Sadakathullah Appa College

(Autonomous)

(Reaccredited by NAAC at an 'A' Grade and ISO 9001:2015 Certified Institution)

Rahmath Nagar, Tirunelveli – 627 011, Tamil Nadu.

DEPARTMENT OF ZOOLOGY

CBCS SYLLABUS

For

B.Sc. Zoology

(Applicable for students admitted in June 2019 and onwards)
(As per the Resolutions of the Academic Council Meetings held on 03-03-2018, 17-10-2018 and 02-03-2019).

CONTENTS

B.Sc. Zoology (2018 – 2021)
(Applicable for students admitted in June 2019 and onwards)
(With Applied Nutrition and Public Health and Botany Allied)

DISTRIBUTION OF CREDITS, NO. OF PAPERS & MARKS

Part	Course	Semester	Hours	Credits	Papers	Marks
I	Tamil / Arabic	I to IV	24	16	4	400
II	English	I to IV	24	16	5	400
III	Discipline Specific Core (DSC) + Project+Practicals	I to VI	78	62	20	1800
	Discipline Specific Elective (DSE)	III to VI	16	16	4	400
	Allied Theory + Practicals	I to IV	24	16	8	600
IV	Non-major Elective (NME)	III & IV	4	4	2	200
	Skill Enhancement Course(SEC)	V & VI	4	4	2	200
	Skill Based Common (SBC)	VI	2	2	1	100
	Ability EnhancementCompulsory Course (AECC)Environmental Studies (EVS)	I	2	2	1	100
	Value Education (VE)	II	2	2	1	100
V	Extension Activities	I to IV+	--	1+1*	1	100
	MOOC$	I – V	-	2#		
		TOTAL	**180**	**141+1*+2#**	**49**	**4400**

SEMESTER WISE DISTRIBUTION OF HOURS

Part	I	II	III				IV				Total
SEM	**T/A**	**ENG**	**DSC**	**PRO/ FW**	**DSE**	**AL**	**NME**	**SEC**	**SBC**	**EVS/VE**	
I	6	6	10	-	-	6	-	-	-	2	**30**
II	6	6	10	-	-	6	-	-	-	2	**30**
III	6	6	6	-	4	6	2	-	-	-	**30**
IV	6	6	6	-	4	6	2	-	-	-	**30**
V	-	-	24	-	4	-	-	2	-	-	**30**
VI	-	-	16	6	4	-	-	2	2	-	**30**
Total	**24**	**24**	**72**	**6**	**16**	**24**	**4**	**4**	**2**	**4**	**180**

+ Activities and evaluation are to be performed during Semesters I to IV and results to be declared at the end of the Semester IV along with those for other courses in the Mark Statement.
* Extra credit for Sadakath Outreach Programme (SOP)
$ As per the guidelines of the UGC all the UG and the PG students shall enrol for one Massive Open Online Course offered through SWAYAM, NPTEL, etc.
# Two extra credits will be given on completion of the course.

B.Sc. Zoology (2018-2021) Course Structure
(With Applied Nutrition & Public Health and Botany Allied)
(Applicable for students admitted in June 2019 onwards)
TITLE OF THE PAPERS, CREDITS & MARKS

I SEMESTER

P	SUB	Title of the paper	S.CODE	H/W	C	MARKS		
						I	E	T
I	TA 1	இக்காலத் தமிழ்	18ULTA11	6	4	25	75	100
	AR 1	Applied Grammar and Translation – I	18ULAR11					
II	EN 1	Prose, Poetry and Grammar - I	18ULEN11	4	2	20	30	50
		English for Communication	18ULEC11	2	2	20	30	50
III	DSC 1	Animal diversity - I	18UCZO11	4	4	25	75	100
	DSC 2	Animal diversity - II	18UCZO12	4	4	25	75	100
	AI-I	Food Science	18UAAN11	4	3	25	75	100
	CP 1	Core Zoology Practicals-I	18UCZO1P1	2	1	20	30	50
	AI-P-I	Allied-Applied Nutrition and Public Health Practicals-I	18UAAN1P1	2	1	20	30	50
IV	EVS	Environmental Studies	18UENS11	2	2	25	75	100
			TOTAL	**30**	**23**			**700**

II SEMESTER

I	TA 2	சமயத் தமிழ்	18ULTA21	6	4	25	75	100
	AR 2	Applied Grammar and Translation – II	18ULAR21					
II	EN 2	Prose, Poetry and Grammar – II	18ULEN21	6	4	25	75	100
III	DSC 3	Developmental Biology	18UCZO21	4	4	25	75	100
	DSC 4	Ecology and Evolution	18UCZO22	4	4	25	75	100
	AI-II	Applied Nutrition	18UAAN21	4	3	25	75	100
	CP 2	Core Zoology Practicals - II	18UCZO2P1	2	1	20	30	50
	AI-P-II	Allied-Applied Nutrition and Public Health Practicals-II	18UAAN2P1	2	1	20	30	50
IV	VE	Value Education – I	18USVE2A	2	2	25	75	100
		Value Education – II	18USVE2B					
			TOTAL	**30**	**23**			**700**

III SEMESTER

P	SUB	Title of the paper	S.CODE	H/W	C	MARKS		
						I	E	T
I	TA 3	பயன்பாட்டுத் தமிழ்	18ULTA31	6	4	25	75	100
	AR 3	Applied Grammar and Translation – III	18ULAR31					
II	EN 3	One – Act Plays and Writing Skill	18ULEN31	6	4	25	75	100
III	DSC 5	Cell & Molecular Biology	18UCZO31	4	4	25	75	100
	DSE 1A	Diet Therapy	18UEAN3A	4	4	25	75	100
	DSE 1B	Public Health	18UEAN3B					
	AII -I	Plant Diversity & Plant Pathology	18UABT31	4	3	25	75	100
	CP-3	Core Zoology Practicals-III	18UCZO3P1	2	1	20	30	50
	AII P-I	Allied Botany Practicals-I	18UABT3P1	2	1	20	30	50
IV	NME-I	Plant Resources and their utilization	18UNBT31	2	2	25	75	100
			TOTAL	**30**	**23**			**700**

B.Sc. Zoology (2018-2021) Course Structure
(With Applied Nutrition & Public Health and Botany Allied)
(Applicable for students admitted in June 2019 onwards)
TITLE OF THE PAPERS, CREDITS & MARKS

IV SEMESTER

I	TA 4	சங்கத் தமிழ்	18ULTA41	6	4	25	75	100
	AR 4	Classical prose	18ULAR41					
II	EN 4	A practical course in spoken English	18ULEN41	6	4	25	75	100
III	DSC 6	Biochemistry	18UCZO41	4	4	25	75	100
	DSE-2A	Mushroom culture	18UEBT4A	4	4	25	75	100
	DSE-2B	Organic farming	18UEBT4B					
	AII -II	Plant Anatomy, Plant functions and Plant Biotechnology	18UABT41	4	3	25	75	100
	CP-4	Core Zoology Practicals-IV	18UCZO4P1	2	1	20	30	50
	AII-P-II	Allied Botany Practicals-II	18UABT4P1	2	1	20	30	50
IV	NME-II	Health and Fitness	18UNCO41	2	2	25	75	100
V	EX	Extension Activities (Choose from the list)	---	--	1	--	100	100
		SOP	18UEXSOP		1*			
			TOTAL	**30**	**24+ 1***			**800**

V SEMESTER

P	**SUB**	**Title of the paper**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
III	DSC 7	Animal Physiology	18UCZO51	6	4	25	75	100
	DSC 8	Genetics	18UCZO52	5	4	25	75	100
	DSC-9	Fundamentals of Biotechnology	18UCZO53	5	4	25	75	100
	DSE-3A	Aquaculture	18UEZO5A	4	4	25	75	100
	DSE-3B	Dairy Farming	18UEZO5B					
	CP-5	Core Zoology Practicals-V	18UCZO5P1	4	2	40	60	100
	CP-6	Core Zoology Practicals-VI	18UCZO5P2	4	2	40	60	100
IV	SEC-I	Food Safety and Quality Control	18USAN51	2	2	25	75	100
			TOTAL	**30**	**22**			**700**

VI SEMESTER

III	DSC 10	Immunology& Microbiology	18UCZO61	4	4	25	75	100
	DSC 11	Applied Biotechnology	18UCZO62	4	4	25	75	100
	DSC 12	Project	18UCZO63	6	6	25	75	100
	DSE-4A	Biostatistics and Computer Application	18UEZO6A	4	4	25	75	100
	DSE-4B	Poultry Science	18UEZO6B					
	CP-7	Core Zoology Practicals-VII	18UCZO6P1	4	2	40	60	100
	CP-8	Core Zoology Practicals-VIII	18UCZO6P2	4	2	40	60	100
IV	SEC-II	Herbal Technology and Horticulture	18USBT61	2	2	25	75	100
	SBC	Personality Development	18USPD62	2	2	25	75	100
			TOTAL	**30**	**26+2#**			**800**
I-V Sem		Massive Open Online Course $		-	2#			

B.Sc. Zoology (2018-2021) Course Structure (CBCS)
(Applicable for students admitted in June 2019 and onwards)
TITLE OF THE PAPERS, CREDITS & MARKS

GROUP II COURSES (TWO -YEAR LANGUAGE COURSES) (B.A. Arabic, B.A. Tamil, B.A. English, B.A. History, B.Sc. Mathematics, B.Sc. Physics, B.Sc. Chemistry, B.Sc. Zoology, B.Sc. Microbiology and B.Sc. Nutrition and Dietetics)							
SEM	**Title of the paper**	**S.CODE**	**H/ W**	**C**	**I**	**E**	**T**
PART I - TAMIL							
I	இக்காலத் தமிழ்	**18ULTA11**	6	4	25	75	100
II	சமயத் தமிழ்	**18ULTA21**	6	4	25	75	100
III	பயன்பாட்டுத் தமிழ்	**18ULTA31**	6	4	25	75	100
IV	சங்கத் தமிழ்	**18ULTA41**	6	4	25	75	100
		TOTAL	**24**	**16**			**400**
PART I – ARABIC							
I	Applied Grammar and Translation – I	**18ULAR11**	6	4	25	75	100
II	Applied Grammar and Translation – II	**18ULAR21**	6	4	25	75	100
III	Applied Grammar and Translation – III	**18ULAR31**	6	4	25	75	100
IV	*Classical Prose*	**18ULAR41**	6	4	25	75	100
		TOTAL	**24**	**16**			**400**
PART II – ENGLISH							
I	Prose, Poetry and Grammar-I	**18ULEN11**	4	2	25	75	100 /2
	English for Communication	**18ULEC11**	2	2	25	75	100 /2
II	Prose, Poetry and Grammar-II	**18ULEN21**	6	4	25	75	100
III	One – Act Plays and Writing Skill	**18ULEN31**	6	4	25	75	100
IV	A Practical Course in Spoken English	**18ULEN41**	6	4	25	75	100
		TOTAL	**24**	**16**			**400**

PART III

Part III DSC, DSE and Project								
SEM	**P**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
I	DSC1	Animal diversity - I	18UCZO11	4	4	25	75	100
	DSC2	Animal diversity - II	18UCZO12	4	4	25	75	100
	CP 1	Core Zoology Practicals-I	18UCZO1P1	2	1	20	30	50
II	DSC3	Developmental Biology	18UCZO21	4	4	25	75	100
	DSC4	Ecology and Evolution	18UCZO22	4	4	25	75	100
	CP 2	Core Zoology Practicals-II	18UCZO2P1	2	1	20	30	50
III	DSC5	Cell & Molecular Biology	18UCZO31	4	4	25	75	100
	CP 3	Core Zoology Practicals-III	18UCZO3P1	2	1	20	30	50
	DSE-I	Diet Therapy	18UEAN3A	4	4	25	75	100
		Public Health	18UEAN3B					
IV	DSC6	Biochemistry	18UCZO41	4	4	25	75	100
	CP 4	Core Zoology Practicals-IV	18UCZO4P1	2	1	20	30	50
	DSE-II	Mushroom culture	18UEBT4A	4	4	25	75	100
		Organic farming	18UEBT4B					
V	DSC7	Animal Physiology	18UCZO51	6	4	25	75	100
	DSC8	Genetics	18UCZO52	5	4	25	75	100
	DSC9	Fundamentals of Biotechnology	18UCZO53	5	4	25	75	100
	CP 5	Core Zoology Practicals-V	18UCZO5P1	4	2	40	60	100
	CP 6	Core Zoology Practicals-VI	18UCZO5P2	4	2	40	60	100
	DSE-III	Aquaculture	18UEZO5A	4	4	25	75	100
		Dairy Farming	18UEZO5B					
VI	DSC10	Immunology& Microbiology	18UCZO61	4	4	25	75	100
	DSC11	Applied Biotechnology	18UCZO62	4	4	25	75	100
	DSC12	Project	18UCZO63	6	6	25	75	100
	CP 7	Core Zoology Practicals-VII	18UCZO6P1	4	2	40	60	100
	CP 8	Core Zoology Practicals-VIII	18UCZO6P2	4	2	40	60	100
	DSE-IV	Biostatistics and Computer Application	18UEZO6A	4	4	25	75	100
		Poultry Science	18UEZO6B					
			TOTAL	**94**	**78**			**2200**

PART III – ALLIED I – Applied Nutrition and Public Health & ALLIED – II Botany

SEM	SUB	TITLE OF THE PAPER	S.CODE	H/W	C	MARKS		
						I	E	T
I	AI-1	Food Science	18UAAN11	4	3	25	75	100
	AI-P1	Allied Applied Nutrition and Public Health Practicals-I	18UAAN1P1	2	1	20	30	50
II	AI-2	Applied Nutrition	18UAAN21	4	3	25	75	100
	AI-P2	Allied Applied Nutrition and Public Health Practicals-II	18UAAN2P1	2	1	20	30	50
III	AII-1	Allied - Plant Diversity & Plant Pathology	18UABT31	4	3	25	75	100
	AII-P1	Allied Botany Practicals-I	18UABT3P1	2	1	20	30	50
IV	AII-2	Plant Anatomy, Plant functions and Plant Biotechnology	18UABT41	4	3	25	75	100
	AII-P2	Allied Botany Practicals-II	18UABT4P1	2	1	20	30	50
		TOTAL		**24**	**16**			**600**

PART IV – NON-MAJOR ELECTIVE COURSES (FOR OTHER MAJOR STUDENTS)

SEM	Sub	Title of the paper	S.CODE	H/W	C	MARKS		
						I	E	T
III	NME-I	Plant Resources and their utilization	18UNBT31	2	2	25	75	100
IV	NME-II	Health And Fitness	18UNAN41	2	2	25	75	100
		TOTAL		**4**	**4**			**200**

Part IV – SEC/SBC								
V	SEC-I	Food Safety and Quality Control	18USAN51	2	2	25	75	100
VI	SEC-II	Herbal Technology and Horticulture	18USBT61	2	2	25	75	100
VI	SBC	Personality Development	18USPD62	2	2	25	75	100
		TOTAL		**6**	**6**			**300**
Part IV – EVS & Value Education								
I	EVS	Environmental Studies	18UENS11	2	2	25	75	100
II	VE	Value Education I	18USVE2A	2	2	25	75	100
		Value Education II	18USVE2B					
		TOTAL		**4**	**4**			**200**

PART – V – Extension Activities

SEM	Extension Activities (Choose any one)	S.CODE	H / W	C	MARKS		
					I	E	T
I to IV	NCC	18UEXNCC		1			100
	NSS	18UEXNSS					
	Physical Education	18UEXPHE					
	Red Ribbon Club	18UEXRRC					
	Youth Red Cross	18UEXYRC					
	Youth Welfare	18UEXYWL					
	Yoga	18UEXYOG					
III-IV	Sadakath Outreach Programme (SOP)	18UEXSOP		1*			
	Total		**-**	**1+1***			**100**

முதல் பருவம்			
PART - 1 TAMIL			
TA – 1	**இக்காலத்தமிழ்**		**18ULTA11**
Hrs/Week: 6	**Hrs/Sem: 90**	**Hrs/Unit: 18**	**Credits:4**

நோக்கம்

1.தமிழ்ப்படைப்பிலக்கியங்களான புதுக்கவிதைகள், சிறுகதைகள்ஆகியவற்றைஎழுத வைத்தல்

2.சமூகம் பற்றியசிந்தனைகளைப் படைப்பிலக்கியங்கள்மூலம் ஏற்படுத்துதல்.

அலகு - 1 தமிழ்க்கவிதைகள்

1. பரம்பொருள் வாழ்த்து - மகாகவிபாரதியார்
2. தமிழின் இனிமை - பாவேந்தர் பாரதிதாசன்
3. கொக்கு - ந.பிச்சமூர்த்தி
4. நான் - தருமு சிவராம் (பிரமிள்)
5. முக்காலம் - சி.மணி
6. தோழர் மோசிகீரனார் - ஞானக்கூத்தன்
7. நகுலன் கவிதைகள் - நகுலன்
8. எதிர்வரும் யாவரும் - கல்யாண்ஜி
9. ஆயிரம் திருநாமம் பாடி - கவிக்கோ அப்துல் ரகுமான்
10. மரங்களைப் பாடுவேன் - வைரமுத்து
11. இளைய தோழனுக்கு - மு.மேத்தா
12. செய்யுள் - கலாப்ரியா
13. பெயர் தெரியாப்பறவை - தேன்மொழிதாஸ்
14. நிசப்தத்தில் குளிரும் வார்த்தை - அனார்
15. முதல்துளி - பாலைவன லாந்தர்
16. இந்தக்காலம் - மனுஷ்யபுத்திரன்
17. பூவின் பதில் - நாகூர் ரூமி
18. அறிவுமதி கவிதைகள் - அறிவுமதி
19. வேர் பிடித்த மரம் - க.அம்சப்ரியா
20. நட்சத்திரக் கிழவி - ப.சுடலைமணி
21. கீதாஞ்சலி - மகாகவிஇரவீந்தரநாத் தாகூர்
22. ஜென் கவிதைகள் - பாஷோ

அலகு - 2 சிறுகதைஇன்பம்

1. விடியுமா? - கு.பா.ராஜகோபாலன்
2. காலனும் கிழவியும் - புதுமைப்பித்தன்
3. கதவு - கி.ராஜநாராயணன்
4. காலத்தின் ஆவர்த்தனம் - தோப்பில் முஹம்மது மீரான்
5. சொர்க்கக் கன்னிகை - கருணா மணாளன்
6. செடிகளுக்கு - வண்ணதாசன்
7. கனவில் உதிர்ந்த பூ - நாறும்பூநாதன்
8. சங்காத்தி - தீன்
9. ராஜமீன் - கீரனூர் ஜாகீர்ராஜா

அலகு -3 கட்டுரைக் கனிகள்

1. தமிழில் ஹைக்கூகவிதைகள்
2. கவிக்கோ அப்துல் ரகுமானின் கவிதைகள்
3. நாட்டுப்புற இலக்கியங்கள்
5. இணையத்தில் தமிழ்
6. தமிழ்ச் சிறுகதைஇலக்கியம்
7. இயற்கையைக் கொண்டாடும் ஜென் கவிதைகள்

அலகு - 4 இலக்கியவரலாறு

1. தமிழ்ப் புதுக்கவிதை தோற்றமும் வளர்ச்சியும்
2. தமிழ்ச் சிறுகதை தோற்றமும் வளர்ச்சியும்
3. தற்காலச் சிறுகதையாசிரியர்கள் ஓர் அறிமுகம்
4. புதுக்கவிதைகள் எழுதப்பயிற்சி தந்து மாணவர் கவிதைத் தொகுப்பை வெளியிடல்.

அலகு - 5 எழுத்து இலக்கணம் & எழுத்து வகைகள்அறிமுகம்

1. முதலெழுத்துகள், சார்பெழுத்துகள், சுட்டெழுத்துக்கள்,வினாவெழுத்துகள்
2. மொழி முதல் எழுத்துகள், மொழி இறுதி எழுத்துகள், வல்லினம் மிகுமிடங்கள், வல்லினம் மிகாவிடங்கள்.
3. நாளிதழ்களில் இடம்பெறும் செய்திகளில் பிழைகளைக் கண்டறிந்து எழுதப்பயிற்சி

பாடநூல்

"இன்பத்தமிழ்"
சதக்கத்துல்லாஹ்அப்பா கல்லூரித் தமிழ்த்துறை வெளியீடு
ரஹ்மத்நகர், திருநெல்வேலி& 627 011.

பார்வை நூல்கள்மற்றும் வழிகாட்டு இணையதளங்கள்

1.வல்லிக்கண்ணன்
புதுக்கவிதை தோற்றமும் வளர்ச்சியும்
2.ந.சுப்புரெட்டியார்
புதுக்கவிதை போக்கும் நோக்கம்
3.பேராசிரியர் சு.பாலசந்திரன்
புதுக்கவிதை & ஒரு புதுப்பார்வை
4.எஸ். ராமகிருஷ்ணன்
கதாவிலாசம்
விகடன் பிரசுரம்
757, அண்ணாசாலை
சென்னை & 600 002.

இணையதளங்கள்

1.www.tamilvu.org
2.www.azhiyasudargal.blogspot.in
3.www.neelamegam.blogspot.in
4.www.jeyamohan.in
5.www.sramakrishnan.com

SEMESTER - I			
AR-1	**APPLIED GRAMMAR AND TRANSLATION-I**		**18ULAR11**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 4**

Objectives: To enable the students to learn Alphabets,Pronunciation, Basic Grammar, Reading, Writing of Arabic Language

UNIT I:Lessons1 to4 (TEXTBOOK – 1)

من الدرس الأول إلى الدرس الرابع

UNIT II: Lessons5to 8 (TEXTBOOK – 1)

من الدرس الخامس إلى الدرس الثامن

UNIT III: Grammar Portions (TEXTBOOK – 2)

1) Words and the types of words **(أجزاء الكلام)**

2) Nominal Sentence **(الجملة الاسمية)**

3) Adjective and Noun-qualified **(الصفة والموصوف)**

4) Subject and Predicate

5) Masculine and Feminine **(المذكر والمؤنث)**

6) Interrogatives **(أدوات الاستفهام)**

7) Singular, Dual and Feminine**(المفرد والتثنية والجمع)**

8) Possessiveness**(المضاف والمضاف إليه)**

9) Detached Pronouns **(الضمائر المنفصلة)**

10) Prepositions **(حروف الجر)**

11) Demonstrative pronouns**(أسماء الاشارة)**

12) Relative pronouns**(الأسماء الموصولة)**

UNIT IV:Lessons9to12 (TEXTBOOK – 1)

من الدرس التاسع إلى الدرس الثاني عشر

UNIT V:Lessons13 to 16 (TEXTBOOK – 1)

من الدرس الثالث عشر إلى الدرس السادس عشر

TEXTBOOKS

1) DuroosulLughatilArabiyaPart – ILessons 1 to 16 only byDr.V. Abdur Rahim.

Available at: Islamic foundation Trust, 78 Perambur High Road, Perambur, Chennai- 600 012.

2) Arabic for Beginners (selected topics only)

By Dr. Syed Ali (Former HOD of Arabic, The New College, Royappettach,

(Chennai) (International Edition 2001) (UBS Publishers & Distributors Ltd)

5, Ansari Road New Delhi -110 002.

I SEMESTER Part – II English			
EN I A	**Prose, Poetry and Grammar - I**		**18ULEN11**
Hrs/ Week: 4	**Hrs/ Sem: 60**	**Hrs/ Unit: 12**	**Credits:2**

Objectives:

- To answer comprehensive questions on passages of moderate level of difficulty.
- To write a critical appreciation of the prescribed poems.
- To write grammatically.

UNIT I PROSE

1. Education Provides a Solid Foundation- A.P. J. Abdul Kalam
2. Love Story- Maneka Gandhi

UNIT II PROSE

3.Speech on Indian Independence- Jawaharlal Nehru
4.Film-Making- Satyajit Ray

UNIT III POETRY

1. In the Bazaars of Hyderabad- Sarojini Naidu
2. Middle Age- Kamala Das

UNIT IV GRAMMAR

1. Parts of Speech: Verb
2. Tenses

UNIT V COMMUNICATION SKILLS

1. Unseen Passages
2. Letter Writing: Personal and Business Letters
3. Curriculum Vitae (CV)

TEXTBOOK:

1. Kulat L. Ambadas, Dr. Joshi, Sandeep. et. al. (ed).
*Blooming Buds.*Hyderabad: Orient BlackSwan, 2017.

I SEMESTER			
EN I B	**ENGLISH FOR COMMUNICATION**		**18ULEC11**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ Unit: 6**	**Credits:2**

Objectives:

1. To teach students basic Grammatical categories.
2. To teach students the four skills viz. Listening, Speaking, Reading and Writing
   and to impart language skills through tasks.
3. To inculcate in students the skills necessary for social and academic circumstances.

UNIT I

Parts of Speech (Pages 5 to 17)

UNIT II

Listening and Speaking (Pages 22 to 34) and (56 to 59)

UNIT III

Reading (Pages 35 to 45)

UNIT IV

Writing - I
Punctuation and Kinds of Sentences (Pages46 to 55)

UNIT V

Writing - II
Filling in Forms & Wrap-up (Pages 60 to78)

TEXTBOOK:

Board of Editors. *Content and Language Integrated Learning to Enhance Communication Skills. Semester I Module 1.* Chennai: Tamil Nadu State Council for Higher Education, 2017.

B.Sc. (ZOOLOGY) - CBCSSYLLABUS (Applicable for students admitted in June 2018 onwards)			
I SEMESTER			
DSC 1	ANIMAL DIVERSITY-1 (INVERTEBRATA)		18UCZO11
Hrs/ Week: 4	Hrs/Sem:4 x 15 = 60	Hrs./Unit:12	Credits:4

Objectives:

- To understand the basic classification of Invertebrata.
- To impart special attention to the general characters of various classes along with in-depth type studies of various phyla.

UNIT I

Introduction to principles of Taxonomy (Binomial nomenclature), Types of classification-Natural, Artificial, Practical.

Protozoa: General characters and classification upto classes with examples.

Type study: Paramecium - Morphology – Nutrition – Locomotion – Reproduction - (Binary fission & Conjugation).

General topic: General structure, life cycle, pathogenicity and control measures of *Entamoeba histolytica*, *Plasmodium malariae*.

UNIT II

Porifera: General characters and classification upto classes with examples

General topic: Canal system in sponges.

Coelenterata: General characters and classification upto classes with examples.

Type study: Obelia - External characters and life history only.

General topic: Coral formation and types of coral reefs**.**

UNIT III

Platyhelminthes: General characters and classification upto classes with example.

General topic*: Fasciola hepatica, Taenia solium* –External morphology, life cycle, pathogenicity and control measures.

Aschelminthes: General characters and classification upto classes with example

General topic: External morphology, Extra intestinal migration of Ascaris, life cycle, pathogenicity and control measures of *Ascaris.*

UNIT IV

Annelida: General characters and classification upto classes with examples.

Type study: Earthworm – external morphology and reproduction.

General topic: Metamerism in Annelids,

Arthropoda: General characters and classification upto classes with an example.

Type study: Cockroach- Morphology and nervous system

General topic: Beneficial insects (Honeybee, Silkworm,).

UNIT V

Mollusca: General characters and classification upto classes with examples.

General topic: Economic importance of Molluscs. (Oyster and Mussels)

Echinodermata: General characters and classification upto classes with examples.

Type study: Star fish - External characters and water vascular system only.

General topic: Larval forms of Echinodermata**.**

TEXTBOOKS

1. Jordon. E.L.and Verma. P. S.Invertebrate Zoology - S. Chand & Co.Limited, 7361, Ram Nagar, Qutub Road, New Delhi – 110 055.
2. Kotpal, R. L. 2007. Modern TEXTBOOK of Zoology – Invertebrates, RastogiPublications,Meerut

REFERENCE BOOKS - INVERTEBRATA

1. Arora, M. P. Non – chordates, Himalaya Publishing House, Ramdoot, Dr. Bhalero Marg, Girgaon, Mumbai – 400 004.
2. Bhamrah, H. S. et al. A TEXTBOOK of Invertebrates –Anmol Publications PrivateLtd.4374 / 4B, Ansari Road, Daryaganj, New Delhi – 110 002.
3. Ekambaranatha Iyer.M.A. Manual of Zoology – Part I - Invertebrata - S.Viswanathan Printers and Publishers Pvt. Ltd. Chennai.
4. Ekambaranatha Iyer. M. and Anathakrishnan T. N. A Manual of Zoology - Vol. I –Invertebrata - S. Viswanathan Printers and Publishers Pvt. Ltd. Chennai.
5. Nair N.C,Leelavathy S.,Soundara Pandian.N,,Murugan. T, Arumugam, N.A TEXTBOOK of Invertebrates- Saras publications,114 / 35G, A.R.P.Camp Road, Periavilai,Kottar Post., Nagercoil.

I SEMESTER		
DSC 2	**ANIMAL DIVERSITY-II (CHORDATA)**	**18UCZO12**
Hrs/ Week: 4	**Hrs / Sem:4 x 15 = 60Hrs./Unit:12**	**Credits:4**

Objectives:

- To exemplify the intermediary position of prochordates between invertebrates and vertebrates
- To study the structure, functional organization, adaptations and the economic importance of lower and higher chordates

UNIT I

Introduction to Chordata: General characters and classification upto classes with examples.

Prochordata: General characters and classification upto orders with examples. **Type Study:** Ascidian – External morphology- Life history

External features and biological significance of the following Examplesa) Amphioxus b) Balanoglossus

Agnatha: Petromyzon – External morphology -Ammocoetes Larva.

UNIT II

Pisces: General Characters and Classification upto sub-classes with examples **Type Study:** Scoliodon – External characters – Placoid scales – Digestive system – Respiratory System – Urinogenital System.

General Topics: (i) Accessory respiratory organs in fishes. (ii) Migration of fishes

UNIT III

Amphibia: General Characters and Classification upto orders with examples.

External features and Biological Significance of the following examplesa) Rhachophorus b) Axolotl Larva

General Topic: Parental care in Amphibia.

Reptilia: General Characters and Classification up to orders with examples.

External features and Biological significance of the following examples a) Chamaeleon b) Draco c) Cobra d) Enhydrina

General Topics: (i) Identification of poisonous and non-poisonous snakes of South India. (ii) Poison Apparatus – Biting mechanism – Venom – Antivenom – First aid for snake bite

UNIT IV

Aves: General characters and classification upto subclasses with examples.

Type study: *Columba livia* – External characters – Exoskeleton – Flight muscles – Respiratory system

General Topics: (i) Migration of Birds, (ii) Flight adaptations in Birds

UNIT V

Mammalia: General Characters and Classification upto subclasses with examples.

Type Study: Rabbit – External Morphology – Dentition – Respiratory System – Circulatory system – Structure of Brain.

General topic: Adaptations of aquatic mammals.

TEXTBOOKS

1. E.L.Jordan and P.S. Verma. 2010. Chordate Zoology. 6th edition S. Chand & Company Ltd, New Delhi.
2. Kotpal, R. L. 2007. ModernTEXTBOOKofZoology – Vertebrates,RastogiPublications,Meerut

REFERENCE BOOKS

1. Ekambaranatha Iyer M.A., Manual of Zoology –Part II –Chordata - S.ViswanathanPrinters and Publishers Pvt. Ltd. Chennai.
2. Ekambaranatha Iyer. M. and Anathakrishnan T. N.A Manual of Zoology - Vol. II –Chordata - S. Viswanathan Printers and Publishers Pvt. Ltd. Chennai.
3. S. N. Prasad, Vasantika Kashyap. 1989. A Textbook of Vertebrate Zoology, 13th edition New Age International, New Delhi.
4. H.S. Bhamrah, Kavita Juneja. A textbook of Chordates – AnmolPublicationsPrivateLtd, New Delhi.

I SEMESTER			
AI-1	**FOOD SCIENCE**		**18UAAN11**
Hrs / Week: 4	**Hrs / Sem: 4x15=60**	**Hrs/Unit:12**	**Credits: 3**

Objectives:

To enable students

- To understand the vital link between nutrition and health.
- To gain knowledge of nutrition and their role in body's smooth functioning.
- To gain practical experience in different methods of cooking.
- To get insights on food adulterants
- To gain knowledge and skill in planning diet for normal and various therapeutic conditions.

UNIT I

A. Human health: Definition, food and nutrition- Classification of food according to functions, Food groups: Basic IV, V-Food pyramid.
B. Preliminary preparation of food, Different methods of cooking and their influence on nutrient retention.

UNIT II

A. Cereals and millets – Structure of wheat and nutritive value of rice, wheat and ragi; Parboiling of rice – Advantages.
B. Pulses, – Nutritive value–Germination of pulses and its advantages; Factors influencing cooking quality of pulses.

UNIT III

A. Nuts and oil seeds – Nutritive value of groundnuts, soybeans, sesame, coconut.
B. Kinds of fats and oils- Mustard oil, sunflower oil, Safflower oil and its importance
C. Stages of sugar cookery.

UNIT IV

A. Vegetables –Classification, Nutritive value, pigments in vegetables and changes during cooking.
B. Fruits – Classification, nutritive value and browning reaction
C. Commonly used Condiments and spices- uses and abuses.
D. Types of beverages.

UNIT V

A. Milk – Nutritive value- different types of milk and milk products.
B. Egg – Structure and nutritive value –uses of egg in cookery.
C. Flesh foods- Nutritive value – methods of selection of fish, poultry, and meat.
D. Food Adulteration –common food adulterants and its harmful effects.

TEXTBOOK

B. Srilakshmi., Food Science, 7th Edition, 2018, New age International (P) Limited Publishers.

REFERENCE BOOKS:

1. Dr. M. Swaminathan, Advanced Text – Book on Food & Nutrition, Bappco, Bangalore. 1985
2. N. Shakuntala Manay, M. Shadaksharaswamy, Foods Facts and principles, New age International (p) Ltd., Publishers Second Edition, 2001
3. Food Science, Potter, AVI publishing Company, New York, USA-1992.

I SEMESTER		
DSCP-I	**CORE ZOOLOGY PRACTICALS-I**	**18UCZO1P1**
Hrs/Week: 2	**Hrs / Sem: 2x15=30**	**Credits: 1**

ANIMAL DIVERSITY I AND IIPRACTICALS

DISSECTION AND MOUNTING

1. Earth worm - Body setae,
2. Cockroach - Nervous system
3. Shark - Placoid scales,
4. Museum specimens, slides, models and charts:

Paramecium, Obelia colony, *Fasciola*, *Taenia solium*, *Ascaris* - male and female, *Chaetopterus,* Octopus, Star fish, Amphioxus, Ascidian, Balanoglossus, Tornaria larva,, Petromyzon, Narcine, Hippocampus,Draco, Rhacoporus, Chamaeleon, Enhydrina, Cobra, King Fisher,Pigeon, Bat.

I SEMESTER		
AI-PI	**ALLIED APPLIED NUTRTION AND PUBLIC HEALTH PRACTICALS-I**	**18UAAN1P1**
Hrs/Week: 2	**Hrs / Sem: 2x15=30**	**Credits: 1**

FOOD SCIENCE PRACTICALS-I

1. Identification of food groups.
2. Tests for detecting food adulteration.
3. Identification of different stages of sugar cooking.
4. Preparation of
    a. Cereals
    b. Pulses
    c. Milk products
    d. Meat and fish and poultry
    e. Egg

I SEMESTER			
EVS	**ENVIRONMENTAL STUDIES**		**18UENS11**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ UNIT: 6**	**Credits:2**

UNIT I: Nature of Environmental Studies

Goals, Objectives and guiding principles of environmental studies. Towards sustainable development - Environmental segments– Atmosphere, Hydrosphere, Lithosphere, Biosphere – definition. Pollution episodes -– Hiroshima – Nagasaki, - Bhopal gas Tragedy, Fukushima. Stone leprosy in Taj Mahal

UNIT II: Natural Resources

Renewable and Non-Renewable resources - classification.

- Forest resources: Use and over - exploitation, Aforestation and deforestation.
- Water resources: Use and over - utilization and conservation of surface and ground water - Rain harvesting.
- Marine Resources: Fisheries and Coral reefs.
- Mineral resources: Use and exploitation - environmental impacts of extracting and using mineral resources.
- Food resources: Effects of modern agriculture fertilizers - pesticide problem.
- Energy resources: Growing energy needs - use of alternate energy source - Solar cells & wind mills.
- Land resources: Land degradation

UNIT III: Ecosystem

- Concept of Eco-systems - Tropic level, food chains, food web and Ecological pyramids, Living conditions on other planets (Brief account).

  Types, structure & Functions of the following:

  a) Aquatic ecosystem
  b) Grassland ecosystem
  c) Forest ecosystem
  d) Desert ecosystem

UNIT IV: Biodiversity & Its Conservation

Introduction - Definition: ecosystem diversity, species diversity and Genetic diversity. Hot spots of biodiversity - Western Ghats, Eastern Himalayas and Gulf of Mannar. Threats to biodiversity - Habitat Loss, Poaching of wildlife and Man - wildlife conflicts.

Conservation of biodiversity: *In-situ* and *Ex-situ*.

UNIT V: Environmental Pollution

Sources, effects, prevention and control measures of the following.

a) Air pollution: Composition of clean air, Global warming, Ozone layer depletion.
b) Water Pollution: Fresh water and Marine water.
c) Noise Pollution
d) Soil pollution

Biodegradable and Non-Biodegradable wastes; Environmental Acts

- Air (prevention & Control of Pollution) Act.
- Environmental Protection Act
- Water (Prevention & Control of pollution) Act
- Environmental movements - Green peace and Chipco movement.
- Role of Central & State pollution Control Boards.

REFERENCE BOOKS:

1. Basic of Environmental Science. Vijayalakhmi, Murugesan and Sukumaran - Manonmaniam Sundaranar University publications.
2. Environmental Studies. John de Brito, Victor, Narayanan and Patric Raja - published by St. Xavier's College, Palayamkottai, 2008.
3. Environmental Science and Biotechnology. A.G. Murugesan and C. Raja Kumar - MJP Publishers.
4. Fundamental of Environmental pollution - Krishnan Kannan - Chand & Company Ltd., New Delhi, 1997.
5. Environmental Studies. S. Muthiah, Ramalakshmi publications, Tirunelveli.
6. Environmental Studies. V.M. Selvaraj, Bavani Publications, Tirunelveli.

இரண்டாம் பருவம்			
PART - 1 TAMIL			
TA- 2	சமயத்தமிழ்		18ULTA21
Hrs/Week: 6	Hrs/Sem: 90	Hrs/Unit: 18	Credits:4

நோக்கம்

1. பலசமயக் கருத்துக்களை ஒப்பிட்டுச் சமயநல்லிணக்கத்தோடு வாழவழிகாட்டுதல்
2. தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையத் தேர்வுக்கு மாணவர்களை ஆயத்தப்படுத்துதல்.

அலகு & 1தமிழ்ச் செய்யுள் (துறை வெளியீடு)

சைவம்

1. அ. திருநாவுக்கரசர் - மாசில் வீணையும்...
   - நாமார்க்கும் குடியல்லோம்...
   - அப்பன் நீ அம்மை நீ
   ஆ. திருஞானசம்பந்தர் - தோடுடைய செவியன்...
   - வேயுறு தோளிபங்கன்
   - மருந்தவை மந்திரம்...
   இ. சுந்தரமூர்த்தி நாயனார் - பித்தா பிறைசூடி...
2. திருவாசகம் &மாணிக்கவாசகர் - பால் நினைந்தூட்டும்....
3. திருவெம்பாவை - ஆதியும் அந்தமும் இல்லா...
4. திருமந்திரம் & திருமூலர் - ஒன்றே குலமும் ஒருவனே தேவனும்

வைணவம்

5. அ. பொய்கையாழ்வார் - வையம் தகளியா...
   ஆ. பூதத்தாழ்வார் - அன்பேதகளியா...
   இ. பேயாழ்வார் - திருக்கண்டேன்..
6. திருப்பாவை &ஆண்டாள் - மார்கழித் திங்கள்...

சமணம்

7. வளையாபதி - மக்கட் செல்வம்

பௌத்தம்

8. புத்தபிரான் - மு.ரா.பெருமாள்

கிறித்தவம்

9. இயேசு காவியம் (மலைப் பொழிவு) முதல் நான்கு பாடல்கள் - கண்ணதாசன்

இஸ்லாம்

10. அல்லாஹ் - உமறுப்புலவர்
11. நபிகள்நாயக மான்மிய மஞ்சரி - சதாவதானிசய்குத்தம்பிபாவலர் (குறிப்பிட்டபாடல்கள்)
12. குணங்குடி மஸ்தான் பாடல்கள் - பாசக்கயிற்றுவலை
13. ஞானப்புகழ்ச்சி - தக்கலை பீர்முகம்மது அப்பா
14. அலகிலா அருளும் - இறையருட் கவிமணி கா. அப்துல்கபூர்

நீதிஇலக்கியம்

15. திருக்குறள் - ஒழுக்கமுடைமை
13. நாலடியார் - கல்விகரையில்

அலகு - 2 புதினம்

வாடிவாசல் - சி.சு.செல்லப்பா,
காலச்சுவடு பதிப்பகம்,நாகர்கோவில்

அலகு - 3 உரைநடை (தமிழ்த்துறை வெளியீடு)

போட்டித் தேர்வுகளுக்குக் கட்டுரை எழுதும் பயிற்சி

1. தமிழ் இலக்கியத்தில் சமயநல்லிணக்கச் சிந்தனைகள்
2. நபிகள்நாயகம் (ஸல்) அன்பின் தாயகம்
3. சதக்கத்துல்லாஹ்அப்பா அவர்களின் வாழ்வும் பணியும்
4. தமிழ் இலக்கியங்களில் மனிதநேயச் சிந்தனைகள்
5. தமிழ் இலக்கியத்தில் மதுஒழிப்புச் சிந்தனைகள்
6. சூஃபியச் சித்தாந்தமும் சித்தர்களும்

அலகு - 4

(போட்டித் தேர்வுத் தயாரிப்பு)

இலக்கியவரலாறு

1. சைவம், வைணவம், கிறித்தவம், இசுலாம் வளர்த்த தமிழ்
2. புகழ் பெற்றதமிழ் நூல்கள், நூலாசிரியர்கள்

அலகு - 5

தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையம் நடத்தும் போட்டித் தேர்வுக்குரிய பொதுத் தமிழ் இலக்கணப்பகுதி& ஓர் அறிமுகம்

1. வேர்ச் சொல்லைக் கண்டறிதல்
2. பெயரெச்சம், வினையெச்சம், முற்றெச்சம் பற்றிஅறிதல்
3. வினைத்தொகை, பண்புத்தொகை பற்றிஅறிதல்
4. வினைமுற்று, வினையாலணையும் பெயர் கண்டறிதல்
5. இரட்டைக்கிளவி, அடுக்குத் தொடர் அறிதல்
6. வேற்றுமைத் தொகையைக் கண்டறிதல்

பாடநூல்

நற்றமிழ், சதக்கத்துல்லாஹ்அப்பா கல்லூரித் தமிழ்த்துறை வெளியீடு

வழிகாட்டு இணையதளங்கள்

1. www.noolulagam.com
2. www.tamilauthors.com
3. www.tnpsc.gov.in
4. www.tnpscexams.in
5. www.tamilvu.org

SEMESTER - II			
AR-2	**APPLIED GRAMMAR AND TRANSLATION-II**		**18ULAR21**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 4**

Objectives: To make the students to develop the skill of basic Arabic Grammar and Translation skills from Arabic to English vice-versa.

UNIT I: Lessons 1 to 3 (TEXTBOOK – 1)

من الدرس الأول إلى الدرس الثالث

UNIT II: Lessons 4 to 6 (TEXTBOOK – 1)

من الدرس الرابع إلى الدرس السادس

UNIT III: Grammar Portions (TEXTBOOK – 2)

1) Inna and Its sisters(إن وأخواتها) 2) Elative(اسم التفضيل)

3) Perfect Tense (الفعل الماضي)4) Imperfect Tense(الفعل المضارع)

5) Doer and Object(الفاعل والمفعول) 6) Kaanaand Its sisters(كان وأخواتها)

7) Classification of Verb into Sound and weak verb(تقسيم الفعل إلى صحيح ومعتل)

8) Transitive and Intransitive verb (الفعل اللازم والمتعدي)9) Verbal Noun(المصدر)

UNIT IV: Lessons 7 to 9 (TEXTBOOK – 1)

من الدرس السابع إلى الدرس التاسع

UNIT V: Lessons 10 to 12 (TEXTBOOK – 1)

من الدرس العاشر إلى الدرس الثاني عشر

TEXTBOOKS

1) DuroosulLughatil Arabiya Part – II Lessons 1 to 12only by Dr. V. Abdur Rahim.Available at: Islamic foundation Trust, 78 Perambur High Road, Perambur, Chennai- 600 012.
2) Arabic Tutor Part-I,II&III, By: Moulana Ebrahim Muhammad Karachi – Darul Ishaat.

II SEMESTER			
EN2	**PART II ENGLISH Prose, Poetry and Grammar - II**		**18ULEN21**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 4**

Objectives:

- To answer comprehensive questions on a passage of moderate level of difficulty.
- To write a critical appreciation of the prescribed poems and write sentences in English grammatically.

UNIT I PROSE

1. Appro JRD - Sudha Murthy
2. Packing - Jerome K. Jerome

UNIT II PROSE

3. How I Became a Public Speaker - G. B. Shaw
4. Values in Life - Rudyard Kipling

UNIT III POETRY

1. Money-Madness - D. H. Lawrence
2. No Men are Foreign - James Kirkup
3. On Another's Sorrow - William Blake

UNIT IV GRAMMAR

1. Subject-Verb Agreement
2. Verbs: Forms of 'to be', 'have', 'do'; modal auxiliaries

UNIT V COMMUNICATION SKILLS

1. Story Building
2. e-Communication: Fax; e-mail
3. Notices, Agendas and Minutes

TEXTBOOK:

Kulat L Ambadas, Dr. Joshi, Sandeep. et. al. (ed). *Blooming Buds*.Hyderabad:Orient BlackSwan, 2017.

II SEMESTER			
DSC 3	**DEVELOPMENTAL BIOLOGY**		**18UCZO21**
Hrs/Week: 4	**Hrs/Sem: 4 x 15 = 60**	**Hrs/UNIT:12**	**Credits:4**

Objectives:

- To study the principles of developmental zoology and understand the various steps that lead to the formation of a new progeny.
- To observe the progression of spermatogenesis, oogenesis, cleavage and cleavage patterns, gastrulation, organogenesis, types of placenta and regeneration.

UNIT I – Gametogenesis and Fertilization

Spermatogenesis – Oogenesis. Structure of sperm and egg of Chick and Human. Sperm and egg interaction – pre and post fertilization, theories and biochemical events-Parthenogenesis.

UNIT II – Cleavage and Gastrulation

Cleavage in Chick and Human. Fate map of Chick and Human. Gastrulation in Chick and Human. Development of Brain and Heart in Chick.

UNIT III – Extra Embryonic Membranes and Placentation

Extra embryonic membranes in Chick – development, types and physiology. Placentationin mammals – types and physiology. Organizer – Primary and secondary organizers – Spemann's experiment.

UNIT IV – Human Reproduction and Birth Control

Reproduction in Human – Infertility (male and female) Artificial insemination – Invitro fertilization and embryo transfer –Test tube babies – Amniocentesis.

Contraceptive devices – Surgical method – Hormonal method – Intra Uterine Contraceptive Devices (IUCD).

UNIT V – Nuclear transplantation and Regeneration

Nuclear transplantation in *Acetabularia*. Regeneration- definition, types, Regeneration in *Planaria* and Amphibians. – Morphogenetic field and gradient hypothesis.

TEXTBOOKS

Verma. P. S. and V. K. Agarwal. Chordate Embryology – S. Chand & Company Ltd.7361, Ram Nagar, Qutab Road, New Delhi – 110 055.

REFERENCE BOOKS

1. Arora,M.P., Embryology, Himalaya Publishing House, Ramdoot, Dr. Bhalero Marg, Giraon, Mumbai 400 004.
2. Berril, N. J., Developmental Biology, Tata Mc. Graw – Hill Publishing Company Limited No.444 / 1, Sri Ekambara Naiker Industrial Estate, Alapakkam, Porur, Chennai-600 116.
3. Diwan, Avian, Embryology, Anmol Publications Private Limited, 4374/4B, Ansari Road, Daryaganj, New Delhi – 108 002.
4. Diwan, Mammalian, Embryology, Anmol Publications Private Limited, 4374/4B, Ansari Road, Daryaganj, New Delhi – 110 002.

II SEMESTER			
DSC 4	**ECOLOGY AND EVOLUTION**		**18UCZO22**
Hrs/Week: 4	**Hrs/Sem: 4 x 15 = 60**	**Hrs/UNIT:12**	**Credits:4**

Objective:
To understand the principles and applications of Ecology to know the origin of species.

UNIT – I Ecology and Environmental Science

Ecology and Environmental Science – Definition - Scope – Branches – Abiotic factors –Water, Temperature and Light. Biotic factors – Animal relationship – Symbiosis – Commensalism – Mutualism – Antagonism – Antibiosis – Parasitism and its types and adaptations- Predation – Competition

UNIT – II Ecosystem

Ecosystem –Definition Structure – Pond ecosystem – Primary production – Secondary production –Food chain – Food web – Trophic levels – Energy flow – Pyramid of biomass – Pyramid of energy

UNIT – III Community & Population Ecology

Community Ecology: Characteristics, types and patterns of Ecological succession.

Population Ecology – Definition – Density – Estimation –Natality – Mortality – Age distribution - Age pyramids – Population growth and Population equilibrium.

UNIT IV Theories of Evolution

Lamarckism, Darwinism, Neo-Lamarckism, Neo-Darwinism, Mutation theory of De Vries and Modern synthetic theory.

UNIT V Variation and Human evolution

Variation-sources of variability – mutation, recombination & hybridization -Population genetics-Hardy-Weinberg law, isolating mechanisms: Speciation. Human evolution (fossil evidences only) Mimicry and Colouration.

TEXTBOOKS:

1. P.S.Verma, V.K.Agarwal. Environmental biology, S. Chand & Co. New Delhi.
2. TEXTBOOK of Ecology & Animal Distribution by P.S. Verma V.K. Agarwal S. Chand & Co. New Delhi.
3. Veer Bala Rastogi. Organic Evolution-2014. Kedar Nath Ram Nath Educational publications.

REFERENCE BOOKS:

1. Odum, E.P., 1971 – Fundamentals of Ecology., W.B. Saunders Company, Philadelphia.
2. Clarke.G.L (1954) - Elements of Ecology, John wiley & Son Inc. New York.
3. Ananthakrishnan. T.N and S. Viswanathan Principles of Animal Ecology
4. Koromondy E.J.(1976) - Concepts of Ecology – Meeven.
5. Kendeigh, S.C., 1961 – Animal Ecology, Prentice Hall
6. Rastogi, V.B. and M.S. Jayaraj, 1989 – Animal Ecology and distribution of animals, Kedarnath Ramnath.

7. Sharma, P.D., 1990 – Ecology and Environment, Rastogi Publications, Meerut.
8. Southwick, C.H., 1976 – Ecology and Quality of Environment D. Van Nostrand Co.
9. Verma, P.S. and V.K. Agarwal, 1996 – Principles of Ecology, S. Chand & Co., New Delhi.
10. S.S. Purohit, D.H. Shanmi and A.K.Agarwal, 2004 – Environmental Sciences: A New Approach, Agrobix, Jodhpur.
11. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad.
12. Krishnamurthy, K.V. 2003, Introduction to Biodiversity. Oxford and IBH
13. Jagerstein, G. Evolution of Metazoan life cycle,Academic Press, New York & London.
14. Veer Bala Rastogi. Evolutionary Biology. 2014. Kedar Nath Ram Nath Educational publications.
15. G. L. Stebbins. Process of organic evolution. 1966. Published by Prentice Hall.

II SEMESTER			
AI - 2	**APPLIEDNUTRITION**		**18UAAN21**
Hrs/ Week: 4	**Hrs/ Sem: 4x15 = 60**	**Hrs/ Unit: 12**	**Credits: 3**

Objectives:

To enable students

- To gain knowledge about the methods of assessment of nutritional status
- To gain knowledge and skill on various methods of different food groups and their nutritive value
- To gain knowledge and skill on various methods of nutritional assessment for different age groups.

UNIT I

A. Menu planning- Principles of planning diet, points to be considered in planning a diet.

B. Assessment of Nutritional status – Methods - Anthropometric measurements, biochemical examination, clinical examination and diet surveys.

UNIT II

A. Energy – Unit of energy - Bomb calorimeter, Physiological energy value of food. BMR- Definition and Factors affecting BMR

B. Carbohydrates – Classification, functions, sources and requirements.

UNIT III

A. Lipids – Classification, functions, sources and requirements.

B. Proteins – Classification, functions, deficiency, sources and requirements.

UNIT IV

A. Fat soluble Vitamins A,D,E,K – Functions, Sources requirements and deficiency

B. Water soluble Vitamins C, B group vitamins- B1,B2,B3,B5,B6,B12 and folic acid- Functions, Sources, requirements and deficiency

UNIT V

A. Minerals- Macro minerals- Calcium and Phosphorus- Functions, Sources, requirements and deficiency; Micro minerals- Iron, Fluorine and Iodine- Functions, Sources, requirements and deficiency.

B. Role of fibre in preventing and managing diseases, Sources of fibre.

C. Water –functions and dehydration

TEXTBOOKS

1. Srilakshmi, Nutrition Science, 6th Edition, 2018, New age International (P) limited publishers.
2. Srilakshmi, Dietetics, 7th Edition, 2014,New age International (P) limited publishers.

REFERENCE BOOKS:

1. Dr.M. Swaminathan, Advanced Text – Book on Food & Nutrition, Bappco,Bangalore. 1985
2. Foundation of Food Preparation, peck am, McMillan Company, London 1994.
3. Krause's Food, Nutrition and Diet Therapy, Mahan W.B Saunders Company, 10th edition, 2000.
4. Normal and therapeutic nutrition, Robinson C.H. and Lawler, McMillan Publications Co. Inc., New York, 1990, Revised Edition.
5. Introductory Nutrition, Guthrie & Boston, 8th Edition. 1989.

II SEMESTER		
DSCP-II	**CORE ZOOLOGY PRACTICALS - II**	**18UCZO2P1**
Hrs / Week: 2	**Hrs / Sem: 2x15=30**	**Credits: 1**

DEVELOPMENTAL BIOLOGY

1. Temporary mounting and observation of Chick embryo - 24, 48, 72 and 96 Hours.
2. Frog – Egg/sperm - Demonstration only – Model/ chart/ CD
3. Museum specimens, slides, models and charts:

a) Human Sperm
b) Egg ofInsect. (Cockroach & Silkworm).
c) Tadpole
d) Axolotl larva.
e) Developmental stages of Frog:Egg,Morula, Blastula, Gastrula and yolk plug stage
f) Chick embryo – 24, 48, 72 & 96 hrs.
g) Contraceptive devices – Condom, Copper T and Pills (Mala-D).
h) Placenta in mammals – Diffuse, Discoidal, Zonary and Cotyledonary.

ECOLOGY AND EVOLUTION

1. Estimation of Dissolved oxygen in two water samples.
2. a) Mutualism- Hermit crab and Sea anemone b) Commensalism – Echeneis and Shark c) Parasitism – Ascaris.

Museumspecimens, slides, models and charts

3. a) Food chain b) Food web c) Ecological pyramids d) Age pyramids e) Growth curves
4. a) Nauplius larva b) Zoea larva c) Mysis larva
5. Animals of Evolutionary significance
   a) Peripatus b) Limulus
6. Colouration a) Chamaeleon b) Lycodon
7. Mimicry a) Phyllium b) Stick insect
8. Mutation
   a) Ancon sheep b) Peppered moth

II SEMESTER		
AI-P2	**ALLIED APPLIED NUTRITIONAND PUBLIC HEALTH PRACTICALS- II**	**18UAAN2P1**
Hrs / Week: 2	**Hrs / Sem: 2x15=30**	**Credits: 1**

1. Principles of Nutrition practicals
   1. Qualitative estimation of Carbohydrate
   2. Qualitative estimation of protein
   3. Estimation of vitamin C in foods
2. Planning menu for the following age groups
   a. Adult women
   b. Pregnant mothers
   c. Lactating women
   d. Vitamin A deficient school child
   e. College going girl – diet for Anaemia
3. Visit to (ANYONE) milk factory, food analysis institute, CFTRI, observing school lunch program and ICDS programme.

II SEMESTER			
VE1	**VALUE EDUCATION – I**		**18USVE2A**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ Unit: 6**	**Credits: 2**

Objectives:

1. To inculcate moral values in the minds of students.
2. To teach ethical practices to be adopted by students in their life.
3. To make students honest and upright in their life.

UNIT I

Islam – Meaning – Importance – A complete Religion – The religion accepted by God – Five Pillars of Islam – Kalima – Prayers – Fasting – Zakat – Haj.

Iman – Monotheism – Angels – Books – Prophets – Dooms Day – Life after death – Heaven and Hell.

UNIT II

Quran – The Book of Allah – Wahi – Revelation to Prophet Muhammad(sal) – Compilation – Perseverance – Structure – Content – Purpose – Source of Islamic Law– Sura Fathiha, Kafirun, Iqlas, Falakh and Nas.

UNIT III

Hadith – Siha Sitha – Buhari – Muslim – Tirmithi – Abu Dawood – Nasai – Ibn Maja – Collection of Hadith – Meaning of 40 Hadith.

UNIT IV

Life History of Prophet Muhammad (sal) – Aiamul Jahiliya – Prophet's Childhood and Marriage – Prophethood – Life at Mecca – Life at Medinah – Farewell Address – Seal of Prophethood.

UNIT V

Good character – Etiquettes – Halal and Haram – Duties towards Allah – Duties towards fellow beings – Masnoon Duas.

REFERENCE BOOKS:

1. V.A. Moahmed Ashrof – Islamic Dimensions – Reflection and Review on Quranic Themes.
2. The Presidency of Islamic Researchers – Revised & Edited – The Holy Quran.
3. M. Manzoor Nomani – Islamic Faith & Practice.
4. Abdul Hasan Ali Nadvi – Muhammad Rasulullah.
5. K. Ali – A Study of Islamic History.
6. Abdul Rahuman Abdullah – Islamic Dress code for Women.
7. Dr. Munir Ahamed Mughal – Code For Believers.
8. Abdul Malik Mujahid – Gems and Jewels.

II SEMESTER			
VE2	**VALUE EDUCATION – II**		**18USVE2B**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ Unit: 6**	**Credits: 2**

UNIT I

Individual Morality – Objective of Moral life – Living in accordance with the code of Morality – the goodness of Morality – Morality and *Thirukural*- The need for faith.

UNIT II

Adherence to higher code of Morality – Fear of God – Good Moral Values – Duty to Parents – Teacher, respecting elders – Moral Etiquettes – Right-minded Principle – High Principles for Proper conduct.

UNIT III

Inculcating good attitudes – Open mindedness – Morale – analysing the pros and cons of good and bad – Service to others – Mind Power, tolerance, respecting others, showing love to others, patience – tranquility – Modesty, kindness and forgiveness.

UNIT IV

Quotations and moral Stories expressing Good characters of Great personalities – Life History of Great people: Mahatma Gandhi, Abraham Lincoln, Dr. A.P.J. Abdul Kalam.

UNIT V

Truth, the importance of uprightness, integrity, friendship – Health awareness on Alcohol and drug abuse – inculcating reading habit – reading good books – Hygiene – Dowry – Corruption.

TEXTBOOK:

Publication of Sadakathullah Appa College.

மூன்றாம் பருவம் PART - 1 TAMIL			
TA – 3	பயன்பாட்டுத்தமிழ்		**18ULTA31**
Hrs/Week: 6	**Hrs/Sem: 90**	**Hrs/Unit: 18**	**Credits:4**

நோக்கம்

1. தமிழின் காப்பியஇலக்கிய வளத்தை மாணவர்களுக்கு உணர்த்துதல்.
2. இந்திய ஆட்சிப் பணித்தேர்வுக்கு மாணவர்களை ஆயத்தப்படுத்துதல்.
3. செய்தி வெளிப்பாட்டு உத்திகளைத் கற்றுத் தந்து மாணவர்களை ஊடகவியலாளர்களாக உருவாக்க முயலுதல்

அலகு - 1தமிழ்ச் செய்யுள்திரட்டு (துறை வெளியீடு)

1. சிலப்பதிகாரம் - காட்சிக்காதை
2. மணிமேகலை - ஆபுத்திரன் திறம் அறிவித்த காதை
3. பெரியபுராணம் - கண்ணப்பநாயனார் புராணம்
4. கம்பராமாயணம் - வாலிவதைப்படலம்
5. இரட்சண்ய யாத்திரிகம் - தீயமகன் திருந்திய கதை
6. சீறாப்புராணம் - மானுக்குப் பிணைநின்றபடலம்

அலகு - 2

"ஐ.ஏ.எஸ். தேர்வும் அணுகுமுறையும்" வெ.இறையன்பு இ.ஆ.ப, நியூ செஞ்சுரி புக் ஹவுஸ், அம்பத்தூர், சென்னை-8

அலகு - 3ஊடகப்படைப்பாக்கம்

- வானொலிக்கு உரைச்சித்திரம் தொலைக்காட்சி நிகழ்ச்சித் தயாரிப்புக்கு எழுதுதல்
- தொலைக்காட்சிச் செய்தியறிக்கை தயாரித்தல்.
- தமிழ் நாளிதழ்களுக்குச் சிறப்புக் கட்டுரைகள், வாசகர் கடிதங்கள் எழுதுதல் & இலக்கியப்படைப்பாளருடன் நேர்காணல்-தாலைகாட்சி விவாதம்
- நேர்முக வருணனை
- சமூகஊடகங்களின் தாக்கம்

அலகு - 4 தமிழ் இலக்கியவரலாறு

- ஐம்பெரும் காப்பியங்கள்
- ஐஞ்சிறு காப்பியங்கள்
- சிற்றிலக்கியங்கள் (உலா, தூது, பிள்ளைத்தமிழ், பரணி)

அலகு - 5 இலக்கணம்

(தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையத்தின் பொதுத்தமிழ் இலக்கணப்பகுதி)

- பிழைத் திருத்தம், சந்திப்பிழைகள், ஒருமை&பன்மை பிழைகள், மரபுப் பிழைகள்
- வழுவுச் சொற்களை நீக்குதல், பிறமொழிச் சொற்களை நீக்குதல், வேர்சொல்லைச் தேர்வு செய்தல்.

பாடநூல்

இருந்தமிழ், சதக்கத்துல்லாஹ்அப்பா கல்லூரித் தமிழ்த்துறை வெளியீடு

பார்வை நூல்கள்

தமிழ் இலக்கியவரலாறு -க.பஞ்சாங்கம், அன்னம் அகரம் வெளியீடு, கும்பகோணம்.
இதழியல் நுணுக்கங்கள் -செண்பகா பதிப்பகம், சென்னை-17
வானொலிநிகழ்ச்சிக் கலை -சிந்துமலர் வெளியீடு, சென்னை
சீறாப்புராணம் மூலமும் பொழிப்புரையும்-ஹாஜி எம்.முகமது யூசுப், இரண்டாம் பாகம்
மக்கள்ஊடகத் தொடர்பியல் -மீடியா பப்ளிகேஷன்ஸ், மதுரை
தொலைக்காட்சி நிகழ்ச்சிக் கலை -வள்ளுவன் வெளியீட்டகம், சென்னை.

SEMESTER III			
AR-3	**Applied Grammar and Translation-III**		**18ULAR31**
Hrs/ Week: 6	**Hrs/Sem: 90**	**Hrs/ Unit: 18**	**Credits: 4**

Objectives:
To enable the students to understand simple Arabic sentences and construct Arabic sentences simple by their own

UNIT I: Lessons 13 to 16 (TEXTBOOK – 1)
من الدرس الثالث عشر إلى الدرس السادس عشر

UNIT II: Lessons 17 to 19 (TEXTBOOK – 1)
من الدرس السابع عشر إلى الدرس التاسع عشر

UNIT III: Grammar Portions (TEXTBOOK – 2)
1) Imperative and Prohibition **(الأمر والنهي)**
2) Original letters which are not enhanced **(الفعل المجرد)**
3.Original letters which are enhanced **(مزيد فيه)**
4) Subjunctive mood **(الحروف الناصبة)**
5) Jussive Mood **(الحروف الجازمة)**
6) Negative particles **(ما و لا (ما ولا النافيتان**
7) Number 1 to 10,000**(العدد من الواحد إلى عشرة آلاف)**

UNIT IV: Lessons 20 to 22 (TEXTBOOK – 1)
من الدرس العشرون إلى الدرس الثاني والعشرون

UNIT V: Lessons 23 to 25 (TEXTBOOK – 1)
من الدرس الثالث والعشرون إلى الدرس الخامس والعشرون

TEXTBOOKS:.
1) DuroosulLughatil Arabiya Part – II Lessons 13 to 25 only by Dr. V. Abdur Rahim. Available at: Islamic foundation Trust, 78 Perambur High Road, Perambur, Chennai- 600 012.
2) Arabic Tutor Part-I,II&III, By: Moulana Ebrahim Muhammad Karachi- Darul Ishaat,

III SEMESTER			
Part - II - English			
EN 3	**ONE-ACT PLAYS AND WRITING SKILL**		**18ULEN31**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 4**

Objectives:

1. To expose the conversational patterns to students and enable them to make use of the patterns in a given practical situation.
2. To write sentences in English grammatically.

UNIT I – ONE-ACT PLAYS

1. The Bishop's Candlesticks - Norman McKinnell
2. The Proposal - Anton Chekov
3. The Hour of Truth - Percival Wilde

UNIT II – ONE-ACT PLAYS

4. Aladdin and His Magic Lamp - Y. Sayed Mohammed
5. Tippu Sultan - Y. Sayed Mohammed
6. Evergreen Merchant of Venice - Y. Sayed Mohammed

UNIT III – WRITING SKILL

1. **Messages** (Pages 1-9 of *Written English for You* to be taught and the tasks given to be accomplished in the *Record of Writing*)
   i) What is a message?
   ii) ii) When do we write messages?
   iii) Why do we write messages?
   iv) How do we write messages?
2. **Letters – 1** (Pages 10-20*Written English for You* to be taught and the tasks given in pages 17 and 19 should be accomplished in the *Record of Writing*)
   i) Letters for Ordering Supply of Goods
   ii) ii) Letters of Complaint
   iii) Letters of Enquiry
3. **Letters – 2** (Pages 36-42 of *Written English for You* to be taught and the tasks given in the pages 38 and 44 should be accomplished in the *Record of Writing*)
   i) Letters to inform your plan of visit
   ii) ii) Letters of Request
   iii) Letters of Asking for Advice

UNIT IV – WRITING SKILL

4. **Essays** (Pages 66-79 to be taught and only the tasks 1-3 from pages 79 and 80 should be accomplished in the *Record of Writing*)
   i) What is an Essay?
   ii) Types of Essays.
   iii) The structure of an Essay.
   iv) Introductory paragraph.
   v) Supporting paragraph.
   vi) What can be the length of an Essay?
   vii) Why am I writing this Essay?

viii) Who am I writing for?
ix) How to begin an Essay?
x) How to organize an Essay?
xi) What to avoid in writing an Essay?

5. **Narrating** (Pages 109-116 of *Written English for You* to be taught only the tasks 1 and 2 from pages 115 to 116 to be accomplished in the *Record of Writing*)
   i) Describing events in a chronological order.
   ii) Narrating events from different points of view
   iii) Narrating events from different view point in time

UNIT V – WRITING SKILL

6. **Reporting** (Pages 127-136 be taught. The tasks given in pages 129- 134 and 136-137 must be accomplished in the *Record of Writing*)
   i) News Reports
   ii) Reporting events or Developments.
   iii) Reporting Interviews and Press Conferences
   iv) Reports of Meetings.
7. **Summarizing** (Pages 164-172 of *Written English for You*be taught and the tasks 1-3 in pages 172-178 to be accomplished in the *Record of Writing*)
   i) What is a Summary?
   ii) How to write a Summary?
   iii) How long should a Summary be?
   iv) Should the Summary be in a Paragraph?
   v) Analysis of the process of Summarizing.

NOTE: Questions for Units III, IV and V should be framed from the tasks given in the prescribed textbook ***Written English for You.***

TEXTBOOKS

1. Compiled by a Board of Editors. *Plays for Pleasure*. Chennai:Paavai Publications, 2009.
2. Sayed Mohammed.Y, ed. *Three One-Act Plays*. Tirunelveli: Muhammed Taahaa Publications, 2011.
3. Radhakrishna Pillai.G, ed. W*ritten English for you*. Chennai: Emerald Publishers, 1990 (rpt. 2008).

III SEMESTER			
DSC 5	**CELL & MOLECULARBIOLOGY**		**18UCZO31**
Hrs/Week: 4	**Hrs/Sem: 4 x 15 = 60**	**Hrs/UNIT:12**	**Credits:4**

Objectives:

1. To learn the cytological techniques, structure and functions of various cellular components.
2. To understand the integrated activity of the animal cell.
3. To understand the molecular basis of cell structure, DNA structure and functions.

UNIT I - Introduction

Cell biology – introduction - cell types - prokaryotes & eukaryotes. Microscopy - detailed study of compound, phase contrast and electron microscopes – Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM),Simple staining.

UNIT II – Cell organelles

Ultra-structure, chemical composition and functions of cell organelles: a) Plasma membrane b) Mitochondria c) Golgi apparatus
d) Endoplasmic reticulum e) Ribosomes f)Lysosomes g) Centriole h)Nucleus

UNIT III – Cell Division

Ultra-structure, chemical composition and functions of Nucleus, Nucleolus. Chromosomes-types -Special type of chromosomes. Cell Division and Cell cycle - Amitosis, Mitosis, Meiosis and their significance. Apoptosis.

UNIT IV - Molecular Biology and Cancer Biology

DNA - types, structure, replication - DNA as the genetic material.

RNA- types, structure and transcription

Cancer cells – Carcinogenesis – definition, types, causes, properties, theories, diagnosis and treatment – Oncogenes.

UNIT V – Genetic Code and Protein Synthesis

Mechanism of protein synthesis. Genetic code – codons and anticodons - Regulation of gene expression in prokaryotes and eukaryotes, lac-operon concept.

TEXTBOOK

Agarwal, V. K. Molecular Biology, S. Chand & Co. Limited, 7361, Ram Nagar, Qutub Road, New Delhi – 110 055.

REFERENCE BOOKS

1. Lodish *et al.,* Molecular Biology, 6th edition, W.H. Freeman and Company, New York.
2. Agarwal, V. K. Cell Biology, S. Chand & Co. Limited, 7361, Ram Nagar, Qutub Road, New Delhi – 110 055.
3. Arora, M. P. Molecular Biology. Himalaya Publishing House, Ramdoot, Dr. BhaleroMarg, Giraon, Mumbai 400 004.
4. Kumar, M. D. Molecular Biology, Vikas Publishing House Private Ltd. 576, Maszid Road, Jangpura, New Delhi – 100 014.
5. De Robertis, E.D,P., W. N. Nowinki and F. A. Saez. Cell Biology. – W. B. Saunders & Co. Philadelphia.
6. Powar, C.B., Cell Biology, Himalaya Publishing House, Mumbai.
7. Gupta, M.L. and Jangir, M.L., Student Edition, Jodhpur.
8. Jeyaraj and Rastogi, Cell Biology, Wiley Eastern Limited, New Delhi.

III SEMESTER			
DSE 1A	**DIET THERAPY**		**18UEAN3A**
Hrs/Week: 4	**Hrs/Sem: 4 x 15 = 60**	**Hrs/UNIT:12**	**Credits:4**

Objectives:

To enable students to

- To learn the responsibilities of a Dietitian in a hospital
- To plan and prepare therapeutic diets for various disease condition.
- To acquire skills on diet counseling for various disease conditions

UNIT I

A. Definition of dietetics – purpose of diet therapy – factors considered in planning therapeutic diets
B. Routine hospital diets – Clear fluid diet, full fluid diet, soft diet, regular normal diet, Preoperative diet and postoperative diet

UNIT II

A. Obesity - etiology, assessment, types of obesity and principles of dietary management.
B. Under weight- etiology, nutrition and food requirements

UNIT III

A. Peptic ulcer- Etiology, symptoms and dietary modification.
B. Diabetic mellitus- causes, types, symptoms and dietary modification

UNIT IV

A. Diet in cardiovascular diseases- Role of fat in the development of atherosclerosis, dietary management in atherosclerosis.
B. Hypertension**-** causes, types, symptoms and dietary management

UNIT V

A. Functions of liver, causes of liver damage, Cirrhosis of liver- etiology, symptoms and dietary management
B. Kidney diseases- functions of kidney; Glomerular Nephritis- causes, symptoms and dietary management.

TEXTBOOK

B. Srilakshmi, Dietetics, 7th Edition, 2014, New age International (P) limited Publishers.

REFERENCE BOOKS:

1. Krause's TEXTBOOK of nutrition and diet therapy, (2004), Macmillan Publishers.
2. Gopalan, C. Ramashasthri, B.V. and Balasubramanian-Nutritive Value of Indian Foods, NIN, ICMR, 1998.
3. Guthrie and Boston, Introductory Nutrition, 1989, VIII Edition.
4. Robinson C.H. and Lawery M. Normal and therapeutic Nutrition, Macmillan Publishing Co., New York, 1990.

III SEMESTER			
DSE 1B	**PUBLIC HEALTH**		**18UEAN3B**
Hrs/Week: 4	**Hrs/Sem: 4 x 15 = 60**	**Hrs/UNIT:12**	**Credits:4**

Objectives:

- To gain knowledge in the concept of public health and preventive medicine
- To know the current health situation in India
- To understand the concept of prevention

UNIT I

Hygiene- Definition and personal hygiene. Public health- Scope and importance.

UNIT II

Hazards to community health

Water pollution, air pollution, pesticide residue in food, sewage treatment and waste management

UNIT III

Nutritional monitoring and surveillances

a. Nutritional assessment- Definition, types
b. Nutritional education- Definition and methods- steps in planning, evaluation and implementation

UNIT IV

Agencies related to combat Nutrition

a. National agencies- NIN, ICMR, CFTRI
b. International agencies- FAO,WHO, UNICEF, World bank, CARE

UNIT V

a. National Programme: Vitamin A Prophylaxis Programme, National Anemia control Programme, National Goiter Control Programme, National Leprosy control Programme
b. School lunch Programme: Mid-day meal Programme, ICDS, TINP, Supplementary feeding Programme.

TEXTBOOK

B. Srilakshmi, Nutrition Science, 6th Edition, 2018,New age International (P) Limited Publishers.

REFERENCE BOOK

1. Park's TEXTBOOK of Preventive and Social Medicine, 2009. 20th edition.
2. Suryatapa Das 2016, TEXTBOOK of Community Nutrition, Second Edition, Academic Publications, Kolkata, ISBN:978-83420-69-8
3. LaithaIshwarn Punnya 2017, Health Education and Sports Nutrition, Khel Shahiya Kendra Publications, New Delhi, ISBN: 978-81-7524-889-2
4. The Educational Planning Group 2007, Food and Nutrition for Nurses, Arya Publishing Group New Delhi, ISBN:81-7064-070-9

III SEMESTER			
AII -1	**PLANT DIVERSITY & PLANT PATHOLOGY**		**18UABT31**
Hrs/Week: 4	**Hrs/Sem: 4 x 15 = 60**	**Hrs/UNIT:12**	**Credits: 3**

Objectives: To enable the students

- To have a general understanding about the diverse group of plants and observe the variations among the plants.
- To identify the different plantsby morphological and anatomical studies.
- To have a comprehensive knowledge of Algae, Fungi, Bryophyte, Pteridophytes, Gymnosperms and Angiosperms.

UNIT I - Algae & Fungi

Algae – General characters of algae:structure, reproduction & life cycle of *Sargassum*. Economic importance of algae. Fungi - General characters of fungi:structure, reproduction & life cycle ofAlbugo. Economic importance of fungi.

UNIT II – Lichens andBryophytes

General characters of lichen – Types – Crustose, Foliose, Fruiticose. Bryophytes- General characters of Bryophyte. Distribution, structure reproduction & life history of *Marchantia-*. Economic importance of bryophytes.

UNIT III – Pteridophytes & Gymnosperms

Pteridophytes- General characters, Structure, reproduction & life cycle of *Lycopodium*.Gymnosperms – General characters, Structure, reproduction & life cycle of Pinus. Economic importance of gymnosperms.

UNIT IV – Taxonomy

Brief account on Classification: Natural – Bentham & Hooker. Morphology and reproductive characters of flowering plants (Pyllotaxy and inflorescence). Study of the following families – Rutaceae, Asclepiadaceae, Euphorbiaceae, Poaceae.

UNIT V – Plant pathology

Introduction to plant pathology –Tikka disease of groundnut, Citrus canker, Bunchy top of banana, Red rot of sugarcane and Late blight of Potato - causal organism, symptoms, disease cycle and control measures.

TEXTBOOKS:

1. Pandey B.P. 2001. College Botany Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
2. Vashishta, B.R. 2008. Botany for Degree Students – Vol I Algae.
3. Sethi, I.K. and Walia, S.K. 2011. TEXTBOOK of Fungi and Their Allies, Macmillan Publishers Pvt. Ltd. Delhi.

REFERENCE BOOKS:

1. Pandey B.P. 2001. College Botany Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
2. Parihar. N. S.2001. Bryophyta - Central Book Depot Publications in Botany, Allahabad
3. Vashista. B R.1997, The Algae, S. Chand & Co. Ltd... New Delhi
4. Pandey.B.P.1997 – Taxonomy of Angiosperms – S. Chand & Co., New Delhi.
5. Power,D. General Microbiology, 1986, Himalaya Publishing House, Bombay.
6. Gangulee, Das & Datta, College Botany Vol I,1986, New central book agency, Kolkata.
7. Vashishta, P.C., Sinha., A.K. Kumar. A., 2010. Pteridophyta, S. Chand. Delhi. India.

III SEMESTER		
DSCP-III	**CORE ZOOLOGY PRACTICALS – III**	**18UCZO3P1**
Hrs/Week: 2	**Hrs/Sem: 2 x 15 = 30**	**Credits: 1**

CELL & MOLECULAR BIOLOGY PRACTICALS

1. Onion root tip squash: Observation of different stages of mitosis.
2. Chironomous larva: Mounting of Polytene chromosomes.
3. Male Grasshopper: Observation of different stages of meiosis.
4. Preparation of the following:

a) Human Squamous epithelium
b) Human blood smear

5. Models & charts:
   a) DNA
   b) tRNA
   c) Ribosome
   d) Protein synthesis
   e) Mitochondria
   f) Golgi apparatus
   g) Nucleus
   h) Endoplasmic reticulum
   i) Lysosomes
   j) Microtome.
   k) Frog Blood Smear

III SEMESTER		
AII-P1	**ALLIED BOTANY PRACTICALS – I**	**18UABT3P1**
Hrs/Week: 2	**Hrs/Sem: 2 x 15 = 30**	**Credits: 1**

PLANT DIVERSITY AND PLANT PATHOLOGY PRACTICALS

Objectives: To enable the students

- To take better sections of plant materials of anatomical & morphological interest for identification.
- To identify various groups of non-flowering plants.
- To develop skill in identify the flowering plants upto species level.

DIVERSITY OF PLANT LIFE PRACTICAL

1. Micropreparation & Identification of the following
   Sargassum – Stipe and leaf.
   Marchantia - Thallus.
2. Observation and Identification of Permanent slide –
   Sargassum – Male and female conceptacles.
   Marchantia sporophyte.
   Disease infected leaves showing Albugo.
3. Micropreparation & Identification of Lycopodium Stem &Pinus needle.
4. Identification, botanical name, family, floral formula, floral diagram and description of the plants from the families prescribed in the theory syllabus.
5. Identification of plant diseases prescribed in the syllabus.
6. Field trip for specimen collection.

REFERENCE BOOKS:

1. Gunasekaran, P., 1996. Lab Manual in Microbiology. New Age International (P), Ltd., Publishers, New Delhi.
2. Parihar, N.S. 19985, The Biology and Morphology of Pteridophytes, Central Book Department, Allahabad.
3. Sporne, K.R. 1971, The Morphology of Gymnosperms, Hutchinson University library London.
4. Pandey, B.P. 2010. Modern Practical Volume – 1. S. Chand & company Ltd. New Delhi.
5. Santra. S.C, Chatterjee, T.P and Das, A.P. 2001. College botany practical – Vol. II. NewCentral Book Agency (p) Ltd. India.

III SEMESTER			
NME-I	**PLANT RESOURCES AND THEIR UTILIZATION**		**18UNBT31**
Hrs/Week: 2	**Hrs/Sem: 2 x 15 = 30**	**Hrs/UNIT:6**	**Credits: 2**

Objectives: To enable the students

- To know about the common names and useful parts of plant species around us
- To know about the commercial usage of medicinal plants.
- To exploit the uses of plants in small scale like industries like canning, beverage, Pharmaceuticals, Nursery gardens, Floriculture, horticulture etc.

AStudy on the following with references to their botanical name, morphology of useful part, family and economic importance.

UNIT I

Plant resources as food: Cereals – Rice, Wheat; Millets – Ragi; Pulses – Pea, Black gram; Vegetables -Cabbage; Fruits – Mango, Banana.

UNIT II

Plant resources as fibers – Classification – Surface fibers –Cotton, Coir; Soft fibers – Jute, Aloe, banana.

UNIT III

Plant resources as timbers – Wood Classification, properties (Mechanical, Physical)– Teak, Deodar; Gums – Gum Arabic; Resin – Oleoresin.

UNIT IV

Plant resources as beverages – Coffee, Tea –Botanical traits, Processing methods.

UNIT V

Plant resources as Spices and Condiments – Botanical name, Morphology of useful part & uses - Seed – Cardamom; Bark – Cinnamon; Fruit – Coriander, Leaves – Mint, Flower – Clove, Rhizome – Zinger, Root – Withania.

TEXTBOOKS:

1. Pandey,B.P. 1997. Economic Botany–S. Chand & company Ltd. New Delhi.
2. Verma, V. 198.Economic Botany – Emkay publication, New Delhi.
3. Albert E. Hill, 1988, Economic Botany. A textbook of useful plants and plants Products.TATA Mc Graw – Hill publishing company Ltd. New Delhi.

REFERENCE BOOKS:

1. Herbs, spices & Medicinal plants, Recent advanced botany by Craker, Lyle E. 1988.Oryx press, phoenix. Arizona.
2. Medicinal plants of India (Medicinal plants of the world vol.5. by Sudhanshu Kumar.Jain.1985-1989.
3. Trease, G.E. & Eram, N.C. 1983, Pharmocognosy Baullinie, Trendall, Enaullourne
4. Pulok K. Mukherjee, 1988 Quality control herbal drugs. New Delhi.
5. VinodL.D. and Rengaw. 1976. Pharmacogonosy & Phytochemical Ist edition Vol I & II. Delhi.
6. Chowdery.R. D., 1996.Herbal Drug Industry. Delhi.

நான்காம் பருவம்			
PART – I - TAMIL			
TA - 4	சங்கத்தமிழ்		18ULTA41
Hrs/Week: 6	Hrs/Sem: 90	Hrs/Unit: 18	Credits: 4

நோக்கம்

1. சங்கஇலக்கியம் குறித்த புரிதலை மாணவர்களுக்கு ஏற்படுத்துதல்.
2. இணையத்தில் தமிழின் இடத்தினைஉணர்த்துதல்.
3. மாணவர்களை இணையத்தைப்பயன்படுத்த அறிவுறுத்துதல்.

அலகு - 1

தமிழ்ச் செய்யுள் (துறை வெளியீடு)

நற்றிணை (பாடல் எண்கள் 68,95), குறுந்தொகை (பாடல் எண்கள் 2, 23), ஐங்குநூறு (பாடல் எண்கள் 23, 49), பதிற்றுப்பத்து (பாடல் எண் 69), பரிபாடல் (செவ்வேள்-திருப்பரங்குன்றத்தின் அமைப்பும் சிறப்பும்-பாடல் எண்கள் 1 முதல் 20 வரை), கலித்தொகை (பாடல் எண் 10), அகநானூறு (பாடல் எண் 44), புறநானூறு (பாடல் எண் 187) மற்றும் பத்துப்பாட்டில் குறிஞ்சிப்பாட்டு முதல் 98 வரிகள்.

அலகு-2

நம்பிக்கைத் தமிழ் -கல்லூரித் தமிழ்த்துறை வெளியீடு,

அலகு - 3

இணையமும் தமிழும்

- தமிழ் இலக்கியப் பதிவுகளும் இணையமும்
- இணையத்தில் படைப்பை வெளியிடும் முறைகள்
- தமிழ் விக்கிபீடியா -அறிமுகம்
- வலைப்பூக்களை உருவாக்க மாணவர்களுக்குப் பயிற்சி தரல்
- தமிழ் மின் நூலகம்
- மின் நூல்களும் வாசகத்தன்மையும்
- புகழ்பெற்ற தமிழ் இலக்கியத் தளங்கள் குறித்த அறிமுகம்.

அலகு - 4

இலக்கியவரலாறு

- சங்கஇலக்கியம் ஓர் அறிமுகம்
- எட்டுத்தொகை, பத்துப்பாட்டு
- சங்கஇலக்கியத் திணைக் கோட்பாடும் சங்ககால மக்கள் வாழ்வியலும்

அலகு - 5

இலக்கணம்

- தமிழர் வாழ்வில் அகமும் புறமும்
- ஐவகை நிலங்களின் முதல், கரு, உரிப் பொருட்கள்
- அறத்தொடு நிற்றல்
- களவு, கற்பு விளக்கம்
- புறத்திணைகள்

பார்வை நூல்கள்

தமிழ்க் கணினி இணையப்பயன்பாடுகள் - முனைவர் துரை. மணிகண்டன்
த.வானதி
கமலினிபதிப்பகம்
கச்சமங்கலம் அஞ்சல்,
தோகூர் வழி,
தஞ்சாவூர் மாவட்டம்

இணையத் தமிழ் -தமிழ்த்துறை வெளியீடு
சதக்கத்துல்லாஹ்அப்பா கல்லூரி
திருநெல்வேலி.

வழிகாட்டு இணையதளங்கள்

1. www.selliyal.com
2. www.tamilvu.org
3. www.tamilcanadian.com
4. www.bbc.com
5. www.tamilinayam.com

	SEMESTER - IV		
AR-4	**CLASSICAL PROSE**		**18ULAR41**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits:4**

Objectives: To impart the moral values in the students and build their personality to make them better citizens to serve the society.

UNIT I: Verses from 1 to 12 from (Sura – al – Hujraat) (TEXTBOOK – 1)
من الآية "يا أيها الذين آمنوا لا تقدموا" إلى الآية"يا أيها الذين آمنوا اجتنبوا "

UNIT II: Verses from 10 to 18 from (Sura – al – Hujraat) & verses from Surah Lqman from (12 to 19) (TEXTBOOK – 1)
من الآية "يا أيها الناس إنا خلقناكم" إلى الآية "إن الله يعلم غيب السموات"
من الآية "ولقد آتينا لقمان الحكمة " إلى الآية "واقصد في مشيك"

UNIT III: Collection and compilation of Quran and Hadeeth, History of Imam Abu Hanifa, Malik, Asshafi,Ahmad, Bukhari, Muslim, Abu Dawood, At-Tirmidi, An-Nasaee and Ibn-Majah (TEXTBOOK – 1)

UNIT IV: Hadeeth 1 to 10 (TEXTBOOK – 2)
من الحديث " لا تأكلوا بالشمال" - إلى الحديث " خيركم من تعلم القرآن"

UNIT V:Hadeeth 11 to 20 (TEXTBOOK – 2)

من الحديث " لا تمنعوا نسائكم " - إلى الحديث " حق المسلم على المسلم خمس"

TEXTBOOKS
1. Tafseer Suratul Hujuraath and from Suraah Luqman (verses from 12-19) A study material prepared by Dept. of Arabic, Sadakathullah Appa College, Rahmath Nagar, Tirunelveli-11
2. Hadeeth: Ahadeeth Sahlah
Available at: Islamic foundation Trust, 78, Perambur High Road, Perambur, Chennai- 600 012.

IV SEMESTER			
EN4	**Part - II - English** **A PRACTICAL COURSE IN SPOKEN ENGLISH**		**18ULEN41**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 4**

Objectives:

1. To express one's needs orally in a fluent, simple and direct style.
2. To pronounce words intelligibly
3. To use the right intonation pattern in speech.

UNIT I

Interactive Expressions and Pronunciation Practice: Consonants (Chapters 1 – 3 of *A Course in Spoken English*)

UNIT II

Introducing oneself / others, patterns for greeting, requesting, expressing and responding to thanks and etc., & Pronunciation Practice: Vowels (Chapters 4 – 8 of *A Course in Spoken English*)

UNIT III

Developing descriptive competency, narrative competency, arguing competency, compering competency and pronunciation practice: Diphthongs (Chapters 9 – 13 of *A Course in Spoken English*)

UNIT IV

Practicing continuous speech, group discussion and pronunciation practice: Word Accent and Intonation
(Chapters 14 – 19 of *A Course in Spoken English*)

UNIT V LISTENING PRACTICE

Students will listen to audio and video materials for 10 – 12 hours.

Textbook, Workbook, Record Note:

1. Nihamathullah. A. et al. *A Course in Spoken English*. Tirunelveli: MSU, 2005. (rpt.2010).
2. Board of Editors, Department of English, Sadakathullah Appa College, *A Workbook forA Course in Spoken English*,2011.
3. Spoken English Practice Record.

Evaluation Scheme:

I Internal Oral Test : 15 Marks
II Internal Oral Test: 15 Marks
III Internal Oral Test: 15 Marks

} The best two of the three CIA test marks will be added up

Distribution of Marks

The best two of the three CIA test marks	:	30 Marks
Loud Reading	:	5 Marks
Listening Test	:	5 Marks
Internal Marks	:	40 Marks
External Oral Test	:	50 Marks
Record Note	:	05 Marks
Workbook	:	05 Marks
External Marks		60 Marks

IV SEMESTER			
DSC6	**BIOCHEMISTRY**		**18UCZO41**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs/ Unit: 12**	**Credits:4**

Objectives:

1. To gain knowledge about the basics of biochemistry along with the principles and techniques.
2. To learn the classification, structure and metabolism of carbohydrates, proteins and fats.

UNIT I - Basic concepts of Biochemistry

Atomic structure, Chemical bonds – Ionic, Covalent & Hydrogen bond – vander Waal's force, pH value - Acid & base concept, Chemical equilibrium - buffers.

UNIT II – Bioenergetics

Oxidation – reduction reactions, Redox potential, Properties, Chemical nature & biological significance of water. Introduction and importance of Bioenergetics - energy and its forms, laws of thermodynamics.

UNIT III – Carbohydrate and its Metabolism

Classification, structure and biological significance of Monosaccharides (Glucose and Fructose), Disaccharides (Lactose and Sucrose) and Polysaccharides (Starch and Glycogen).Glycolysis, Kreb's Cycle, Glycogenolysis and Glycogenesis

UNIT IV – Proteins and Lipids:

Classification, structure and biological significance of Amino acid, Proteins and lipids. Primary, Secondary, Tertiary and Quarternary. Enzymes – classification and mechanism of enzyme action – Enzyme Inhibitors

UNIT V – Instrumentation

Basic instruments – Principle and applications of pH meter, Colorimeter, Spectrophotometer and Electrophoresis – Agarose Gel Electrophoresis (AGE) and Polyacrylamide Gel Electrophoresis (PAGE), Centrifuge, Cheomatography – Paper and thin layer Chromatography

TEXTBOOK

Ambika Shanmugam, Fundamentals of Biochemistry for Medical Students, Nagaraj and Company Private limited, Chennai.

REFERENCE BOOKS

1. Lubert Stryer, Biochemistry, W.H.Freeman & Company, Newyork.
2. Agarwal,G. R. Kiran Agarwal & O. P. Agarwal– TEXTBOOK of Biochemistry (Physiological Chemistry), Krishna Prakashan Media (P) Limited, 11 Shivaji Road, Meerut – 250 001.
3. Berry, A. K. A –TEXTBOOK of Biochemistry. EMKEY Publications, Post BoxNo. 9410, B -19, East Krishna Nagar, Swami Dayanand Marg, New Delhi – 110 051.
4. David T. Plummer,- AnIntroduction to Practical Biochemistry. Tata Mc. Graw Hill Publishing Company Limited, No.444 / 1 Sri Ekambara Naicker Industrial Estate, Alapakkam Porur, Chennai – 600 116.
5. Jeyaraman, J. – Laboratory Manual in Biochemistry. New Age International Publishers, 4835/24, Ansari Road, Darya Ganj, New Delhi. – 110 002.

IV SEMESTER			
DSE – 2A	**MUSHROOM CULTURE**		**18UEBT4A**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs/ Unit: 12**	**Credits:4**

Objectives

To enable the students

- To know the various types of edible mushrooms and their nutritional value.
- To understand the method of cultivation of edible mushroom and spawn production.

UNIT – I

Introduction – History –- Scope & Importance of edible mushroom cultivation – Types of Edible & Poisonous mushrooms in India.

UNIT – II

Spawn preparation: Preparation of pure culture, media used in raising pure culture, Culture maintenance, Facilities required for spawn preparation, Preparation of spawn substrate, storage of spawn..

UNIT – III

Cultivation technology of Oysters, Button and Milky mushrooms (Mass cultivation), Storage of mushroom.

UNIT – IV

Nutrient Profile of Mushrooms. Problems encountered in mushroom cultivation techniques and its commercial exploitation.

UNIT – V

Mushroom Recipes: Preparation of various dishes like Mushroom Sabji, Mushroom Achar, Mushroom khir, Mushroom soup, Mushroom Pakoda, Mushroom Papad. Cutlet, Omelette Samosa, Curry, Soup Powder and Idly chutney powder.

Field visit to Mushroom farm and Oneday Training on Mushroom cultivation.

TEXTBOOK:

Nita Bahl (1984-1988) Hand book of Mushrooms, II Edition, Vol. I & Vol. II.

REFERENCES:

1. Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991) Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.
2. Swaminathan, M. (1990) Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
3. Paul Stamets, J.S. and Chilton, J.S. (2004). Mushroom Cultivator: A practical guide to growing mushrooms at home, Agarikon Press.
4. Shu-Ting Chang, Philip G. Miles, Chang, S.T. (2004). Mushrooms: Cultivation, nutritional value, medicinal effect and environmental impact, 2nd ed, CRC press.

IV SEMESTER			
DSE – 2B	**ORGANIC FARMING**		**18UEBT4B**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs/ Unit: 12**	**Credits:4**

Objectives

To enable the students

- To learn the definition of organic farming.
- To know the various types of organic farming and their importance.
- To learn the production of various organic farming.

UNIT I

Soil Science, Brief Account of Soil Profile; Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

UNIT II

Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

UNIT III

Plant wastes – Fallen leaves and Twigs – Humus Formation, Green Manuring – Mulching – Leaves of Trees like Pongamia, Gliricidia, Azadirachta, Calotropis – Compost making.

UNIT IV

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi - Mass production and Applications.

UNIT – V

Vermicomposting – Importance, Application and Production of Vermicompost; Preparation and importance of Panchagavya foliar spray.

REFERENCES:

1. Dubey, R.C. 2006, A TEXTBOOK of Biotechnology, S. Chand and Company Ltd. New Delhi.
2. ICAR, 1980. Handbook of Agriculture, Indian Council of Agricultural Research, New Delhi.
3. John Jothi Prakash, E. 2006. Outlines of Biotechnology. Emkay Publications, New Delhi.
4. Mark Coyne, 2004. Soil Microbiology- An Exploratory Approach. Delmar Publishers, Singapore.
5. Miller, C.E. and Turk, L.M. 2002. Fundamentals of Soil Science. Biotech Books, New Delhi.

IV SEMESTER			
A II – 2	PLANT ANATOMY, PLANT FUNCTIONS & PLANT BIOTECHNOLOGY		18UABT41
Hrs/ Week: 4	Hrs / Sem: 4 x 15 = 60	Hrs/ Unit: 12	Credits: 3

Objectives

To enable the students

- To understand the metabolic activities of plants.
- To know about the various concepts and mechanisms of functions of plant.
- To understand the basic principles of tissue culture and in various aspects of crop improvements.
- To make the students aware of the application of biotechnology to human welfare.

UNIT I

Tissues – Meristematice tissues, simple and complex tissues. Primary structure of dicot and monocot stem, root, Annual ring. Secondary growth in dicot stem. Anomalous secondary growth- Boerhaavia.

UNIT II

Water relations – Diffusion, Imbibition & Osmosis. Absorption of water – Mechanism of water absorption – active and passive. Ascent of sap –Path and Mechanism, Cohesion theory. Transpiration – Types – Cellular, Stomatal, Lenticular. Mechanism of Stomatal Transpiration. (Theories not needed). Anti transpirant, significance of transpiration.

UNIT III

Photosynthesis – Ultra Structure of Chloroplast. Pigment systems. 'Z' scheme of electron transport – Calvin cycle, factors affecting photosynthesis – significance of photosynthesis.

UNIT IV

Respiration – Ultra Structure of Mitochondria. Types – Aerobic & Anaerobic, Glycolysis – Krebs's cycle. Growth Hormones – Physiological role of Auxins and Cytokinins.

UNIT V

Plant tissue culture: Definition, Scope & importance. Totipotency, Callus & Meristerm Culture, induction. Application of tissue culture. Biofertilizer – Definition, Scope & importance. Mass production of Rhizobium, BGA – Nostoc, VAM fungi and Azolla. Applications.

TEXTBOOKS:

1. Jain V. K. 1996 - Fundamentals of Plant Physiology 5th edition - S Chand & Co., New Delhi.
2. Kumar H. D.1998 -Modern Concept of Biotechnology, Vikas Publishing House Ltd., New Delhi.

REFERENCE BOOKS:

1. Dubey R.C. 2001 A TEXTBOOK of Biotechnology, S. Chand & Co., New Delhi.
2. Taiz, L and Zeiger, E. 1991, Plant Physiology. The Bengamen Cummings Publishers, California.
3. Thakur. K. and Bassi. K, 2007. Diversity of microbes and cryptogams. S. Chand & company Ltd. New Delhi.

IV SEMESTER		
DSCP-IV	**CORE ZOOLOGY PRACTICALS - IV**	**18UCZO4P1**
Hrs/ Week: 2	**Hrs / Sem: 2 x 15 = 30**	**Credits: 1**

BIOCHEMISTRY PRACTICALS

1. Beer'sand lambert's lawverification using Colorimeter
   a) Protein b) Carbohydrate.
2. Separation of Aminoacid using paper Chromatography.
3. Separation of Aminoacid using Thin layer Chromatography.
4. Qualitative tests for Carbohydrates, Proteins & Lipid.
5. pH measurement of any two samples with the help of pH meter.
6. **Charts/Models:**
   a) Glucose
   b) Aminoacid
   c) Steroid
   d) Electrophoresis unit
   e) Colorimeter
   f) pH meter
   g)Chromatogram.

IV SEMESTER		
AII-P2	**ALLIED BOTANY PRACTICALS – II**	**18UABT4P1**
Hrs/ Week: 2	**Hrs / Sem: 2 x 15 = 30**	**Credits: 1**

PLANT ANATOMY, PLANT FUNCTIONS AND PLANT BIOTECHNOLOGY PRACTICALS

Objectives: To enable the students

- To take better sections of plant materials of anatomical & morphological interest for identification.
- To identify various groups of non-flowering plants.
- To develop skill in identify the flowering plants upto species level.

Plant Anatomy:

1. Micropreparation and Identification of
   a. Dicot Stem
   b. Monocot Stem
   c. Dicot Root
   d. Monocot Root.
2. To observe and identify the following slides showing
   a. Meristems – Shoot apex and root apex
   b. Simple tissues.

Plant Funtions:

To demonstrate simple set up in Plant Physiology.

1. Osmosis – Potato Osmoscope.
2. Transpiration Ganongs potometer experiment.
3. To demonstrate plasmolysis by using Tradescantia leaf.
4. Ganong's light screen experiment.
5. Ganong's respiroscope – Respiration.

Plant Biotechnology:

Photograph / model in Biotechnology.

1. Biofertilizer – Rhizobium/B.G.A./ VAM Fungi.
2. Tissue culture - Photograph (Callus & Meristerm culture).
3. Industrial visit.

REFERENCES:

1. Pandey, B.P. 2010. Modern Practical Volume –III. S. Chand & company Ltd. New Delhi.
2. Pandey, B.P. 2010. Botany for degree students. S. Chand & Company Ltd. New Delhi.
3. Santra. S.C, Chatterjee, T.P and Das, A.P. 2005. College botany practical – Vol. I. New Central Book Agency (p) Ltd. India.

IV SEMESTER			
NME -II	**HEALTH AND FITNESS**		**18UNAN41**
Hrs/ Week: 2	**Hrs / Sem: 2 x 15 = 30**	**Hrs / Unit:6**	**Credits: 2**

Learning Outcome:

On successful completion of the course, the learners will equipped to

- Familiarize about the terms related to health and fitness
- Acquire knowledge aboutrole ofhealthy food and exercise.
- Understand the importance of personal hygiene.
- Compare the relationship between fitness and nutrition.

UNIT I

Health-Definitions, concept of health, changing concepts, dimensions of health, concept of well being, spectrum of health, determinants of health, ecology of health, right to health, responsibility for health and indicators of health.

UNIT II

Physical -mental – social- Positive health; Spectrum of health. Millennium development goals – Primary Health Care.Health situation in India.

UNIT III

Physical fitness- definition, factor affecting physical fitness, importance of physical fitness. Assessment of physical fitness- Body Weight, Height, BMI, Broka Index, Waist circumference, Hip Circumference, Waist to Hip Ratio.

UNIT: IV

Techniques for Obtaining Relevant Information - General Profile, Medical History and Clinical Information. Dietary Diagnosis - Assessing food and nutrient intakes, Lifestyles, physical activity and stress, Nutritional Status

UNIT: V

Ethical Codes and Guidelines, The Counselor's Ethical and Legal Responsibility - Rights of Clients and Dimensions of Confidentiality

TEXTBOOK

1. B. Srilakshmi, Nutrition Science, 6th Edition, 2018, New age International (P) limited publishers.
2. B.Srilakshmi, Dietetics, 7th Edition, 2014, New age International (P) limited publishers.

References:

1. K. Park TEXTBOOK of Preventive and social medicine, 15th edition, MIS Banarsidas Bhano Publishers, Jabalpur, 1997.
2. Guthrie, H.A, "Introductory Nutrition", 6th ed., Times Mirror/Mosby College Publ. – St Louis 1989.
3. Whitney E.N., Hamilton E.N. & Raffes S.R., "Understanding Nutrition", 5th ed. West Pub. Co. New York.

V SEMESTER			
DSC7	**ANIMAL PHYSIOLOGY**		**18UCZO51**
Hrs/ Week: 6	**Hrs / Sem: 6 x 15 = 90**	**Hrs / Unit: 18**	**Credits: 4**

Objectives:

- To learn the various aspects of animal physiology with an in-depth study of its mechanism.
- To study the structure and function of various organs such as the heart, brain, lungs and kidney.
- To explore the complicated endocrine system, sense organs and internal biological clocks present in living systems.

UNIT I - Nutrients and Digestion

Elements of Nutrition- Vitamins & Minerals. Digestion - Intracellular and Intercellular. Digestion and absorption of carbohydrate, protein and fat. Gastrointestinal Hormones.

UNIT II - Respiratory System and Circulatory System

Types of respiratory organs, respiratory pigments, transport and exchange of gases – control of respiration, anaerobiosis – respiratory quotient –Basic, Standard and Active Metabolism.

Blood - composition, function and coagulation. - Structure and function of human heart – ECG – Heart diseases

UNIT III - Excretory System

Types of nitrogenous wastes – Ammonotelism, Ureotelism and Uricotelism – Structure and function of human Kidney – Physiology of Urine formation.

Homeostasis - Osmoregulation in crustaceans (Astacus) and fishes (Marine and freshwater teleosts), Mechanism of thermoregulation in ectotherms and endotherms.

UNIT IV – Muscular and Nervous system

Types of muscles - Ultra structure of skeletal muscle; Physico - chemical properties – mechanism of muscle contraction.

Structure and types of neurons - nerve impulse - conduction of impulse through nerve – synapse – myoneural junction - reflex action.

UNIT V - Endocrine systems and Chronobiology

Endocrine glands – Pituitary, Thyroid, Parathyroid, Adrenal and Pancreas**.** Menstrual cycle and Oestrous cycle – the role of hormones – Menopause, Pregnancy and Parturition. Biological rhythms – exogenous and endogenous rhythms – concept of biological clocks - survey of biological rhythms in animals and human.

TEXTBOOKS

Agarwal, R. A. A. K.Srivastava and Kaushal Kumar –Animal Physiology and Biochemistry, S. Chand & Company Limited, 7361 Ram Nagar, New Delhi.

REFERENCE BOOKS

1. Goel, K.A., Sastri, K. V. –A TEXTBOOK of Animal Physiology, Rastogi Publications, Shivaji Road, Meerut. – 250 002.
2. Arora, M.P., Animal Physiology (6 th Edition) Himalaya Publishing House, Ramdoot, Dr. Bhalero Marg, Giraon, Mumbai. – 400 004.
3. Goyal, K. A., and K.V. Sasthri, Animal Physiology (6threvised Edition), Rastogi Publications, Gangotri, Shivaji Road, Meerut - 250 002.
4. Hill - Animal Physiology, ANE Book India, Awantika Niwas, 19, Doraiswamy Road,T. Nagar, Chennai.

V SEMESTER			
DSC 8	**GENETICS**		**18UCZO52**
Hrs/ Week: 5	**Hrs / Sem: 5 x 15 = 75**	**Hrs / Unit: 15**	**Credits: 4**

Objective:

To facilitate the student to understand the structure of genes and the concept of human genetics.

UNIT I - Mendelian Inheritance

Mendelian laws. Multiple alleles - A, B, O blood groups, Rh factors in man. Multiple genic inheritance - skin colour in man. Phenotypic ratio - Co-dominance, Incomplete dominance, epistasis, lethal genes, Penetrance, Expressivity and pleiotropism. Linkage, Crossing over.

UNIT II – Sex Linked Inheritance and Syndrome

Sex determination in man, Sex chromosomes and sex-linked inheritance in man, sex influenced genes and sex limited genes. Non-disjunction in man (Klinefelter's syndrome, Turner's syndrome and Down's syndrome), Y linked inheritance – Holandric genes. Extra Chromosomal inheritance – Shell coil in Snail and Kappa particles in Paramecium.

UNIT III – Mendelian Genetics

Human chromosomes – Karyotype, ideogram, Simple Mendelian traits in man, Inborn errors of metabolism – Phenyl ketonuria, Alkaptonuria, Albinism. One gene-one enzyme theory. Genetics of Human metabolic disorders & diseases; inherited disorders - Sickle cell anemia and Thalassaemia. Inbreeding and Out breeding, Eugenics, Euthenics, Genetic Counseling, Twins – types and significance.

UNIT IV – Aberration of Chromosomes

Fine structure of gene – Cistron, Recon and Muton. Gene Mutation – types and effects (Deletion, Duplication, Inversion and Translocation) – Ploidy – Euploidy, Polyploidy and Aneuploidy. Chromosomal aberration - Structural aspects.

UNIT V – Microbial Genetics

Bacterial genetics, Conjugation, Transformation, Transduction and Sexduction, Mapping of Bacterial chromosome.

Viral Genetics –T_4Phage - Lytic and lysogenic cycle

TEXTBOOKS:

1. Power, C.B. Genetics - I, Himalaya Publishing House, Ramdoot, Dr. Bhalero Marg, Giraon, Mumbai 400 004.
2. Meyyon, P.P. Genetics, Saras Publication, 114/35G, A.R.P. Camp Road, Periavilai, Kottar Po, Nagercoil.

REFERENCE BOOKS

1. Arora, M. P. and S. Shandu. -Genetics. (5 th Edition) Himalaya Publishing House, Ramdoot, Dr. Bhalero Marg, Giraon, Mumbai 400 004.
2. Bhzamrah, H. S.and C. M. ChaturvediA TEXTBOOK of Genetics. Anmol Publications Private Limited, 4374 / 4 B, Ansari Road, Daryaganj, New Delhi 110 002.
3. Gupta P. K.Elements of Genetics. Rastogi Publications, Gangotri, Shivaji Road, Meerut-250 002.
4. Parihar, P. A. - A TEXTBOOK of Basic and Molecular Genetics. Student Edition, Agrobios (India), Behind Nasrani Cinema, Chopasani Road, Jodpur – 342 002.
5. Sanjay Mandal, Fundamentals of Human Genetics. New Central Book Agency, (P)Ltd. 8 / 1 Chintamoni Das Street, Kolkata – 700 009.
6. Verma, P.S., Agarwal, V.K. Genetics. 9th revised edition S,Chand & Co Limited, NewDelhi.

V SEMESTER			
DSC 9	**FUNDAMENTALS OF BIOTECHNOLOGY**		**18UCZO53**
Hrs/ Week: 5	**Hrs / Sem: 5 x 15 = 75**	**Hrs / Unit: 15**	**Credits: 4**

Objectives

- To learn the basic principle behind techniques involved in biotechnology.
- To impart awareness on intellectual property rights and safety issues involved in handling of transgenic organisms.

UNIT I - Tools of Biotechnology

History, Scope and Importance of Biotechnology - Basic concepts of Genetic Engineering, Restriction enzymes, Cloning vectors: Bacterial plasmid vector (pBR ^{322}), phage vector (Lambda and M 13) –Plant Vector (T_1Plasmid) Animal vector (SV40) - Transposons as vectors –Yeast Artificial Chromosomes (YAC) – Bacterial Artificial Chromosomes (BAC).

UNIT II- Gene cloning

Gene cloning: - Integration of DNA fragments into the vector – Gene transfer methods, Transformation and Transfection - Biolistics transformation - Protoplast fusion - Liposome mediated transfer - Electroporation - Electrofusion - DNA transfer by calcium phosphate method – Microinjection. Screening and Selection of recombinants- Replica plating method - Blue and white method - Insertional inactivation -Antibiotic resistance -Gradient method -Hybridization techniques.

UNIT III -Cell culture

Animal cell culture: Cell types – Requirements for animal cell culture - substrate, media and gases - Cell culture techniques - primary cell culture, basic technique of mammalian cell culture - sterilization and prevention of contamination. Stem cell culture: embryonic stem cell culture - Methods to produce differentiated cells – Application of stem cells.

UNIT IV - Techniques in Biotechnology

Somatic cell hybridization. Hybridoma technology - monoclonal antibody production. Blotting technique (Southern, Western and Northern) Construction of DNA library, DNA probe, PCR.

UNIT V- Transgenesis

Transgenesis - Technique of transgenic animal production- Gene targeting, Gene knockout. Applications of transgenic animals- transgenic sheep, fish, mosquito and Cow. Bioethics: Bio safety and Patenting of Biotech product and IPR.

TEXTBOOKS

1. Sathiyanarayana U., (2017). Biotechnology. Book and Allied (P) Ltd, Kolkata.
2. R. C. Dubey, 2014.A TEXTBOOK of Biotechnology, S. Chand & Co.New Delhi

REFERENCE BOOKS

1. Arora. M. Biotechnology (2nd Edition), Himalaya Publishing House, Ramdoot, Dr.Bhalero Marg, Giraon, Mumbai. – 400 004.
2. Gupta, P.K.Elements of Biotechnology. Rastogi Publications, Gangotri, Shivaji Road, Meerut - 250 002.
3. Jogdand, S. N. Gene Biotechnology (5th Edition) Himalaya Publishing House, Ramdoot, Dr. Bhalero Marg, Giraon, Mumbai. – 400 004.
4. Joshi, P. Genetic Engineering, Student Edition., Agrobios (India), Behind Nasrani Cinema, Chopasani Road, Jodpur – 342 002.
5. Kumar, H. D. Modern Concept of Biotechnology, Vikas Publishing House Private Ltd.576, Maszid Road, Jangpura, New Delhi – 100 014.
6. Sambamurty. A.V.S.S. Molecular Biology, Narosa Publishing Home, India
7. Singh, B.D. Biotechnology Expanding horizon, Kalyani Publishers, India

V SEMESTER			
DSE3 A	**AQUACULTURE**		**18UEZO5A**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs / Unit: 12**	**Credits: 4**

Objective:

To enumerate the aquaculture potential and practices in India and augment food production from aquatic resources through aquaculture

UNIT I- Introduction

Scope of Aquaculture - Aquaculture in India – Freshwater, Coastal and Marine aquaculture –Site selection- Pond construction - Maintenance of pond - Types of fish ponds- Nursery pond, Rearing pond and culture pond.

UNIT – II - Culture Practices

Biology of Indian major carps –Fin fish culture: collection of seeds and transportation of seeds – natural breeding, induced breeding, Marine prawn culture –*Penaeus monodon* - Transgenic fish production – Ploidy and Induction – Cryopreservation. Culture practices in Edible oyster: collection of seeds – induced breeding.

UNIT – III – Types of Culture

Types of culture: extensive - semi-intensive and intensive culture – monoculture - monosex culture – polyculture - cage culture - pen culture – seaweed culture - integrated fish farming – paddy cum fish culture - poultry cum fish culture - pig cum fish culture - sewage fed fish culture.

UNIT IV - Fish Feed and Diseases

Fish feed: artificial feed – feed formulation – need - ingredients ratio – square method– pellets. Live feeds and their culture: *Artemia* and Rotifer – Seaweed culture. Fish Diseases: bacterial, viral, fungal, ecto and endo-parasitic diseases and nutritional deficiency diseases.

UNIT – V - Harvesting and Post-harvest Technology

Methods of fish harvesting – craft (Kattumaram and Trawlers) and gears (Gill net and trap net) used for inland and marine fisheries - Fish preservation – fishery by-products. Role of government organizations-CMFRI – CIFRI – FFDA - CIFT – CIFE - MPEDA – CIBA etc.

TEXTBOOKS

1. Sandhu, G.S. 2010. A TEXTBOOK of fish and Fisheries of India. Wisdom Press, New Delhi.
2. N.Arumugam, Saras Publications, 114/35G, A.R.P. Camp Road, Periyavilai, Kottar Po, Nagercoil – 629002.

REFERENCE BOOKS

1. Jhingran, V.G. Fish and fisheries of India. Hindustan Publishing Corporation (India), Delhi
2. Santhanam, R., N. Sukumaran and P. Natarajan., A manual of freshwater aquaculature. Oxford & IBH Publishing Co. Pvt. Ltd., 66 Janpath, New Delhi – 110 001.

3. Sundararaj, V. and B. Srikrishnadhas, Cultivable aquatic organisms, Narendra Publishing House, 1417, Krishnan Dutt Street, Maliwara, Delhi – 110 006.
4. Pillai, T.V.R., Aquaculture and the environment. 1st edition, Fishing news Books, England, 1992.
5. Pandian, T.J., Sustainable indian fisheries, 2001
6. Samuel Paulraj., Shrimp farming techniques, problems and solutions-1995
7. Kurian, C.V and V.O. Sebastian. Prawns and prawn fisheries of India IV edition 1993
8. Victor, A.C., A. Chellam, S. Dharmaraj and T.S. Velayudhan, Manual on pearl oyster seed production, farming and pearl culture, CMFRI Special publication-1995
9. Vijayan, K.K. et al., 2007. Indian Fisheries: A progressive outlook. CMFRI Publications, Kochi.
10. Mohan Joseph Modayil and Pillai, N.G.K. 2007. Status and perspectives of Marine fishery research in India. CMFRI Publications, Kochi.
11. Mohan Joseph Modayil and Jayaprakash, A.A. 2003. Status of exploitory marine fisheries research of India. CMFRI Publications, Kochi.

V SEMESTER			
DSE3 B	**DAIRY FARMING**		**18UEZO5B**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs / Unit: 12**	**Credits: 4**

Objective:
To study the importance of livestock, Economical importance and productivity of dairy animals, Prevention and control of livestock diseases and marketing the dairy products

UNIT I
Dairy development in India – Dairy Cooperatives – NDRI, NDDB, TCMPF - Operation Flood – Milk and Milk Products– Nutritive value of milk – Milk production in India and Tamil Nadu– Per capita availability of milk in India and Tamil Nadu – Role of milk and milk products in human nutrition.

UNIT II
Dairy Cattle Breeds – Indigenous and exotic – Dairy Cattle – Nutrition – Physiology –Breeding Techniques – Frozen Semen technology. Mammary gland and Milk synthesis. Male reproductive animals- Management of breeding bulls. Health and Hygiene

UNIT III
Milk and microbes – Common microorganisms in milk – spoilage of milk – Fermentation of milk - Desirable and undesirable fermentation – milk borne Diseases –clean milk production –common starter cultures in dairy industry-their classification, characteristics and propagation.

UNIT IV
Pasteurizer, Homogenizer, Freezer, Evaporator – their Principles and designs - Boiler - Installation, operation and design - Boiler efficiency Cream separators - Principle of Heat Exchange - Energy consumption in different milk processing operations – Refrigeration requirements in different dairy processing. Pipelines and Pasteurizers - Energy Conservation measures.

UNIT V
Production of clean milk and organic milk-milking environment-preparation of milking, milk handling. Cleaning of dairy farm and milk room. Diseases: foot and mouth diseases, Rabies, Heamoragic septicemia, Anthrax, Rinder pest and Tuberculosis.

TEXTBOOKS:
1. TEXTBOOK of Preventive and social medicine be E. pal Panarsidar Bhanot – M.A. 1268 Napier town
2. Breeding & improvement of farm animals: Rice, Victor. Arthar Tata Mc. Graw Hill.

REFERENCE BOOKS:
1. Principles of dairy chemistry – Jenness. Robertand Stute Patton Wiley Eastern.
2. Artifical in semination of farm animals, Perry Enos (Edition) Oxford & I B H
3. Breeding & improvement of farm animals: Rice, Victor. Arthar Tata Mc. Graw Hill.

4. Livestock & Poultry Production – Singh, Harbans & Earl Moore – PrenticeHall of India.
5. Sanitariane Hand Book (Theory and Administrative pras Publication) Osleans New (USA)
6. St. John Ambulance Associations TEXTBOOKS
   a) First Aid to the injured.
   b) A preliminary course of First Aid to the injured
7. First Aid in Accidents by Dr. V. Rama Rao. Published Krishnan Bros. Thambu chetty street, Chennai.

V SEMESTER		
DSCP-V	**CORE ZOOLOGY PRACTICLAS – V**	**18UCZO5P1**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Credits: 2**

ANIIMAL PHYSIOLOGY, GENETICS and FUNDAMENTALS OF BIOTECHNOLOGY PRACTICALS

ANIIMAL PHYSIOLOGY

1. Rate of Oxygen consumption in a fish (to be done individually).
2. Effect of temperature on operculum movement of freshwater fish. Calculation of Q_{10}. (to be done individually).
3. Effect of temperature on Salivary amylase activity.
4. Detection of Nitrogenous waste products of fish (ammonia), birds (uric acid) & mammals (urea) (to be done individually).
5. Demonstration of blood pressure with Sphygmomanometer.
6. Models, charts and photos:
   a) Simplemuscletwitch
   b) Sphygmomanometer
   c) Haemoglobinometer
   d) Haemocytometer
   e) Reflex arc model
   f) ECG model
   g) Kymograph

GENETICS

1. Observation of Simple Mendelian traits in man - to be recorded.
2. Blood group to be analyzed in a population with a minimum of 30 students.
3. Breeding experiments to be illustrated with beads
   a) Monohybrid b) Dihybrid
4. Observation and study of polygenic inheritance of quantitative traits to be interpreted in graphs.
   a) Height of students b) Weight of students
5. Spotters
   a) Syndromes – Down's syndrome, Turner's syndrome & Klinefelter's Syndrome.
   b) Sex linked Inheritance-Colour blindness, Hemophilia & Hypertrichosis
   c) DNA model
   d) Sickle cell anaemia

FUNDAMENTALS OF BIOTECHNOLOGY

1. Separation of genomic DNA by AGE - Demonstration.
2. Separation of protein by PAGE - Demonstration.
3. Models, charts and photos:
   a) pBR 322
   b) Ti plasmid
   c) Lambdaphage
   d) M 13
   e) CaMV
   f) Restriction enzymes
   g) Recombinant DNA
   h) Gene cloning
   i) Electroporation Unit
   j) Blotting techniques
   k) Stem cells
   l) Dolly
   m) Animal cloning
   n) Transgenesis
   o) Gene knock out
   p) Somatic cell fusion
   q) Agarose

V SEMESTER		
DSCP-6	**CORE ZOOLOGY PRACTICALS – VI**	**18UCZO5P2**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Credits: 2**

AQUACULTURE PRACTICALS

1. Estimation of water samples.
   a) Salinity,
   b) Dissolved oxygen and
   c) Alkalinity
2. Collection and Identification of economically important fishes – Catla, Eel, Shark and Sardine.
3. Collection and Identification of economically important crustaceans (*Penaeus, Macrobrachium* and Crab)
4. Collection and Identification of economically important seaweed (*Eichornia, Pistia, Sargassam* and *Ulva*)
5. Mounting of marine and freshwater planktons
6. Identification of fish scales - Cycloid, Ctenoid and Placoid.
7. Examination of fishes for diseases and their control –Bacterial (Abdominal dropsy, Furunculosis) - Viral (spring viremia) – Parasitic (Argulus) – Fungal (Rot disease)
8. Visit to aquaculture farm.

V SEMESTER			
SEC-I	**FOOD SAFETY AND QUALITY CONTROL**		**18USAN51**
Hrs/ Week: 2	**Hrs / Sem: 2 x 15 = 30**	**Hrs / Unit: 6**	**Credits: 2**

Objectives

This course will enable the students

- to develop good habits of personal and environmental hygiene
- to learn safe, handling of food and ensure completely, safety of raw and processes foods.

UNIT – I Introduction to food safety

a. Definition of food safety, threats to safety of food supply
b. Definition and Principles of quality control

UNIT – II Sensory Evaluation of Foods

General guideline – requisites, guidelines for panel members, preparation of samples, evaluation card, and difference test – rating test, sensitivity test and distribution test.

UNIT – III Hazard Analysis critical control point (HACCP)

Definition, principles – guidelines for application of HACCP

UNIT – IV Care of premises and Equipment

a. Impervious washable floors and walls, Tabletops and floors. Good ventilation and lighting care of dark corner. Crevices and cracks.
b. Garbage disposal

UNIT – V Food Adulteration and laws – FSSAI

a. Food adulteration and public health hazards, prevailing food standards in India P.F.A, F.P.O Agmark and B.I.S.
b. Food safety standards act *2011*

TEXTBOOK

B. Srilakshmi., Food Science, 7th Edition, 2018, New age International (P) limited publishers.

Reference Books:

1. Shirley and Mary wood Beuran Food preservation and safety.
2. Principles and actives Surabli Publications 1999
3. Pomeranz and Healan C.E (1996) Food Analysis Theory and practical CBS Publications and distributors New Delhi.

VI SEMESTER			
DSC 10	**IMMUNOLOGY & MICROBIOLOGY**		**18UCZO61**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs / Unit: 12**	**Credits: 4**

Objective:

- To understand and perceive the importance of the immune system, lymphoid organs lymphoid cells and immunoglobulin.
- To understand the nature of the microbes and to know the beneficial and harmful effects of microbes.

UNIT I - Introduction

History and scope of Immunology - Immunity - Types of Immunity - Innate and acquired, Passive and Active. Lymphoid organs - Primary and secondary lymphoid organs - Thymus, Bone marrow, Bursa of Fabricius, Spleen, Tonsil, Lymph node, Peyer's patches.

UNIT II – Immunoglobulin and Immune Diseases

Immunoglobulin - Structure, function and biological properties of Immunoglobulin classes. Interaction of antigen and anti-body- Auto immune diseases **–** Causes, Classification with one example each, Diagnosis and Treatment. Hypersensitivity, Tumour Immunology.

UNIT III – Lymphocyte and Immune Response

Lymphocyte as unit of immune system – Stem cells, T cells and its types - B cells and macrophages. Immune response: Primary and secondary response – Humoralimmune response (B cell activation) – Cell mediated immune response (T cell activation).

UNIT IV – Structure, sterilization and culture techniques of Microbes

General structure of microbes: Ultra structure of E.coli and T_4 Phage Bacterial growth, Sterilization techniques, Culture media-General Purpose Media, Selective and Differential media. Isolation of microbes, Pure culture, Continuous and Batch culture techniques – Growth rate and curve.

UNIT V – Applied Microbiology

Food microbiology: Food poisoning, food spoilage and food preservation.

Industrial microbiology: Alcohol production.

Soil microbiology: Role of soil microbes in nitrogen fixation (Rhizobium), Biofertilizers (Acetobacter and Blue Green Algae).

Medical microbiology: Causative agents, Symptoms, treatment and prevention of Five specific microbial disease:

Bacterial diseases: Tuberculosis, Syphilis.

Viral diseases: AIDS, Measles, Hepatitis.

TEXTBOOKS:

1. Rao, C. V.-An Introduction to Immunology, Narosa Publishing House, Private Limited, 35 –36 Greams Road, Thousand Lights, Chennai.
2. Purohit, S.S., ATEXTBOOK of Microbiology, Student Edition, Agrobios (India) Behind Nasrani Cinema, Chopasani Road, Jodhpur.

REFERENCE BOOKS – IMMUNOLOGY

1. Berry A. K. A -TEXTBOOK of Immunology, EMKEY Publications, B -19,East Krishna Nagar, Swami Dayanand Marg, Delhi – 110 051.
2. Cazenave, P. A. andG. P. Talwar.- Immunology–Pauster's heritage, New Age International Publishers, 4835 / 24 Ansari Road, Darya Kanj, New Delhi.
3. George Pinchuk -Immunology, Tata Mc.Graw – Hill Publishing Company Limited,7, West Patel Nagar, New Delhi.
4. Joshi, K. R.and N. O. Osamo. - Immunology and Serology, Student Edition, Agrobios (India) Behind Nasrani Cinema, Chopasani Road, Jodhpur.
5. Kuby-Immunology, ANE Books India, Avantika Niwas, 19 Doraiswamy Road, T. Nagar, Chennai.
6. Mani., ANarayanan.L. M., Selvaraj. A. M., Arumugam. N. –Immunology & Microbiology, Saras Publications, 114 / 35 G, A. R. P.Camp road, Nagercoil.

REFERENCE BOOKS – MICROBIOLOGY

1. Arora, M. P. Microbiology, Himalaya Publishing House, Ramdoot,Dr. Bhalerao Marg,Girgaon, Mumbai.
2. Dubey, R. C.andD. K. Maheswari.-A TEXTBOOK of Microbiology, S. Chand & Company Limited. 7361 Ram Nagar, Qutab Road, New Delhi.
3. Kalaiselvan, P.T. –Microbiology and Biotechnology, A Laboratory Manual, MJP Publishers, Tamil Nadu Book House, 47, Nallathambi Street, Triplicane, Chennai.
4. Meenakumari, S. Microbial Physiology, MJP Publishers, Tamil Nadu Book House, 47, Nallathambi Street, Triplicane, Chennai.
5. Power and Dagimawala, - General Microbiology Vol.– I (20th Edition) Himalaya Publishing House, Ramdoot, Dr. Bhalerao Marg, Girgaon, Mumbai.

VI SEMESTER			
DSC 11	**APPLIED BIOTECHNOLOGY**		**18UCZO62**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs / Unit: 12**	**Credits: 4**

Objectives:

- To understand the application of various biotechnological innovations for the protection of environment and for the genetic improvement of agricultural plants, aquatic resources and livestock and for the welfare of human beings
- To learn about the application of bioinformatics and nanotechnology

UNIT I - Environmental Biotechnology

Introduction – solid and liquid wastes, Bio-technological methods for wastewater treatment – Preliminary, Primary, Secondary, Tertiary treatment (Aerobic & anaerobic treatment).

Bioremediation: Definition – types of Xeno biotics, Biodegradation of pesticide, Role of genetically engineered microorganisms in bioremediation-super bug. Phyto-remediation of contaminated soil. Biotechnological tools for pollution monitoring.

UNIT II - Agricultural and Livestock Biotechnology

Somatic hybridization & Micro-propagation - Genetic manipulation of 'nif' gene and 'nod' gene for nitrogen fixation. Genetically modified crops – their advantages & disadvantages.

UNIT III - Bioprocess Technology

Bioreactors, Fermentation Process – Metabolite production – Primary Metabolites – Biofuels – Ethanol Production – Secondary Metabolites– Enzyme Production – Galactosidase.

Biogas – production, Advantages & disadvantages.

UNIT IV - Biotechnology and health care

Human Genome Project- principle and application. Vaccines - Recombinant Vaccines, DNA Vaccines. Gene therapy- types – vectors used in gene therapy. DNA sequencing, chromosome walking. DNA finger printing technique and applications. Bio sensors – Types – applications.

UNIT V – Bioinformatics and Nanotechnology

Introduction, Definition, History – scope and application of bioinformatics – role of bioinformatics in life sciences - protein database – SWISSPORT & PIR – search tools – BLAST and FASTA – applications. Pairwise sequence alignment – Local and global alignment.

Nano technology – definition, classification. methods of synthesis – solgel method and bacterial synthesis, application in biology.

TEXTBOOK

1. Sathyanarayana U., (2017). Biotechnology. Book and Allied (P) Ltd, Kolkata.
2. SinghB.D (2015), Biotechnology Kalyani Publishers. Mahalakshmi street, T.Nagar, Chennai – 600017.
3. Dubey R.C. (2014), A TEXTBOOK of Biotechnology. S. Chand & Co Ltd. 7361, Ramnagar, New Delhi – 110055.

REFERENCE BOOKS

1. Arora M.P.-Biotechnology (II nd Edition) Himalaya Publishing House, Ramdoot. Dr. Bhalerao Mar g, Girgaon Mumbai – 400004.
2. Gupta P.K - Elements of Biotechnology. Rastogi Publications, Gangotri, Shivaji Road, Mererut – 2500002
3. Herren, R.V. – Introduction to Biotechnology, Thomson Learning, Alps Buildings, Ist Floor, 56 Janpath, New Delhi – 110001.
4. Joshi.P- Genetic Engineering. Student Edition, Agrobios (India) Behind Nasrani Cinema, Chopasani Road, Jodhpur – 342002
5. Prakash S. Lohar- Biotechnology, M.J.P.Publishers, Tamilnadu Book house 47, Nallathambi Street Triplicane – 600005.
6. Trivedi P.C - Advances in Bio-technology, Agrobios (India) Behind Nasrani Cinema, Choprasani Road Jodhpur – 342002.
7. Vikas pruthi - Basic Biotechnology, ANE Books India, Avantika Nivas,19, Doraisamy Road T.Nagar Chennai – 600017.
8. Yount.L –Genetics & Genetic Engineering, Orient Longman Limited Post Box No: 310, 160 Anna Salai, Chennai – 600002.
9. Shanmugam - Nanobiotechnology – MJP publication, Chennai

VI SEMESTER		
DSC 12	**PROJECT**	**18UCZO63**
Hrs/ Week: 6	**Hrs / Sem: 6 x 15 = 90**	**Credits: 6**

Objectives:

At the end of the semester the students should be able to:

1. Identify the potential areas of research in his/her field;
2. Collect data from various sources including the internet, analyze them, make new connections and link them to life.
3. Read and write originally and usefully.

GUIDELINES:

1. The project may be done individually or in groups not exceeding five per group.
2. The minimum length of the project should be 30 pages in A4 size.
3. Marks for the project report will be 100 divided as 60% for the project and 40% for viva – voce.

Evaluation scheme:

The project will be evaluated by both Internal and External Examiners. Each Examiner will evaluate for 100 marks. The allocation of marks for project is as follows:

Project	Internal	External
Word of title	5	5
Objectives / Formulation including Hypothesis	5	5
Review of literature	10	10
Relevance of project to social needs	5	5
Methodology / Technique / Procedure adopted	20	20
Summary / Findings / Summation	5	5
Works cited / Annexure / Footnotes	10	10
Total	**60**	**60**

VI SEMESTER			
DSE 4A	**BIOSTATISTICS & COMPUTER APPLICATIONS**		**18UEZO6A**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs / Unit: 12**	**Credits: 4**

Objectives:

- To understand and perceive the learner about the applied areas of advanced bioscience like biostatistics and computer applications
- To impart the knowledge on computer – intensive bio-statistical methods.

UNIT I – Introduction

Collection of Data – primary and secondary data-sampling methods - Variables - Discrete and continuous presentation of Data – Classification and Tabulation – Parts of tables - Diagrams and Graph: Line diagram, Bar diagram, Pie diagram, Histogram, Frequency polygon and frequency curve.

UNIT II - Measures of central tendency

Mean, median, mode, standard deviation and standard error and Variance. Test of Independence- Chi – square test.

UNIT III – Probability and Correlation

Probability-definition-theories-Binominal poisson and normal distribution, students‘ t ’ test and applications - correlation and correlation coefficient-simple regression ANOVA – one way and two way

UNIT IV - Introduction to Computer

Types of computer, generation of computer, components of computer – input devices, output devices, DSCPU and memory units.

UNIT V - Introduction to M.S. Office

Basic concepts of internet – E-mail, browsing, Web applications of computer. Microsoft excel – spreadsheet and presentation software- tool bars- cell character format – cell filling – worksheet – alignment of data and summation – calculation of average and percentage- graphic representation- line graph and bar diagram.

TEXTBOOK

1. Palanichamy and Manoharan. Biostatistics for Biology. Palani Paramout Publications.
2. Gurumani, N. –An Introduction to Biostatistics (Computer Application included) 2nd Edition, MJP Publishers, Tamil Nadu Book House, 47, Nallathambi Street, Triplicane, Chennai.
3. Gopi.A, Meena.A., Arumugam.N, Sundaralingam. R. and V. Kumerasan. Biostatistics, Computer Application and Bioinformatics. (3rd Edition) Saras publications, 114 / 35G, A.R. P. Camp Road, Periavilai,Kottar Post., Nagercoil.

REFERENCE BOOKS - BIOSTATISTICS

1. Arora and Mathan, Biostatistics (5th Edition). Himalaya Publishing House, Ramdoot, Dr. Bhalerao Marg, Girgaon Mumbai – 400004.
2. Parihar and Parihar –Biostatistics and Biometry, Student Edition, Agrobios (India) Behind Nasrani Cinema, Chopasani Road, Jodhpur – 342002.
3. Pranab Kumar Banergee,- Introduction to Biostatistics (2nd Edition) S. Chand & Co. Ltd. 7361, Ramnagr, New Delhi – 110055.
4. Saha, T. K.-Biostatistics in Theory and Practice EMKEY Publications, B -19, East Krishna Nagar, Swami Dayanand Marg, Delhi – 110 051.

REFERENCE BOOKS - COMPUTER APPLICATIONS

1. Rajaram, V. – Fundamental of computers
2. Krishnamoorthy, R.- Computer programming and applications
3. Ram, B. – Computer structure and architecture

VI SEMESTER			
DSE 4B	**POULTRY SCIENCE**		**18UEZO6B**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Hrs / Unit: 12**	**Credits: 4**

Objectives:

To make scope for self employment opportunities after their graduation in their career.

UNIT I

Definition, poultry in India- a survey- historical review- progress through 5 year plans. Types of poultry birds, choosing a commercial laying stock, sexing in day old chicks, poultry housing – general principles of building poultry house, deep litter system – principles of built up litter system, droppings pit- feeders and waters-nest boxes. Laying cages, Californian cages, management of cage birds.

UNIT II

Poultry manure-volume, composition and values, nutritional content of ages. Managements of chicks, growers, layers and broilers. Lighting for chicks, growers, layers and broilers. Summer and winter managements.

UNIT III

Debeaking, forced moulting, poultry nutrition- energy – gross energy, digestible energy and metabolizable energy, fibre level in poultry feeds, protein and amino acid requirements for chicks, growers, layers and broilers – symptoms of excessive dietary levels and deficiency. Brief account of carbohydrates and fats as energy sources – essential fatty acids – deficiency symptoms – requirements of vitamins and inorganic minerals for chicks, growers and layers – deficiency symptoms – supplementation of vitamins and minerals in poultry feed.

UNIT IV

Non-nutritive feed additives- merits and demerits of additives – feed stuffs for poultry – south Indian feed ingredients and agro - industrial by products in relation to M.E. level, protein level, amino acid level, minerals (C and P) and fibre contents.

UNIT V

Causes, symptoms, transmission, treatment, and management of the following diseases: New CASTLE disease, fowl pox, laryngobronchitis, Avian leucosis complex and Gumboro disease. Pullorum, fowl cholera, mycoplasmosis and coccidosis and lice. Avian flu virus H5B virus.

TEXTBOOK

Gnanamani M.R, Modern aspects of Commercial Poultry Keeping, Giri Publications, Madurai, 1998.

REFERENCE BOOKS -

1. The Rearing of Pullets – Bulletin No. 54, Her majesty's stationary office, London.
2. Intensive Poultry Managements for egg production. Bulletin No. 152. Her majesty's stationary office, London.
3. Nutrition of the Chicken – M.L. Scott *et al.*,
4. Diseases of Poultry – Biester – Oxford and IBH
5. Applied Zoology- Arumugam, N. *et al.*, Saras publication

VI SEMESTER		
DSCP-VII	**CORE ZOOLOGY PRACTICALS - VII**	**18UCZO6P1**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Credits: 2**

IMMUNOLOGY & MICROBIOLOGY AND APPLIED BIOTECHNOLOGY PRACTICALS

IMMUNOLOGY & MICROBIOLOGY

1) Lymphoid organs in Rat (Demonstration) – Model/ chart/ CD. Students have to draw the diagram and write a detailed account of the lymphoid organs in rat in the observation notebook.
2) Double immunodiffusion and radial immuno diffusion. (Demonstration)
3) Rh and ABO blood grouping.
4) Cleaning and sterilization.
5) Preparation of culture media for microbes (Nutrient agar, broth)
6) Serial dilution technique. (Demonstration)
7) Distribution of microbes in soil, water and air. (Demonstration)
8) Aseptic transfer of microbes and pureculture of bacteria, preservation and maintenance (Demonstration)
9) Simple staining of Bacteria.
10) Gram staining of Bacteria.
11) WIDAL Slide Test (Demonstration)
12) Microscopic counting of microbes using Haemocytometer (Demonstration only).
13) Spotters-Colony counter, Inoculation loop, Petri dishes**,** Laminar air flow chamber, Autoclave.

APPLIED BIOTECHNOLOGY

1. Estimation of BOD in two Water samples (Demonstration).
2. Protoplast preparation & fusion (Demonstration only).
3. Estimation of O_2 / CO_2 in any effluent / Sewage.
4. Isolation of plasmid (Demonstration only).
5. Models, charts photos and slides:
   Anaerobic digester, Filter – Biosensor, Callus, Explant, Micro Propagation, Protoplast fusion, Fermentor, Enzyme (Structure), Recombinant DNA, Human Genome Sequence, Penicillin Structure, Rhizobium, Blue green algae (Nostoc), and Azolla.
6. Visit to Biotechnology laboratory

VI SEMESTER		
DSCP-VIII	**CORE ZOOLOGY PRACTICALS - VIII**	**18UCZO6P2**
Hrs/ Week: 4	**Hrs / Sem: 4 x 15 = 60**	**Credits: 2**

BIOSTATISTICS & COMPUTER APPLICATIONS PRACTICALS

1. Study of probability with 2 coins tossing experiments.
2. Calculationof Mean, Median, Mode, Variance, Standard deviation and Standard error using Neem leaves.
3. Calculation of Correlation Coefficient - Height and weight of students
4. Testing goodness of fit using coin toss (Chi square test)
5. Preparation of slides using M.S PowerPoint.
   1) Bar diagrams, 2) Pie diagrams, 3) Histogram.
   4) Input devices – Keyboard, Mouse 5) output devices – Monitor, printer,
   6) CPU – Central Processing Unit

VI SEMESTER			
SEC-II	**HERBAL TECHNOLOGY AND HORTICULTURE**		**18USBT61**
Hrs/ Week: 2	**Hrs / Sem: 2 x 15 = 30**	**Hrs / Unit: 6**	**Credits: 2**

UNITI

Scope and Importance of herbal botany. Classification of medicinal plants based on the parts used -Routes of drug administration–oral, enteric, enemata and parenteral.

UNIT II

Traditional systems of medicines: Ayurvedic, Unani, Siddha and Homeopathy medicines (AYUSH) – Tribal knowledge on medicinal plants and their conservation.

UNIT III

Study of the morphologically useful parts, its medicinal values of the following plants-Rhizome- Ginger, Fruit – Pepper, Seed - Fenugreek, Bulb - Onion, Leaves – Indian Borage, Root – Indian Sarsaparilla (Hemidesmus).

UNIT IV

Introduction – division of horticulture – propagation of horticultural crops – asexual propagation, advantages & disadvantages – Methods – A) cuttage B) layering C) graftage – propagation by specialized plant parts.

UNIT V

Importance, principlesof gardening – Formal & Informal. Components of ornamental garden – Lawn. Indoor gardening – Principles and Maintanence. Bonsai – Cut flowers and flower arrangement.

TEXTBOOKS:

1. Jyothiprakash E J 2006. Medicinal botany and pharmacognosy. Emkay publishers New Delhi.
2. Verma V 2009. TEXTBOOK of Economic Botany. Ane Book.

REFERENCE BOOKS:

3. Herbs, Spices & Medicinal plants: Recent advances in Botany by Craker, Lyle.E. 1988, Oryx Press, Phoenix, Arizonal.
4. Dictionary of medicinal plants by Vijay Verma 2008, Anmol publication. New Delhi.
5. Medicinal plants in the traditions of Prophet Mohamed: Scientific study of prophetic medicine by M.I.H. Farooqi. Vedoms Books (P) Ltd. Sidrab Pub. Lucknow.2004.
6. Medical botany plants affecting human health 2nd edition by Walter H. Lewis
7. et al.2003. Wiley publishers. New York.
8. Medicinal plants of India. (Medicinal plants of the world vol5. by Sudhanshu Kumar jain. 1985- 1989.
9. Poisonous and medicinal plants by will H. Blackwell. 2001. Prentice Hall.
10. Albert F.Hill, 1988, economic Botany – a Text of useful plants & plant products, TATA McGraw – Hill publishing company Ltd.New Delhi.
11. Kokate.C.K, Purohit, A.P. Gokhale, S.B, 2007. Pharmacognosy, Nirali Prakashan Publishers, Pune.

VI SEMESTER			
SBC	**PERSONALITY DEVELOPMENT**		**18USPD62**
Hrs / Week: 2	**Hrs / Sem: 30**	**Hrs / Unit: 6**	**Credits:2**

UNIT I

PERSONALITY - Definition – Determinants – Personality Traits –Theories of Personality – Importance of Personality Development. **SELF AWARENESS** – Meaning – Benefits of Self – Awareness – Developing Self – Awareness. **SWOT** – Meaning – Importance- Application – Components.

UNIT – II

SELF MONITORING – Meaning –Advantages and Disadvantages self-monitor - Self – monitoring and job performance. **PERCEPTION**- Definition-Factor influencing perception- Perception process. **ATTITUDE** – Meaning-Formation of attitude – Types of attitude - Measurement of Attitudes. **ASSERTIVENESS** - Meaning – Assertiveness in Communication – Assertiveness Techniques.

UNIT – III

TEAM BUILDING – Meaning – Types of teams – Importance of Team building- Creating Effective Team. **LEADERSHIP** – Definition – Leadership style – Qualities of an Effective leader. **NEGOTIATION SKILLS** – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process. **CONFLICT MANAGEMENT** – Definition- Types of Conflict- Levels of Conflict.

UNIT –IV

COMMUNICATION: Definition – Importance of communication –Processof communication –Barriers in communication – Overcoming Communication Barriers. **EMOTIONAL INTELLIGENCE**: Meaning – Components of Emotional Intelligence- Significance of managing Emotional intelligence. **STRESS MANAGEMENT** – Meaning – Sources of Stress – Symptoms of Stress – Consequences of Stress – Managing Stress.

UNIT – V

SOCIAL GRACES – Meaning – Social Grace at Work – Acquiring Social Graces. **TABLE MANNERS** – Meaning – Table Etiquettes in Multicultural Environment- Do's and Don'ts of Table Etiquettes. **DRESS CODE** – Meaning- Dress Code for selected Occasions – Dress Code for an Interview. **GROUP DISCUSSION** – Meaning – Personality traits required for Group Discussion- Process of Group Discussion**. INTERVIEW** – Definition- Types of skills – Employer Expectations –Planning for the Interview – Interview Questions- Critical Interview Questions.

REFERENCES:

1. Dr.S. Narayana Rajan, Dr. B. Rajasekaran, G. Venkadasalapthi, V. VijureshNayaham and Herald M.Dhas, **Personality Development**, Publication Division, Manonmaniam Sundaranar University, Tirunelveli
2. Stephan P.Robbins, **Organisational Behaviour**, Tenth Edition, Prentice Hall of India Private Limited, New Delhi,2008
3. Jit S. Chandan, **Oragnisational Behaviour**, Third Edition, Vikas Publishing House Private Limited, 2008
4. Dr.K.K. Ramachandran and Dr.K.K. Karthick, **From Campus to Corporate**, Macmillan Publishers India Limited, New Delhi, 2010.

SCHEME OF EXAMINATIONS UNDER CBCS (2018 - 2021)

The medium of instruction in all UG and PG courses is English, and students must write the CIA Tests and Semester Examinations in English.

DISTRIBUTION OF MARKS FOR CIA AND SEMESTER EXAMINATIONS UNDERGRADUATE, CERTIFICATE & DIPLOMA COURSES

SUBJECT	TOTAL MARKS	CIA TEST	SEMESTER EXAMINATION	PASSING MINIMUM		
				CIA TEST	SEM. EXAM.	OVER ALL
Theory	100	25	75	Nil	30	40
Practical (4 hrs)	100	40	60	Nil	24	40
Practical (2 hrs)	50	20	30	Nil	12	20
Project	100	Nil	Report - 60 marks Viva Voce – 40marks	Nil	Nil	40

DIVISION OF MARKS FOR CIA TEST

SUBJECT	MARKS	ASSIGNMENT FOR UG / ASSIGNMENT OR SEMINAR FOR PG	RECORD NOTE	TOTAL MARKS
Theory	20	5	--	**25**
Practical (4 hrs)	30	--	10	**40**
Practical (2 hrs)	15	--	5	**20**

1. The duration of each CIA Test is ONE hour and the Semester Examination is THREE hours.
2. Three CIA tests of 20 marks each will be conducted and the average marks of the best two tests out of the three tests will be taken.
3. The I test will be based on the first 1.5 units of the syllabus, the II test will be based on the next 1.5 units of the syllabus and the III test will be based on the next 1.5 units of the syllabus.
4. Two assignments for Undergraduate, Certificate, Diploma and Advanced Diploma Courses and two assignments OR two seminars for Postgraduate Courses has to be submitted.
5. The duration and the pattern of question paper for practical examination may be decided by the respective Boards of Studies. However, out of 60 marks in the semester practical examination, 10 marks may be allotted for record and 50 marks for practical.
6. Two internal practical tests of 30/15 marks each will be conducted for science students in the respective semester and the average will be taken. The record marks allotted for the above practical are 10 and 5 respectively.

QUESTION PAPER PATTERN FOR CIA TEST (THEORY)

Duration: 1 Hr			**Maximum Marks: 20**
Section	**Question Type**	**No. of Questions & Marks**	**Marks**
A	No Choice Answer should not exceed 75 words	2 Questions 2 marks each	2 x 2 = 4
B	Internal choice (Either or type) Answer should not exceed 200 words	2 Questions 4 marks each	2 x 4 = 8
C	Open Choice (Answer ANY ONE out of Two) Answer should not exceed 400 words	1 Question 8 marks	1 x 8 = 8
		TOTAL	**20 MARKS**

QUESTION PAPER PATTERN FOR SEMESTER EXAMINATION (THEORY)

Duration: 3 Hrs		**Maximum Marks: 75**	
Section	**Question Type**	**No. of Questions & Marks**	**Marks**
A	No Choice Answer should not exceed 75 words	10 Questions - 2 marks each (2 Questions from each unit)	10 x 2 = 20
B	Internal choice (Either or type) Answer should not exceed 200 words	5 Questions with internal choice. Each carry 5 marks (Two questions from each unit)	5 x 5 = 25
C	Open Choice (Answer ANY THREE out of FIVE) Answer should not exceed 400 words	3 Questions out of 5 - 10 marks each (1 Question from each unit)	3 x 10 = 30
		TOTAL	**75 MARKS**