Assessment (100 Marks)</td></tr>
<tr><td></td><td>Course Outcomes</td><td colspan="2">Marks</td></tr>
<tr><td>Test 1</td><td>CO 1, 2, 3 & 4</td><td colspan="2">20</td></tr>
<tr><td>Test 2</td><td>CO 1, 2, 3 & 4</td><td colspan="2">20</td></tr>
<tr><td></td><td>Test 3</td><td>CO 3 & 4</td><td colspan="2">20</td></tr>
</table>

		Test 4	CO 3, 4 & 5	20			
		Test 5	CO 1,4 & 5	20			
		IA Total		**100**			
11	**Course Content and Teaching Method:**	**Learning outcomes**		**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT - I Aspects of Communication	At the end of the module the students will be able to • Understand the aspects of communication, its process, barriers and how those barriers can be rectified.		6	3	2	CO 1, 2,3 , 4 & 5
	UNIT - II Speaking Skill	At the end of the module the students will be able to • Start and end a conversation • Express with courteousness • Make a magical public presentation • Improve their telephoning mannerism		6	3	2	CO 1, 2,3 & 4
	UNIT - III Reading Skill	At the end of the module the students will be able to • Understand the human behaviour		6	3	1	CO 3 & 4
	UNIT – IV Writing Skill	At the end of the module the students will be able to • Improve their writing skills • Develop editing and paraphrasing • Enhance mailing and drafting mails and memos		6	3	1	CO 3 & 4
	UNIT - V Soft Skills	At the end of the module the students will be able to • Develop good listening skills • Express empathy • Understand the nuances of facing an interview		6	3	2	CO 1 & 4
				30	**15**	**8**	
12	**Reference books**	Adair, John. Effective Communication. London: Pan Macmillan Ltd., 2003. Ajmani, J. C. Good English: Getting it Right. ... Hasson, Gill. Brilliant Communication Skills. Great Britain: Pearson. Education, 2012. Hughes, Shirley. ... Raman, Meenakshi & Sangeeta Sharma. Technical Communication: Principles and Practice. "Soft Skills – Enhancing Employability: Connecting Campus with Corporate" by M S Rao "Personality Development and Soft Skills (Old Edition)" by Barun K Mitra "Communication and soft skill development (first edition)" by career publications and Ashwini Deshpande					
13	**Online Resources**	https://www.goskills.com https://elearningindustry.com/top-soft-skills-online-training-resources-management-team https://virtualspeech.com/blog/improve-communication-skills https://learndigital.withgoogle.com/digitalgarage/course/soft-skills-training					
14	**Syllabus Content**	**Communication and Soft Skills (AAE003)**					

	UNIT – I Aspects of Communication	Importance of communication, Process, Barriers Non Verbal Communication
	UNIT – II Speaking Skill	Opening and Closing conversations Introductions and Address Systems Expressing Courtesy Giving Compliments and replying to Compliment Presentation Skills Telephonic conversation and telephone etiquette
	UNIT – III Reading Skill	White washing the Fence – Episode from Tom Sawyer by Mark Twain Bacon's Essays: - Of Goodness and goodness of nature
	UNIT – IV Writing Skill	Letter writing - Letter of Complaints, Inviting and Declining an invitation Memos and Email Editing- Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.
	UNIT – V Soft Skills	Active Listening Skills Assertive Skills Negotiation and Persuasive Skills Interview Skills

AAE003: Communication and Soft Skills
Ability Enhancement Course for UG programs under CBCS [English Language Lab]

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - (a) MARKS	End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OL+OA	Practical / SI	Total hours			Theory (b)	Practical/ Viva (c)	a+c = 100
											PM: 40%	EST	ESP	PM: 40%
AAE003	AE	**Communication and Soft Skills**	0.5	0.5	1	2	30	30	60	80	100	-	-	100

1	**Name of the course**	Community Medicine	
2	**Elective Code**	AAE 007	Dept. of Community Medicine
3	**Credits & Category:**	2	AE
4	**Level**	Under Graduate programs under CBCS.	
5	**Course Objective**	Facilitate the students to CO1. Acquire excellent knowledge in the principles of Community Medicine CO2. Acquire excellent skills in the practice of Community Medicine	
6	**Rationale for inclusion**		
7	**Delivery method** • **OL- Contact class/ Online Learning [** L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **OA- Online activities** (Discussion forum, Reflection, Blogs) / Practical + A – Assessment • **SI- Synchronous Interaction** (Live interactions through Google meet/ Moodle) • **IL – Independent Learning** **Approximately double the Online learning hours)	**Hours per credit** 30 OL HOURS = 1 CREDIT 30 OA HOURS = 1 CREDIT 15 SI HOURS = 1 CREDIT	

8	**Credits** Credits assigned are based on the course objectives and learning outcomes.	**Activity**	**Hours allocated per credit**
		Online Learning Online Activities Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 30 SI +IL hours = 1
		Total Credit	**2**
9	**Course outcomes**	On successful completion of the course the students should be able to CO1. Describe the principles of Community Medicine. CO2. Practice and categorize aspects of community Medicine.	
10	**Summary**		

11	**Assessment** Course Instructors are encouraged to provide equal Weightage to all the assessments.	**Continuous Assessment (50 Marks) :**		
				Marks
		Test 1	CO-1 & CO-2	20
		Test 2	CO-1 & CO-2	20
		Test 3	CO-1, 2	20
		Assignment	CO-1, & CO-2	40
		IA Total		**100**
		Summative Assessment : (By Department) As per CBCS 2019 Regulations		

12	**Course Content and Teaching Method :**	**Specific Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	Unit –I: •Importance of Community Medicine	• Natural History of disease- Epidemiologic concept of Interactions of Agents, Host and Environment- Agent factors- Environmental factors – Risk groups • Dynamics of Disease Transmission- Sources and Reservoir- Modes of transmission Susceptible Host • Principles of prevention and control – Controlling the reservoir-Interruption of transmissionLevels of Prevention - Modes of Intervention -Vaccine preventable diseases -Importance of Immunization- Immunization schedule • Disinfection-Definition, Types and Principles of Disinfection- Disinfectants, Recommended disinfection procedures for faeces and urine, sputum and room- Factors affecting the efficacy of sterilization				
	UNIT – II: • Hospital Acquired infection:	• Hospital Acquired infection –Source, Routes of spread, Recipients – Principles of infection control – preventive measures-Standard Precautions • Hospital Waste Management – Definition of health care waste – Health hazards - Route of transmission of infection from health care waste - Segregation and safe storage – Choice of bins – Handling and Treating of health care waste and Disposal. • Important Communicable Diseases – Tuberculosis, ARI & Influenza, Leprosy, HIV / AIDS, Hepatitis B & C, Acute Diarrhoeal Diseases / Food poisoning, Arthropod borne infections, - Risk factors, Prevention – Related health programmes in brief. • Non Communicable diseases -CHD & Obesity, Diabetes and Hypertension, Cancer – Risk factors and Prevention				
	Unit –III: Mental health	• Mental health - Alcoholism and Tobacco use –Adverse health effects and Prevention.				
	UNIT – IV Maternal and Child Health	• Maternal and Child Health – Antenatal, Intranatal, & Postnatal care & Reproductive and Child Health programme in brief • Family planning – Definition- Health aspects of family planning- Condom, IUD, Oral Contraceptive Pills – Mode of action, Advantages and Disadvantages				
	UNIT – V Environmental sanitation &	• Environmental sanitation - Prevention of environmental pollution – Waterborne diseases Household purification of water-				

	Nutritional problems in public health-	Disposal of wastes-Public health importance-Open air defecation-Sanitation barrier • Nutritional problems in public health- Low birth weight-Protein energy malnutrition-Vit A deficiency- Nutritional anemia-Iodine deficiency disorders- Balanced diet • Health education-Contents-Principles and Practice of health education • Epidemiological Study designs – Descriptive and analytical study designs-Uses of epidemiology				
			15	**15**	**30**	

12	**Reference books**	Park's Textbook of Preventive and Social Medicine -23rd Edition Textbook of Public health and Community Medicine I Edition–published by Department of Community Medicine, Armed forces Medical college, Pune
13	**Online resources**	Online Reference 1. World Health Organization web site - www.who.int/topics/en/

14	**Syllabus Content :**	**Community Medicine [AAE 007]**
	UNIT – I •Importance of Community Medicine	• Natural History of disease- Epidemiologic concept of Interactions of Agents, Host and Environment- Agent factors- Environmental factors – Risk groups • Dynamics of Disease Transmission- Sources and Reservoir-Modes of transmission Susceptible Host • Principles of prevention and control – Controlling the reservoir-Interruption of transmissionLevels of Prevention - Modes of Intervention -Vaccine preventable diseases - Importance of Immunization- Immunization schedule • Disinfection-Definition, Types and Principles of Disinfection-Disinfectants, Recommended disinfection procedures for faeces and urine, sputum and room- Factors affecting the efficacy of sterilization
	UNIT – II Hospital Acquired infection:	• Hospital Acquired infection –Source, Routes of spread, Recipients – Principles of infection control – preventive measures-Standard Precautions • Hospital Waste Management – Definition of health care waste – Health hazards - Route of transmission of infection from health care waste - Segregation and safe storage – Choice of bins – Handling and Treating of health care waste and Disposal. • Important Communicable Diseases – Tuberculosis, ARI & Influenza, Leprosy, HIV / AIDS, Hepatitis B & C, Acute Diarrhoeal Diseases / Food poisoning, Arthropod borne infections, - Risk factors, Prevention – Related health programmes in brief. • Non Communicable diseases -CHD & Obesity, Diabetes and Hypertension, Cancer – Risk factors and Prevention
	UNIT – III Mental health	• Mental health - Alcoholism and Tobacco use –Adverse health effects and Prevention.

	UNIT – IV Maternal and Child Health	• Maternal and Child Health – Antenatal, Intranatal, & Postnatal care & Reproductive and Child Health programme in brief • Family planning – Definition- Health aspects of family planning- Condom, IUD, Oral Contraceptive Pills – Mode of action, Advantages and Disadvantages
	UNIT – V Environmental sanitation & Nutritional problems in public health-	• Environmental sanitation - Prevention of environmental pollution – Waterborne diseases Household purification of water-Disposal of wastes-Public health importance-Open air defecation-Sanitation barrier • Nutritional problems in public health- Low birth weight-Protein energy malnutrition-Vit A deficiency- Nutritional anemia- Iodine deficiency disorders- Balanced diet • Health education-Contents-Principles and Practice of health education • Epidemiological Study designs –Descriptive and analytical study designs-Uses of epidemiology

AAE007: Community Medicine
Ability Enhancement Course for UG programs under CBCS [Dept. of Community Medicine]

Course code	Category	Course Title	Credits / Week			Credits (C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - (a)	End Semester **Department**		Grand Total
			OL	OA	Practical (P) / SI		OL+OA	Practical / SI	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40%	EST	ESP	PM: 40%
AAE007	AE	**Community Medicine**	0.5	0.5	1	2	30	30	60	80	100	-	-	100

1	**Name of the course**	**Medical Ethics & Law**	
2	**Elective Course Code**	**AAE010**	Dept. of General Medicine
3	**Credits & Category:**	2	AE
4	**Level**	Under Graduate programs under CBCS	
5	**Course Objective**	• To understand the importance of ethics and professionalism in the practice of medicine • Understand the process of analyzing an ethical case. • Understand the relationship between medical ethics and medical professionalism. • Understand ethical and legal concept relating to confidentiality • Understand ethical and legal concepts relating to informed consent, surrogate decision making, and advances directives.	
6	**Rationale for inclusion**		

7	**Delivery method** • **OL- Contact class/ Online Learning [** L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **OA- Online activities** (Discussion forum, Reflection, Blogs) / Practical + A – Assessment • **SI- Synchronous Interaction** (Live interactions through Google meet/ Moodle) • **IL – Independent Learning** **Approximately double the Online learning hours)	**Hours Per credit** 30 OL HOURS = 1 CREDIT 30 OA HOURS -= 1 CREDIT 15 SI HOURS = 1 CREDIT

8	**Credits** Credits assigned are based on the course objectives and learning outcomes.	**Activity**	**Hours allocated per credit**
		Online Learning Online Activities Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 15 SI +IL hours = 1
		Total Credits	**2**
9	**Course outcomes**	On successful completion of the course the students should be able to CO1. . Describe the importance of ethics and professionalism in the practice of medicine CO2. Explain the process of analyzing an ethical case. CO3. Demonstrate the relationship between medical ethics and medical professionalism. CO4. Practice and categorize ethical and legal concept relating to confidentiality CO5. Practice and categorize ethical and legal concepts relating to informed consent, surrogate decision making, and advances directives.	
10	**Summary**		
11	**Assessment**	Course Instructors are encouraged to provide Equal Weightage to all the assessments.	
		Continuous Assessment (50 Marks) :	
			Marks

		Test 1	CO-1 & CO-2	20
		Test 2	CO-3 & CO-4	20
		Test 3	CO-5	20
		Assignment	CO-1, CO-2 & CO-4	40
		IA Total		**100**
		Summative Assessment: (By Department) As per CBCS 2019 Regulations		

12	**Course Content and Teaching Method :**	**Specific Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT –I Professional codes of ethics	• History of Medical Law & Ethics • Definition & key terms: Ethics vs Law • Define: Negligence, Malpractice and Liability • Influence of ethics on general practice • Describe primary and secondary ethical principles				
	UNIT–II Describe the moral basis of informed consent & advances directives	Beneficiance / non-malificaence Human Rights Futility Conflict of Interest i. Retrieval ii. Vendor Relationship iii. Treating Family members iv. Sexual Relationship				
	UNIT – III Euthanasia and physician – assisted suicide	Research Ethics Euthanasia & Physician-assisted Suicide Empathy / Sympathy Neuro Ethics / nursing Ethics Medical Malpractice Ethics in Psychiatry/ Ethics in Addiction				
	UNIT – IV Physicians, patients and other autonomy, truth telling & confidentiality	Reproductive Control: assisted reproduction and ethics Workers compensation Ethics issues in applied Medicine Fertility & birth Control Genetic testing and Genetic screening				
		Total	**15**	**15**	**30**	
13	**Reference books**	**Text books** 1.Medical ethics, A case based approach – Author: Schwartz lisa, Preece paul 2.Practical ethics, for general practice- Author: Rogerg wenty A, Braunack – Mayer Annette J 3.Ethics for Health care – Author: Catherine Berglund 4. Ethics in health administration – A practical approach for decision makers – Author: Eileen E Morrision. 5.Medical ethics – Francis – CM (Nursing basis sciences) 6. Principle of bio – medical ethics – Author: Beauchamb Tom L,				

		Child less – James F (Nursing general) 7.Indian Journal of medical ethics selected reading 1993 to 2003 – Author: former for medical ethics society 8. Fundamental issues in bio medical ethics with real life –Ex: for better understand – Author: Jain A 9. Department of forensic medicine: Medical ethics issues and implications – Author: Pain Asisi Kumar
14	**Online resources**	
15	**Syllabus Content :**	**Medical Ethics & Law [AAE010]**
	Unit I: Professional codes of ethics	• History of Medical Law & Ethics • Definition & key terms: Ethics vs Law • Define: Negligence, Malpractice and Liability • Influence of ethics on general practice • Describe primary and secondary ethical principles
	Unit II: Describe the moral basis of informed consent & advances directives	Beneficiance / non-malificaence Human Rights Futility Conflict of Interest v. Retrieval vi. Vendor Relationship vii. Treating Family members viii. Sexual Relationship
	Unit III: Euthanasia and physician – assisted suicide	Research Ethics Euthanasia & Physician-assisted Suicide Empathy / Sympathy Neuro Ethics / nursing Ethics Medical Malpractice Ethics in Psychiatry/ Ethics in Addiction
	Unit IV: Physicians, patients and other autonomy, truth telling & confidentiality	Reproductive Control: assisted reproduction and ethics Workers compensation Ethics issues in applied Medicine Fertility & birth Control Genetic testing and Genetic screening

AAE010: Medical Ethics & Law

Ability Enhancement Course for UG programs under CBCS {Dept. of General Medicine]

Course code	Category	Course Title	Credits / Week			Credits (C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - (a)	End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OL+OA	Practical / SI	Total hours			Theory (b)	Practical/ Viva (c)	a= 100
											PM: 40%	EST	ESP	PM: 40%
AAE010	AE	**Medical Ethics & Law**	0.5	0.5	1	2	30	30	60	80	100	-	-	100

1	**Name of the course**	Essentials of Trauma Life Support	
2	**Elective Code**	AAE011	**Credits:** 2
3	**Level**	Any student enrolled in Post Graduate programs under CBCS.	
4	**Course Objective**	The Trauma Life Support program provides its learners with a reliable and secure method for the immediate treatment of injured patients including the necessary basic knowledge to 1. Describe the primary and secondary survey in trauma patients. 2. Demonstrate the skills to deal with acute life-threatening conditions in a timely manner. 3. Enumerate the steps of initial assessment and treatment of multiple injured patients.	
5	**Rationale for inclusion**	This course is designed to emphasis on Traumatic injuries sustained by a patient. To sensitize the students to identify the life-threatening conditions and appropriate interventions to be performed in the pre-hospital setup before reaching an Level 1-Trauma care center	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) (including 10 assessment)	20
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/In Person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 0.5 20 OA hours = 0.5 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	After the completion of the course, the student will be able to 1. Describe the importance of the Trauma patient assessment in a given simulated environment 2. Describe the steps of assessment of trauma patients 3. Identify and treat any life-threatening Injuries during the primary survey	

T.V. RamaKrishnan

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Medical College & Research Institute
(Deemed to be University)
Porur, Chennai - 600 116.

9	**Summary**	This course is designed to address on the multiple system Traumatic injuries sustained by a patient. To sensitize the students to identify and address the life-threatening conditions and appropriate interventions to be performed in the pre-hospital setup to reduce the mortality and morbidity.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks for GE 100 for SE?SL/SE) :

	Course Outcomes	Marks
Test 1	CO1 (MCQ's/Fill in the blanks/True or False)	20
Test 2	CO2 (MCQ's/Fill in the blanks/True or False)	20
Test 3	CO3 (MCQ's/Fill in the blanks/True or False)	20
Test 4	CO4 (MCQ's/Fill in the blanks/True or False)	20
Assignment 1	Primary and Secondary Survey assessment Algorithm	10
Assignment 2	Splinting Techniques and its principle, Use of SMRD	10
IA Total		**100**

Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations.

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Recognize the importance of the Trauma patient assessment in a given simulated environment. • Describe the steps of Trauma Patient assessment	4	2	2	CO1
	UNIT – II	At the end of the module the students will be able to • Describe the steps of appropriate method of airway intervention for a given scenario • Identify and address the life-threatening Thoracic trauma • Define the source of shock in the majority of trauma patients • Describe the management of hemorrhagic shock • Describe the evaluation and pre-hospital management of the patient who has suffered a head injury. • Demonstrate skills of spinal motion restriction (SMR) device application	12	8	5	CO2

	UNIT – III	At the end of the module the students will be able to • Differentiate between blunt and penetrating injuries. • Evaluate and treat life-threatening injuries, with a focus on extremity trauma. • Discuss the major immediate and short-term consequences, as well as the treatment, of the following extremity injuries. • Describe the evaluation of the patient who has suffered a Burn injury. • Special considerations: Assessment and management approach towards Geriatric trauma • Special considerations: Assessment and management approach towards Pediatric trauma	10	8	5	CO3
	Unit – IV	At the end of the module the students will be able to • Describe the physiological changes in pregnancy • Describe the initial assessment and management of pregnant trauma patients • Identify the treatable causes of cardiopulmonary arrest in trauma	4	2	3	CO4
			30	**20**	**15**	
12	**Reference books**	1. International Trauma Life Support provider manual 8th Edition 2. Pre-hospital Trauma Life Support provider manual 9th edition 3. Advanced Trauma Life Support Provider manual 10th Edition 4. Tintinalli Emergency Medicine, A comprehensive guide 8th or 9th Edition 5. Nancy Caroline Emergency Care in the streets Eighth edition Volume II 6. Mosby's Paramedic textbook 4th Edition				
13	**Online resources**	1. https://emedicine.medscape.com/ 2. https://www.braintrauma.org/ 3. https://www.jems.com/ 4. www.itrauma.org				
14	**Syllabus Content:**	Essentials of Trauma Life Support (AAE011)				
	Unit I: Introduction to Trauma Assessment	Scene Size-up - Trauma Assessment and Management				
	Unit II: Mechanism of Trauma and Multisystem approach – Part I	Airway Management - Thoracic Trauma – Shock - Head Trauma - Spinal Trauma				
	Unit III: Mechanism of Trauma and Multisystem approach – Part II	Abdominal Trauma - Extremity Trauma – Burns - Pediatric Trauma - Geriatric Trauma				
	Unit IV Special considerations	Trauma in Pregnancy - Traumatic cardiopulmonary arrest				

Essentials of Trauma Life Support [AAE011] **Ability Enhancement Course for PG programs under CBCS** **[Dept.: EMERGENCY & TRAUMA CARE TECHNOLOGY]**														
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA (a)	End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OL+OA	Practical / SI/ IL	T/ total			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 50 %	EST	ESP	PM: 50%
AAE011	AE	**Essentials of Trauma Life Support**	0.5	0.5	1	2	30	15+20	65	80	100	-	-	100

1	**Name of the Course**	Essentials of Cardiac Life Support	
2	**Elective Code**	AAE012	**Credits:** 2
3	**Level**	Any student enrolled in Post Graduate programs under CBCS.	
4	**Course Objective**	The objective of this course is to enable the students to: 1. Recognize cardiac arrest and perform high quality Cardiopulmonary Resuscitation (CPR). 2. Identify cardiac arrest rhythms and management algorithm. 3. Acquire knowledge on electrical therapies and emergency medications. 4. Identify pre arrest rhythms – Brady and Tachyarrhythmia and its management algorithm. 5. Explain the signs of Return of spontaneous circulation (ROSC) and post cardiac arrest care.	
5	**Rationale for inclusion**	This course is designed to introduce the students on how to recognize the cardiac arrest and abnormal heart rhythms which will enable the learners to identify the causes and follow a systemic approach (algorithm) on managing cardiac arrest using advanced life support measures.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	30
		• **Online Activities including Assessment** OA-Online activities (Discussion forum, Reflection, Blogs) (including 10 assessment)	20
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/In Person)	15
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 0.5 20 OA hours = 0.5 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	After the completion of the course, the student will be able to 1. Demonstrate recognition of cardiac arrest and provide high quality CPR skills. 2. Describe the basic principles and causes of peri arrest and cardiac arrest rhythms. 3. Recognize the specific peri arrest and cardiac arrest rhythms. 4. Application of appropriate algorithmic management in pre hospital	

T.V. Ramakrishnan

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Institute of Higher Education
(Deemed to be University)
Porur, Chennai - 600 116.

<table>
<tr><td></td><td></td><td colspan="5">settings.
5. Summarize the list of core emergency drugs.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="5">This course introduces the learners to understand the cardiac arrest rhythms, core emergency drugs based on the evidence based science & guidelines and the treatment provided ensuring the restoration of physiological and neurological functions.</td></tr>
<tr><td>10</td><td>Assessment</td><td colspan="5">Course Instructors are encouraged to provide equal Weightage to all the Online assessments.
Continuous Assessment (50 Marks for GE 100 for SE?SL/SE) :
<table>
<tr><th></th><th>Course Outcomes</th><th>Marks</th></tr>
<tr><td>Test 1</td><td>CO1 (MCQ's/Fill in the blanks/True or False)</td><td>20</td></tr>
<tr><td>Test 2</td><td>CO2 (MCQ's/Fill in the blanks/True or False)</td><td>20</td></tr>
<tr><td>Test 3</td><td>CO3 (MCQ's/Fill in the blanks/True or False)</td><td>20</td></tr>
<tr><td>Test 4</td><td>CO4 (MCQ's/Fill in the blanks/True or False)</td><td>20</td></tr>
<tr><td>Assignment 1</td><td>List of Emergency Drugs used in resuscitation
Adult Cardiac Arrest Algorithm</td><td>10</td></tr>
<tr><td>Assignment 2</td><td>Adult Tachycardia, Bradycardia algorithm
Electrical therapy</td><td>10</td></tr>
<tr><td>IA Total</td><td></td><td>100</td></tr>
</table></td></tr>
<tr><td>11</td><td>Course Content and Teaching Method :</td><td>Learning outcomes</td><td>OL</td><td>OA & A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td></td><td>UNIT – I</td><td>At the end of the module the students will be able to
• Recognition of cardiac arrest victims
• Describe the importance of systematic approach to the adult chain of survival links
• Discuss the algorithmic approach to adult basic life support
• Define the critical concepts in high qualities of Cardio-pulmonary resuscitation</td><td>5</td><td>5</td><td>3</td><td>CO1</td></tr>
<tr><td></td><td>UNIT – II</td><td>At the end of the module the students will be able to
• Describe the Basic understanding about the abnormal ECG rhythms
• Discuss about antiarrhythmic drugs during the algorithmic approach
• Identification of reversible causes of cardiac arrest (5H's & 5T's)
• Explain the appropriate electrical therapy (Defibrillation)</td><td>5</td><td>5</td><td>4</td><td>CO2</td></tr>
</table>

	UNIT – III	At the end of the module the students will be able to • Recognize the risk factors in cardiac emergencies • Discuss the mechanism involved in shock • Describe the assessment and approach of child in cardiac arrest • Demonstrate the use of appropriate airway adjuncts and management during cardiac arrest • Describe the basic mechanism of actions, indications, doasges and contraindications of core emergency drugs • Summarize the appropriate pre-hospital care for specific medical emergencies	10	5	4	CO3
	UNIT – IV	At the end of the module the students will be able to- • Demonstrate the steps of Defibrillation • Discuss the importance of early use of and AED • Demonstrate the appropriate use of an AED • Review the anatomy of Respiratory system • Describe the manual airway maneuvers and use of airway adjuncts • Discuss the Importance of oxygenation therapy and Bag mask ventilation	10	5	4	CO4
			30	**20**	**15**	
12	**Reference books**	1. Nancy Caroline's Emergency Care in the streets 8th edition 2. American Heart Association Basic Life Support provider 8th edition2020 guidelines 3. American Heart Association Advanced Life Support 2020 guidelines 4. AHA 2020 ACLS supplementary 5. Mosby's Paramedic Textbook 4th edition 6. Tintinalli Comprehensive Textbook of Emergency Medicine 8th edition				
13	**Online resources**	1. medscape.com 2. uptodate.com 3. www.heart.org 4. cpr.heart.org 5. https://drive.google.com/file/d/1U0_9tfwO8nXoBM_s2xTFa032Bioe1dfV/view?usp=sharing 6. https://drive.google.com/file/d/1itu_IbMxlv1s8l5Mj0K_Wal_qi89UKzf/view?usp=sharing 7. https://drive.google.com/file/d/15duUEhd7T0AzkCvnt61MB8WrVvA9p1l4/view?usp=sharing				

14	**Syllabus Content**	Essentials of Cardiac Life Support (AAE012)
	Unit - I Basic Life Support	Introduction to BLS - Adult chain of Survival - The universal algorithm for adult Basic life Support
	Unit - II Advanced Cardiac Life Support Algorithms	Ventricular fibrillation/Pulseless ventricular tachycardia algorithm - Pulseless electrical activity (PEA) / Asystole algorithm - Bradycardia treatment algorithm - Tachycardia Treatment algorithm
	Unit - III General Topics	Hypotension / Shock - Acute myocardial Infarction - Pediatric Advanced Life Support - Airway management - Drugs used in ACLS - Emergency Cardiac pacing
	UNIT - IV Emergency Procedures	Defibrillation - Automated External Defibrillator (AED) - Techniques for oxygenation and ventilation

AAE012: Essentials of Cardiac Life Support
Ability Enhancement Course for PG programs under CBCS
[Dept.: EMERGENCY & TRAUMA CARE TECHNOLOGY]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)					End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OL+OA	Practical / SI/ IL	Total hours	Attendance (%)	CIA - (a) MARKS	Theory (b)	Practical/ Viva (c)	a = 100
											PM: 50 %	EST	ESP	PM: 50%
AAE012	AE	**Essentials of Cardiac Life Support**	0.5	0.5	1	2	30	15+20	65	80	100	-	-	100

1	**Name of the Course**	Environmental Science	
2	**Elective Code**	HAE001	**Credits:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Introduce about current environmental problems, manage green environment, and participate in green initiatives. 2. Introduce about natural resources and energy resources and the needs for alternate energy sources. 3. Provide necessary knowledge to understand the various types of pollution and their medication steps and environmental laws 4. Participate in outreach activities including environmental applications and problem solving in off-campus community settings.	
5	**Rationale for inclusion**	Gaining knowledge on current environmental problems, common sources, routes of exposure, mechanisms of health effects of various pollutions, and control measures will enable the learners to apply the learned concepts to safe guard environment and heath.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online/Offline Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet / Big Blue Button / In person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	15 30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe the structure and function of the ecosystem, natural resources and conservation 2. Understand and describe the processes and mechanisms by which hazards are produced, released, transported, and modified in the environment and affect health.	

S.

Dr. S. SANKAR
Professor & Head
Department of Environmental Health Engineering
Faculty of Public Health
Sri Ramachandra Institute of Higher Education and Research
(Deemed to be University)
Porur, Chennai - 600 116.

		3. Apply management practices to environmental and occupational health issues. 4. Identify the implications of environmental policies and standards on compliance with regulatory, standard setting organizations and International policies.
9	**Summary**	This course introduces the learners to the major current environmental problems, create awareness about ecosystem and various pollutions which pose health risks to the exposed populations and environment. Further the course helps to trains to recognize and control these pollutions thereby safeguarding environment and our health.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test 1	CO-1	10
Test 2	CO-2	10
Test 3	CO-3	10
Assignment	CO-3 & CO-4	20
IA Total		**50**

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL hrs**	**OA & A Hrs**	**SI Hrs**	**SLO-CO mapping**
	UNIT – I	1. Gain insight in to current issues in india, environmental education and awareness 2. Define physical, chemical and biological factors in the environment 3. Recognize the structure and function, structure and composition of atmosphere, meteorology, 4. Discuss the energy flow in the ecosystem, food chains, food webs, ecological pyramids	2	2	3	1
	UNIT – II	1. Gain insight into use and benefits, over utilization, degradation, exploitations and associated problems: 2. Learn about forest; water, mineral, food, land and ocean resources 3. Discuss the energy resources and needs for alternate energy sources.	4	3	3	2

	UNIT – III	1. Delineate source, cause, effects and control measures of- air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution 2. Understand the effect and control measures of nuclear hazards, occupational hazards, hazardous 3. Define solid wastes, municipal wastes, biomedical wastes, electronic wastes, plastic wastes 4. Gain insight in to safety hazards in fireworks industries, disaster management	5	3	4	3
	UNIT – IV	1. Understand the environment protection related acts, issues involved in enforcement of environmental legislation and public awareness. 2. Learn about urban problems related to energy and water conservation, resettlement and rehabilitation of people 3. Describe Environmental ethics, Human Rights. 4. Understand about HIV/AIDS role of information technology in environment and human health, case studies.	4	3	3	4
	UNIT – V	1. Visit to a local area to document environmental assets river/ forest/grassland/hill/mountain 2. Study of simple ecosystems	0	4	2	5
			15	**15**	**15**	
12	**Reference books**	1. https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf 2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. 3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad –380 013, India, Email:mapin@icenet.net (R) 4. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB) 5. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p 6. De A.K., Environmental Chemistry, Wiley Eastern Ltd.				
13	**Online resources**	1. https://study.com/academy/lesson/what-is-environmental-science-definition-and-scope-of-the-field.html 2. http://www.prospects.ac.uk/options_environmental_science.htm 3. https://www.cseindia.org/ 4. https://www.weforum.org/ 5. https://www.epa.gov/				

14	**Syllabus Content :**	Environmental Science (HAE001)
	Unit – I Multidisciplinary nature of environmental studies and Ecosystem	Scope of environmental science, Physical, Chemical and Biological factors in the environment, Concept of an ecosystem- Types, Structure and function, Structure and composition of atmosphere, Meteorology, Energy flow in the ecosystem, Food chains, food webs and Ecological pyramids, Current issues in India, Environmental education and awareness
	Unit – II Natural Resources, Biodiversity and its conservation:	Natural resources- Use and benefits, over utilization, degradation, Exploitations and Associated problems: Forest; Water, Mineral, Food, Land and Ocean resources, Energy resources and needs, Alternate energy sources, Conservation of natural resources, Biodiversity at global, National and local levels- Bio geographical classification of India, Threats to biodiversity and Hot-spots, Endangered and endemic species of India, Conservation of biodiversity
	Unit – III Environmental Pollution and Social issues	Source, Cause, effects and control measures of- Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Occupational hazards, Hazardous and solid wastes- Municipal wastes, Biomedical wastes, Electronic wastes, Plastic wastes, Industrial chemicals, Chemical, Physical & Safety hazards in Fireworks Industries, Disaster management, Urban problems related to energy and Water conservation, Resettlement and Rehabilitation of people, Environment protection related Acts, Issues involved in enforcement of environmental legislation and Public awareness.
	Unit – IV Human Population and the Environment	Population growth and explosion variation among nations, Family Welfare Programme, Environment and human health, Women and Child Welfare, Environmental ethics, Human Rights, Value Education, HIV/AIDS, Role of Information Technology in Environment and human health, Case Studies.
	Unit – V Field work	Visit to a local area to document environmental assets river/ forest/grassland/hill/mountain, Visit to a local polluted site-Urban/Rural/Industrial/Agricultural, Study of common plants, insects, birds. Study of simple ecosystems-pond, river, hill slopes, recycling and reusing the biodegradable and dry waste etc.

HAE001: Environmental Science

Ability Enhancement Course for **UG** programs under CBCS

[Dept.: Environmental Health Engineering]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - (a) MARKS	End Semester **Department**		Grand Total
			OL	OA	Practical		OL+OA	Practical / SI	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40 %	EST	ESP	PM: 40%
HAE001	AE	**Environmental Science**	0.5	0.5	1	2	30	30	60	80	100	-	-	100

1	Name of the course	First Aid and Emergency Care	
2	Elective Code	AHS - UAH19AE308, Applied Psychology - UPS19AE309	Credits: 2
3	Level	AHS and Applied Psychology Students enrolled in Under Graduate programs under CBCS.	
4	Course Objective	The objective of this course is to enable the students to: 1. Define the importance of first aid and components of First aid supplies 2. Summarize the importance of Basic Life Support and use of AED 3. Identify the trauma emergencies and relate the severity of hypovolemic shock 4. Recognize the medical and environmental emergencies and seek medical care immediately	
5	Rationale for inclusion	This course is designed to give you the theoretical knowledge and needed to accompany the Emergency First Aid .This course specifically tailored to the needs of health professionals and allied professions.	
6	Delivery method		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	15 30 30 15
7	Credit		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	15 OL hours = 0.5 30 OA hours = 1 15 SI hours = 0.5
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	Learning outcomes	On completion of the course, the student will be able to 1. Explain how to recognize an emergency and activate help 2. Demonstrate skills of CPR and use of an AED 3. Demonstrate skills on early haemorrhage control and dressing. 4. Recognize various emergencies, provide first aid and seek medical care immediately	

T.V. Ramakrishnan

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Medical College & Research Institute
Porur, Chennai - 600 116.

9	Summary	1. This course introduces the learners to understand the importance of their role as an emergency responders. 2. Describe how to minimize risks to themselves and others. 3. Identify the need of establishing consent to provide first aid.
10	Assessment	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks for GE 100 for SE?SL/SE) :

	Course Outcomes	Marks
Test 1	CO1 (MCQ's/Fill in the blanks/True or False)	20
Test 2	CO2 (MCQ's/Fill in the blanks/True or False)	20
Test 3	CO3 (MCQ's/Fill in the blanks/True or False)	20
Test 4	CO4 (MCQ's/Fill in the blanks/True or False)	20
Assignment 1	Basic Life Support, External bleeding management	10
Assignment 2	Risk factors and clinical symptoms of Seizures, Low Blood Sugar and Asthma	10
IA Total		**100**

Summative Assessment:
Pattern of Assessment: As per CBCS 2019 Regulations only for GE courses

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Demonstrate skills of CPR and use of an AED • Learn the Basic Airway opening skills • Define the importance of first aid • Write the components of first aid kit	2	6	3	CO1
	UNIT – II	At the end of the module the students will be able to • Recognize various medical emergencies, provide first aid and seek medical care immediately • Demonstrate appropriate first aid management Skills	3	8	4	CO2
	UNIT – III	At the end of the module the students will be able to : • Recognize various medical emergencies, provide first aid and seek medical care immediately • Demonstrate appropriate first aid management Skills	5	8	4	CO3
	UNIT – IV	At the end of the module the students will be able to • Understand the basics of trauma • Recognize the specific injuries signs and symptoms • Explain the management of pre hospital	5	8	4	CO4

		care				
			15	**30**	**15**	
12	Reference books	1. Emergency First Aid Handbook – St. John Ambulance 2. AHA Basic Life Support Algorithms, supplementary material 3. American Red cross society – First Aid Handbook				
13	Online resources	1. Global First Aid Reference centre – GFRChttps://www.globalfirstaidcentre.org/ 2. International federation of Red cross and Red crescent societies IFRChttps://www.ifrc.org/Global/Publications/Health/First-Aid-2016-Guidelines_EN.pdf 3. www.trauma.org 4. **Epistaxis :** https://drive.google.com/file/d/1En7uN_no0umCFu4BefpxgdODLyvGaC4b/view?usp=sharing 5. **External Bleeding Control:** https://drive.google.com/file/d/1DV93CXwBOMTxfEdNbGkB1X1801wMOst4/view?usp=sharing 6. **Bandaging and Splinting:** https://drive.google.com/file/d/1Dcc9eQUT8uxd07G954owt0gaQP7OdlcM/view?usp=sharing 7. **Adult Choking :** https://drive.google.com/file/d/1B0UPtnc9Gt2NWrabItUOCvBeLJrblaJ1/view?usp=sharing 8. **Adult BLS:** https://drive.google.com/file/d/1ycEEL-bvw0CoobLHYFqxjMy4gPiwGPRj/view?usp=sharing				
14	Syllabus Content	First Aid and Emergency Care (AHS - UAH19AE308, Applied Psychology - UPS19AE309)				
	Unit 1: Basics of first aid and Basic life support	Basic Life Support - The importance of first Aid - First aid supplies – AED - Triple Maneuver - Choking				
	Unit 2: Basics of Emergency Care - Part I	External bleeding and Hypovolemic shock - Amputations - Impaled objects - Dressing - Suspected Fractures & Dislocation - Sprain & Strain				
	Unit 3: Basics of Emergency Care - Part II	Chest pain – Fainting – Seizures - Low Blood Sugar - Breathing difficulties- Asthma, Allergic reactions				
	Unit 4: Trauma and Environmental Emergencies	Head trauma - Thoracic trauma (Open Pneumothorax, Flail chest) - Abdominal trauma (Evisceration, Impaled object) – Hypothermia – Hyperthermia – Burns - Electrical Injuries				

UAH19AE308; UPS19AE309: First Aid and Emergency Care
Ability Enhancement Course for UG programs under CBCS
[Dept.: EMERGENCY & TRAUMA CARE TECHNOLOGY]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - (a) MARKS	End Semester **Department**		Grand Total
			OL	OA	Practical (p)/ SI		OL+OA	Practical / SI	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40 %	EST	ESP	PM: 40%
UAH19AE308; UPS19AE309	AE	First Aid and Emergency Care	0.5	1	0.5	2	45	15	60	80	100	-	-	100

C. LIST OF SKILLS ENHANCEMENT COURSES OFFERED BY DEPARTMENTS OF THIS DU [Credits = 2]				
S. No.	**Elective Code**	**Title**	**Department**	**UG/PG**
Faculty of Allied Health Sciences				
1	ASE 006	Bakery and Confectioneries	Clinical Nutrition	UG
2	ASL014	National service scheme and Nation Building	Community Medicine	UG
3	ASL015	Culinary Skills for optimal nutrition	Clinical Nutrition	UG
4	ASL016	Basic Life Support	Emergency & Trauma Care Technology	UG
5	ASL017	Library Science and E-Resources	Central Library	UG
6	ASL018	Basics of Electronics	Allied Health Sciences	UG
7	ASE019	English For Research Writing	English Language Lab	PG
8	ASL020	Introduction to the principles and practice of infection prevention and control	Microbiology	PG
Faculty of Biomedical Sciences & Technology				
9	BSE 001	Good Laboratory Practices	Biomedical Sciences	UG
10	BSE 003	Fundamentals in Analytical Laboratory Skills	Biomedical Sciences	UG
11	BSL017	Practice and Skills in Medical Transcription	Human Genetics	UG
Faculty of Dental Sciences				
12	DSL001 *	Tooth Wisdom	Dental Sciences	UG
Faculty of Management Sciences				
13	GSL002	Interpersonal Skills	Management	UG
Faculty of Nursing				
14	NSL001	Diabetic foot care	Community Nursing	UG
Faculty of Physiotherapy				
15	TSL001	Ergonomics and Health promotion	Physiotherapy	UG

Curriculum Delivery method [Hours per credit]

- **Online Learning [30 h= 1 credit]**
  OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
- **Online Activities including Assessment [30 h= 1 credit]**
  OA - Online activities (Discussion forum, Reflection, Blogs)
- **Synchronous Interaction [15 h= 1 credit]**
  SI - Synchronous Interaction (Live interactions through Google meet/ Big BlueButton / In-person)
- **Independent Learning [60 h= 1 credit]**
  IL – Independent Learning **Approximatelydouble the Online learning hours)

<table>
<tr><td>1</td><td>Name of the Course</td><td colspan="4">Bakery and Confectionery</td></tr>
<tr><td>2</td><td>Elective Code</td><td>ASE006</td><td>Credits : 2</td><td>Level : UG</td><td>Category: SE</td></tr>
<tr><td>3</td><td>Faculty / Dept. offering</td><td colspan="4">Allied Health Sciences / Clinical Nutrition</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">The objective of this course is to enable the student to:
1. Identify the concepts pertaining to the regulation for bakery units.
2. Explain the science, properties and functions of basic ingredients used in baking.
3. Describe the fundamental principles of baking.
4. Appraise and judge the characteristics of baked products andcommon faults in baking.</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">This course is designed to learn the art of baking and confectionery products.</td></tr>
<tr><td>6</td><td>Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td></td><td></td><td colspan="3">• Online Learning
OL - Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• Online Activities including AssessmentOA - Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In-person)
• Independent Learning
IL – Independent Learning
**Approximatelydouble the Online learning hours)</td><td>30

30

15

60</td></tr>
<tr><td>7</td><td>Credit</td><td colspan="3"></td><td>Hours allocated per credit</td></tr>
<tr><td></td><td></td><td colspan="3">Online Learning
Online Activities including Assessment
Synchronous Interaction</td><td>15 OL hours = 0.5
15 OA hours = 0.5
15 SL hours =1.0</td></tr>
<tr><td></td><td></td><td colspan="3">Total Credit</td><td>2</td></tr>
<tr><td></td><td></td><td colspan="4">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the student should be able to:
CO1. Introduced to the art of baking and also understand the historyand organization of bakery
CO2. Interpret the role of various ingredients needed for baking.
CO3. Recognize the various techniques of bread making
CO4. Acquire preparation and evaluation of Cakes and Confectionery.</td></tr>
</table>

9	**Summary**	This course introduces the basic concepts of bakery units, it helps the students to learn various ingredients involved in baking process and different methods of bread making, also the concepts involved in the process of cake and confectionery making.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all theOnline assessments

Continuous Formative Assessment (100 Marks) :

	Course Outcomes	Marks
Test 1	CO1	10
Test 2	CO1	10
Test 3	CO1 & CO2	10
Test 4	CO1 & CO2	10
Test 5	CO3	10
Test 6	CO3	10
Test 7	CO4	10
Test 8	CO4	10
Assignment (1)	CO1	10
Assignment (2)	CO4	10
IA Total		**100**

Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able • Summarize the history and terms related to Bakery. • Interpret the statutory regulations of bakery units • Relate between nutrition and bakery products.	2	4	3	1
	UNIT – II	At the end of the module the students will be able • Summarize the fundamentals of baking • Infer the concepts related to cereals and its properties. • Compare and contrast the role of various ingredients involved in the process of Baking.	3	3	4	1 & 2

	UNIT – III	At the end of the module thestudents will be able • Identify different variety of baked product available in market. • Sketch various methods and steps involved in bread making process.	3	4	4	3
	UNIT – IV	At the end of the module thestudents will be able • Relate the basic methods ofbaking process • Classify confectionery varietiesavailable of in market.	7	4	4	4
			15	**15**	**15**	
12	**Reference books**	1. Baked Products: Science, Technology and Practice, Cauvain S.P. andYoung L.S., Wiley- Blackwell, 2006. 2. Bakery Products: Science and Technology, 2nd Edition, Hui Y.H. Ed.,Wiley-Blackwell, 2014. 3. Principles of Cereal Science and Technology, Delcour J.A. and Hoseney R.C., 3rd Edition, 2010.				
13	**Online resources (Open)**	1. www.bakersjournal.com 2. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1412&cont ext=extensionhist 3. http://egyankosh.ac.in/bitstream/123456789/45870/1/Unit-6.pdf 4. https://gcwgandhinagar.com/econtent/document/1587453339UNIT_3 _Processing_of_pastry_and_all_bakery_products_1.pdf 5. http://www.eiilmuniversity.co.in/downloads/Bakery_&_confectionery.p df				
14	Syllabus Content :	**Bakery and Confectionery (ASE006)**				
	UNIT – I	Introduction, history and scope of bakery & confectionery, bakery terms.Organization chart of bakery. a. Standard and statutory regulation for bakery units. b. Nutritional aspects of bakery products.				
	UNIT – II	Structure of wheat grain, milling of wheat and role of bran and germ.Flour – Types, composition, role of constituents, quality assessmentLeavening agents – functions, and factors affecting their action Role of sugar, eggs and cocoa Fats and fat replacers – Properties, functions and role in bread makingSalt – Function and role in dough making and fermentation. Other ingredients: Milk products, emulsifiers, improvers, dried fruits etc.				

	UNIT – III	Type of Breads available in markets– Basic recipe and its variations(whole wheat, multigrain, addition of spices and herbs) Bread making process - Commercial a. Chemical dough development b. Mechanical dough development c. Batch / Continuous dough mixing d. Dividing and rounding, e. Intermediate proofing, moulding, panning, f. Proofing, g. Baking, h. Depanning, i. Cooling, slicing, packaging External characteristics - volume, symmetry of shape, Internalcharacteristics - colour, texture, aroma, clarity and elasticity.
	UNIT – IV	Basic methods of cake preparation, Biscuits & Cookies with and without oven, Pudding, Indian sweets- gulab jamun, coconut burfi, carrot halwa. Confectionery – types (crystalline and non-crystalline candies, fudge, marshmallows) preparation, ingredients and their role. Storage ofconfectionery products Types of icing-butter icing, glaze icing, royal icing, marshmellows, fudges.

ASE006: Bakery and Confectionery Skills Enhancement Course for UG programs [Dept. of Clinical Nutrition]														
Course code	Category	Course Title	Credits /Week			**Credits(C)**	Hours/ semester(15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical / SI		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a =100
											PM: 40%	EST	ESP	PM: 40%
ASE006	SE	**Bakery and Confectionery**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="3">National Service Scheme and Nation Building</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>ASL014</td><td colspan="2">Dept. of Community Medicine</td></tr>
<tr><td>3</td><td>Credits & Category:</td><td>2</td><td colspan="2">SE</td></tr>
<tr><td>4</td><td>Level</td><td colspan="3">Under Graduate programs under CBCS</td></tr>
<tr><td>5</td><td>Course Objective</td><td colspan="3">•To provide an understanding about the aims, structure and programmes and activities of National Service scheme in terms of Nation Building
•To develop certain basic skills for personality development through community development</td></tr>
<tr><td>6</td><td>Rationale for inclusion</td><td colspan="3">This course is designed to enable our student youth to understand about NSS and its role in building youth and our Nation and developing skills thereof.</td></tr>
<tr><td>7</td><td colspan="2">Delivery method
• OL- Contact class/ Online Learning [L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• OA- Online activities (Discussion forum, Reflection, Blogs) / Practical + A – Assessment
• SI- Synchronous Interaction (Live interactions through Google meet/ Moodle)
• IL – Independent Learning **Approximately double the Online learning hours)</td><td colspan="2">hours/credit
30 OL HOURS = 1 CREDIT
30 OA HOURS -= 1 CREDIT
15 SI HOURS = 1 CREDIT</td></tr>
<tr><td rowspan="3">8</td><td rowspan="3">Credits
Credits assigned are based on the course objectives and learning outcomes.</td><td>Activity</td><td colspan="2">Hours allocated per credit</td></tr>
<tr><td>Online Learning
Online Activities
Synchronous Interaction</td><td colspan="2">15 OL hours = 0.5
15 OA hours = 0.5
15 SI +IL hours = 1</td></tr>
<tr><td>Total Credits</td><td colspan="2">2</td></tr>
<tr><td>9</td><td>Course outcomes</td><td colspan="3">On successful completion of the course the students should be able to
CO1. Describe the aims, structure and programs of NSS
CO2. Describe the activities of National Service scheme in terms of Nation Building
CO3. Demonstrate certain basic skills for personality development through community development</td></tr>
<tr><td>10</td><td>Summary</td><td colspan="3"></td></tr>
<tr><td>11</td><td>Assessment</td><td colspan="3">Course Instructors are encouraged to provide Equal Weightage to all the Online assessments.
Continuous Assessment (100 Marks) :
<table>
<tr><td></td><td></td><td>Marks</td></tr>
<tr><td>Test 1</td><td>CO-1 & CO-2</td><td>20</td></tr>
<tr><td>Test 2</td><td>CO-3</td><td>20</td></tr>
<tr><td>Test 3</td><td>CO-1-3</td><td>20</td></tr>
<tr><td>Assignment</td><td>CO-1, CO-2 & CO-3</td><td>40</td></tr>
<tr><td>IA Total</td><td></td><td>100</td></tr>
</table>
Summative Assessment: (By Department)
As per CBCS 2019 Regulations</td></tr>
</table>

12	**Course Content and Teaching Method :**	**Specific Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT –I Structure and Functions of NSS	• Aims and Objectives of National Service Scheme • Organizational Structure • Roles of various NSS functionaries; • Concept of Regular Activities and Special Camping activities • Adoption of Villages and Slums Methodology of conducting Survey.				
	UNIT–II Understanding Youth	• Definition and Profiles of youth categories • Youth Issues, Challenges and Opportunities for Youth • Youth as agent of social change & Community Mobilization. • Role of Youth in Nation Building. National Youth Policy.				
	UNIT – III Personality and Community Development skills	• Personalty and Community Development skills • Importance of youth Leadership • Traits of Good Leadership and Personality Development. • Role of youth in creating awareness through NSS Programmes on Health & Hygiene • Environmental Conservation and Enrichment for Sustainable Development • Sanitation and Swachh Bharat.				
	UNIT – IV Practical / Field Activity : (15 Hours)	Practical / Field Activity				
			15	**15**	**15**	
13	**Reference books**	National Service Scheme – A Youth Volunteers Programme for Under Graduate students as per UGC guidelines J.D.S.Panwar et al. Astral International. New Delhi. 2. National Service Scheme Revised Manual, 2006.Govt. of India. Ministry of Youth Affairs & Sports. New Delhi National Youth Policy-2014. Ministry of Youth Affairs & Sports. .Govt. of India 2. Youth in Perspective				

14	**Online resources**	Official Web site of National Service Scheme.www.nss.nic.in 2. National Service Scheme-Wikipedia https:// en.wikipedia.org/wiki/National-service-scheme
15	**Syllabus Content :**	**National Service Scheme and Nation Building [ASL014]**
	UNIT – I Structure and Functions of NSS	• Aims and Objectives of National Service Scheme • Organizational Structure • Roles of various NSS functionaries; • Concept of Regular Activities and Special Camping activities • Adoption of Villages and Slums Methodology of conducting Survey.
	UNIT – II Understanding Youth	• Definition and Profiles of youth categories • Youth Issues, Challenges and Opportunities for Youth • Youth as agent of social change & Community Mobilization. • Role of Youth in Nation Building. National Youth Policy.
	UNIT – III Personality and Community Development skills	• Personalty and Community Development skills • Importance of youth Leadership • Traits of Good Leadership and Personality Development. • Role of youth in creating awareness through NSS Programmes on Health & Hygiene • Environmental Conservation and Enrichment for Sustainable Development • Sanitation and Swachh Bharat.
	UNIT – IV	Practical / Field Activity : (15 Hours)

ASL014: National Service Scheme and Nation Building Skills Enhancement Course for UG Program [Dept. of Community Medicine]														
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)		End Semester **Department**		Grand Total
			OL	OA	Practical (P)/ SI		OL+OA	Practical / SI	Total hours		CIA - (a)	Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40%	EST	ESP	PM: 40%
ASL014	SL	**National Service Scheme and Nation Building**	0.5	0.5	1	2	30	15	45	80	100	-		100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="4">Culinary skills for Optimal Nutrition</td></tr>
<tr><td>2</td><td>Elective Code</td><td>ASL015</td><td>Credits : 2</td><td>Level : UG</td><td>Category: SE</td></tr>
<tr><td>3</td><td>Faculty / Dept. offering</td><td colspan="4">Allied Health Sciences / Clinical Nutrition</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">The objective of this course is to enable the students to:
• Paraphrase the basic concepts of nutrition.
• Describe the importance of dietary modification based on disease condition.
• Use the methods of identifying food adulteration.</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">This course is designed to enable the students to recognize the role of good nutrition and develop the art of food preparation with pertinent nutrient modification</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">• Online Learning
OL- Online Learning (Vidéo tutorials, Podcasts,External links, Articles, E books)
• Online Activities including Assessment
OA- Online activities (Discussion forum, Reflection, Blogs)
• Synchronous Interaction
SI- Synchronous Interaction (Live interactionsthrough Google meet/ Big Blue Button/ In- person)
• Independent Learning
IL – Independent Learning
**Approximatelydouble the Online learning hours)</td><td>30

30

15

60</td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Credit</td><td colspan="3"></td><td>Hours allocated per credit</td></tr>
<tr><td colspan="3">Online Learning
Online Activities including AssessmentSynchronous Interaction</td><td>15 OL hours = 0.5
15 OA hours = 0.5
15 SI hours = 1</td></tr>
<tr><td colspan="3">Total Credit</td><td>2</td></tr>
<tr><td colspan="4">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the students should be able to:
CO1. Identify the different methods of cooking for various food groups.
CO2. Demonstrate the skill for meeting modified dietary requirements.
CO3. Connect the importance of special diets.
CO4. Use methods of identifying common adulterants in food at the household level.</td></tr>
<tr><td>9</td><td>Summary</td><td colspan="4">This course enables the student learn making healthy food choices and the different techniques involved in preparing food according to the disease condition.</td></tr>
</table>

10	**Assessment** Course Instructors are encouraged to provide equal Weightage to allthe Online assessments.	**Continuous Formative Assessment (100 Marks) :**	**Module**	**Marks**
		Test 1	CO-1	10
		Test 2	CO -2	10
		Test 3	CO -2	10
		Test 4	CO -3	10
		Test 5	CO -3	10
		Test 6	CO -3	10
		Test 7	CO -4	10
		Test 8	CO -4	10
		Assignment	CO-4	20
		IA Total		**100**
		Pattern of Assessment: As per CBCS 2019 Regulations		

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT –I	At the end of the module thestudents will be able to • Classify the different foodgroups • Relate the moist heat and dry heat methods of cooking foods	3	3	3	CO1
	UNIT–II	At the end of the module thestudents will be able to • Illustrate the techniques involved in preparing different consistencies of food	3	5	3	CO2
	UNIT – III	At the end of the module the students will be able to • Recognize the need for nutrient modification in different types of diets • Develop food recipes with modified nutrient content to suit the clinical conditions	3	3	4	CO3
	UNIT – IV	At the end of the module thestudents will be able to • Demonstrate the different methods in identifying adulteration. • Articulate the Significance of food labels in health and nutrition • Judge the nutrition information by reading food labels • Articulate safety in kitchen	6	4	5	CO4
			15	**15**	**15**	

12	**Reference books**	**Text Books** 1. Peckham, G.G., Foundation of Food Preparation, The MacMillanCompany, London, 1994 2. Srilakshmi B. Food Science, New Age International (p) Ltd Publishing House, New Delhi, 2009 **Reference Text** 1. Gupta LC, Gupta K, Gupta A. Foods and Nutrition Facts and Figures, 6th Ed., Jaypee, 2006. 1. 2. Parker R O. Introduction to Food Science, Thomson Delmar Learning, 2000
13	**Online resources (Open)**	www.eatright.orgwww.fssai.gov.in
14	**Syllabus Content**	**Culinary Skills for Optimal Nutrition (ASL015)**
	UNIT – I Introduction & Methods ofCooking	Foods- definition, food groups. Moist heat methods of cooking cereals,vegetables & pulses. Dry heat methods of cooking meat, poultry & fish.
	UNIT – II Preparation of consistency modified menu	Preparation of clear liquid, full fluid, soft solid, pureed diets
	UNIT – III Preparation of Special diets	Preparation of diets: Low Calorie, High Calorie, High Protein, Low Protein, Low Fat, Salt restricted and Vegan
	UNIT – IV Adulteration and Labeling	Tests to identify food adulteration in: milk, milk products, vegetables, oil and honey. Market survey on food labelling, Safety in kitchen

ASL015: Culinary Skills for Optimal Nutrition
Skills Enhancement Course for UG programs [Dept. of Clinical Nutrition]

Course code	Category	Course Title	Credits /Week			Credits (C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical/(SI)		OL+OA	SI / Practical	Total hours		CIA - Theory / Practical (a)	Theory (b)	Practical/ Viva (c)	(a) = 100
											PM: 40%	EST	ESP	PM: 40%
ASL015	SE	**Culinary Skills for OptimalNutrition**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

1	**Name of the course**	Basic Life Support	
2	**Elective Code**	ASL016	**Credits:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS.	
4	**Course Objective**	The Objective of this course is to enable the students to: 1. Recognize cardiac arrest and to perform high quality Cardiopulmonary Resuscitation (CPR). 2. Acquire knowledge and skill of Hands on Training on Cardio pulmonary resuscitation. 3. Use Automated External Defibrillator. 4. Identify and perform choking management for all age group.	
5	**Rationale for inclusion**	This course introduces the identification of cardiac arrest and to perform CPR skills with more emphasize on hands on training (practical sessions)	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)	**30**
		• **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) (including 10 assessment)	**20**
		• **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/In Person)	**15**
		• **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	**60**
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 0.5 20 OA hours = 0.5 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	After the completion of the course, the student will be able to 1. Recognize cardiac arrest 2. Describe the importance of BLS 3. Demonstrate skills in CPR and Automated external Defibrillator 4. Identify choking and its Management	
9	**Summary**	This course introduces the identification of cardiac arrest and to perform CPR skills in both adults and pediatrics with hands on training. In addition to cardiac arrest, students will be taught how to identify choking and its management.	

T.V. Ramakrishnan

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine
Sri Ramachandra Medical College & Research Institute
(Deemed to be University)
Porur, Chennai - 600 116.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (50 Marks for GE 100 for SE?SL/SE) :				
			Course Outcomes			**Marks**
		Test 1	CO1 (MCQ's/Fill in the blanks/True or False)			15
		Test 2	CO2 (MCQ's/Fill in the blanks/True or False)			15
		Test 3	CO3 (MCQ's/Fill in the blanks/True or False)			15
		Test 4	CO4 (Skills and Viva - Voce)			25
		Assignment 1	Adult and Pediatric Cardiac Arrest Algorithm			15
		Assignment 2	Management of choking			15
		IA Total				**100**
11	**Course Content and Teaching Method**	**Learning outcomes**		**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	At the end of the module the students will be able to • Recognition of cardiac arrest victims • Understand the importance of systematic approach to the adult chain of survival links • Define the critical concepts in high qualities Cardio-pulmonary resuscitation • Demonstrate One rescuer adult CPR, Two rescuer adult CPR skills and Automated external Defibrillator		3	3	3	CO1
	UNIT – II	At the end of the module the students will be able to • Explain the management of Respiratory arrest • Define the critical concepts in high qualities of Cardio-pulmonary resuscitation • Demonstrate One rescuer Paediatric CPR, Two rescuer paediatric CPR • Identify and Managing Adult choking, child choking and Infant choking		4	4	5	CO2
	UNIT – III	At the end of the module the students will be able to • Explain the CPR modifications In pregnant patients • Discuss the BLS in intoxicated patient • Describe the AED special situations • Summarize the differences between Adult, Child and Infant BLS		3	3	2	CO3

Dr. T.V. RAMAKRISHNAN, MD
Professor & Head
Dept. of Emergency Medicine

	UNIT – IV	At the end of the module the students will be able to demonstrate the skills on: • Adult, Pediatric and Infant BLS Cardiopulmonary Resuscitation • Use of an AED • Adult, Pediatric and Infant Choking management	20	10	5	CO4
			30	**20**	**15**	
12	**Reference books**	1. Nancy Caroline's Emergency Care in the streets 8th edition 2. American Heart Association Basic Life Support provider 8th edition2020 guidelines 3. Mosby's Paramedic Textbook 4th edition 4. Tintinalli Comprehensive Textbook of Emergency Medicine 8th edition				
13	**Online resources**	1. medscape.com 2. uptodate.com 3. www.heart.org 4. cpr.heart.org **https://cpr.heart.org/-/media/cpr-files/cpr-guidelines-files/highlights/hghlghts_2020_ecc_guidelines_english.pdf** **https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916**				
14	**Syllabus Content**	Basic Life Support (ASL016)				
	Unit 1: Introduction to BLS	Introduction and importance of BLS, Chain of survival /critical concepts of CPR, One rescuer adult CPR, Two rescuer adult CPR and Automated external defibrillator, Practicals				
	Unit 2: Pediatric BLS and Respiratory arrest	Management of Respiratory arrest, Child CPR Infant CPR Adult choking child choking Infant choking, Practicals				
	Unit 3: Special Situations	CPR modifications In pregnant patients BLS in intoxicated patient AED special situations Difference between infant, paediatric and adult CPR, Practicals				
	Unit 4: Hands on Training	Adult, Pediatric and Infant BLS Cardiopulmonary Resuscitation Use of an AED Adult, Pediatric and Infant Choking management				

ASL016: Basic Life Support

Skills Enhancement Course for UG programs [Dept. of Emergency and Trauma Care Technology]

Course code	Category	Course Title	Credits /Week			Credits (C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical/(SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	(a) = 100
											PM: 40%	EST	ESP	PM: 40%
ASL016	SE	**Basic Life Support**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="2">LIBRARY SCIENCE AND ERESOURCES</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>ASL017</td><td>Central Library</td></tr>
<tr><td>3</td><td>Credits & Category:</td><td>2</td><td>SE</td></tr>
<tr><td>4</td><td>Level</td><td colspan="2">Under Graduate programs under CBCS</td></tr>
<tr><td>5</td><td>Course Objective</td><td colspan="2">• To train students in Library Managements and equip them with the latest development in libraries and information centers.
• To make the students aware of various sources of E information and Providing information to the different user groups.</td></tr>
<tr><td>6</td><td>Rationale for inclusion</td><td colspan="2">This course is designed to provide knowledge on Library Science and its management. It helps learner to understand the uses of library information resources.</td></tr>
<tr><td>7</td><td colspan="2">Delivery method

• OL- Contact class/ Online Learning [
L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• OA- Online activities (Discussion forum, Reflection, Blogs) / Practical + A – Assessment
• SI- Synchronous Interaction (Live interactions through Google meet/ Moodle)
• IL – Independent Learning **Approximately double the Online learning hours)</td><td>hours/credit

30 OL HOURS = 1 CREDIT

30 OA HOURS -= 1 CREDIT

15 SI HOURS = 1 CREDIT</td></tr>
<tr><td>8</td><td>Credits
Credits assigned are based on the course objectives and learning outcomes.</td><td>Activity
Online Learning
Online Activities
Synchronous Interaction

Total Credits</td><td>Hours allocated per credit
15 OL hours = 0.5
15 OA hours = 0.5
30 SI +IL hours = 1

2</td></tr>
<tr><td>9</td><td>Course outcomes</td><td colspan="2">On successful completion of the course, the students should be able to

CO1. Analyze and understand the query
CO2. Identify the sources of information
CO3.Practice the process of finding and categorize information</td></tr>
<tr><td>10</td><td>Summary</td><td colspan="2">This course is designed to provide knowledge on Library Science and its management. It helps learner to understand the uses of library information resources</td></tr>
<tr><td>11</td><td>Assessment</td><td colspan="2">Course Instructors are encouraged to provide Equal Weightage to all the Online assessments.
Continuous Assessment (100 Marks) :
<table><tr><td></td><td></td><td>Marks</td></tr><tr><td>Test 1</td><td>CO-1 & CO-2</td><td>20</td></tr><tr><td>Test 2</td><td>CO-3</td><td>20</td></tr><tr><td>Test 3</td><td>CO1,2 & 3</td><td>20</td></tr><tr><td>Assignment</td><td>CO-1, CO-2 & CO-3</td><td>40</td></tr><tr><td>IA Total</td><td></td><td>100</td></tr></table></td></tr>
</table>

		Summative Assessment: (By Department) As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Specific Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT –I BASIC CONCEPTS AND INFORMATION SERVICES	• Meaning of Library Types of Library -– Library layout - Functions of Library – need for Library • Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL) • Communication theories and models. Barriers to communication. Levels of communications – Intrapersonal, interpersonal and mass communication. • Information services – literature search- Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services				
	UNIT–II INFORMATION SOURCES	• Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. • Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format • Secondary sources of information - Bibliography, Encyclopedia, Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.				
	UNIT – III LIBRARY AUTOMATION	• Definition need, Purpose, advantages. Planning for Library automation. • Automation of Library				

		operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. • Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. • Basic concepts: Bibliography, bibliographic coupling, Impact factor				
	UNIT – IV ELECTRONIC INFORMATION SOURCES	• Meaning and definition, Growth and development • Types. EJournals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. • Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. • Types of computer networks: Local Area Network Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). • Wide Area Networks and Metropolitan Area Networks-Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.				
	UNIT V– VDigital Libraries	• Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation • Electronic documents, files and file formats. Study of different file formats. Studying PDF in detail- features of PDF. • Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.				

	UNIT VI PRACTICAL: (10 hours)	Classification of books and Cataloguing 1. Collection of information through different sources 2. Library Automation 3. Remote Access 4. Preservation of Documents (Digitization)				
		Total	**15**	**15**	**15**	
12	**Reference books**	TEXTBOOKS 1. Ranganathan, S.R The five Laws of Library Science UBS Publishers, 1988 2. Ranganathan, S.R. Library Manual Sarada Ranganathan endowment for Library Science, 1989 3. Ranganathan, S.R. Cataloguing Practice Sarada Ranganathan endowment for Library Science 1990 REFERENCE BOOKS 1. Pooja and Jain Introduction to Computer, Vikas Publication 2011 2. Dhawan, S.M. et.al Shaping the future of Special Libraries beyond Boundaries, Ane Books Pvt. Ltd, 2008				
13	**Online resources**					
4	**Syllabus Content :**	**LIBRARY SCIENCE AND eRESOURCES [ASL017]**				
	UNIT – I BASIC CONCEPTS AND INFORMATION SERVICES	Meaning of Library Types of Library -— Library layout - Functions of Library – need for Library Meaning of ISBN and ISSN – Collection management - Library Classification system - Five laws of Library Science – Inter Library Loan (ILL) Communication theories and models. Barriers to communication. Levels of communications – Intrapersonal, interpersonal and mass communication. Information services – literature search- Methods of Dissemination of information Current Awareness Service (CAS), Selective Dissemination of Information (SDI), Document delivery service, Alert services, and Internet services				
	UNIT–II INFORMATION SOURCES	Documentary Sources of Information, Print, and Non-print including Electronic, Human and Institutional sources: Nature, types, characteristics and utility. Internet as a source of Information. Primary sources of information – Journal, conference volume, patents, research reports, thesis and their electronic format Secondary sources of information - Bibliography, Encyclopedia, Dictionary, Yearbook , Directory, Geographical Source, Textbook, Index and Abstracts.				
	UNIT – III LIBRARY AUTOMATION	Definition need, Purpose, advantages. Planning for Library automation. Automation of Library operations - Acquisitions, Cataloguing, OPAC, Circulation and Serials control. Evaluation of Library automation systems - Application of Barcode and RFID Technology for Library Functions. Basic concepts: Bibliography, bibliographic coupling, Impact factor				

	UNIT – IV ELECTRONIC INFORMATION SOURCES	Meaning and definition, Growth and development Types. EJournals, e-Books, e-Theses, e-newspapers, Blogs, Wikis. Free databases and fee based bibliographical and full text databases, subject related websites, Institutional repositories, Open Archives and digital Libraries. Resource Sharing and Networks: Consortia- Importance and objectives. Study of Information networks and Digital Library Consortia. Types of computer networks: Local Area Network Concept, Topologies - Bus, Star, Mesh, Tree, and Ring). Wide Area Networks and Metropolitan Area Networks- Concepts, Circuit switching and Packet switching. Difference between LAN and WAN. Wireless Networks –Mobile telephones.
	UNIT V– VDigital Libraries	Digital Libraries: Concepts and issues. Understanding digital Libraries Content creation Electronic documents, files and file formats. Study of different file formats. Studying PDF in detail- features of PDF. Digitization- scanning, Digital Preservation, Conservation and Archival Management – Problems and prospects. Open Access Movement and Institutional repositories.
	UNIT VI PRACTICAL: (10 hours)	Classification of books and Cataloguing 1. Collection of information through different sources 2. Library Automation 3. Remote Access 4. Preservation of Documents (Digitization)

ASL017: LIBRARY SCIENCE AND eRESOURCES Skills Enhancement Course for **UG** programs [Central Library]														
Course code	Category	Course Title	Credits /Week			**Credits (C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical/(SI)		OL+OA	SI / Practical	Total hours		CIA - Theory / Practical (a)	Theory (b)	Practical/ Viva (c)	(a) = 100
											PM: 40%	EST	ESP	PM: 40%
ASL017	SE	**LIBRARY SCIENCE AND eRESOURCES**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

1	**Name of the Course**	Basics of Electronics	
2	**Elective Code**	ASL018	**Credits:** 2
3	**Level**	Any students enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	The objective of this course is to enable the student to: 1. demonstrate the basic concepts of everyday electronics 2. Analyse the working of components involved in the biomedical equipment. 3. Apply the skills in creating simple circuit.	
5	**Rationale for inclusion**	This course is designed to focus on the basic working principal and circuitry of simple appliances to biomedical equipment used in healthcare.	
6	**Delivery Methods**		**Hours per credit**
		• **Online Learning** OL – Online Learning (Video tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes	
8	**Learning outcomes**	On successful completion of the course the student should be able to: 1. Read and interpret schematics and interpretation of circuits. 2. Comprehend basic electrical and electronic terminology. 3. Designing simple circuits that can be used to build basic electronic equipment. 4. Familiarize with electronic devices, gadgets and basic testing equipment	
9	**Summary**	This course introduces the basic concepts of electronics involved in pour day to day life. It also deals with the working of biosensors that are an intricate part of healthcare diagnostic tool. Students will be trained to operate devices to measure parameters in electrical energy and construction of simple circuits. The students will also be trained to troubleshoot simple electronic circuits. They will also be sensitized about the intricate components and working principle of the common appliances they use.	

Dr. S.SENTHIL KUMAR, Ph.D.,
Principal
Sri Ramachandra Faculty of Allied Health Sciences
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
Porur, Chennai - 600 116.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (100 marks)				
		Test 1	CO 1 (Objective questions)			10
		Test 2	CO 2 (Objective questions)			10
		Test 3	CO3 (Objective questions)			10
		Test 4	CO4 (Lab modules)			20
		Practical Assessment	CO5 (Construct a simple working model (e,g sensor/detector etc))			50
		IA Total				**100**
		Summative Assessment: Pattern of Assessment: As per CBCS 2019 Regulations only for GE Courses				
11	**Course Content and teaching method:**	**Learning outcomes**		**OL**	**OA &A**	**SI**	**SLO-CO mapping**
	UNIT - I	At the end of the module the students will be able to • Students will analyse about the intricate components in the circuit • They will comprehend the working of measuring devices		3	3	2	CO1
	UNIT - II	At the end of the module the students will be able to • Students will learn about working of the day to day gadgets and appliance • They will learn about the importance of proper grounding in circuits		3	3	2	CO2
	UNIT - III	At the end of the module the students will be able to • Students will analyze about the working of sensors and transducers.		3	3	2	CO3
	UNIT - IV	At the end of the module the students will be able to • Students will be explained about construction of simple circuits through video demonstration • Create simple circuits.		6	6	9	CO4 & CO5
				15	**15**	**15**	

12	**Reference Books**	**Text Books:** 1. V.K. Mehta 'Principle of Electronics, S Chand publishers. 2. Biomedical instrumentation by Arumugam, Anuradha publishers **Reference Books:** 1. Jacob Millman and Halkias C.,"Integrated Electronics," Mc Graw hill, New York, 2004. 2. Basic Electronics by Debashis De, pearson publishers.
13	**Online resources**	1. www.electronics-lab.com 2. Modern Devices: The Simple Physics of Sophisticated Technology, wiley online library.
14	**Syllabus Content:**	Basics of Electronics (ASL018)
	Unit I: Introduction	Basic concepts – static and current electricity – Ammeter – Voltmeter – Multimeter– Capacitor – Resistors- Basic circuitry - Inductors – Rectifiers – Semiconductor theory - diodes – LED – Timer circuits
	Unit II: Electronic Gadgets	Basic circuitry of home appliances – principle and working of gadgets –trouble shooting in home appliances- electrical safety –macro shock – micro shock – electrical accidents – protection devices.
	Unit III: Sensors	Introduction – Principle And Types – Biosensors – Transducers – Selection Of Transducer – Direct And Indirect Measurement –Strain Gauge – Controlling lighting and reducing wastage of Energy.
	Unit IV: Practical	Understanding of Basic circuit connections and continuity in circuits - Construction of light dark sensor - Demonstration of sound level meter - Construction of electronic alarm and buglar alarm - Construction of FM receiver - Demonstration of the working of thermostat and water heater - Demonstration of minor day to day gadgets.

ASL018: Basics of Electronics

Skills Enhancement Course for **UG** programs [Dept. of AHS]

Course code	Category	Course Title	Credits / Week			**Credits (C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical/(SI)		OL+OA	SI / Practical	Total hours		CIA - Theory / Practical (a)	Theory (b)	Practical /Viva (c)	(a) = 100
											PM: 40%	EST	ESP	PM: 40%
ASL018	SE	**Basics of Electronics**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

1	**Name of the Course**	English for Research Writing	
2	**Elective Code**	ASE019	**Credits:** 2
3	**Level**	Any student enrolled in Post Graduate programs under CBCS.	
4	**Course Objective**	The objectives of the course is to enable the students to: 1. Build fundamental research writing skills. 2. Apply various language tools to appraise research writing.	
5	**Rationale for inclusion**	The course will prepare students to strengthen their research writing.	
6	**Delivery Method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In Person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15
7	**Credit**		**Hours per Credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 15 OA hours = 0.5 8 SI hours = 0.5
		Total Credits	**2**
		Credit assigned based on the course objectives and learning outcomes	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Creatively write research ideas, logically using coherence and Cohesion devices. 2. Employ various sub strategies of writing such as paraphrasing, hedging, Interpreting to strengthen research writing. 3. Effectively use vocabulary in research writing 4. Review and strengthen grammar concepts involved in preparation of Manuscripts	
9	**Summary**	This course introduces the steps to develop, practice and edit own and peers' research writing for grammatical form, word choice, spelling, mechanics, sentence variety and organization using various language skill sets.	
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.	
		Continuous Assessment (100 Marks)	
			Course Outcomes / **Marks**
		Test 1	CO 1, 2,3 &4 / 20

Dr. S.SENTHIL KUMAR, Ph.D.,
Principal
Sri Ramachandra Faculty of Allied Health Sciences
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116.

		Test 2	CO 1, 2,3 &4	10
		Test 3	CO 3 &4	20
		Test 4	CO 3 &4	15
		Test 5	CO 1 &4	10
		IL	CO 1, 2,3 &4	25
		IA Total		**100**

11	**Course Content and Teaching Method:**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT - I	At the end of the module the students will be able to • Write a well-structured paragraph which is highly effective and creative. • Prepare a structure research proposal for the formulated research objective. • Employ paraphrasing strategies to the given content • Apply hedging devices to state opinion	6	3	2	CO 1, 2,3 & 4
	UNIT - II	At the end of the module the students will be able to • Construct a questionnaire to collect the basic needed information while conducting research with a specific aim. • Demonstrate linguistic proficiency to interpret the visual data (bar graphs, pie charts etc).	6	3	2	CO 1, 2,3 & 4
	UNIT - III	At the end of the module the students will be able to • Apply various types of reading skills. • Demonstrate Reading Competence and comprehend the meaning of the given text the given text.	6	3	1	CO 3 & 4
	UNIT – IV	At the end of the module the students will be able to • Recognize the major processes that are used in the formation of English words • Identify and use common phrasal verbs • Use the correct pronunciation of words • Identify the common mistakes used in different situations • Interpret the words based on various circumstances.	6	3	1	CO 3 & 4
	UNIT - V	At the end of the module the students will be able to • Identify and correct the grammatical errors in manuscripts.	6	3	2	CO 1 & 4

		• Apply grammar concepts of SV Agreement, Tenses and prepositions correctly in preparation of Manuscript.				
			30	**15**	**8**	
12	**Reference books**	1. Bailey,Stephen (2003).Academic Writing. London and New York, Routledge. 2. Hedge,T. (2005).Writing.London,OUP 3. Raman, Meenakshi and Sangeetha Sharma (2011). Technical Communication: Principles and Practice. New Delhi, OUP. 4. Department of English, Delhi University (2006) Fluency in English Part II. New Delhi, OUP. 5. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi. 6. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw –Hill Publishing Company Limited. 7. Technical Communication – Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press. 8. Developing Communication Skills by Krishna Mohan and Meera Banerji, II edition, Macmillan. 9. The Complete Guide to Functional Writing in English by M. Sarada, Sterling Publishers (P) Ltd., New Delhi. 10. High School English Grammar and Composition by Wren & Martin. 11. Vistas and Visions Orient Black Swan (Writing and Grammar exercises at the end of lessons are recommended) From remapping an anthology for Degree classes, (Writing Skills) Orient Black Swan. 12. Contemporary Communicative English, S.Chand. 13. Technical communication: A reader centered approach P.V.Anderson.Wadsworth,Cengage				
13	**Online Resources**	1. http://www.studygs.net/reading_essays.htm 2. http://www.edufind.com/english-grammar/english-grammar-guide/ 3. http://sscwriting.kellimcbride.com/pol_ereader/pol_douglass_learning.pdf				
14	**Syllabus Content**	English for Research Writing (ASE019)				
	UNIT – I Writing -1 (Core Skills)	Paragraph Building - Preparing Research Proposals - Paraphrasing to avoid Plagiarism - Use of Hedging devices				
	UNIT – II Writing (Supportive Skills)	Preparation of Questionnaire -Using Open ended Questions, Closed Ended Questions, Back Translation Techniques - Verbal Interpreting of Visual data				
	UNIT – III Reading	Types of Reading - Barriers to effective reading and tips to enhance reading - Strategies for Reading Comprehension				
	UNIT – IV Vocabulary	Word Formations (Etymological interpretation of words) - Phrasal Verbs - Commonly mispronounced words - Misspelled Words				
	UNIT – V Remedial Grammar	Proof reading/ Spotting Errors in Manuscript - Review Grammar topics involved in preparation of manuscript(Tenses , S-V Agreement, Use of conjunctions as connectors)				

ASE019– English for Research Writing

Skills Enhancement Course for **PG** programs [English Language Lab]

Course code	Category	Course Title	Credits /Week			Credits (C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical/(SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	(a) = 100
											PM: 50%	EST	ESP	PM: 50%
ASE019	SE	**English for Research Writing**	1	0.5	0.5	2	45	8	53	80	100	-	-	100

<table>
<tr><td>1</td><td>Name of the course</td><td colspan="4">Introduction to the principles and practice of infection prevention and control</td></tr>
<tr><td>2</td><td>Elective Course Code</td><td>ASL020</td><td>Credits: 2</td><td>Category: SE</td><td>Dept. of Microbiology</td></tr>
<tr><td>3</td><td>Level</td><td colspan="4">Post Graduate programs under CBCS.</td></tr>
<tr><td>4</td><td>Course Objective</td><td colspan="4">At the end of this course, the students shall be able to:
Describe the Health care associated infections and factors that contribute to the development of HAI
Demonstrate Knowledge of the principles and application of infection control and prevention measures: Standard precautions, Communicable and notifiable diseases , isolation precautions, ,Biomedical waste management, antimicrobial stewardship, outbreak management, Immunisation and vaccination
Demonstrate Infection control practices namely hand hygiene, use of Personal Protective Equipment (PPE) and Biomedical waste management
Demonstrate knowledge to carry out surveillance activity for assessing Infection indices for surgical site Infections (SSI), Catheter Related Brood stream Infections (BSI), Ventilator Associated Pneumonia (VAP) and Urinary Tract Infections (UTI)
Plan and implement an infection prevention program and Explain the roles and functions of Infection Control Committee</td></tr>
<tr><td>5</td><td>Rationale for inclusion</td><td colspan="4">Health care associated infections (HAI) are increasingly recognised as a major cause of morbidity and mortality worldwide. To prevent HAI, infection control program is adopted and implemented in health care facility. Education and training of the health care professional is an essential part of the Infection control program. This course will provide the basic understanding of the principles of Infection control and prevention and its implementation</td></tr>
<tr><td rowspan="5">6</td><td rowspan="5">Delivery method</td><td colspan="3"></td><td>Hours per credit</td></tr>
<tr><td colspan="3">• Online Learning
OL- Online Learning (Vidéo tutorials, External links, Articles, E books)</td><td>30</td></tr>
<tr><td colspan="3">• Online Activities including Assessment
OA- Online activities (Discussion forum)</td><td>30</td></tr>
<tr><td colspan="3">• Synchronous Interaction
SI- Synchronous Interaction (Live or interactions through Google meet)</td><td>15</td></tr>
<tr><td colspan="3">• Independent Learning
IL – Independent Learning **Approximately double the Online learning hours)</td><td>60</td></tr>
<tr><td rowspan="4">7</td><td rowspan="4">Credit</td><td colspan="3"></td><td>Hours allocated per credit</td></tr>
<tr><td colspan="3">Online Learning
Online Activities
Synchronous Interaction</td><td>15 OL hours = 0.5
15 OA hours = 0.5
30 SI hours = 1</td></tr>
<tr><td colspan="3">Total Credit</td><td>2</td></tr>
<tr><td colspan="4">Credit assigned based on the course objectives and learning outcomes.</td></tr>
<tr><td>8</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the students should be able to
CO1. Demonstrate knowledge of the principles and application of infection control and prevention measures
CO2 Identify potential health care related infections to implement prevention and control measures. and describe roles and functions of Infection Control Committee
CO3 Demonstrate basic Infection control practices
CO4 Demonstrate knowledge to carry out surveillance of HAI
CO5 Plan and implement an infection prevention program.</td></tr>
</table>

<table>
<tr><td>9</td><td>Summary</td><td colspan="5">The program aims to impart knowledge about the various practices in prevention of infection both within the Hospital and Community. The students will understand the principles of the infection control practices and how to implement them effectively</td></tr>
<tr><td rowspan="9">10</td><td rowspan="9">Assessment</td><td colspan="5">Provided equal Weightage to all the Online assessments.</td></tr>
<tr><td colspan="5">Continuous Assessment (100 Marks):</td></tr>
<tr><td></td><td colspan="2"></td><td colspan="2">Marks</td></tr>
<tr><td>Test 1</td><td colspan="2">CO-1 & CO-2</td><td colspan="2">20</td></tr>
<tr><td>Test 2</td><td colspan="2">CO-3 & CO-4</td><td colspan="2">40</td></tr>
<tr><td>Test 3</td><td colspan="2">CO-5</td><td colspan="2">20</td></tr>
<tr><td>Assignment</td><td colspan="2">CO-1, CO-2 & CO-4</td><td colspan="2">20</td></tr>
<tr><td>CIA Total</td><td colspan="2"></td><td colspan="2">100</td></tr>
<tr><td colspan="3">Summative Assessment:
As per CBCS 2019 Regulations [Departmental Assessment] (Practicals)- From 2021 onwards</td><td colspan="2"></td></tr>
<tr><td rowspan="5">11</td><td rowspan="5">Course Content and Teaching Method :</td><td>Learning outcomes

At the end of each module the learner will be able to</td><td>OL</td><td>OA&A</td><td>SI</td><td>SLO-CO mapping</td></tr>
<tr><td>UNIT –I</td><td>• Define Health care associated infections (HAI)
• Elucidate the modes of transmission of infections
• Recognise the impact of HAI
• Describe the basic principles of prevention of HAI
• Define Standard precautions & describe its components
• Perform Hand hygiene and demonstrate use of PPE
• Demonstrate source segregation of Biomedical waste
• Describe the transmission based precautions to control infections
• Describe roles and functions of Infection Control Committee</td><td>2</td><td>3</td><td>3</td><td>CO-1, 2, 3

CO-5</td></tr>
<tr><td>UNIT – II</td><td>• Define sterilization and disinfection and Describe the different method of sterilisation and disinfection protocols in health care setting
• Describe the Occupational exposure to infection in HCW and management</td><td>3</td><td>3</td><td>3</td><td>CO-1,2,3</td></tr>
<tr><td>UNIT–III</td><td>• Describe the Infection prevention in
▪ Operating rooms
▪ Casualty/ emergency room
▪ Dialysis
▪ transplant units
▪ Burns unit.
▪ Central Sterilization Services department,
▪ Laundry,
▪ Diet kitchen
▪ Intensive Care Units</td><td>3</td><td>3</td><td>3</td><td>CO-1,2,3</td></tr>
<tr><td>UNIT – IV</td><td>• Explain the environmental surveillance protocols
• Demonstrate knowledge to carry out surveillance activity for assessing Infection indices for surgical site Infections (SSI), Catheter Related Brood stream Infections (BSI), Ventilator Associated Pneumonia (VAP) and Urinary Tract Infections (UTI).
• Surveillance and control of infection caused by multi-drug resistant organisms</td><td>3</td><td>3</td><td>3</td><td>CO-4</td></tr>
</table>

	UNIT – V	• Describe the rationale and principles of hospital Antimicrobial stewardship program	4	3	3	CO-5
		Total	**15**	**15**	**15**	
12	**Reference books**	1. Handbook Of Hospital Infection Control – Sanjay Singhal 2. Basics of Infection Control for Health Care Providers 2nd edition: Mike kennamar 3. APIC Text of Infection Control and Epidemiology, 4th ed. 4. Hospital Epidemiology and Infection Control – Glen Mayhall . 4th Edition. Lippincott Williams 5. Hospital Clinical Waste, Hazards, Management and Infection Control . Dr. Ashok Saini . Indian Society of Health Administrators. Yem Yes Printers 6. Hospital Acquired Infections – Prevention and Control , PurvaMathur, 1st Edition, Lippincott Williams 7. Essentials Of Hospital Infection Control by Apurba S Sastry, Jaypee				
13	**Online resources**	https://www.cdc.gov/ https://www.who.int https://www.nabh.co/standard.aspx				
14	**Syllabus Content**	**Introduction to the principles and practice of Infection Prevention and Control [ASL020]**				
	UNIT – I	Overview of infectious diseases with special reference to communicable pathogens. Hand hygiene principles, practice and audit. Handling of patients with communicable diseases and the principles of isolation policies. Reporting of communicable diseases to the governmental agencies. Biomedical waste management and the current regulations.				
	UNIT-II	Sterilisation and Disinfection policy in Health care settings Prevention of infection in HCW and vaccination				
	UNIT – III	Area specific Infection prevention in hospital				
	UNIT – IV	Surveillance of HAI and infections caused by Multidrug resistance organisms				
	UNIT – V	Antibiotic stewardship				

ASL020: Introduction to the principles and practice of Infection Prevention and Control
Skills Enhancement Course for PG programs [Dept. of Microbiology]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 50%	EST	ESP	PM: 50%
ASL020	SE	**Introduction to the principles and practice of Infection Prevention and Control**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

1	**Name of the Course**	Good Laboratory Practices	
2	**Elective Code**	BSE001	**Credits:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the fundamental concepts of good laboratory practices 2. Describe the basic laboratory skills 3. Discuss and apply the relevance of good laboratory practices	
5	**Rationale for inclusion**	Good lab practice is a set of principles that provides a framework within which laboratory studies are planned, performed, monitored, recorded, reported and archived and is essential to ensure the uniformity, consistency, reliability, reproducibility, quality and integrity of non-clinical research. GLP helps to ensure the credibility and traceability of data submitted, thereby addressing the issue of non-reproducibility in many biopharmaceutical experiments. Knowledge of GLP is essential to minimize adverse drug effects and improve the human health and environmental safety profiles.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	10 30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	10 OL hours = 1 20 OA hours & 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Explain the basic concepts and importance of good laboratory practices 2. Describe the preparation, administration and distribution of SOPs 3. Explain the test facility organization and personnel management 4. Describe the reporting, storage and archival of reports	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

9	**Summary**	This particular course will provide knowledge about the system covering the organizational process and the conditions under which non-clinical health and environmental studies are planned, performed, monitored, recorded, reported and retained (or archived).				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (100 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1 & CO-2	20		
		Test 2	CO-3 & CO-4	20		
		Test 3	CO-1, CO-2,CO-3 & CO-4	40		
		Assignment	CO-1, CO-2,CO-3 & CO-4	20		
		IA Total		**100**		
		Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA & A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Explain bioethics and biosafety 2. Explain the benefits of GM technology and related issues 3. Discuss the importance of protection of new knowledge and innovations and its role in business	2	5	3	1,2
	UNIT – II	1. Explain the minimum standard for the conduct of tests and documentation and analysis of data 2. Discuss the quality standards for the conduct of nonclinical studies, data collection, and the reporting of the results	3	5	4	1,2
	UNIT – III	1. Explain how to achieve efficiency, quality output and uniformity of performance 2. Describe to reduce miscommunication and failure to comply with industry regulations	3	6	4	3
	UNIT – IV	1. Explain the importance of adequate document and record management processes and the traceability of origin of materials 2. Discuss the attributable, legible, contemporaneous, original and accuracy of the collected data	2	4	4	4
			10	**20**	**15**	

12	**Reference books**	1. Ludwig Huber, A primer Good laboratory Practice and Current good manufacturing practice, Agilent Technologies publishers, Page No 1-132. 2. Principles of Good Laboratory Practice Accreditation Process Requirements by Pradeep Deshmukh 3. GLP Essentials A Concise Guide to Good Laboratory Practice, Second Edition By Milton A. Anderson ISBN 9781574911381 Published June 30, 2002 4. Good Laboratory Practice Regulations Third Edition Revised And Expanded (Drugs And The Pharmaceutical Sciences) by Weinberg Sandy ISBN:9780824708917; Nov 6 2002
13	**Online resources**	https://en.wikipedia.org/wiki/Good_laboratory_practice https://www.who.int/tdr/publications/documents/glp-handbook.pdf https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2801195/ https://actascientific.com/ASMI/pdf/ASMI-01-0056.pdf https://www.ifcc.org/media/476761/ifcc-cclm-workshop-praveen-sharma-ethics-in-clinical-laboratory-practice.pdf
14	**Syllabus Content :**	Good Laboratory Practices (BSE001)
	UNIT – I: Introduction	Introduction to Bioethics and Biosafety.Biosafety Guidelines and Regulations.Legal and Socioeconomic Impacts of Biotechnology.Use of Genetically Modified Organisms and their Release in the Environment. Hazardous Materials used in Biotechnology their Handling and Disposal. Good Laboratory Practice (GLP) and Good Manufacturing Practice (GMP). Public Education of Producing Transgenic Organisms.
	UNIT – II: Good Laboratory Practice Principle	Test Facility Organization and Personnel: Management responsibility, Study director's responsibility, safety measures and personal responsibility. Quality assurance program. Facilities: Test System Facilities, Facilities for Handling test and Reference Substances. Archive Facilities. Waste Disposal, Animal Care Facilities, Animal Supply Facilities.
	UNIT – III: Standard Operating Procedures	Definition, Initiation of SOP, Preparation of SOP, Administration, Distribution and Implementation. Maintenance of laboratory records. Formatting SOP, Reagent/materials certification, Certification of analysts, Certification of laboratory facilities, Documentation and maintenance of record
	UNIT – IV: Data Reporting And Storage	Performance of study, Study plan, Conduct of study, Reporting of results. Archival storage of records and reports.

BSE001: Good Laboratory Practices
Skills Enhancement Course for UG programs [Dept. of Biomedical Sciences]

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40%	EST	ESP	PM: 40%
BSE001	SE	**Good Laboratory Practices**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

1	**Name of the Course**	Fundamentals in Analytical Laboratory Skills	
2	**Elective Code**	BSE003	**Credit:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the basic safety measures in laboratory 2. Describe the units of measurements to properly reporting the results 3. Discuss the principles and applications of instruments to study biological material	
5	**Rationale for inclusion**	The students would be able to apply the knowledge in the field of biomedical science for understanding the basics of biosafety, proper reporting of results in terms of units of measurements	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	10 OL hours = 1 20 OA hours & 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe the principles governing instruments commonly applied to study biological material 2. List the precautionary rules and other safety measures in common laboratory 3. Explain the proper reporting of results in terms of units of measurements	

Prof. ARUN DHARMARAJAN
VICE - PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116, India

9	**Summary**	This course introduces the steps of laboratory safety practice and gain principles, handling of instruments commonly apply to study biological material. Student will be trained to proper reporting of results for a preparation of chemical reagents and solvents through chemical formula				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (100 Marks) :				
			Course Outcomes	**Marks**		
		Test 1	CO-1	20		
		Test 2	CO-2, CO-3	20		
		Test 3	CO-1, CO-2,CO-3	40		
		Assignment	CO-1, CO-2,CO-3	20		
		IA Total		**100**		
		Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Define Hazard communications and colour coded system 2. Discuss the common cause of fire in the laboratory	2	4	2	1
	UNIT – II	1. Define the term distillation and deionized water 2. Discuss about Meniscus readers 3. Describe the various methods of measuring liquids	1	3	2	1,2
	UNIT – III	1. Define SI and CGS unit 2. Explain the various methods of expressing concentration in solution	2	4	4	2
	UNIT – IV	1. Define Pka 2. Discuss about principle and maintenance of pH meter 3. Explain principle and maintenance of Analytical Balance	3	4	4	3
	UNIT – V	1.Define accuracy and precision 2.Explain the various methods of expressing precision	2	5	3	3
			10	**20**	**15**	
12	**Reference books**	1. Text Book of Practical Clinical Biochemistry by Harold Varley 2. Malhotra VK. Practical Biochemistry for students. Fourth Edition, 2003 Jaypee publishers 3. Daniel C Harris: Quantitative Chemical Analysis. 4. Text book of Medical Biochemistry by Chatterjee Shinde				

13	**Online resources**	1. https://www.labcompare.com/ 2. https://courses.lumenlearning.com/ 3. https://chem.libretexts.org/
14	**Syllabus Content :**	Fundamentals in Analytical Laboratory Skills (BSE003)
	UNIT – I: Accidents & Safety Measures	Basic causes of accidents, common types of laboratory accidents. Safety measures and first aid in laboratory.
	UNIT – II: Distillation and calibration	Distillation of water - distillation plants, purity checks. Storage of distilled water. Calibration of volumetric apparatus- flasks, burettes and pipettes, meniscus readers
	UNIT – III: Units of measurement	S.I and CGS unit, strength, molecular weight, equivalent weight. Normality, molarity, molality. Calculations in grams and moles, Solutions and their concentrations
	UNIT – IV: Concept of pH & Measurement	Definition, PKa value, methods of measurement of pH, pH paper, pH meter Analytical balance- Principle, working, maintenance.
	UNIT – V: Error in chemical analysis	Accuracy, precision, methods of eliminating or minimizing errors. Methods of expressing precision: Mean median, deviation, average deviation and coefficient of variation

BSE003: Fundamentals in Analytical Laboratory Skills
Skills Enhancement Course for UG programs [Dept. of Biomedical Sciences]

Course code	Category	Course Title	Credits / Week			Credits(C)	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40%	EST	ESP	PM: 40%
BSE003	SE	**Fundamentals in Analytical Laboratory Skills**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

1	**Name of the Course**	Practice and skills in Medical Transcription	
2	**Elective Code**	BSL017	**Credits:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. Explain the fundamental of medical transcription 2. Describe the uses of vocabulary, listening comprehension 3. Summarize the preparation of medical document	
5	**Rationale for inclusion**	This course is designed to provide hands-on training in the field of Medical Transcription and to prepare a medical report by transcribing WAV file to word file.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button/ In person)	20 30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	20 OL hours = 1 15 OA hours & 10 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Discuss the basic skills in the knowledge of Vocabulary, Medical terminology, and preparation of chart notes 2. Describe the skills in listening comprehension 3. Explain accurate format for medical document preparation	
9	**Summary**	This course introduces in learning medical terminology (Anatomy, Physiology & Pathology) Learning of Grammar and basic foundation to read and interpret Lab report (Hematology, Biochemical reports and Radiology)	

Prof. ARUN DHARMARAJAN
VICE PRINCIPAL
Faculty of Biomedical Sciences, Technology & Research
SRI RAMACHANDRA
Institute of Higher Education and Research
Porur, Chennai - 600 116. India.

10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (100 Marks) :				
			Course Outcomes		**Marks**	
		Test 1	CO-1		20	
		Test 2	CO-2, CO-3		20	
		Test 3	CO-1, CO-2 &CO-3		40	
		Assignment	CO-1, CO-2 &CO-3		20	
		IA Total			**100**	
		Pattern of Assessment: As per CBCS 2019 Regulations				
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Define Ethical& Legal Responsibilities 2. Discuss on Certification for Medical Transcriptionists	5	4	2	1
	UNIT – II	1. Discuss the importance of Hardware & Software of Computer 2. Discuss the importance of Ergonomics in the field of Medical Transcription	5	4	3	2
	UNIT – III	1. Explain the guidelines to prepare Medical report 2. List the Proof reading notations	5	3	3	3
	UNIT – IV	1. Describe the equipments for medical transcription 2. Explain the typing skills for the beginners 3. Discuss the preparation of chart notes 4. Explain listening comprehension 5. Explain transcription check off sheet	5	4	2	3
			20	**15**	**10**	
12	**Reference books**	1. Medical Key boarding, Typing, and Transcribing Techniques and procedures 4th Edition, March Otis Diehl, Marilyn Takahashi Fordney, W.B. Saunders Company 2. The AAMT Book of Style for Medical Transcription, Claudia J. Tessier CD's available for: a.Stedman's Electronic Medical Dictionary 4.0 b.American Drug Index 2003				

13	**Online resources**	www.medicaltranscriptiontraining.in www.rbsten-tel.com/pdf/QualityMT.pdf
14	**Syllabus Content :**	Practice and skills in Medical Transcription (BSL017)
	UNIT – I: The Medical Transcriptionist's career including Ethical& Legal Responsibilities	Introduction to Medical transcription, Job Opportunities, Transcription Skills, Medical records, Certification for Medical Transcriptionists, Ethical and Legal responsibilities
	UNIT – II: Equipments in Transcription	Equipment, Computer Systems, Ergonomics, Dictation Equipments, Hand and Foot control Dictation, Transcription Preparation
	UNIT – III: Transcription Guidelines	Punctuations, Proof reading notations, Formats and styles, SOAP for Chart notes; Discharge Summary
	UNIT – IV: Practical	1.Equipments for Medical Transcription 2. Typing for the beginners 3. Voçabulary 4. Proof reading Notations 5. Formats and styles in document preparation 6. Preparation of chart notes 7. Listening Comprehension 8. Transcription check off sheet

BSL017: Practice & Skills in Medical Transcription **Skills Enhancement Course for UG programs [Dept. of Biomedical Sciences]**														
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment **Department**		Grand Total
			(OL)	(OA)	Practical (SI)		OL+OA	SI / Practical	Total hours			Theory (b)	Practical/ Viva (c)	a = 100
											PM: 40%	EST	ESP	PM: 40%
BSL017	SE	**Practice & Skills in Medical Transcription**	0.5	0.5	1	2	30	15	45	80	100	-	-	100

<table>
<tr><td>1.</td><td>Name of the course</td><td colspan="4">Tooth Wisdom</td></tr>
<tr><td>2.</td><td>Elective Code</td><td>DSL001</td><td>Credits: 2</td><td>Faculty of Dental Sciences</td><td>Category: SE</td></tr>
<tr><td>3.</td><td>Level</td><td colspan="4">Any UG student</td></tr>
<tr><td>4.</td><td>Course Objective</td><td colspan="4">At the end of this course, the students should have knowledge in:
1. The two most common diseases of the oral cavity and its prevention
2. The myths and facts of Dentistry
3. How the oral health plays an important role in general health
4. The importance of the role of teeth in personality</td></tr>
<tr><td>5.</td><td>Rationale for inclusion</td><td colspan="4">Oral Health and Hygiene are essential components of any individual’s health. Hence a rational knowledge of oral health is an investment in a person’s health</td></tr>
<tr><td rowspan="2">6.</td><td colspan="3">Delivery Methods (hours/credit)</td><td colspan="2">Hours per Credit</td></tr>
<tr><td colspan="3">• Contact class/ Online Learning
L/ OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books)
• OA- Online activities (Discussion forum, Reflection, Blogs) / Practical + A - Assessment
• SI- Synchronous Interaction (Live interactions through Google meet/ Moodle)
• IL – Independent Learning **Approximately double the Online learning hours)</td><td colspan="2">30

30 (including 10 hrs assessment)

15</td></tr>
<tr><td rowspan="5">7.</td><td colspan="2" rowspan="5">Credit
Credit assigned based on the course objectives and learning outcomes</td><td colspan="2"></td><td>Hours allocated per credit</td></tr>
<tr><td colspan="2">Contact class/ Online Learning</td><td>15 OL hours = 0.5</td></tr>
<tr><td colspan="2">OA- Online activities including practicals</td><td>15 OA hours = 0.5</td></tr>
<tr><td colspan="2">SI- Synchronous Interaction</td><td>15 SL hours = 1</td></tr>
<tr><td colspan="2">Total credits</td><td>2</td></tr>
<tr><td>8.</td><td>Learning outcomes</td><td colspan="4">On successful completion of the course the students should be able to:
C01. have a broad overview of Dentistry
CO2: Demonstrate knowledge about common diseases affecting the teeth
CO3: Describe teeth and its supporting structures including identification, etiology and prevention.</td></tr>
<tr><td>9.</td><td>Summary</td><td colspan="4"></td></tr>
</table>

10	**Assessment** (Course Instructors are encouraged to provide equal Weightage to all the Online assessments)	Continuous Assessment (a) Marks				
		Test 1	CO-1-	20		
		Test 2	CO-2	20		
		Test 3	CO 1-3	20		
		Assignment	CO 1- 3	40		
		IA Total		**100**		
		Summative Assessment (As per CBCS guidelines)				
11	**Course Content and teaching method**	Learning Outcomes	OL	OA	SI	CO: SLO: mapping
	UNIT – I OVERVIEW OF DENTISTRY	• Tooth dynamics • Gumpad, types of dentition & its chronology • Pedodontics clinical observation and infant oral health • Assessment	**6**	6	3	CO1
	UNIT - II NO CAVITY IN ORAL CAVITY:	• Dental caries – etiology and precipitating factors • PRECIPITATING FACTORS [Activity based learning] i) Diet & Microbes ii) Saliva & Substrate with Activities • Assessment • PREVENTION OF DENTAL CARIES i) Remineralizing agents ii) Fluorides in dentistry • Clinical observation .a)Conservative Dentistry & Endodontics b) Public Health Dentistry	8	6	3	CO1 &2
	UNIT – III DANCING TOOTH:	• Gum dynamics • Plaque & Gum disease • Identifying & prevention of gum disease a) Oral Hygiene Instructions & activity b) Toothpaste & Tooth brush & Auxillary aids c) Tooth brushing techniques (Activity based learning and assessment) • Malocclusion • Cleft lip & Palate assessment	8	6	3	CO 2,3
	UNIT- IV Hidden Links	• Oral health – A gateway to health • Hormonal influences on Oral diseases Dental	4	6	3	CO 2,3

		imaging - Observation/ Activity/ assessment • Beauty at 60 • Museum visit				
	UNIT –V: CUT TO SAVE:	• Wisdom about wisdom tooth • Oro-facial trauma & tumours • Assessment • Oral Pathology & Museum visit	4	6	3	CO 2,3
	UNIT –VI: IN A NUT SHELL:		15	15	15	
12	Text books & References	Conservative dentistry - Sturdevant 6th ed, Textbook of Oral Medicine – Burket's 12th ed., Essential of Public Health dentistry – Soben Peter 5th ed Pediatric Dentistry –Principles and practice : MS. Muthu, N. Sivakumar, 2nd ed Textbook of Orthodontics – William. R. Proffi				
13	Web Sources	Web Resources: From SRU Library Portal				
14	**Syllabus Content**	**Tooth Wisdom**				
	UNIT – I OVERVIEW OF DENTISTRY; [4 hours]	1. Tooth dynamics 2. Gumpad, types of dentition & its chronology 3. Pedodontics clinical observation and infant oral health 4. Assessment				
	UNIT - II NO CAVITY IN ORAL CAVITY:	1. Dental caries – etiology and precipitating factors 2. PRECIPITATING FACTORS [Activity based learning] i) Diet & Microbes ii) Saliva & Substrate with Activities 3. Assessment 4. PREVENTION OF DENTAL CARIES: i) Remineralizing agents ii) Fluorides in dentistry 5. Clinical observation Hour – 6. a)Conservative Dentistry & Endodontics b) Public Health Dentistry				
	UNIT – III DANCING TOOTH	1. Gum dynamics 2. Plaque & Gum disease 3. Identifying & prevention of gum disease a) Oral Hygiene Instructions & activity b) Toothpaste & Tooth brush & Auxillary aids c) Tooth brushing techniques (Activity based learning and assessment)				

		4. Malocclusion 5. Cleft lip & Palate assessment
	UNIT- IV Hidden Links	1. Oral health – A gateway to health 2. Hormonal influences on Oral diseases 3. Dental imaging - Observation/ Activity/ assessment 4. Beauty at 60 5. Museum visit
	UNIT –V CUT TO SAVE:	1. Wisdom about wisdom tooth 2. Oro-facial trauma & tumours 3. Assessment 4. Oral Pathology & Museum visit
	UNIT –VI: IN A NUT SHELL:	

DSL001: Tooth Wisdom **Generic Elective Course for UG programs [**Faculty of Dental Sciences**]**															
Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a=100
											PM: 40%	EST	ESP	PM: 40%
DSL001	GE	**Tooth Wisdom**	0.5	0.5	1	2	30	15	45	80	100			100

1	**Name of the Course**	**Interpersonal Skills**	
2	**Elective Code**	**GSL002**	**Credits: 2**
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	1. To demonstrate the knowledge of self-developmentand attitude. 2. To articulate the importance of communication andetiquette at workplace. 3. To impart knowledge about conflict management,leadership and Time management.	
5	**Rationale for Inclusion**	Students will learn about self-awareness, communication skills and conflict management, which will enable the students to exhibit effective interpersonal skills.	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL - Online Learning (Video tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA - Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI - Synchronous Interaction (Live interactions through Google meet/ Big Blue Button) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 15 SI hours = 1
		Total Credits	**2**
		Credit assigned based on the course objectives and learning outcomes.	

Dr.K.C.JOHN
Director
SRI RAMACHANDRA
FACULTY OF MANAGEMENT SCIENCES
SRI RAMACHANDRA INSTITUTE OF
HIGHER EDUCATION AND RESEARCH
(Deemed to be University), Porur, Chennai-116.

8	**Learning outcomes**	On successful completion of the course the students should be able to CO1. Interpret the importance of self-development and positive attitude CO2. Develop communication skills and appraise the importance of listeningskills CO3. Comprehend the importance of etiquette and integrity at workplace CO4. Identify and apply effective conflict management style , leadership style and techniques to keep the workforce motivated
9	**Summary**	This course introduces the importance of attitude, communication skills, leadership skills and basic etiquette at workplace which will facilitate the students to exhibit effective interpersonal communication at work setting.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.

Continuous Assessment (50 Marks) :

	Course Outcomes	Marks
Test-1	CO-1 & CO-2 (BL 1 Remember and BL2-Understand)	15
Test 2	CO-3 & CO-4 (BL2-Understand BL3 –Apply)	15
Assignment	CO-1 & CO-3 (BL3-Apply BL4-Analyze)	10
Seminar	CO-1, CO-2, CO-3 & CO-4 (BL3-Apply BL4-Analyze)	10
IA Total		**50**

Summative Assessment :
Pattern of Assessment: As per CBCS 2019 Regulations

11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL hrs**	**OA & A hrs**	**SI hrs**	**SLO-CO mapping**
	UNIT – I	1. Interpret the benefits of SWOT Analysis and process of goal setting 2.Analyze the Componentsand Measurement of attitude 3.Discuss stress management techniques	4	4	4	CO-1

	UNIT – II	1.Identify the process and forms of communication 2.Comprehend the barriers of communicationand ways for effective communication 3.Associate listening skills with effective communication	4	4	4	CO-2
	UNIT – III	1.Analyze the do's and don'ts of Group Discussion. Justify the importance of professional behavior, ethics andintegrity at workplace. 2.Appraise the significance of emailand telephone etiquette at workplace	3	3	3	CO-3
	UNIT – IV	1.Assess the stages ofteam development 2.Analyze the levels ofconflict and techniques. Identify effectiveleadership style. 3.Justify the importanceof time management.	4	4	4	CO-4
			15	**15**	**15**	
12	**Reference books**	1.Personality development and soft Skills, Barun K Mitra , OxfordHigher Education 2. Organizational Behaviour , Fred Luthans , McGraw Hill 3. 7 Habits of Highly effective people, Stephen Covey, Free press 4. You can win, Shiv Khera , Macmillan				
13	**Online resources**	http://www.trainingcoursematerial.com/free-training-articles http://www.unimenta.com/materials/Unimenta-free-and-sample-materials				
14	**Syllabus Content :**	Interpersonal Skills (GSL002)				
	UNIT – I	Self-Assessment - Self- Awareness - SWOT Analysis – Attitudes – Values -Goal setting – Stress Management				
	UNIT – II	Communication process- Types – Barriers – Tips for EffectiveCommunication - Speaking Skills - Listening Skills				
	UNIT – III	Group Discussion – Resume Writing- Importance of Professional behavior at workplace – Ethics and Integrity at workplace - Grooming - Email and telephone etiquette				
	UNIT – IV	Team Work – Conflict Management – Motivating Others – Good Leadership Behaviors –Time Management				

GSL002: Interpersonal Skills

Generic Elective Course for UG programs [Faculty of Management Sciences**]**

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a=100
											PM: 40%	EST	ESP	PM: 40%
GSL002	GE	**Interpersonal Skills**	0.5	0.5	1	2	30	15	45	80	100			100

1	**Name of the Course**	Diabetic Foot Care	
2	**Elective Code**	NSL001	**Credits:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	The objective of this course is to enable the student to: 1. Recognize the basic concepts of foot care 2. Acquire knowledge and skill on diabetic foot care 3. Orient on services available for diabetic foot care	
5	**Rationale for inclusion**	This course is designed to focus on health promotion activities and prevention of complications related to diabetic foot.	
6	**Delivery Method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Video tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet/ Big Blue Button / In person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15 60
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	30 OL hours = 1 15 OA hours = 0.5 7 SI hours = 0.5
		Total Credits	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	**On successful completion of the course, the students should be able to** Correlate anatomy, physiology with pathogenesis of diabetic foot disorders. Demonstrate skill in comprehensive diabetic foot assessment. Interpret the various diagnostic tests report. Counsel the patient and family on self-care management of diabetic foot care.	

5.1.Nov..

PRINCIPAL
Sri Ramachandra Faculty of Nursing
SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Porur, Chennai - 600 116.

9	**Summary**	This course introduces the basic concepts of diabetic foot care through various students centered methods. Students will be trained to perform diabetic foot screening through techniques of physical examination and foot assessment scale as well as involve the patient and family in health promoting behavior.
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments

Continuous Assessment (100 marks) :

	Course Outcomes	Marks
Test 1	CO1 (MCQs / Fill in the blanks/ Tue or false)	10
Test 2	CO1 (MCQs / Fill in the blanks/ Tue or false)	10
Test 3	CO2 (MCQs / Fill in the blanks/ Tue or false)	10
Test 4	CO3 (Match the following)	10
Test 5	CO4 (MCQs / Fill in the blanks/ Tue or false)	10
Test 6	CO1, CO2, CO3 & CO4 (Short answer Questions)	10
Assessment 7	CO1, CO2, CO3 & CO4 (E poster preparation (Rubrics))	10
Assessment 8	CO4 (Counsel the patient / family on self-care management of diabetic foot care(Rubrics)	10
Assignment	CO1, CO2, CO3 & CO4 (Two Assignments from IL – Independent Learning 1. (Complete a foot assessment form) 2. Research related to diabetic foot)	20
IA Total		**100**

11	**Course Content and teaching method**	**Learning outcomes**	**OL hrs**	**OA hrs**	**SI hrs**	**SLO-CO mapping**
	UNIT – I	• Review the anatomy, physiology including neuro-vascular supply ofthe endocrine pancreas, skin, nail and foot • List the risk factors of DM • Describe the biomechanics of the foot	4	2	1	CO1
	UNIT – II	• Identify the clinical manifestations of foot ulcer • Discuss the management of patients with diabetic foot ulcer	6	4	2	CO1

	UNIT – III	• Demonstrate the assessment of diabetic foot • Interpret the diagnostic studies related to diabetic foot	6	4	2	CO2 &CO3
	UNIT – IV	• Explain the diabetic foot care practices for prevention of complications	14	5	2	CO4
			30	**15**	**7**	
12	**Reference Books**	1. Alberti, K. G. M. M., Zimmet, P., &DeFronzo, R. A. (1997). *International textbook of diabetes mellitus*. J. Wiley. 2. Bakker, K., Apelqvist, J., Schaper, N. C., & International Working Group on the Diabetic Foot Editorial Board. (2012). Practical guidelines on the management and prevention of the diabetic foot 2011. *Diabetes/metabolism research and reviews*, *28*, 225-231. 3. DeFronzo, R. A., Ferrannini, E., Zimmet, P., & Alberti, G. (Eds.). (2015). *International textbook of diabetes mellitus*. John Wiley & Sons. 4. Levin, M. E., Bowker, J. H., & Pfeifer, M. A. (2008). *Levin and O'Neal's the diabetic foot*. Elsevier Health Sciences.				
13	**Online resources**	www.diabeticfootcare.com www.diabetesresearchconnection.org				
14	**Syllabus Content**	Diabetic Foot Care (NSL001)				
	UNIT – I Introduction	Anatomy, Physiology and blood supply of the endocrine pancreas, skin, nail and foot Biomechanics of the foot - Over view of Diabetes mellitus				
	UNIT – II Management of patients with diabetic foot ulcer	Definitions - Risk factors - Pathogenesis - Clinical features - Diagnostic evaluation - Collaborative care - Complications involving the foot - Recent advances & development in diabetic foot wound management.				
	UNIT – III Assessment of diabetic foot Diagnostic studies	Health history - Physical assessment including - Neurovascular assessment - Foot examination - Nerve conduction studies - Doppler study – Podiastat - Other investigations				
	UNIT – IV Health promotion :Foot care practices	Screening the diabetic foot - Self care - Foot hygiene - Care of toe nails - Cutting callus - Foot wear inspection and advice - Lifestyle modification - Self- monitoring of blood sugar- Follow-up care - Patient and family education and Counselling				

NSL001: Diabetic Foot Care

Generic Elective Course for UG programs [Faculty of Nursing**]**

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a=100
											PM: 40%	EST	ESP	PM: 40%
NSL001	GE	**Diabetic foot care**	1	0.5	0.5	2	45	7	52	80	100			100

1	**Name of the Course**	Ergonomics and Health Promotion	
2	**Elective Code**	TSL001	**Credit:** 2
3	**Level**	Any student enrolled in Under Graduate programs under CBCS	
4	**Course Objective**	It provides knowledge on basics of movement mechanics and energy expenditure, posture-effects, need for physical activity, assessment of associated health risks and strategies for Health promotion	
5	**Rationale for inclusion**	This course designed to provide understanding of significance of body mechanics, posture in lifestyle disorders and methods to improve fitness	
6	**Delivery method**		**Hours per credit**
		• **Online Learning** OL- Online Learning (Vidéo tutorials, Podcasts, External links, Articles, E books) • **Online Activities including Assessment** OA- Online activities (Discussion forum, Reflection, Blogs) • **Synchronous Interaction** SI- Synchronous Interaction (Live interactions through Google meet / Big Blue Button / In person) • **Independent Learning** IL – Independent Learning **Approximately double the Online learning hours)	30 30 15
7	**Credit**		**Hours per credit**
		Online Learning Online Activities including Assessment Synchronous Interaction	15 OL hours = 0.5 15 OA hours = 0.5 15 SI hours = 1
		Total Credit	**2**
		Credit assigned based on the course objectives and learning outcomes.	
8	**Learning outcomes**	On successful completion of the course the students should be able to 1. Describe the energy sources of human body and their relationship with exercises and physical health 2. Articulate concept of ergonomics, and its application in occupational assessment and daily life 3. Demonstrate simple assessments for physical health and functional capacity 4. Apply the concepts of posture, physical capacity and health risk factors towards health promotion.	

Dr N. VENKATESH, PhD.,
Professor & Course Chairman
Faculty of Physiotherapy
SRI RAMACHANDRA
Institute of Higher Education & Research
(Deemed to be University)
Porur, Chennai - 600116.

9	**Summary**	This course equips the student with concepts of ergonomics, posture, physical activity and exercises in health promotion perspectives				
10	**Assessment**	Course Instructors are encouraged to provide equal Weightage to all the Online assessments.				
		Continuous Assessment (100 Marks) :				
			Course Outcomes			**Marks**
		Test 1	CO-1			20
		Test 2	CO-2			20
		Test 3	CO-3 & CO-4			40
		Assignment	CO-1,Co-2,CO-3 & CO-4			20
		IA Total				**100**
11	**Course Content and Teaching Method :**	**Learning outcomes**	**OL**	**OA&A**	**SI**	**SLO-CO mapping**
	UNIT – I	1. Describe the construction, classification and functions of joints 2. List the sources of energy in human body 3. Describe aerobic and anaerobic metabolisms 4. Explain the influence of exercise on energy systems	5	5	5	1,2
	UNIT – II	1. Describe the fundamentals of ergonomics 2. Plan a work related risk and posture assessment 3. Analyse work related injuries	5	5	5	2
	UNIT – III	1. Describe the attributes of physical fitness 2. Demonstrate simple functional capacity assessment and physical health assessment 3. Explain the influence of inactivity on physical health	5	5	5	3,4
			15	**15**	**15**	
12	**Reference books**	1. William D. McArdle , Frank I. Katch , Victor L. Katch ,Exercise Physiology: Energy, Nutrition and Human Performance, Lippincott Williams and Wilkins; 5th Revised edition(2001) 2. Greg Welk, Physical Activity Assessments for Health-related Research, Human Kinetics, 2002 3. Perceptive in Rehab Ergonomics, Shrawan Kumar, Taylor and Francis, 1997. 4. Work Hardening: A Practical Guide, Linda M. Demers, Andover Medical Pub. 1992 5. Kinesiology of Musculoskeletal system, Donald. A Neuman.				

		6. Anatomy and Human Movement, Nigel Palastanga. 7. Joint structure and function, Cynthia.CNorkin, Pamela K.Levangie, Fourth edition.
13	**Online resources**	1. https://ergonomicshealth.com/ 2. https://www.physio-pedia.com/
14	**Syllabus Content :**	Ergonomics and Health Promotion (TSL001)
	UNIT – I	Principles of construction of human joints; Classification of joints Physiology of Muscle contraction, posture and movement Food energetics – Source of energy Basal Metabolism Anaerobic metabolism – Oxygen transportation steps Aerobic metabolism Influence of exercises on metabolism Methods of energy expenditure evaluation
	UNIT – II	Fundamentals of ergonomics Body mechanics, posture and anthropometry Application of ergonomic principle and related evaluation Common work related musculoskeletal disorders, Cumulative Trauma Disorders and Repetitive motion disorders Ergonomic Risk Factors and Modification Application for daily life
	UNIT – III	Components of physical fitness and evaluation Functional capacity and evaluation (6-MWT) Exercise capacity and evaluation Indicators of physical health and their assessment (includes PR,BP,BMI) Principles of fitness training Methods of fitness training Physical inactivity & health effects Life style diseases and their modification

R. Sundaram

TSL001: Ergonomics and Health Promotion

Generic Elective Course for UG programs [Faculty of Physiotherapy]

Course code	Category	Course Title	Credits / Week			**Credits(C)**	Hours/ semester (15 WEEKS)			Attendance (%)	CIA - Theory / Practical (a)	End Semester Assessment		Grand Total
			OL	OA	Practical (SI)		OL+OA	SI	Total hours			Theory (b)	Practical/ Viva (c)	a=100
											PM: 40%	EST	ESP	PM: 40%
TSL001	GE	**Ergonomics and Health Promotion**	0.5	0.5	1	2	30	15	45	80	100			100