SADAKATHULLAH APPA COLLEGE

(AUTONOMOUS)

(Reaccredited by NAAC at an 'A' Grade with a CGPA of 3.40 out of 4.00 in the III cycle An ISO 9001:2008 Certified Institution)

RAHMATH NAGAR, TIRUNELVELI- 11.

Tamilnadu

DEPARTMENT OF PHYSICS

MY LORD
VOUCHSAFE ME WISDOM

CBCS SYLLABUS

For

B.Sc. Physics

(Applicable for students admitted in June 2015 and onwards)

(As per the Resolutions of the Academic Council Meeting held on 23.02.2016)

CONTENTS

B.Sc. Physics
COURSE STRUCTURE (CBCS)
(Applicable for students admitted in June 2015 onwards)

ALLIED I – MATHEMATICS **ALLIED II – CHEMISTRY**

I SEMESTER			
P	**COURSE**	**H/W**	**C**
I	Tamil / Arabic	6	3
II	English	6	3
III	Core – 1	4	5
	Core – 2	3	4
	Core Practical – I*	3	–
	Allied I – Paper I	6	5
IV	Environmental Studies	2	1
	TOTAL	**30**	**21**

II SEMESTER			
P	**COURSE**	**H/W**	**C**
I	Tamil / Arabic	6	3
II	English	6	3
III	Core – 3	4	5
	Core – 4	3	4
	Core Practical – I*	3	3
	Allied I – Paper II	6	5
IV	Islamic Value Education **Or** Value Education	2	1
	TOTAL	**30**	**24**

III SEMESTER			
I	Tamil / Arabic	6	3
II	English	6	3
III	Core – 5	3	4
	Core Practical – II*	3	–
	Allied II – Paper I	3	4
	Allied II – Practical*	3	–
IV	Skill Based Elective – 1	3	2
	Non Major Elective – 1	3	2
	TOTAL	**30**	**18**

IV SEMESTER			
I	Tamil / Arabic	6	3
II	English	6	3
III	Core – 6	3	4
	Core Practical – II*	3	3
	Allied II – Paper II	3	4
	Allied II – Practical*	3	2
IV	Skill Based Elective – 2	3	2
	Non Major Elective – 2	3	2
V	Extension Activities	**– –**	1
	TOTAL	**30**	**24**

V SEMESTER			
III	Core – 7	6	6
	Core – 8	5	5
	Core – 9	5	5
	Core Practical – III*	3	–
	Core Practical – IV*	3	–
	Core Elective – 1	5	6
	Core Elective Practical*	3	–
	TOTAL	**30**	**22**

VI SEMESTER			
III	Core – 10	6	6
	Core – 11	5	5
	Core – 12 – Project	5	5
	Core Practical – III*	3	3
	Core Practical – IV*	3	3
	Core Elective – 2	5	6
	Core Elective Practical*	3	3
	TOTAL	**30**	**31**

* Practical Examination – End of even semester **G2 – S**

B.Sc. Physics (With Mathematics & Chemistry Allied)						
DISTRIBUTION OF CREDITS, NO. OF PAPERS & MARKS						
Part	**Course**	**Semester**	**Hrs.**	**Credits**	**No. of Papers**	**Marks**
I	Tamil / Arabic	I to IV	24	12	4	400
II	English	I to IV	24	12	4	400
III	Core + Core Practical	I to VI	71	65	11+ 4	1500
	Core Elective + CE Practical + Project	V & VI	21	20	2 + 1 + 1	400
	Allied + Practical	I to IV	24	20	4 + 1	500
IV	Environmental Studies	I	2	1	1	100
	Social Value Education	II	2	1	1	100
	Skill Based Elective	III & IV	6	4	2	200
	Non Major Elective	III & IV	6	4	2	200
V	Extension Activities	I to IV	0	1	1 (No Exam)	100
		TOTAL	**180**	**140**	**39**	**3900**

SEMESTER WISE DISTRIBUTION OF HOURS										
Part	**I**	**II**	**III**				**IV**			**Total**
Sem	**T/A**	**ENG**	**Core + Pract**	**CE**	**PRO**	**Allied+ Pract**	**SBE**	**NME**	**ES/VE**	
I	6	6	7+3	–	–	6+0	–	–	2	**30**
II	6	6	7+3	–	–	6+0	–	–	2	**30**
III	6	6	3+3	–	–	3+3	3	3	–	**30**
IV	6	6	3+3	–	–	3+3	3	3	–	**30**
V	–	–	16+6	5+3	–	–	–	–	–	**30**
VI	–	–	11+6	5+3	5	–	–	–	–	**30**
TOT	**24**	**24**	**47+24=71**	**10+6=16**	**5**	**18+6= 24**	**6**	**6**	**4**	**180**

Sc. Physics (With Mathematics & Chemistry Allied)
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	15UTAL11	6	3	25	75	100
	AR 1	Applied Grammar and Translation – I	15UARL11					
II	EN 1	Prose, Poetry and Remedial Grammar – I	15UENL11	6	3	25	75	100
III	C 1	Physical Optics and Lasers	15UPHC11	4	5	25	75	100
	C 2	BasicPhysics	15UPHC12	3	4	25	75	100
	CPI	Core Physics Practical – I	–	3	–	Examination II Semester		
	AI 1	Allied Mathematics – I	15UMAA11	6	5	25	75	100
IV	ES	Environmental Studies	15UEVS11	2	1	25	75	100
			TOTAL	**30**	**21**	**150**	**450**	**600**

II SEMESTER								
P	**SUB**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
I	TA 2	சமயத் தமிழ்	15UTAL21	6	3	25	75	100
	AR 2	Applied Grammar and Translation – II	15UARL21					
II	EN 2	Prose, Poetry and Remedial Grammar – II	15UENL21	6	3	25	75	100
III	C 3	Thermal Physics	15UPHC21	4	5	25	75	100
	C 4	Mechanics and Astrophysics	15UPHC22	3	4	25	75	100
	CPI	Core Physics Practical – I	15UPHC2P	3	3	40	60	100
	AI 2	Allied Mathematics – II	15UMAA21	6	5	25	75	100
IV	VE	Value Education – I	15USVE2A	2	1	25	75	100
		Value Education - II	15USVE2B					
			TOTAL	**30**	**24**	**190**	**510**	**700**

B.Sc. Physics (With Mathematics & Chemistry Allied)
TITLE OF THE PAPERS, CREDITS & MARKS

III SEMESTER								
P	**SUB**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
I	TA 3	பயன்பாட்டுத் தமிழ்	15UTAL31	6	3	25	75	100
	AR 3	Prose and Letter Writing	15UARL31					
II	EN 3	One – Act Plays and Writing Skill	15UENL31	6	3	25	75	100
III	C 5	Electricity	15UPHC31	3	4	25	75	100
	CPII	Core Physics Practical – II	–	3	–	Examination IV Semester		
	AII1	Allied Chemistry – I	15UCHA31	3	4	25	75	100
	AIIP	Allied Chemistry Practical	–	3	–	Examination IV Semester		
IV	SBE1	Introduction toComputers	15UPHS31	3	2	25	75	100
	NME1	Choose from the list	–	3	2	25	75	100
			TOTAL	**30**	**18**	**150**	**450**	**600**

IV SEMESTER								
P	**SUB**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
I	TA 4	சங்கத் தமிழ்	15UTAL41	6	3	25	75	100
	AR 4	*Quran* and *Hadeeth*	15UARL41					
II	EN 4	A Practical Course in Spoken English	15UENL41	6	3	25	75	100
III	C 6	Electro Magnetism	15UPHC41	3	4	25	75	100
	CPII	Core Physics Practical – II	15UPHC4P	3	3	40	60	100
	AII2	Allied Chemistry – II	15UCHA41	3	4	25	75	100
	AIIP	Allied Chemistry Practical	15UCHA4P	3	2	40	60	100
IV	SBE2	Programming in C++	15UPHS41	3	2	25	75	100
	NME2	Choose from the list	–	3	2	25	75	100
V	EX	Extension Activities (Choose from the list)	–	**– –**	1	– –	100	100
			TOTAL	**30**	**24**	**230**	**670**	**900**

B.Sc. Physics (With Mathematics & Chemistry Allied)
TITLE OF THE PAPERS, CREDITS & MARKS

V SEMESTER								
P	**SUB**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
III	C 7	ModernPhysics&Spectroscopy	15UPHC51	6	6	25	75	100
	C 8	BasicElectronics	15UPHC52	5	5	25	75	100
	C 9	EnergyPhysics	15UPHC53	5	5	25	75	100
	CPIII	Core Physics Practical – III	–	3	–	Examination VI Semester		
	CPIV	Core Physics Practical – IV	–	3	–	Examination VI Semester		
	CE 1	A)Digital Electronics**OR**	15UPHE5A	5	6	25	75	100
		B)Biomedical Instrumentation	15UPHE5B					
	CEP	Physics Core Elective Practical	–	3	–	Examination VI Semester		
			–					
			TOTAL	**30**	**22**	**100**	**300**	**400**

VI SEMESTER								
P	**SUB**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
III	C 10	Quantum Mechanics and Statistical Mechanics	15UPHC61	6	6	25	75	100
	C 11	Communication Electronics	15UPHC62	5	5	25	75	100
	C 12	Project	15UPHP61	5	5	–	100	100
	CPIII	Core Physics Practical – III	15UPHC6P1	3	3	40	60	100
	CPIV	Core Physics Practical – IV	15UPHC6P2	3	3	40	60	100
	CE 2	A) Introduction to Nanotechnology**OR**	15UPHE6A	5	6	25	75	100
		B) Computer Oriented Numerical Methods	15UPHE6B					
	CEP	Physics Core Elective Practical	15UPHE6P	3	3	40	60	100
			TOTAL	**30**	**31**	**220**	**480**	**700**

B.Sc. Physics Course Structure (CBCS
(Applicable for students admitted in June 2015 and onwards)
TITLE OF THE PAPERS, CREDITS & MARKS

GROUP II COURSES (TWO YEAR LANGUAGE COURSES) (B.A. English, B.A. Islamic Studies, B.A. Tamil, 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	15UTAL11	6	3	25	75	100
II	சமயத் தமிழ்	15UTAL21	6	3	25	75	100
III	பயன்பாட்டுத் தமிழ்	15UTAL31	6	3	25	75	100
IV	சங்கத் தமிழ்	15UTAL41	6	3	25	75	100
		TOTAL	**24**	**12**	**100**	**300**	**400**
PART I – ARABIC							
I	Applied Grammar and Translation – I	15UARL11	6	3	25	75	100
II	Applied Grammar and Translation – II	15UARL21	6	3	25	75	100
III	Prose and Letter Writing	15UARL31	6	3	25	75	100
IV	*Quran* and *Hadeeth*	15UARL41	6	3	25	75	100
		TOTAL	**24**	**12**	**100**	**300**	**400**
PART II – ENGLISH							
I	Prose, Poetry and Remedial Grammar – I	15UENL11	6	3	25	75	100
II	Prose, Poetry and Remedial Grammar – II	15UENL21	6	3	25	75	100
III	One – Act Plays and Writing Skill	15UENL31	6	3	25	75	100
IV	A Practical Course in Spoken English	15UENL41	6	3	40	60	100
		TOTAL	**24**	**12**	**115**	**285**	**400**

DEPARTMENT OF PHYSICS
B.Sc. Physics – Syllabus
PART III – CORE, CORE ELECTIVE AND PROJECT
(Applicable for students admitted in June 2015 and onwards)

SEM	SUB	TITLE OF THE PAPER	S.CODE	H/W	C	MARKS		
						I	E	T
I	C 1	Physical Optics and Lasers	15UPHC11	4	5	25	75	100
	C 2	Basic Physics	15UPHC12	3	4	25	75	100
	CP 1	Core Physics Practical – I	–	3	–	Examination II Semester		
II	C 3	Thermal Physics	15UPHC21	4	5	25	75	100
	C 4	Mechanics and Astrophysics	15UPHC22	3	4	25	75	100
	CP 1	Core Physics Practical – I	15UPHC2P	3	3	40	60	100
III	C 5	Electricity	15UPHC31	3	4	25	75	100
	CP II	Core Physics Practical – II	–	3	–	Examination IV Semester		
IV	C 6	Electro Magnetism	15UPHC41	3	4	25	75	100
	CP II	Core Physics Practical – II	15UPHC4P	3	3	40	60	100
V	C 7	Modern Physics & Spectroscopy	15UPHC51	6	6	25	75	100
	C 8	Basic Electronics	15UPHC52	5	5	25	75	100
	C 9	Energy Physics	15UPHC53	5	5	25	75	100
	CP III	Core Physics Practical – III	–	3	–	Examination VI Semester		
	CP IV	Core Physics Practical – IV	–	3	–	Examination VI Semester		
	CE1	A)Digital Electronics **OR**	15UPHE5A	5	6	25	75	100
		B)	15UPHE5B					
	CE P	A) Digital Electronics and Nanotechnology Practical **OR**	–	3	–	Examination VI Semester		
			–					
VI	C 10	Quantum Mechanics and Statistical Mechanics	15UPHC61	6	6	25	75	100
	C 11	Communication Electronics	15UPHC62	5	5	25	75	100
	C 12	Project	15UPHP61	5	5	–	100	100
	CP III	Core Physics Practical – III	15UPHC6P1	3	3	40	60	100
	CP IV	Core Physics Practical – IV	15UPHC6P2	3	3	40	60	100
	CE 2	A) Introduction to Nanotechnology **OR**	15UPHE6A	5	6	25	75	100
		B) Computer Oriented Numerical Methods	15UPHE6B					
	CEP	Physics Core Elective Practical	15UPHE6B	3	3	40	60	100
TOTAL				**92**	**85**	**525**	**1375**	**1900**

PART III – ALLIED I – MATHEMATICS								
Allied Mathematics offered by Mathematics Department to B.Sc. Physics and B.Sc. Chemistry Students								
SEM	**P**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
I	AI 1	Statistics and Calculus	15UMAA11	6	5	25	75	100
II	AI 2	Algebra & Differential Equations	15UMAA21	6	5	25	75	100
			TOTAL	**12**	**10**	**50**	**150**	**200**

PART III – ALLIED II – CHEMISTRY								
Allied Chemistry offered by Chemistry Department to B.Sc. Physics and B.Sc. Mathematics Students								
SEM	**P**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
III	AII1	Allied Chemistry – I	15UCHA31	3	4	25	75	100
	AIIP	Allied Chemistry Practical	–	3	–	Examination IV Semester		
IV	AII2	Allied Chemistry – II	15UCHA41	3	4	25	75	100
	AIIP	Allied Chemistry Practical	15UCHA4P	3	2	40	60	100
			TOTAL	**12**	**10**	**90**	**210**	**300**

PART III – ALLIED II – PHYSICS								
Allied Physics offerred by Physics Department to B.Sc. Mathematics and B.Sc. Chemistry Students								
SEM	**P**	**TITLE OF THE PAPER**	**S.CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
III	AII1	Allied Physics – I	15UPHA31	3	4	25	75	100
	AIIP	Allied Physics Practical	–	3	–	Examination IV Semester		
IV	AII2	Allied Physics – II	15UPHA41	3	4	25	75	100
	AIIP	Allied Physics Practical	15UPHA4P	3	2	40	60	100
			TOTAL	**12**	**10**	**90**	**210**	**300**

Part IV – Skill – Based Elective (For B.Sc. Physics Students)

III	1	Introduction to Computers	15UPHS31	3	2	25	75	100
IV	2	Programming in C++	15UPHS41	3	2	25	75	100
			TOTAL	**6**	**4**	**50**	**150**	**200**

Part IV – Non – Major Elective (For Other Major Students)

SEM	P	TITLE OF THE PAPER	S.CODE	H/W	C	MARKS		
						I	E	T
III	1	Basic Physics – I	15UPHN31	3	2	25	75	100
IV	2	Basic Physics – II	15UPHN41	3	2	25	75	100
			TOTAL	**6**	**4**	**50**	**150**	**200**

Part IV – EVS & Value Education (For All Major Students)

SEM	P	TITLE OF THE PAPER	S.CODE	H/W	C	MARKS		
						I	E	T
I	1	Environmental Studies	15UEVS11	2	1	25	75	100
II	2	Islamic Value Education**OR**	15USVE2A	2	1	25	75	100
		Value Education	15USVE2B					
			TOTAL	**4**	**2**	**50**	**150**	**200**

PART – V – Extension Activities

SEM	Extension Activities (Choose any one)	S.CODE	H/W	C	MARKS		
					I	E	T
I to IV	Enviro Club	15UEXEVC	–	1	–	100	100
	NCC	15UEXNCC					
	NSS	15UEXNSS					
	Physical Education	15UEXPHY					
	Red Ribbon Club	15UEXRRC					
	Sadakath Outreach Programme	15UEXSOP					
	Youth Red Cross	15UEXYRC					
	Youth Welfare	15UEXYWL					
			–	**1**	**–**	**100**	**100**

PART – 1 TAMIL			
முதல் பருவம்			
Part – 1	இக்காலத் தமிழ்		15 UTAL11
Hrs/Week : 6	Hrs/Sem : 90	Hrs/Unit : 18	Credits : 3

நோக்கம் :

- தமிழ்ப் படைப்பிலக்கியங்களான புதுக்கவிதைகள், சிறுகதைகள் ஆகியவற்றை எழுத வைத்தல்.
- சமூகம் பற்றிய சிந்தனைகளைப் படைப்பிலக்கியங்கள் மூலம் ஏற்படுத்துதல்.

அலகு - 1

தமிழ்ச் செய்யுள் - புதுக்கவிதைகள்

1. அல்லாஹ்	-	மகாகவி பாரதியார்
2. தமிழுக்கு அமுதென்று பெயர்	-	பாவேந்தர் பாரதிதாசன்
3. பாடல்	-	பட்டுக்கோட்டை கல்யாணசுந்தரம்
4. ஆயிரம் திருநாமம் பாடி	-	கவிக்கோ அப்துல் ரகுமான்
5. தேசப்பிதாவுக்கு ஒரு தெருப் பாடகனின் அஞ்சலி	-	மு. மேத்தா
6. ஐந்து பெரிது ஆறு சிறிது	-	வைரமுத்து
7. மழை கொடுக்கும்	-	கவியரசு கண்ணதாசன்
8. எத்திசையிலிருந்து எறியப்பட்டது	-	கல்யாண்ஜி
9. சினேகிதனின் தாழ்வான வீடு	-	கலாப்பிரியா
10. தூக்கம் விற்ற காசுகள்	-	ரசிகவ்ஞானியார்
11. தோழர் மோசிகீரனார்	-	ஞானக்கூத்தன்
12. வயலும் வாழ்வும்	-	நா.முத்துக்குமார்
13. கடவுள் போற்றி	-	கவிமணி
14. நண்பனே	-	கலீல் ஜீப்ரான்

அலகு -2 (சிறுகதைக் களஞ்சியம்)

1. காஞ்சனை	-	புதுமைப்பித்தன்

2. கூறல் - வண்ணதாசன்
3. சொர்க்க கன்னிகை - கருணாமணாளன்
4. காலத்தின் ஆவர்த்தனம் - தோப்பில் முகமதுமீரான்
5. கனவில் உதிர்ந்த பூ - நாறும்பூநாதன்
6. ராஜமீன் - கீரனூர் ஜாஹிர்ராஜா
7. சங்காத்தி - தீன்

அலகு- 3 உரைநடை

1. படிப்பது சுகமே – வெ. இறையன்பு இ.ஆ.ப.

   நீயூ செஞ்சுரி புக் ஹவுஸ் (பி) லிட், சென்னை.

அலகு- 4 இலக்கிய வரலாறு

1. தமிழ்ப் புதுக்கவிதைகள் தோற்றமும் வளர்ச்சியும்
2. தமிழ்ச் சிறுகதைகள் தோற்றமும் வளர்ச்சியும்
3. தடம் பதித்த தமிழ்ச் சிறுகதையாசிரியர்கள்
4. தற்காலத் தமிழ்ப் புதுக்கவிதைகள், சிறுகதைகளின் போக்கு

அலகு- 5 இலக்கணம்

1. எழுத்து வகை பற்றிய விளக்கம்
   முதலெழுத்துகள், சார்பெழுத்துகள், சுட்டெழுத்துகள், வினாவெழுத்துகள்
2. மொழி முதல் எழுத்துக்கள், மொழி இறுதி எழுத்துகள்
3. வல்லினம் மிகுமிடங்கள், மிகா இடங்கள்

PART – 1 TAMIL			
இரண்டாம் பருவம்			
Part – 1	சமயத் தமிழ்		15 UTAL21
Hrs/Week : 6	Hrs/Sem : 90	Hrs/Unit : 18	Credits : 3

நோக்கம் :

- பலசமயக் கருத்துக்களை ஒப்பிட்டுச் சமய நல்லிணக்கத்தோடு மாணவர்கள் வாழ இப்பருவம் துணை புரிகிறது.
- தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையத் தேர்வுக்கு மாணவர்களை ஆயத்தப்படுத்துதல்

அலகு- 1
தமிழ்ச் செய்யுள் (துறை வெளியீடு)

சைவம்

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

வைணவம்

5. பொய்கையாழ்வார் - வையம் தகளியா...
   - பூதத்தாழ்வார் - அன்பே தகளியா...
   - பேயாழ்வார் - திருக்கண்டேன்...
6. திருப்பாவை
   - ஆண்டாள் - மார்கழித் திங்கள்...
7. வளையாபதி - மக்கட் செல்வம்

பௌத்தம்

8. புத்தபிரான் - மு.ரா.பெருமாள்

கிறித்தவம்

9. இயேசு காவியம் (சில பகுதிகள்)- கண்ணதாசன்

இஸ்லாம்

10. நபிகள் நாயக மான்மிய மஞ்சரி - சதாவதானி செய்குத்தம்பிப்பாவலர் (குறிப்பிட்ட பாடல்கள்)
11. குணங்குடி மஸ்தான் பாடல்கள் - பாசக்கயிற்று வலை
12. ஞானப் புகழ்ச்சி - தக்கலை பீர்முகமது அப்பா
13. அலகிலா அருளும் - இறையருட் கவிமணி. கா.அப்துல்கபூர்

நீதி இலக்கியங்கள்

14. திருக்குறள் (வான் சிறப்பு)
15. நாலடியார் - கல்வி கரையில
16. இன்னாநாற்பது - ஆன்றவித்த...

அலகு- 2 புதினம்

"கல்மரம்" - திலகவதி

அலகு - 3 உரைநடை (தமிழ்த் துறை வெளியீடு)

1. நபிகள் நாயகம் (ஸல்) அன்பின் தாயகம்
2. சதக்கத்துல்லாஹ் அப்பா அவர்களின் வாழ்வும் பணியும்
3. கவி.கா.மு.ஷெரிப் - த.மு.சா காசாமைதீன்
4. கவிக்கோ அப்துல்ரகுமானின் கவிதைகள்
5. தமிழ் இலக்கியங்களில் மனிதநேயச் சிந்தனைகள்
6. இணையத்தில் தமிழ்

அலகு- 4 (போட்டித் தேர்வுத் தயாரிப்பு)

இலக்கிய வரலாறு

1. சைவம், வைணவம், கிறித்துவம், இசுலாம் வளர்த்த தமிழ்
2. புகழ் பெற்ற தமிழ் நூல்கள், நூலாசிரியர்கள்
3. தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையம் நடத்தும் போட்டித் தேர்வுக்குரிய பொதுத்தமிழ் பாடத்திட்டம் - ஓர் அறிமுகம்

அலகு- 5 இலக்கணம்

வேர்ச்சொல் அறிதல், அகரவரிசைப்படி மாற்றியமைத்தல், செய்வினை, செய்யப்பாட்டுவினை, தன்வினை, பிறவினை, உடன்பாடு, எதிர்மறை, செய்தி வாக்கியம், கலவை வாக்கியம், பெயர்வினை, இடை, உரிச்சொற்களின் இலக்கணம் மற்றும் பெயர்ச்சொல், வினைச்சொல் வகைகள், லகர, ளகர, ணகர, ரகர, றகர வேறுபாடுகள்.

PART – 1 TAMIL			
மூன்றாம் பருவம்			
Part – 1	பயன்பாட்டுத் தமிழ்		15 UTAL31
Hrs/Week : 6	Hrs/Sem : 90	Hrs/Unit : 18	Credits : 3

நோக்கம் :

- தமிழின் காப்பிய இலக்கிய வளத்தை மாணவர்களுக்கு உணர்த்துதல்
- இந்திய ஆட்சிப் பணித்தேர்வுக்கு மாணவர்களை ஆயத்தப்படுத்துதல்
- செய்தி வெளிப்பாட்டு உத்திகளைக் கற்றுத் தந்து மாணவர்களை ஊடகவியலாளர்களாக மாற்றுதல்.

அலகு- 1

தமிழ்ச் செய்யுள் (துறை வெளியீடு)

1. சிலப்பதிகாரம் - வழக்குரைக் காதை
2. மணிமேகலை - பாத்திரம் பெற்ற காதை
3. பெரியபுராணம் - மெய்ப்பொருள் நாயனார் புராணம்
4. கம்பராமாயணம் - சுந்தரகாண்டம் (ஊர் தேடு படலம்)
5. இயேசு காவியம் - சிலுவைப்பாடு
6. சீறாப்புராணம் - மதினத்தார் ஈமான் கொண்ட படலம்
7. குத்பு நாயகம் - வண்ணக் களஞ்சியப் புலவர் (காப்பியப் பாவிகம் மட்டும்)

அலகு- 2

இந்திய ஆட்சிப் பணிக்குத் தயார்படுத்தும் நோக்கிலமைந்த பயன்பாட்டுக் கட்டுரை நூல். **ஐ.ஏ.ஏஸ் தேர்வும் அணுகுமுறையும் -வெ.இறையன்பு இ.ஆ.ப.,**நியூ செஞ்சுரி புக் ஹவுஸ், அம்பத்தூர், சென்னை – 98.

அலகு- 3

ஊடக அறிமுகம்

இதழியல் அறிமுகம்
சமூகமும் இதழ்களும்
வானொலி, தொலைக்காட்சி நிகழ்ச்சிகளை அமைக்கும் முறை
சிறப்புக் கட்டுரை எழுதுதல்

இதழ்களின் அடிப்படைக் கொள்கைகள்
தற்கால நாளிதழ்களில் தமிழ்

அலகு - 4

தமிழ் இலக்கிய வரலாறு

- ஐம்பெரும் காப்பியங்கள்
- ஐஞ்சிறு காப்பியங்கள்
- சிற்றிலக்கியங்கள் (உலா, தூது, பிள்ளைத் தமிழ், பரணி)

அலகு - 5

இலக்கணம்

(தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையத்தின் பொதுத் தமிழ் இலக்கணப் பகுதி)

பிழைத் திருத்தம், சந்திப் பிழைகள், ஒருமை – பன்மைப் பிழைகள், மரபுப் பிழைகள், வழுவுச் சொற்களை நீக்குதல், பிறமொழிச் சொற்களை நீக்குதல், வேர்சொல்லைச் தேர்வு செய்தல்

பார்வை நூல்கள் :

தமிழ் இலக்கிய வரலாறு	-	முனைவர்.சு.ஆனந்தன் கண்மணிப் பதிப்பகம், திருச்சி – 02.
இதழியல் நுணுக்கங்கள்	-	செண்பகா பதிப்பகம் சென்னை – 17. தொலைபேசி : 24331510
குத்பு நாயகம் ஆய்வுரை	-	டாக்டர்.மு.அப்துல்கரீம் உலக தமிழாராய்ச்சி நிறுவனம், சென்னை.
சீறாப்புராணம் மூலமும் பொழிப்புரையும் இரண்டாம் பாகம்	-	ஹாஜி எம்.முகமது யூசுப்

PART – 1 TAMIL			
நான்காம் பருவம்			
Part – 1	சங்கத் தமிழ்		15 UTAL41
Hrs/Week : 6	Hrs/Sem : 90	Hrs/Unit : 18	Credits : 3

நோக்கம் :

- சங்கத் தமிழ் குறித்த சிந்தனைகளை மாணவர்களுக்கு ஏற்படுத்துதல்
- இணைய ஊடகத்தில் தமிழ் இடம் பெற்றுள்ள இடத்தினை உணர்த்தி மாணவர்களை இணையத்தைப் பயன்படுத்த வைத்தல்

அலகு- 1

தமிழ்ச் செய்யுள் (துறை வெளியீடு)

நற்றிணை, குறுந்தொகை, ஐங்குறுநூறு, பதிற்றுப்பத்து, பரிபாடல், கலித்தொகை, அகநானூறு, புறநானூறு மற்றும் பத்துப் பாட்டில் முல்லைப்பாட்டு முழுவதும்

அலகு- 2

உரைநடை

சிற்பியே உன்னைச் செதுக்குகிறேன் - வைரமுத்து

அலகு- 3

இணையத் தமிழ் (தமிழ்த்துறை வெளியீடு)

இணையத் தமிழ் - முனைவர் ச.மகாதேவன்

இரண்டாம் பதிப்பு பேரா.அ.மு.அயூப்கான்

முனைவர்.அ.சே.சேக்சிந்தா

- இணையம் - ஓர் அறிமுகம் - உலகளாவிய தமிழ்
- வலைத்தளங்கள் - இணையத்தளத்தேடு பொறி
- இணையப் பயன்பாடு - தமிழில் வலைப் பூக்கள்

அலகு- 4

இலக்கிய வரலாறு

எட்டுத் தொகை, பத்துப் பாட்டு நூல்கள்

அலகு- 5

இலக்கணம்

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

புறத்திணைகள் : 12 அறிமுகம்

பார்வை நூல்கள்

தமிழ் இலக்கிய வரலாறு

முனைவர் சு.ஆனந்தன்

கண்மணி பதிப்பகம்

திருச்சி – 620002.

இணையத் தமிழ் (தமிழ்த்துறை வெளியீடு)

சதக்கத்துல்லாஹ் அப்பா கல்லூரி

திருநெல்வேலி.

Part - I ARABIC			
Applicable for Group II Courses (Two Year Language Courses) such as B.A. English, B.A. Tamil, B.A. Islamic Studies, B.Sc., Mathematics, B.Sc., Physics, B.Sc., Chemistry, B.Sc, Zoology, B.Sc, Microbiology and B.Sc., Nutrition and Dietetics.			
PAPER-I	***APPLIED GRAMMAR AND TRANSLATION-I***		**15UARL 11**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

Unit I :-

Lessons 1 to 5 (Reader)

Unit II :-

Lessons 6 to 10

Unit III :-

Grammar Portions

1) Al Mufrad wal- muthanna wal jam'
2) Huroof ul Jarr
3) Asmaa – ul Ishaarah.
4) Adawaatul Istifhaam
5) Ad Damaair – ul – Munfasilah Val Muthasilah
6) Al-Idaafah
7) Al Mubtada wal khabar
8) As-sifatu wal mausoof
9) Al mudhakkar wal muannath
10) Asmaa-ul-mausool

Unit IV :-

Lessons 11 to 15

Unit V :-

Lessons 16 to 20

TEXT BOOKS

1) Duroosul Lughatil Arabiya Part – I (Reader) - Lessons 1 to 20 only by Dr.V. Abdur Rahim. Available at Islamic foundation Trust, 78 Perambur High Road , Perambur, Chennai- 600 012.

2) An-Nahwul Waadih Ibtidayee – Part I (Grammar, selected topics only) by Ali Al-jaarim and Mustafa Ameen. Available at Hilal Book House , Tirurkad, Angadipuram, Kerala.

Semester - II			
PAPER-II	***APPLIED GRAMMAR AND TRANSLATION-II***		**15UARL 21**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

Unit I :-

Lessons 1 to 3 (Reader)

Unit II :-

Lessons 4 to 7

Unit III :-

Grammar Portions

1) Inna wa Akhavaatuha.
2) Ismut Tafleel
3) AlMali wal Mularee
4) Al-Amr wan Nahi
5) Al Fa-il
6)Al Maf-ool
7) Al-Asmaul Mausool
8) Taqseemu Fihl ila As-saheeh wal Muhtal
9)Ismul Maf'ool
10) Ismul Faa'il.

Unit IV

Lessons 8 to 11

Unit V

Lessons 12 to 15

TEXT BOOKS

1. ***Duroosul Lughatil Arabiya*** *Part – II (Reader) Lessons 1 to 15 only by Dr.V. Abdur Rahim. Available at: Islamic foundation Trust, 78 Perambur High Road , Perambur, Chennai-600 012.*
2. ***An-Nahwul Waadih Ibtidayee*** *–Part I &II (Selected Grammar Portions only) by Ali Al-jaarim and Mustafa Ameen. Available at: Hilal Book House , Tirurkad, Angadipuram, Kerala.*

Semester III			
Paper – III	**Prose and Letter Writing**		**15UARL31**
Hrs/Week:6	**Hrs/Sem:90**	**Hrs/Unit : 18**	**Credits:3**

Unit I

Lessons 1 to 9

الحركة - الكلمة - أنواع الكلمة – المركبات - الفراشة والزهرة - الزيارة - في السوق - المحطة - القطار -

Unit II

Lessons 10 to 17

أسرة العم - دكان الفواكه - جنينة الحيوانات - نزهة طيبة - اللعب - السفر بالطائرة - العودة من الحج - حفل ديني

Unit III

Lessons 18 to 25

سرقة الزهرة - نظام الحجرة - العبادة - محادثة - الخطاب - رحلة الي دهلي - منظر الحقول - البريد –

Unit IV

Lessons 26 to 31

حديث الاطفال - دكان البقال - الصيدلية - الزمن - الساعة (ألف)– الساعة (ب)

Unit V

Kinds of letters - **رسالة الي الوالد لطلب الفلوس للرسوم - رسالة طلب الاجازة – رسالة طلب وظيفة الي شركة***(page no 14)* **– رسالة الاستفسار عن البضاعة – رسالة شكوي عن نقص البضاعة – رسالة الي مدير البنك –** *Glossary of Words*

TEXT BOOKS

1. ***Al Qira't- ul- Waaliha*** *Part- II By: Waheeduz Zamaan Al-Keeranavi* **القراءة الواضحة – الجزء الثاني - وحيد الزمان الكيرانوي** *(lessons 1 to 3***1***only) Available at: Husainiya Bookstall, Deoband, Utterpradesh.*
2. *Letter Writing in Arabic (For schools and colleges) (selected letters only) by Dr. Syed Karamathullah Bahmani – Available at: Published by Alif Books & Prints, Chennai – 600 014.*

Semester IV			
PAPER-IV	**QURAN AND HADEETH**		**15UARL41**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

Unit I

Verses from 1 to 9 from (Sura – al – Hujraat)

Unit II

Verses from 10 to 18 from (Sura – al – Hujraat)

Unit III

Codification and Compilation of Hadeeth Literature, Life History of Imam Bukhari, Muslim, Tirmidi, Abu Dawood, Nasaee and Ibn Majah & Hadeeth 1 to 10

Unit IV

Hadeeth 11 - 20

Unit V

Verses from 12 to 19 from (Sura – Luqman)

TEXT BOOKS:

1. ***Tafseer Suratul Hujuraath and 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 An Explana Hadeeth: Sharhu Ahadeeth Sahlah An explanatory translation of Dr. V. Abdur Rahim's Ahadeeth Sahalah with grammatical notes. Available at: Islamic foundation Trust, 78 Perambur High Road , Perambur, Chennai- 600 012.*

PART – II ENGLISH

TWO – YEAR LANGUAGE COURSE

B.A. English, History, Islamic Studies, B.Sc. Mathematics, Physics, Chemistry, Zoology, Microbiology and Nutrition and Dietetics

I SEMESTER			
EN1	**PROSE, POETRY AND REMEDIAL GRAMMAR - I**		**15UENL11**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

Objectives:

1. To answer comprehensive questions on passages of moderate level of difficulty.
2. To analyse the prescribed prose pieces and to attempt a critical appreciation of the poems.
3. To write grammatically.

UNIT I – PROSE

1. Letter to a Teacher - Nora Rossi and Tom Cole (Trans.)
2. Spoken English and Broken English - George Bernard Shaw
3. Voluntary Poverty - M.K. Gandhi

UNIT II – PROSE

4. A Snake in the Grass - R.K. Narayan
5. The Civilization of Today - C.E.M. Joad
6. Kamala Nehru - Jawaharlal Nehru

UNIT III – POETRY

1. On His Blindness - John Milton
2. Upon Westminster Bridge - William Wordsworth
3. When I have Fears - John Keats

UNIT IV – FUNCTIONAL GRAMMAR

1. Articles and Nouns (Units 68-80 of *Intermediate English Grammar*)
2. Pronouns and Determiners (Units 81–90 of *Intermediate English Grammar*)

UNIT V – FUNCTIONAL GRAMMAR

3. Reported Speech (Units 46-47 of *Intermediate English Grammar*)
4. Questions and auxiliary verbs (Units 48-51 of *Intermediate English Grammar*)
5. 'ing' and the infinitive (Units 52-67 of *Intermediate English Grammar*)

TEXTBOOKS:

1. T. Srirama, Colin Swatridge. ed. *College Prose and Poetry*. TRINITY, New Delhi: Trichy, 1989 (rpt. 2014).
2. Raymond Murphy. ed. *Intermediate English Grammar*. New Delhi : Cambridge University Press, 1994 (rpt. 2006).

II SEMESTER			
EN2	**PROSE, POETRY AND REMEDIAL GRAMMAR - II**		**15UENL21**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

Objectives:

1. To answer comprehensive questions on passages of moderate level of difficulty.
2. To analyse the prescribed prose pieces and to attempt a critical appreciation of the poems.
3. To write grammatically.

UNIT I – PROSE

1. With the Photographer - Stephen Leacock
2. Professions for Women - Virginia Woolf
3. On Letter Writing - Alpha of the Plough

UNIT II – PROSE

4. The Night the Ghost Got In - James Thurber
5. The Donkey - Sir. J.Arthur Thomson
6. A Cup of Tea - Katherine Mansfield

UNIT III – POETRY

1. The Flower - Alfred Lord Tennyson
2. Homage to a Government - Philip Larkin
3. Obituary - A.K. Ramanujan

UNIT IV – FUNCTIONAL GRAMMAR

1. Present and Past (Units 1-6 of *Intermediate English Grammar*)
2. Present Perfect and Past (Units 7-18 of *Intermediate English Grammar)*
3. Future (Units 19-22 of *Intermediate English Grammar)*

UNIT V – FUNCTIONAL GRAMMAR

4. Future (Units 23-25 of *Intermediate English Grammar)*
5. Modals (Units 26-36 of *Intermediate English Grammar)*
6. Conditionals and 'Wish' (Units 37-40 of *Intermediate English Grammar)*
7. Passive (Units 41-45 of *Intermediate English Grammar)*

TEXTBOOKS:

1. T. Srirama, Colin Swatridge. ed. *College Prose and Poetry*. TRINITY, New Delhi: Trichy, 1989 (rpt. 2014).
2. Raymond Murphy. ed. *Intermediate English Grammar*. New Delhi: Cambridge University Press, 1994 (rpt. 2006).

III SEMESTER		
EN3	**ONE – ACT PLAYS AND WRITING SKILL**	**15UENL31**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

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. Refund - Fritz Karinthy
2. Reunion - W.ST.John Tayleur
3. The Never Never Nest - Cedric Mount

UNIT II – ONE – ACT PLAYS

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

UNIT III – WRITING SKILL

1. **Messages** (Pages 1-9 of *Written English for You* be taught and the tasks given be accomplished in the *Record of Writing*)
   i) What is a message?
   ii) When do we write messages?
   iii) Why do we write messages?
   iv) How do we write messages?

2. **Letters – 1** (Pages 10-19 of *Written English for You* 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) Letters of Complaint
   iii) Letters of Applications

3. **Letters – 2** (Pages 36-40 of *Written English for You* be taught and the tasks given in pages 38 and 40 should be accomplished in the *Record of Writing*)
   i) Letters to inform your plan of visits
   ii) Letters of Request
   iii) Letters of Apology

UNIT IV – WRITING SKILL

4. **Essays** (Pages 66-79 be taught and the tasks 1-3 given in pages 79 - 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) Transitional paragraph.
vii) Concluding paragraph.
viii) What can be the length of an Essay?
ix) Why am I writing this Essay?
x) Who am I writing for?
xi) How to begin an Essay?
xii) How to organize an Essay?
xiii) What to avoid in writing an Essay?

5. **Narrating** (Pages 109-116 of *Written English for You* be taught. The tasks 1 and 2 given in pages 115 - 116 should 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 a different viewpoint 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 given in pages 172 -178 should 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 text book **Written English**.

TEXTBOOKS:

1. Y. Sayed Mohammed. ed. *The Lamp of India*. Tirunelveli: Muhammed Taahaa Publications, 2011.
2. G. Radhakrishna Pillai. ed. W*ritten English for You*. Chennai: Emerald Publishers, 1990 (rpt. 2008).
3. Compiled by a Board of Editors. *A Book of Plays*. Chennai: Orient Blackswan, 2010.

IV SEMESTER			
EN4	**A PRACTICAL COURSE IN SPOKEN ENGLISH**		**15UENL41**
Hrs/ Week: 6	**Hrs/ Sem: 90**	**Hrs/ Unit: 18**	**Credits: 3**

Objectives:

1. To express students' 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, etc., & Pronunciation Practice : Vowels

(Chapter 4 – 8 of *A Course in Spoken English*)

UNIT III

Developing descriptive competency, narrative competency, arguing competency, compering competency and Pronunciation Practice: Diphthongs (Chapter 9 – 13 of *A Course in Spoken English*)

UNIT IV

Practising 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. A Workbook for A Course in Spoken English.
3. Spoken English Practice Record.

Evaluation Scheme:

I Internal Oral Examination	:	15 Marks	The best two of the three CIA test marks will be added up
II Internal Oral Examination	:	15 Marks	
III Internal Oral Examination	:	15 Marks	
Loud Reading	:	5 Marks	
Listening Test	:	5 Marks	
Internal Marks	**:**	**40 Marks**	
External Oral Examination	:	50 Marks	
Record Note	:	05 Marks	
Workbook	:	05 Marks	
		60 Marks	

B.Sc. (PHYSICS) – CBCSSYLLABUS (2015 – 2016) PART III – CORE,CORE ELECTIVE & PROJECT		
I SEMESTER		
C1	PHYSICAL OPTICS AND LASERS	15UPHC11
Hrs/Week: 4	Hrs/Sem: 4x15= 60 Hrs./ UNIT : 12	Credit: 5

UNIT I Interference

Conditions for interference – interference due to reflected light – Newton's rings – theory and experimentto find R and refractive index of liquid – Air wedge – theory and experiment to find the diameter of a thin wire – testing the planeness of the surface – Michelson's interferometer – determination of wavelength and thickness of a mica sheet.

UNIT II Diffraction

Fresnel and Fraunhoferclasses of diffraction – Fresnel's diffraction at a straight edge – theory of diffraction grating – determination of wave length – absent spectra –overlapping spectra – Dispersive and resolving powers of a grating – comparisonbetween prism and grating spectrum.

UNIT III Polarisation

Double refraction – Huygen's explanation – Nicol prism – quarter wave plate and half wave plate – plane, partially, elliptically, and circularly polarized light – their production and detection – optical activity – Fresnel's explanation – bi quartz polarimeter – determination of specific rotatory power.

UNIT IV Principle and types of Lasers

Basic principle of laser – characteristics of laser – Einstein's coefficients – population inversion – expression for threshold gain. Solid lasers – Ruby laser – Nd : YAG laser – Nd : YAG glass laser – Gas lasers – He – Ne laser – CO_2 laser – Liquid laser – dye laser.

UNIT V Applications of lasers

Laser drilling – laser welding – laser cutting – laser remote sensing – LIDAR – Raman LIDAR – Principle of Holography – recording and of reconstruction Hologram – characteristics of holograms – applications of Holography – applications of lasers in medicine and surgery.

TEXT BOOKS:

1. Optics and Spectroscopy –Murugesan and KiruthigaSivaprasath – (7th edition) – S.Chand& Co., New Delhi.
2. Laser Physics – S.Mohan,V.Arjunan&Selvarani,MJP Publishers, Chennai.

REFERENCE BOOKS:

1. Optics – Brijlal&Subrahmaniam – 23rdEdition – S.Chand& Co., New Delhi.
2. Atoms, Molecules and Lasers – KPR Nair – Narosa Publishing House, New Delhi.

I SEMESTER			
C2	**BASIC PHYSICS**		**15UPHC12**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 4**

UNIT I Elasticity

Stress and strain – Hooke's law – factors affecting elasticity – different moduli – Poisson's ratio – resilience – bending of beam – bending moment – cantilever – E by cantilever depression – non uniform bending (Scale & Telescope) – uniform bending (Pin & Microscope) – torsion of a cylinder – rigidity modulus of a wire.

UNIT II Geometrical Optics

Lens – lens equation – lens maker's equation – Newton's lens equation – magnification power –Aberration – spherical aberration – reducing spherical aberration – coma – aplanatic points –astigmatism – chromatic aberration – achromatic lenses.

UNIT III Sound

Stationary waves – properties – interference – Conditions for interference of sound waves – Laws of transverse vibration of a string(statements only) – Melde's experiment – Musical sound and noise – characteristics of Musical sound – intensity of sound – Measurement of intensity of sound – Decibel, bel&phon – Limits of audibility.

UNIT IV Acoustics

Reverberation – Sabine's reverberation formula(No derivation) – absorption coefficient – factors affecting the acoustics of building – sound distribution in an auditorium – requisites for good acoustics – Ultrasonics – production, detection and applications.

UNIT V Electronics

Semiconductors – N type and P type semiconductors – P N junction diode – characteristics under FB and RB – FW Bridge Rectifier – Zener diode– Zener regulated power supply – Bipolar transistors – characteristics under CE mode – transistor constants.

TEXT BOOKS

1. College Physics – Volume I & III – N. Sundararajan& others –United Publishers,Kodialbail, Mangalore – 575003.
2. Text Book of Sound – Brijlal and Subrahmanyam – Vikas Publishing Pvt. Ltd, New Delhi.
3. Principles of Electronics – V.K.Mehta and Rohit Mehta – S.Chand& Co. Ltd. New Delhi.

REFERENCE BOOKS

1. Properties of Matter – R.Murugesan – S.Chand& Co. Ltd. New Delhi.
2. Text book of optics – Brijlal&Subrahmanyam – S.Chand& Co. Ltd. New Delhi.

II SEMESTER			
C3	**THERMAL PHYSICS**		**15UPHC21**
Hrs/Week: 4	**Hrs/Sem: 4x15= 60**	**Hrs./ UNIT : 12**	**Credit: 5**

UNIT I Kinetic theory

Mean free path – Expression for mean free path – – Brownian motion – Degrees of freedom and the ratio of specific heat capacities of mono, dia and tri atomic gases – Transport phenomena – viscosity – thermal conductivity –diffusion – Real gases – Andrews' experiment on carbon di oxide – Critical constants of a gas.

UNITII Thermodynamics

Zeroth law of thermodynamics – – First law of thermodynamics – Application of first law(Specific heat relation and adiabatic equation) – Second Law of thermodynamics – significance – entropy – change of entropy when ice is converted into steam – change of entropy of a perfect gas – third law of thermodynamics – Maxwell's thermodynamic relations – ClausiusClapeyron's latent heat equations – effect of pressure on boiling point and melting point .

UNIT III Low temperature

Porous plug experiment – theory – relation between Boyle's temperature, temperature of inversion and critical temperature – J.T effect vs. reversible adiabatic expansion – regenerative cooling – liquefaction of air – Liquefaction of hydrogen and helium – adiabatic demagnetization – expression for the change in temperature.

UNIT IV Transmission of heat

Types – Thermal conductivity – Lee's experiment – properties of thermal radiation – black body – absorptive and emissive power radiation in a uniform enclose – laws of radiation – Kirchoff's law – Pressure of radiation – Stefan – Boltzmann law–Distribution of energy in black body spectrum — Planck's law(No derivation) – deduction of Wein's displacement law &Rayleigh – Jean's law from Planck's law .

UNIT V Common thermodynamic applications

Practical applications of conduction of heat –Davy's safety lamp – applications of convection – Thermopile – Steam power plants – examples of cooling by evaporation– domestic refrigerator –ammonia ice plant – Air conditioning systems (summer and winter type)

TEXT BOOK:

Heat and Thermodynamics – Brijlal ,Subrahmanyam and Hemne (revised edition 2010) – S.Chand& Co. Ltd. New Delhi.

REFERENCE BOOKS:

1. Heat & Thermodynamics – Brijlal&Subrahmanyam, S.Chand& Co. Ltd. New Delhi.
2. College Physics – Volume I & III – N.Sundararajan& others –United Publishers, Mangalore.
3. College Physics – Volume I – A.B.Gupta – Books and allied (P) Ltd,Kolkatta.

II SEMESTER			
C4	**MECHANICS AND ASTROPHYSICS**		**15UPHC22**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 4**

UNIT I Frictional & Rotational motion

Friction between solid surfaces – Coefficient of Static, Kinetic & Rolling friction – Laws of friction – angular velocity – angular acceleration – rotation with constant angular acceleration – K.E. of rotation – work & power in rotation – torque and angular acceleration – angular momentum – conservation of angular momentum.

UNIT II Collision

Elastic and inelastic – Lab frame and centre of mass frame – perfectly elastic collision in one dimension – Final velocities after collision – perfectly inelastic collision in one dimension – co efficient of restitution – elastic collision in two dimension.

UNIT III Gravitation

Newton's law of gravitation– gravitational field – gravitational potential – gravitational potential energy – gravitational potential and field due to thin spherical shell, hollow sphere, solid sphere – inertial mass and gravitational mass – escape velocity.

UNIT IV Satellites

Satellite motion – orbital velocity – time period – launching of artificial satellites – binding energy of a satellite – geostationary satellite – weightlessness – artificial gravity in space stations – remote sensing through satellites – Indian remote sensing satellites – applications of remote sensing.

UNIT V Astrophysics

Physical properties of stars – luminosity, brightness, distance, surface temperature, mass, chemical composition, internal temperature, internal pressure, mass – luminosity relation – stellar evolution – formation of stars – white dwarf(brief account only) – black holes – supernova explosion.

TEXT BOOKS:

1. College Physics – Volume I & III – N. Sundararajan& others – United Publishers, Mangalore.
2. College Physics – Volume I – A.B. Gupta – Books and allied (P) Ltd, Kolkatta

REFERENCE BOOKS:

1. Properties of matter – Brijlal and Subrahmanyam – S.Chand& Co. Ltd. New Delhi.
2. Mechanics & Electrodynamics – Brijlal and Subrahmanyam,S.Chand& Co. Ltd. New Delhi.

I& IISEMESTERS			
CP1	**PHYSICS CORE PRACTICAL – I***		**15UPHC2P**
Hrs/Week: 3	**Hrs/Sem: 3x15=45**	**Hrs./ UNIT : 9**	**Credit: 3**

*** Examination at the end of II Semester**

1) E – Uniform Bending – Pin & Microscope
2) E – Non Uniform Bending – Scale & Telescope
3) E – Cantilever Depression
4) n – Torsion Pendulum
5) Bifilar Pendulum
6) Frequency of a tuning fork – Melde's string
7) Refractive index & Dispersive Power of prism – Spectrometer
8) Thickness of a wire –Air wedge
9) Zener diode characteristics
10) Transistor characteristics – CE mode
11) Thermal conductivity of a bad conductor – Lee'sDisc
12) Viscosity – Capillary flow
13) Surface tension by drop weight method
14) Specific heat capacity of liquid – by cooling method

III SEMESTER			
C5	**ELECTRICITY**		**15UPHC31**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 4**

UNIT I Electrostatics

Electric dipole – Field intensity at any point due to a dipole – Gauss's law and its proof – applications(spherical charge and pane sheet of charge distribution) – mechanical force experienced by a charged conductor – conservative nature of electric potential –parrallel plate capacitor – effect of dielectric – partially filled dielectric capacitor.

UNIT II Current electricity

Thevenin and Norton theorem– Wheatstone's bridge – sensitiveness of the Wheatstone's bridge – Meter bridge – Carey fosters bridge – LR, RC and L C R series circuits – high resistance by leakage.

UNIT III Chemical effects of current

Faraday's laws of electrolysis – electrolytic conduction – dissociations theory –conductivity in electrolyte – Kohlrash bridge – ionic velocities and mobilities – experimental determination of ionic mobilities – reversible and irreversible cells(introduction only) – Gibbs helmholtz equation.

UNIT IV Thermo electricity

Seebeck ,Peltier and Thomson effect – laws of thermo emf – Thermodynamics of a thermo couple – thermo electric power diagram – uses – applications – measurement of thermo emf by potentiometer – application of thermo electric effect – Boy's radiometer –pyrometer – thermopile.

UNIT V Alternatingcurrent

Measurement of a.c. – a.c. circuit containingL and R – LCR circuits (series and parallel) – theoryand applications – power in an a.c. circuit – Kirrchoff's law in a.c. – application ofKirchoff's law – Owen's bridge – Anderson bridge – series and parallel circuits.

TEXT BOOK:

Electricity and magnetism – R.Murugeshan (Revised edition 2008), S.Chand& Co. Ltd. New Delhi.

REFERENCE BOOKS:

1. Electricity and magnetism – D.C.Tayal, Himalaya Publishing Home, Mumbai -400004.
2. Electricity and magnetism – Brijlal and N.Subramaniyan.RatanPrakashanMandir,ProfessorColny,Agra – 2.
3. Electricity and magnetism – Ubald Raj & Jose Robin, Indira Publication, Marthandam, K.K.Dist., T.N.

IV SEMESTER			
C6	**ELECTRO MAGNETISM**		**15UPHC41**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 4**

UNIT I Magnetic properties of materials

Permeability –susceptibility –classification of magnetic materials –Langevins's theory of dia and para magnetism – Weiss theory of ferro magnetism – BH curve –Ballistic method – Hysteresis – energy loss – importance of hysteresis

UNIT II Magnetostatics

Magnetic vector potential – magnetic field for a long straight current carrying wire –magnetic scalar potential – application – magnetic shell – potential at any point due to a magnetic shell – magnetic potential due to circular magnetic shell Ampere's theorem(Hall effect) – quantitative analysis of Hall effect – application of hall effect

UNIT III Electromagnetic induction

Faraday's law of electromagnetic induction – Vector form – self inductance –self inductance of a long solenoid – Rayleigh bridge – Anderson bridge – mutual inductance – mutual inductance between two coaxial coil –experimental determination of mutual inductance – coefficient of coupling.

UNIT IV Magnetic effects of electric current

Cork screw rule – right hand thumb rule – definition for B – Biotsavort's law – Ampere's law – magnetic field due to current in a straight conductor and circular coil – magnetic field due to a solenoid

UNIT V Generators and motors

Three phase ac generator – advantages – different types of three phase connection – acdynamo – two phase ac generator – DC dynamo –Field excitation – DC motor – Three phase ac generator – y connection – phase and voltage relationship –Deltaconnection .

TEXT BOOKS:

1. Electricity and magnetism –R.Murugeshan (Revised edition 2008), S.Chand& Co. Ltd. New Delhi.

REFERENCE BOOKS:

3. Electricity and magnetism – D.C.Tayal, Himalaya Publishing Home, Mumbai -400004.
4. Electricity and magnetism – Brijlal and N.Subramaniyan, RatanPrakashanMandir,ProfessorColny,Agra – 2.
4. Electricity and magnetism – Arora ,Saxena and Prakash, PragathiPrakashan, Meerut.

III & IVSEMESTERS			
CP2	**CORE PRACTICAL – II***		**15UPHC2P**
Hrs/Week: 3	**Hrs/Sem: 3x15=45**	**Hrs./ UNIT : 9**	**Credit: 3**

***Examination at the end of VI semester**

1. Determination of refractive index of glass – Newton's rings method
2. Grating – Normal incidence – Spectrometer
3. Grating – Oblique incidence - Spectrometer
4. Axial coil –determination of magnetic moment ofa magnet
5. M &B_H – Deflection Magnetometer - Tan C Position
6. Calibration of low range voltmeter – Potentiometer
7. Calibration of low range ammeter – Potentiometer
8. LCR series resonance
9. LCR parallel resonance
10. Current and voltage sensitiveness of BG
11. Owen's bridge – Determination of self induction
12. Desauty bridge
13. Determination of B_H using Axial Coil method
14. Carey Foster Bridge Determination of specific resistance

V SEMESTER			
C7	**MODERNPHYSICS & SPECTROSCOPY**		**15UPHC51**
Hrs/Week: 6	**Hrs/Sem: 6x15= 45**	**Hrs./ UNIT : 18**	**Credit:6**

UNIT Atomic structure, X –rays& Relativity

The vector atom model – spatial quantization – spinning electron – quantum numbers – coupling schemes – L S coupling and JJ coupling – Pauli's exclusion principle – Stern Gerlach experiment – Zeeman effect – experimental arrangementfor the normal Zeeman effect – Diffraction of x rays – Bragg's law and Bragg's spectrometer – characteristics and x ray spectra –Fundamental frames of reference – Michelson – Morley experiment – Einstein's concept of relativity – Special theory of relativity – Lorentz transformation equations – Equivalence of mass & energy.

UNIT II Nucleus& Radioactivity

General properties of the nucleus – binding energy – B.E./A curve and its significance – mass defect – packing fraction – proton electron hypothesis – why electrons cannot be present inside the nucleus – proton neutron hypothesis – nuclear forces & its characteristics – liquid drop model – nuclear transmutations – Natural radio activity – alpha, beta, gamma rays – properties – Soodyfajan's displacement law – natural radioactive series – law of radioactive disintegration – Half life period – mean life period – units of radio activity – radio carbon dating

UNIT III Nuclear reactors, particle accelerators and detectors

Nuclear fission – energy released in fission – chain reaction – nuclear reactor – nuclear fusion – condition for fusion to take place – magnetic bottle – fusion reactor – detectors – G.M. counter – scintillation counter –Wilson cloud chamber – accelerators – linear accelerator – cyclotron – synchrocyclotron – betatron.

UNIT IV IR and Raman spectroscopy

Preliminaries – selection rules –vibrating diatomic molecule – diatomic vibrating rotator – vibration of poly atomic molecules – normal vibration of CO_2 and H_2O molecules – Biological and other application of IR – theory of Raman scattering – classical, quantum theory – rotational Raman spectrum – application of Raman spectrum.

UNIT V ESR, NMR &NQR spectroscopy

Magnetic properties of nuclei – resonance condition – NMR instrumentation – relaxation process – principles of ESR – ESR spectrometer – hyperfine structure – ESR spectrum of Hydrogen atom – Quadrupole nucleus – principle of NQR – transition for axially symmetric system – transition for non axially non symmetric system.

TEXT BOOKS:

1. Modern Physics –R.Murugesan and KiruthigaSivaprasath – (15thEdition) – S.Chand& Co., New Delhi.
2. Atomic and nuclear Physics – Brijlal and Subrahmanyam,(Revised edition 2008), S.Chand& Co. Ltd. New Delhi.
3. Molecular structure and spectroscopy – G.Aruldhas – 7th edition – Prentice Hall of IndiaPrivate Ltd., New Delhi..

REFERENCE BOOKS:

1. Nuclear Physics – D.C.Tayal, Himalaya Publishing Home, Mumbai - 400004.
2. Optics and Spectroscopy – R.Murugesan and KiruthigaSivaprasath – S.Chand& Co., New Delhi.
3. Molecular Spectroscopy –Banwell – 5th edition – Tata McGraw Hill Company Ltd., New Delhi.

V SEMESTER			
C8	**BASIC ELECTRONICS**		**15UPHC52**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75**	**Hrs./ UNIT : 15**	**Credit: 5**

UNIT I Special diodes and FETs

LED – LED voltage and current – advantages – multicolor LEDs – applications of LEDs – photo diode – characteristics –tunnel diode – tunnel diode oscillator – varactor diode – applications – Shockley diode – JFET – construction , working – differences between JFET and BJT – JFET characteristics – parameters – MOSFET –D – MOSFET – E – MOSFET.

UNIT II Transistor amplifier

Faithful amplification – transistor biasing – inherent variations of transistor parameters – stabilization – stability factor – methods of transistor biasing – practical circuit of a transistor amplifier – phase reversal – DC and AC equivalent circuits – load line analysis – classification of amplifiers – multistage amplifiers – important terms – RC coupled amplifier – transformer coupled amplifier – direct coupled amplifier.

UNIT III Transistor audio power amplifiers

Difference between voltage and power amplifier – performance quantities of power amplifiers – classification of power amplifiers – thermal runaway – heat sink – stages of a practical power amplifier – driver stage – output stage – push pull amplifier – feedback – principles of negative feedback – advantages – emitter follower – applications of emitter follower.

UNIT IV Oscillators

Oscillatory circuit – Positive feedback – essentials of transistor oscillator – Barkhasuen criterion – tuned collector,Hartley, Colpitt and phase shift oscillators – Wienbridge oscillator – transistor crystal oscillator – multi vibrators – astable, mono stable,bistablemulti vibrators.

UNIT V Power electronics and SCR

Power electronics – The Triac –Triac construction – operation – applications– The diac – operation – applications – UJT – construction – operation – characteristics – advantages – applications – SCR & SCR as half wave rectifier – construction – working – important terms – characteristics – SCR as a switch.

TEXT BOOKS:

1. Principles of Electronics – V.K. Mehta and Rohit Mehta – S. Chand & Co. Ltd., New Delhi – 110055.
2. Electronics – Sanjay Sharma – S.K.Kataria& Sons,Daryaganj,NewDelhi – 110002.

REFERENCE BOOKS:

1. College Physics – Volume III – N. Sundararajan& others – United Publishers, Mangalore.
2. Electronic principles – sixth edition – Albert Paul Malvino.

V SEMESTER			
C9	**ENERGY PHYSICS**		**15UPHC53**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75**	**Hrs./ UNIT : 15**	**Credit: 5**

UNIT I Energy

Energy consumption – Energy consumption as a measure of prosperity –World production and reserves of commercial energy sources – India's production and reserves of commercial energy sources – need for alternative energy sources – different non – conventional renewable energy sources – advantage of non – conventional renewable energy sources.

UNIT II Solar Radiation and Collectors

Solar radiation at the earth's surface – beam and diffused solar radiation – attenuation of beam radiation by absorption and scattering – solar radiation geometry – declination, hour angle, altitude angle (solar altitude), zenith angle, the slope, day length – Flat plate collectors – liquid collector – air collector – concentrating collectors – line focusing collectors – Fresnel's lens collector – point focusing collector (parabolodial type) – Advantages and disadvantages of concentrating collectors over flat – plat collector.

UNIT III Solar Energy Storage & Applications

Thermal storage – sensible heat storage, water storage, packed bed exchanger storage, latent heat storage (phase change energy storage) – solar pond – Principle of operation and description of non – convective solar pond – extraction of thermal energy from solar pond – solar water heating (hot water supply system) – natural circulation solar water heater – forced circulation – space heating (passive heating only) – solar distillation – solar furnace & solar cooking.

UNIT IV Wind Energy

Introduction – Nature of the wind – Wind energy conversion – Site selection considerations – Basic components of a Wind Energy Conversion Systems (WECS) – Advantages & Disadvantages of WECs – Wind energy collectors – Horizontal Axial machines – Vertical axial machines – Applications of wind energy.

UNIT V Energy from Biomass

Biomass as a source of energy – Photosynthesis – Methods for obtaining energy from Biomass – Biomass conversion – Biofuels – Bio – gas generation – Classification of Biogas plants –Materials used for Bio – gas Generation–Methods for maintaining Biogas production– fuel properties of Bio – gas – Bio – gas from plant wastes.

TEXT BOOK:

Non – conventional energy sources – G.D. Rai, Fourth Edition, Khanna Publishers, New Delhi.

REFERENCE BOOKS:

1. Solar energy –(Thermal conversion) – Revised edition –Suhatme – Tata McGraw Hill Company Ltd., New Delhi.
2. Solar Energy Utilisation – G.D.R AI 5th edition – Khanna Publishers, New Delhi.

V SEMESTER			
CE1 A	**DIGITAL ELECTRONICS**		**15UPHE5A**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75**	**Hrs./ UNIT : 15**	**Credit: 6**

UNIT I Number systems – Codes, Addition and Subtraction and Boolean algebra

Decimal, Binary, Octal, Hexadecimal numbers – conversion from one to another – ASCII code, Excess 3 code, BCD, Gray code – binary addition – subtraction, unsigned binary numbers,overflow, signedmagnitudenumbers,2'scompliment method – Boolean laws andtheorems.

UNIT II Basic Logic Gates, Half & full adders, subtractors, Karnaugh map – parity

Basic logic gates (OR, AND, NOT, NOR, NAND, EX – OR), NAND and NOR as universal gates – Demorgan's laws, – Half adder, full adder, half subtractor, full subtractor – Karnaugh map – methods of addressing a cell K map(2, 3, 4 variables) – preparation of truth table from the Karnaugh map – don't care conditions – parity generators – checkers.

UNIT III Clocks, Flip – flops

Introduction to 555 timer – astablemultivibrator – monostable multivibrators – Bistable multivibrators –flipflops – RSflipflop – implementation of RS flip flop using NOR, NAND gates – clock pulses – clocked RS, Dflipflop, JKflipflop – JK master – slave flipflop – Tflipflop.

UNIT IV Registers and Counters

Shiftregisters – serial in – serial out,serialinparallelout, parallelin – serial out, parallel inparallelout, Ringcounters – Asynchronous counters – synchronouscounters – up – downcounters (Bi direction counters) – Mod counters – Decade Counters.

UNIT V D/A, A/D Conversion

D/A converter – variable resistor network & binary R – 2R ladder type – A/D converter – Successive Approximation type – Dual Slope type – A/D Converter using Voltage – to – Time Conversion – Over – sampling A/D Converters. –Multiplexers – demultiplexers – Decoder – BCD to decimaldecoder – seven segment decoders – encoders – decimal to BCD encoder – ROM – Programmable ROMS – RAMS.

TEXT BOOKS:

1. Digital principles – A.P. Malvino& Donald P.Leach, GoutamSaha – TMH, New Delhi.
2. Modern Digital Electronics – R.P.Jain – TMH, New Delhi.

REFERENCE BOOKS:

1. Thomas L. Floyd, Digital Fundamentals, 8th Edition, Pearson Education Inc, New Delhi, 2003
2. M. Morris Mano, Digital Design, 3rd Edition, Prentice Hall of India Pvt. Ltd., 2003 / Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003.
3. S. Salivahanan and S. Arivazhagan, Digital Circuits and Design, 3rdEdition, Vikas Publishing House Pvt. Ltd, New Delhi, 2006.

V SEMESTER		
CE1 B	**BIOMEDICAL INSTRUMENTATION**	**15UPHE5B**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75 Hrs./ UNIT : 15**	**Credit: 6**

UNIT I - Bio Potential

Transport of ions through cell membrane – resting and action potentials – bio potentials – bio electric signals and their characteristics – designing of medical instruments – components of bio medical instrumentation system.

UNIT II – Transducers

Transducers – active transducers – Strain gauge – photo electric type resistive transducers – metallic wire transducer – capacitative transducer – piezoelectric ultrasonic type transducer.

UNIT III – Bio potential recorders

Characteristics of recording system – electro cardiograph (ECO) – electro encephalo graphy (EEG) – electro myography (EMG) - electro retinograpy (ERG) – electro oculography (EOG) – accuracy of recorders.

UNIT IV – Diagnostic instruments

Blood flow meters – EM blood flow meter – principle and applications – ultrasonic blood flow meter blood gas analyzer – pH meter – oximeter – digital thermometer - audio meter – angiography – applications of X-rays – electron microscope.

UNIT – V Advances in biomedical instrumentation

Computers in medicine – lasers in medicine – endoscope – nuclear imaging technique – CT scan – applications of computer tomography – medical applications of thermography – imaging system – magnetic resonance imaging.

TEXTBOOKS:

1. *Biomedical instrumentation – M.Arumugam*
2. *Biomedical instrumentation – Rekhs & Ravikumar*

REFERENCE BOOK:

Hand book of biomedical instrumentation – R.S. Khandpur.

VI SEMESTER		
C10	**QUANTUM MECHANICS AND STATISTICAL MECHANICS**	**15UPHC61**
Hrs/Week: 6	**Hrs/Sem: 6 x 15 = 90 Hrs./ UNIT : 18**	**Credit:6**

UNIT I Wave mechanics

Inadequacy of classical mechanics – black body radiation – specific heat capacity of solids – matter waves – expression for wave length – Davison and Germer experiment – G. P. Thomson experiment – wave packet and its motion – relation between group velocity and wave velocity – Heisenberg's uncertainty principle – proof – applications.

UNIT II General formalism of QM

wave function and its interpretation – Normalization of the wave function – symmetric and asymmetric wave functions – probability current density – stationary states – fundamental postulates of quantum mechanics - Schrodinger's time – independent wave equation – Schrodinger's time – dependent wave equation.

UNIT III Operators and their properties

Linear operators – identity operator – Hermition operator – Ladder operator – Laplacian operator – momentum operator – K.E operator – Hamiltonian operator – eigen values and eigen functions of operators – uncertainty principle using operators – orbital angular momentum operator.

UNIT IV Bound state Problems

Particle in a one dimensional box – normalization of wave function – particle in a three dimensional box – degeneracy – rigid rotator – linear harmonic oscillator

UNIT V Statistical mechanics

Probability – phase space – quantum states – micro states and macro states – fundamental postulates of statistical mechanics – thermodynamic probability – Boltzmann's relation between entropy and probability – Maxwell – Boltzmann statistics – Bose – Einstein statistics – Fermi – Dirac statistics – comparison of the three statistics.

TEXT BOOKS:

1. Quantum mechanics – 25th edition (2008) – Gupta, Kumar and Sharma – Jai Prakash Nath& Co., Meerut.
2. Statistical mechanics –SathyaPrakash Ram Nath Publication, New Delhi.
3. Modern Physics – S.L.Kakani and ShubhraKakani – Viva Books Private Ltd., New Delhi.

REFERENCE BOOKS:

1. Quantum Mechanics – Mathews and Venkatesen, Second Edition, Tata Mcgraw Hill Educ. Pvt. Ltd., New Delhi.
2. Quantum Mechanics Statistical Mechanics& Solid State Physics – S.P.Kuila, First Edition, Books and Allied (p) Ltd. Kolkata.

VI SEMESTER		
C11	**COMMUNICATION ELECTRONICS**	**15UPHC62**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75 Hrs./ UNIT : 15**	**Credit: 5**

UNIT I Radio communication system

Introduction to communication system – Need for modulation– Signal to Noise ratio – amplitude modulation (AM) – its frequency spectrum – AM transmitter –AM Superheterodyne receiver – Frequency Modulation – its frequency spectrum – FM transmitter – comparison of AM and FM.

UNIT II Pulse Communication

Introduction – types of pulse modulation – Pulse Amplitude Modulation – Pulse Width Modulation – Generation and detection of Pulse Position Modulation – Pulse Code Modulation – frequency division multiplexing – time division multiplexing – telegraphy – Telemetry.

UNIT III Digital Communication

Principle of digital communication –characteristics of data transmission circuits – digital codes – need and functioning of modem – Network organization – types of networks – network protocol – E–mail – Internet

UNIT IV Broad band Communication

Microwave links – principle and design – repeaters –Long Haul systems – submarine cables– satellite communication – principle & characteristics– earth station – satellite construction – radar system – Radar performance factors – Doppler effect and its application to Radar – CW radar system – pulsed radar system.

UNIT V Optical Communication

Optical fibre – Acceptance angle – Numerical aperture – characteristics of optical fibre and advantages – fibre cables & losses – Fiber optic components and systems – source (Laser diode) – detector (PIN diode & APD) –Optical link – fibre testing – fusion splicing – mechanical splicing – optical connectors – optical communication receiver.

TEXT BOOKS:

1. Principles of Communication K.S. Srinivasan – Revised edition,2008 – Anuradha Publications.
2. Communication Electronics – Louis E.Frenzel,4th edition, TMH,New Delhi.

REFERENCE BOOKS:

1. Principles of communication systems – Taub& Schilling, TMH, New Delhi.
2. Principle of communication – K.MuraliBabu& K.VinothBabu, Lakshmi Publications.
3. Modern Electronic Communication – Jeffrey S.Beasley, Gary M.Miller,PHI Pvt. Ltd., New Delhi.
4. Optical Fibre communication – Gerd Keisser.3rd edition, McGraw Hill, Singapore.

VI SEMESTER		
C12	**PROJECT**	**15UPHP61**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75**	**Credit: 5**

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 projectis 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**

V & VI SEMESTERS		
CP3	**CORE PRACTICAL – III***	**15UPHC6P1**
Hrs/Week: 3	**Hrs/Sem: 3x15=45**	**Credit: 3**

***Examination at the end of VI semester**

NON ELECTRONICS

1. Cauchy's constants
2. Hartmann's constants
3. Determination of refractive index – i – i' curve
4. Determination of refractive indexI – i – d curve
5. Biprism – spectrometer
6. High resistance by leakage method – B.G.
7. Determination of mutual inductance – B.G
8. Comparison of mutual inductances – B.G
9. Thermo emf and thermoelectric power – M.G.
10. Elliptical fringes – Young' modulus
11. Absolute capacity and figure of merit – B.G.
12. Conversion of a galvanometer into ammeter and voltmeter
13. Planck's constant – Photocell
14. B.H. curve – Hysteresis

V & VI SEMESTERS		
CP4	**CORE PRACTICAL – IV**	**15UPHC6P2**
Hrs/Week: 3	**Hrs/Sem: 3x15=45**	**Credit: 3**

***Examination at the end of VI semester**

ELECTRONICS

1) Zener regulated power supply
2) Dual power supply – IC regulated
3) Single stage amplifier – with and without feedback
4) Colpitt's oscillator
5) Hartley oscillator
6) Multivibrator – monostable – 555
7) Multivibrator – astable – 555
8) UJT characteristics
9) Op – amp wein's bridge oscillator
10) Differentiator & integrator using op – amp
11) Half adder & full adder using ICs
12) Universal building blocks NAND & NOR gates.
13) FET characteristics
14) Verification of Adder, Subtractor using op – amp

VI SEMESTER		
CE2 A	**INTRODUCTION TO NANOTECHNOLOGY**	**15UPHE6A**
Hrs/Week: 5	**Hrs/Sem: 5 x 15 = 75 Hrs./ UNIT : 15**	**Credit:6**

UNIT I Fabrication of nanostructures

Background and evolution of Nanotechnology – size of nano – Solid state synthesis – vapour phase synthesis – inert gas condensation – plasma based synthesis – flame based synthesis – spray pyrolysis – solution processing of nanoparticles – Sol gel processing – water – oil micro emulsion method.

UNIT II Characterization on nanostructures

Lithography techniques – electron beam lithography – Dip – pen lithography – photo lithography – thin film deposition – electro spinning – Atomic force microscope – FTIR – Differential scanning calorimetry – Scanning electron microscope – Transmission electron microscope.

UNIT III Applications of nanotechnology

Fabrication, properties and applications of quantum dots – quantum wires – quantum well – Fullerenes – carbon nano tubes – quantum point contact – nano crystals and their applications – nano electronics Moore's law – Nano circuitry.

UNIT IV Nano medicine and nano biology

Basic concepts – nano biotechnological devices – applications nano biotechnology – biosensors – nano biosensors – applications of nano biosensors – nano DNA technology – building blocks of DNA – DNA sensors – Optical biosensors.

UNIT V Environmental implications of Nanotechnology

Pollution prevention – Areas of Pollution prevention – Environmentally beneficial Nano Technology – Water Purification – Water decontaminator – Water desalination – Nano toxicology – Green Nano Technology – Positive and Negative aspects of N.T – Environmental implications of N.T.

TEXT BOOKS:

3. Nano technology – S. Shunmugam – MJP Publishers, Chennai.
3. Nano Biotechnology – SubbiahBalaji – MJP Publishers, Chennai.

REFERENCE BOOKS:

1. Nano technology – an introduction – Mark Ratner and Daniel Ratner – 3rd edition – Pearson Education –New Delhi.
2. Nano : The essentials – T. Pradeep – 4th edition – McGraw Hill Education – New Delhi.

VI SEMESTER			
CE2B	**NUMERICAL METHODS**		**15UPHE6B**
Hrs/Week: 5	**Hrs/Sem: 5x15= 75**	**Hrs./ UNIT : 15**	**Credit: 6**

UNIT I : Solutions of Numerical Algebraic and Transcendental equations

Bisection method – Successive approximation method – Regular falsi method – Newton Raphson method.

Unit II – Solutions of simultaneous linear equations

Gauss elimination method – Gauss Jordan modification – Gauss Jacobi method – Gauss seidal method.

UNIT III – Interpolation

Newton's forward interpolation method – Newton's backward interpolation method – Interpolation method for unequal intervals – Lagrange's method – Inverse interpolation.

UNIT IV – Numerical Differentiations and Integration

Newton Gregory's forward interpolation formula for derivatives – Newton Gregory's Backward interpolation formula for derivatives – Trapezoidal rule – Simpson's 1/3 rule.

UNIT V – Numerical solutions of differential equations

Taylor series method – Runge kutta second order and fourth order method – predictor and corrector method – Milne's predictor – corrector method.

TEXT BOOK:

Numerical methods for scientific and engineering computation – Dr.M.K. Venketaraman

REFERENCE BOOKS

1. *Computer* oriented Numerical methods – V.Rajaraman
2. Numerical methods for scientific and engineering computation – M.K. Jain, S.R.K. Iyenkar, R.K.Jain

V & VI SEMESTER		
CEP	**PHYSICS CORE ELECTIVE PRACTICAL**	**15UPHE6P**
Hrs/Week: 3	**Hrs/Sem: 33x15= 45**	**Credit: 3**

*** Examination at the end of VI Semester**

1) To read any two numbers through the key board and to perform simple arithmetic operations (i.e. addition, subtraction, multiplication and division) and display the result using Cin and Cout functions. Use do-while loop.
2) The find the sum of the series using for loop.
   a) Sum = 1 + 3 + 5 + ….. n
   b) Sum x – x3 / 3! + x5 / 5! – x7 / 7! + ….. xn/n
   c) Sum = $1 + 2^2 + 4^2 + \ldots\ldots\ldots n^2$
3) *To find the factorial of a number by using function declaration with/without using the return statement.*
4) *To read a set numbers from a standard input device and to find out the largest number in the given array using function declaration. Also sort them in the ascending or the descending order.*
5) *To read the elements of the given two matrices of order m x n and to perform the matrix addition and display the transpose of the result.*
6) *Determination of thickness of a wire by air wedge method.*
7) *Determination of m and B_H using inheritance.*
8) *To generate a series of Fibonacci numbers using constructor where the constructor member function has been defined in the scope of class definition out of the definition using the scope resolution operator.*
9) *To read the following information from the keyboard in which basic class consists of Name, Roll No. and sex. The derived class contains the data member's height and weight. Display the contents of he class using inheritance concept.*
10) *An OOP to find the period of a pendulum of given length L, in a gravitational field accept the required values using the keyboard. Also display the results.*
11) *Develop a program in C++ to calculate the Young's modulus of a material from the data obtained from uniform bending method.*
12) *Define a class to represent a bank account*

Data members

   1) *Name of the depositor.*
   2) *Account name*
   3) *Type of account*
   4) *Balance amount in the account*

Member function

   1) *To assign initial values*
   2) *To deposit an amount*

PART III – ALLIED I			
Allied Mathematics offered by Mathematics Department to B.Sc. Physics and B.Sc. Chemistry Students			
I SEMESTER			
AI 1	**STATISTICS AND CALCULUS**		**15UMAA11**
Hrs/Week: 6	**Hrs/Sem: 6x15= 90**	**Hrs./ UNIT : 18**	**Credit: 5**

Objectives:

1. To enable the students to understand physical science by a knowledge of elementary calculus.
2. To introduce various statistical tools to satisfy the need of concept personals.

UNIT I

Measures of Central Tendency – simple average – Mean, Median & Mode – Geometrical mean and Harmonic mean.

UNIT II

Measures of dispersion range – quartile deviation – standard deviation and mean deviation – coefficient of variation.

UNIT III

Correlation and regression: Scatter diagram – Karl Pearson's Coefficient of Correlation – properties – Rank Correlation – lines of regression – regression coefficient and properties.

UNIT IV

Pedal equations – Curvature – Radius of Curvature in Cartesian, parametric & polar co – ordinates – Evolute – Circle and centre of curvature

UNIT V

Beta and Gamma functions

TEXT BOOKS:

1. Statistics by S. Arumugam and Isaac , New Gamma Publications
2. Calculus by S.Arumugam and Isaac, New Gamma Publications

UNIT I : Chapter II Section 2.1 – 2.4

UNIT II : Chapter III Section 3.1

UNIT III : Chapter VI Section 6.1 0 – 6.3

UNIT IV : Text Book 2 Part I Chapter III Section 3.3, 3.4

UNIT V : Text Book 2 Part II Chapter IV

REFERENCE BOOK:

1. Probability and Statistics by Joseph A. MangaladossPresi—Persi Publication
2. Calculus Volume I&II by S. Narayanan & T.K.Manicavachagam Pillay, S.Viswanathan

PART III – ALLIED I			
Allied Mathematics offered by Mathematics Department to B.Sc. Physics and B.Sc. Chemistry Students			
II SEMESTER			
AI 2	**ALGEBRA & DIFFERENTIAL EQUATIONS**		**15UMAA21**
Hrs/Week: 6	**Hrs/Sem: 6x15= 90**	**Hrs./ UNIT : 18**	**Credit: 5**

Objective:

To enable the students to understand physical science by a knowledge of elementary calculus.

UNIT I

Every equation f(x)=0 of degree n has n roots – Relation between roots and coefficients – Symmetric functions of roots in terms of coefficients.

UNIT II

Symmetric functions of roots in terms of coefficients**,** Reciprocal equations – Transformation of equations.

UNIT III

Approximate solutions of numerical equations using Newton's method and Horner's method.

UNIT IV

First order higher degree Differential equations – Solvable for p, x and y – Clairaut's form

UNIT V

Vector differentiation – gradient – curl – divergents – solenoidal – irritational – formulae involving gradient, curl and divergent.

TEXT BOOK:

1. Algebra and Sequences and Series by Joseph A. Mangaladoss , Presi – Persi Publications – Edition 2004
3. Differential equation & Applications by S. Arumugam, New Gamma Publications—Edition 2008
4. Analytical Geometry 3D, Vector Calculus & Trigonometry by S. Arumugam&Issac Edition 2004.

UNIT I : Chapter I : Section 1.1, 1.2, 1.3.

UNIT II : Chapter I : Section 1.4,

Chapter III : Section 3.1 – 3.

UNIT III : Chapter IV : Section 4.1, 4.2

UNIT IV : TB2 Chapter I : Section 1.7

UNIT V : TB3 Chapter VII

REFERENCE BOOK:

Differential Equation & Application BySankaranarayanan& Others.

PART III – ALLIED II			
Allied Chemistry offerred by Chemistry Department to B.Sc. Physics and B.Sc. Mathematics Students			
III SEMESTER			
AII 1	ALLIED CHEMISTRY – I		15UCHA31
Hrs / Week: 3	Hrs / Sem: 45	Hrs / Unit: 9	Credit: 4

UNIT I – Inorganic chemistry – Zero group elements

Objective: To study the nature of inert gases and their compounds

Isolation of inert gases by physical and chemical methods – preparation and properties of xenon tetra fluoride, xenon hexafluoride xenon oxytetrafluoride – uses of noble gases

UNIT II – Organic chemistry – Principles of reactions

Objective: To learn the chemistry of basic heterocyclic compounds.

Heterolytic and homolytic cleavage – nucleophiles and electrophiles – reaction intermediates – preparation and properties of carbonium ions and carbanions – type of reactions – substitution, addition, elimination and polymerization reactions

UNIT III – Physical chemistry – Photochemistry

Objective: To study about photochemical reactions

Definition – comparison between thermal and photochemical reactions – Laws of photochemistry – Beer Lambert's law – Grothus Draper law – Einstein's law – Quantum yield – low and high quantum yield – determination of quantum yield – fluorescence, phosphorescence, thermo – luminescence, chemi – luminescence and bioluminescence – definition with examples

UNIT IV – Polymer Chemistry

Objective: To learn about the importance of polymers and polymer science.

Definition – Monomers, Oligomers, Polymers – Classification of polymers – : Natural synthetic, linear, cross linked and network – plastics, elastomers, fibres, Homopolymers and Co – polymers Thermoplastics – Polyethylene, Polypropylene, polystyrene, Poly Vinyl Chloride and nylon – Thermosetting Plastics – : Phenol formaldehyde and expoxide resin

UNIT V – Applied Chemistry

Objective: To study about lubricants and some cosmetics in the modern world.

Lubricants – classification – criteria of good lubricating oils – synthetic lubricating oils – poly glycols and poly alkene oxides – greases or semi solid lubricants – examples –

Prepration and uses of shampoo, nail polish, tooth paste, boot polish, moth ball, chalk piece.

REFERENCE BOOKS

1. B. R. Puri, L. R. Sharma and K. C. Kalia, Principles of Inorganic Chemistry
2. P. L. Soni, Text Book of Inorganic Chemistry
3. K. S. Tewari and N. K. Vishnoi,A Text Book of Organic Chemistry.
4. ArunBahl and B.S. Bahl, Advanced Organic Chemistry, S. Chand and Sons.
5. M.K. Jain and S. C. Sharma, Modern Organic Chemistry
6. K.K.Rohatgi Mukherjee, Fundamentals of photochemistry, Wiley Eastern Ltd.
7. B.R. Puri and L.R. Sharma, Principles of Physical Chemistry, S.Chand& Co.
8. Malcom P. stevens, Polymer Chemistry – An Introduction
9. V.R. Gowariker, Polymer Science, Wiley Eastern, 1995.
10. Sawyer.W, Experimental cosmetics, Dover publishers, New York, 2000.

PART III – ALLIED II			
Allied Chemistry offerred by Chemistry Department to B.Sc. Physics and B.Sc. Mathematics Students			
IV SEMESTER			
AII 2	**ALLIED CHEMISTRY – II**		**15UCHA41**
Hrs / Week: 3	**Hrs / Sem: 45**	**Hrs / Unit: 9**	**Credit: 4**

UNIT I: INORGANIC CHEMISTRY

Objective: To study about the Transition and inner transition elements

Transition metals – general characteristics – metallic character – oxidation states – size – density – melting and boiling points – ionization energy – colour – magnetic properties – reducing properties – catalytic properties.

Inner Transition elements – Lanthanides – Electronic configuration and general characteristics – occurrence of lanthanides – separation by ion exchange method – lanthanide contraction – Actinides – Electronic configuration and general characteristics – comparison with lanthanides.

UNIT II: ORGANIC CHEMISTRY

Objective: To know about the Aromatic compounds

General characteristics of aromatic compounds – aromaticity – Huckel's rule with examples – non – benzenoid aromatic compounds (definition and examples only) – preparation, properties and structure of benzene and naphthalene.

UNIT III: PHYSICAL CHEMISTRY

Objective: To understand about Nuclear Chemistry

Nuclear stability – n/p ratio – packing fraction – mass defect – binding energy – isotopes, isobars, isotones with examples. Separation of isotopes by diffusion method – group displacement law – radioactive series – Nuclear fission, Nuclear fusion – Application of radio isotopes (radio diagnosis and therapy, C^{14} dating)

UNIT IV: BIOCHEMISTRY

Objective: To know about the Bio – chemistry

Carbohydrates – definition and classification – Amino acids – classification – amphoteric nature – isoelectric point – Proteins – classification according to composition, solubility and shape – colour reactions – biological action – Nucleic acids – purines, pyrimidines, nucleosides, nucleotides – structure of DNA and RNA.

UNIT V: PHARMACEUTICAL CHEMISTRY

Objective: To study about the Pharmaceutical Chemistry

Common diseases – infective diseases – insect borne – air borne – water borne – hereditary diseases. Definition and examples of analgesics, antipyretics, sulpha drugs, antimalarials and antibiotics. Indian medicinal plants – tulsi, neem, keezhanelli – their importance.

REFERENCE BOOKS

1. Puri, Sharma and Kalia, Principles of Inorganic Chemistry, Milestone Publishers and Distributors, 2008.
2. P.L.Soni, Text book of Inorganic Chemistry, Sultan Chand and Sons, 2007.
3. Bahl and ArunBahl, Organic Chemistry, S. Chand and Sons, New Delhi, 2005.
4. Morrison and Boyd, Organic Chemistry, VI th edition, Prentice Hall of India Pvt. Ltd., New Delhi, 1998.
5. J.L. Jain, Sunjay Jain and Nitin Jain, Fundamentals of Biochemistry, S. Chand and Company Ltd., New Delhi, 2005.
6. S. Lakshmi, Pharmaceutical Chemistry, S. Chand and Sons, New Delhi, 1995.

III & IV SEMESTER		
AIIP	**ALLIED CHEMISTRYPRACTICAL***	**15UCHA4P**
Hrs / Week: 3	**Hrs/Sem: 3 x 15 = 45**	**Credit: 2**

***Examination at the end of IV semester**

QUALITATIVE ANALYSIS

Analysis of a sample salt containing one anion and one cation

Anions:

1. Carbonate
2. Sulphate
3. Nitrate
4. Chloride
5. Oxalate
6. Borate
7. Fluoride
8. Phosphate

Cations:

1. Lead
2. Copper
3. Cadmium
4. Nickel
5. Manganese
6. Strontium
7. Ammoniu

Note:

a. Elimination should be avoided.

b. Interfering radicals with cations of group III, IV and V may be avoided

VOLUMETRIC ANALYSIS

Acidimetry – alkalimetry:

1. Estimation of Sodium Hydroxide – Sodium Carbonate standard and HCl link.
2. Estimation of Sulphuric Acid – Oxalic acid standard and Sodium Hydroxide link.
3. Estimation of Sodium carbonate – Sodium carbonate standard and HCl link.

Permanganometry:

4. Estimation of Ferrous ion – Ferrous ammonium sulphate standard and $KMnO_4$ link.
5. Estimation of Sodium Oxalate – Oxalic acid standard and $KMno_4$ link.
6. Estimation of Oxalic acid – FAS standard and $KMnO_4$ link.

Complexometry:

7. Estimation of Zinc by EDTA method – Standard Zinc sulphate and EDTA link.
8. Estimation of Magnesium by EDTA method – Standard Magnesium sulphate and EDTA link.

PART III – ALLIED II			
Allied Physics offered by Physics Department to B.Sc. Mathematics and B.Sc. Chemistry Students			
III SEMESTER			
AII 1	**ALLIED PHYSICS – I**		**15UPHA31**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 4**

UNIT I Elasticity

Elasticmodulii – Poisson's ratio – relation between elastic constants – Expression for bending moment – cantilever – expression for depression – experiment to find young's modulus (uniform bending) – expression for elevation – experiment to find young's modulus using microscope (non uniform bending) – expression for depression – experiment to find Young's modulus using scale and telescope

UNIT II Interference and Diffraction

Young's experiment – Condition for interference – Additional phase difference due to dissimilar reflections – Colours of thin film – Air wedge – Thickness of wire – Fresnel and Fraunhofer diffraction – Plane transmission grating – Theory and experiment to find wave length by normal incidence method. Distinction between interference and diffraction bands.

UNIT III Polarisation

Double refraction – Nicol prism – Brewster's law – Production and analysis of plane, circulary and elliptically polarisedlight, half wave and quarter wave plate – Optical activity – specific rotation (definition)

UNIT IV Transport Phenomena

Mean free path – expression for mean free path (Zeroth order approximation) Transport phenomena – Viscosity, thermal conductivity, diffusion

UNIT V Transfer of Heat

Conduction – Coefficient of thermal conductivity – definition – Thermal conductivity of a bad conductor – Lee's Disc experiment – Convection – Newton's law of cooling – determination of specific heat capacity of liquid – Radiation – Stefan's law – Planck law.

REFERENCE BOOKS:

1. Properties of matter – Brijlal & Subrahmanyam – S.Chand & Co. – New Delhi.
2. College Physics – Volume 1 – A.B.Gupta – Books and Allied (P) Ltd. – Kolkatta – 700010.
3. Heat and Thermodynamics Brijlal & Subramaniyam S.Chand & Co. – New Delhi.
4. A Text book of Optics Brijlal , Subrahmanyam & M.N.Avathanu – S.Chand& Co. – New Delhi.

PART III – ALLIED II		
Allied Physics offerred by Physics Department to B.Sc. Mathematics and B.Sc. Chemistry Students		
IV SEMESTER		
AII 2	**ALLIED PHYSICS – II**	**15UPHA41**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 4**

UNIT I Relativity and Wave Mechanics

Frame of reference – Galilean transformation – Postulates – Lorentz transformation – de Broglie's theory of matter waves – Expression for de Broglie wavelength – Davison and Germer experiment

UNIT II Nuclear Physics

Nuclear structure – Properties of nucleus – Packing fraction – Binding energy – BE/A curve – Nuclear forces – Nuclear stability – Liquid drop model.

UNIT III Electricity & Electromagnetism

Charge – Current – Potential difference – Resistance & Resistivity – Ohm's law – Kirchoff's law – Potentiometer – Principles – Calibration of Voltmeter – Capacitance – Self induction – self inductance of toroidal solenoid – determination of Rayleigh method – mutual inductancebetween coils– determination of mutual induction using B.G.

UNIT IV Basic Electronics

Semiconductor diode – Diode Characteristics – Zener diode characteristics – Regulation with Zener diode – Bridge rectifier – Biasing of transistor – RC Coupled Amplifier.

UNIT V Digital Electronics

Basic logic gates – NOR, NAND gates – EX – OR gate – Boolean equations and logic circuit from table – NOR and NAND gates as universal building blocks – Binary adder – Half adder – Full adder

REFERENCE BOOKS:

1. Modern Physics –R.Murugesan and Kiruthiga Sivaprasath – (15th edition) – S.Chand& Co., New Delhi.
2. Electricity & Magnetism – R.Murugesan. 8th edition – S.Chand & Co., New Delhi.
3. Introduction to Integrated Electronics, Digital and Analog – V.Vijayendran – S.Viswanathan Pvt. Ltd., Chennai.

III & IVSEMESTERS		
AII P	**ALLIED PHYSICS PRACTICAL***	**15UPHA4P**
Hrs/Week: 3	**Hrs/Sem: 3 x 15 = 45**	**Credit: 3**

***Examination at the end of IV semester**

1. Young's modulus – Uniform bending (Pin and Microscope)
2. Young's modulus – Non Uniform bending (scale and Telescope)
3. Young's modulus – Cantilever – depression
4. Lee's disc – Thermal Conductivity
5. Verification of Newton's law of cooling
6. Spectrometer Grating – Oblique incidence
7. Newton's rings – Refractive Index of lens
8. Air wedge – thickness of wire
9. Calibration of Voltmeter using potentiometer
10. Characteristics of Zener diode
11. Basic logic gates OR, NOT & AND
12. Transistor Characteristics (CE mode)

III SEMESTER			
SBE 1	**INTRODUCTION TO COMPUTERS**		**15UPHS31**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 2**

UNIT I Introduction to computers

Introduction – Characteristics of Computers – Evolution of Computers – Generations of Computers – classification of Computers – The Computer system – Applications of Computers

UNIT II Peripheral devices & operating System

Input devices – output devices – Primary memory – RAM , types of RAM, ROM , types of ROM & Secondary storage devices – Classification of secondary storage – Mass storage devices – operating system – types of operating system – modern operating systems.

UNIT III Computer Programming

Introduction – developing a program – Algorithm – Flowchart – Pseudo code – program testing & debugging – Unstructured Programming – Structural Programming – Characteristics of a Good Program – Programming languages (Machine, Assembly & High – level languages).

UNIT IV Windows XP

What is windows – starting windows XP – The Desktop – start button – log off/Turn off the computer – structure of window – moving a window – maximizing , minimizing and restoring a window – closing a window –standard buttons on toolbar – folder options – copying and moving files/folders – deleting files/folders – creating a new file/folder – rename a file/folder – install and uninstall programs – starting and closing program – starting a program using run

UNIT V Internet

Introduction – Evolution of internet – Basic internet terms – Getting connected to internet – Internet applications – world wide web, E – mail, Internet Telephony & video conferencing) – How E – Mail works – Searching the web – Web browsers.

TEXT BOOKS:

1. Windows XP in easy steps – Harshad Kotecha –Revised edition – Dream Tech Press – New Delhi.
2. Introduction to Computer Science – ITL Education Solutions Limited – 5thImpression – Pearson Education South Asia.

REFERENCE BOOKS:

Computer fundamentals and windows with internet technology – N.Krishnan.

IV SEMESTER			
SBE 2	**PROGRAMMING IN C++**		**15UPHS41**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 2**

UNIT I Basics of programming, Concepts of OOPS and C++

Software and its Need, Types of Software – System software, Application software, System Software – Operating System, Utility Program, Algorithms, Flow Charts – Symbols, Rules for making Flow chart, Programming languages, Assemblers, Compilers and Interpreter.

Basic concepts of object – oriented programming, application of OOP, What is C++, application of C++, a simple C++ program, structure of C++ program.

UNIT II Data types, control structure, functions and arrays

Identifiers and keyboards – constants – C++ operators – declaration of variables – manipulator functions.If, if – else and switch statement – loop statements (for, while, do – while) – breaking control statements (break, continue and go to) – Defining a function – types of functions, actual and formal arguments and default arguments – Arrays.

UNIT III Classes, objects, constructors and destructors

Specifying a class, defining member functions, nesting of member functions , arrays within a class, arrays of objects, Constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, copy constructor, destructors

UNIT IV Operator overloading, inheritance

Defining operator overloading, overloading unary and binary operators, rules for overloading operators. Defining derived class, single inheritance, multilevel inheritance, multiple inheritance, Hierarchical inheritance, hybrid inheritance

UNIT V Pointers, File handling

Introduction to pointers, Pointer to objects, pointer to derived classes, C++ streams, C++ stream classes, unformatted I/O operations, formatted console I/O operations, managing output with manipulators.

TEXT BOOKS:

1. Object Oriented Programming with C++ – E. Balagurusamy – 4thedition – TMH, New Delhi.
2. Computer Fundamentals – B. Ram – 3rd edition – New Age International Publishers

REFERENCE BOOKS:

1. Programming with C++ – D.Ravichandran – 3rdedition – TMH, New Delhi.
2. Object Oriented Programming in C++ – Robert Lafore – 4thedition – Course Sams Publishing.

B.Sc. (PHYSICS) – CBCSSYLLABUS (2015 – 2016)			
PART IV – Non-major Elective Subject offered by Physics Department to Other Major Students			
III SEMESTER			
NME1	BASIC PHYSICS – I		15UPHN31
Hrs/Week: 3	Hrs/Sem: 3x15= 45	Hrs./ UNIT : 9	Credit: 2

UNIT I PHYSICS, MEASUREMENT, KINEMATICS AND LAWS OF MOTION

Fundamental and derived units – Speed, velocity and acceleration – Mass and weight – Density – scalar and vectors – Force – Pressure – Newton's laws of motion; conservation of linear momentum and its applications – basic concepts of Projectile motion.

UNIT II DYNAMICS OF ROTATIONAL MOTION

Uniform circular and rotational motion – Centripetal force and its applications – Energy, work and power – Center of mass – moment of force, torque, angular momentum, conservation of angular momentum and applications..

UNIT III GRAVITATIONAND SATELLITES

Newton's law of gravitation– gravitational field – gravitational potential – Kepler's laws of planetary motion – escape velocity – Satellite motion – orbital velocity – geostationary satellite – applications of remote sensing – Indian Satellites.

UNIT IV PROPERTIES OF SOLIDS AND LIQUIDS

Stress – strain relationship, Hooke's Law, types of modulus –

Pressure in a fluid, Pascal's Law and its applications, buoyancy (Archimedes Principle).Viscous drag – Newton's formula for viscosity, Coefficient of viscosity – units –stoke's law – stream line and turbulent flow –applications – Surface tension and its applications

UNIT V THERMAL PHYSICS

States of matter – molecular model – evaporation – Pressure changes. Thermal expansion of solids, liquids and gases – Measurement of temperature – thermal capacity – melting and boiling Point – Transfer of thermal energy: Conduction, Convection, Radiation – Consequences of energy transfer and its applications.

- Course material will be supplied by the Department

IV SEMESTER			
NME2	**BASIC PHYSICS – II**		**15UPHN41**
Hrs/Week: 3	**Hrs/Sem: 3x15= 45**	**Hrs./ UNIT : 9**	**Credit: 2**

UNIT I WAVES, OSCILLATIONS AND SOUND

Characteristics of wave – Periodic motion – Simple Harmonic Motion –free, forced and damped oscillations – resonance – Doppler's effect – Ultrasonics – applications

UNIT II ELECTRICITY AND MAGNETISM

Electric charge, fields and potentials – Coulomb's law – Ohm's law – resistor – capacitor – Kirchoff's laws – Alternating currents and transient response of LCR series circuits: Resonance, Q factor and damping factor – Magnetic fields – Magnetic materials – electromagnetic induction – Transformers.

UNIT III LIGHT

Electromagnetic waves, their characteristics and its applications.

Characteristics of light – phenomena: dispersion, scattering, reflection, refraction, total internal reflection. – lenses – defects in images – Optical instruments (kaleidoscope, periscope, Microscope, telescope) – Interference – Diffraction – Lasers and their applications.

UNIT IV ATOMIC AND NUCLEAR PHYSICS

Atomic models – Nucleus – Properties – Isotopes – Nuclear fission and fusion – Applications. Radioactivity: Detection – Characteristics – Radioactive decay – half – life – Applications – Indian Nuclear Reactors.

UNIT V ELECTRONICS:

Conductor – Insulator – Semi conductor – Diode (Applications like rectifier..)– Transistors – characteristics and applications – basic logic gates – Components of Computer System – Fibre optic communication – modem.

- Course material will be supplied by the Department

PART IV – NON-MAJOR ELECTIVE (AIDED COURSES) (2015 – 2018)							
SEM	***TITLE OF THE PAPER***	***S.CODE***	***H/W***	***C***	***MARKS***		
					I	***E***	***T***
DEPT. OF ENGLISH							
III	*Computer Assisted Language Learning: Reading & Writing*	*15UENN31*	***3***	***2***	***25***	***75***	***100***
IV	*Computer Assisted Language Learning: Listening & Speaking*	*15UENN41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF HISTORY							
III	*Modern Constitution – I*	*15UHSN31*	***3***	***2***	***25***	***75***	***100***
IV	*Modern Constitution – II*	*15UHSN41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF MATHEMATICS							
III	*Mathematics for Competitive Examinations – I*	*15UMAN31*	***3***	***2***	***25***	***75***	***100***
IV	*Mathematics for Competitive Examinations – II*	*15UMAN41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF PHYSICS							
III	*Basic Physics – I*	*15UPHN31*	***3***	***2***	***25***	***75***	***100***
IV	*Basic Physics - II*	*15UPHN41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF CHEMISTRY							
III	*Water Management*	*15UCHN31*	***3***	***2***	***25***	***75***	***100***
IV	*Applied Chemistry*	*15UCHN41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF ZOOLOGY							
III	*Ornamental Fish culture*	*15UZON31*	***3***	***2***	***25***	***75***	***100***
IV	*Apiculture*	*15UZON41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF COMPUTER SCIENCE							
III	*Office Automation*	*15UCSN31*	***3***	***2***	***25***	***75***	***100***
IV	*Desktop Publishing*	*15UCSN41*	***3***	***2***	***25***	***75***	***100***
DEPT. OF COMMERCE							
III	*Principles of Commerce*	*15UCON31*	***3***	***2***	***25***	***75***	***100***
IV	*Basics in Accounting**	*15UCON41*	***3***	***2***	***25***	***75***	***100***

* Common to Department of Commerce and Department of Commerce (CA)

I SEMESTER			
EVS	**ENVIRONMENTAL STUDIES**		**15UEVS11**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ UNIT: 6**	**Credits: 1**

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, Fukishma – Stone leprosy in Taj Mahal

UNIT - II: Natural Resources

Renewable and Non Renewable resources - classification.

- Forest resources: Use and over - exploitation, Aforrestation 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. Types, structure & Functions of the following:
  a) Aquatic ecosystem
  b) Grassland ecosystem
  c) Forest ecosystem
  d) Desert ecosystem
  e) Living conditions on other planets (Briefly)

UNIT - IV: Biodiversity & Its Conservation

Introduction - Definition: eco system diversity, species and Genetic Hot spots of biodiversity - Western Ghats, Eastern Himalayas and Gulf of Mannar. Threats to biodiversity - Habitual Loss, Poaching of wild life and Man - wild life conflicts.

Conversation of biodiversity: Insitu and ex-insitu.

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 and Marine water pollution
c) Noise Pollution
d) Soil pollution
e) Bio degradable and Non Bio degradable wastes
   - Air (prevention & Control of Pollution) Act.
   - Environmental Protection Act
   - Water (Prevention & Control of pollution) Act
   - Environmental movements - Green peace and Chipco,
   - Role of State & Central pollution Control Boards.

REFERENCE BOOKS:

1. Basic of Environmental Science. Viyajalakhmi, 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.
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.

II SEMESTER			
VE1	**VALUE EDUCATION – I**		**15USVE2A**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ Unit: 6**	**Credits: 1**

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 – Preservance – 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**		**15USVE2B**
Hrs/ Week: 2	**Hrs/ Sem: 30**	**Hrs/ Unit: 6**	**Credits: 1**

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.

SCHEME OF EXAMINATIONS UNDER CBCS (2015 - 2018)

The medium of instruction in all UG and PG courses is English and students shall write the CIA Tests and Semester Examinations in English. However, if the examinations were written in Tamil, the answer papers will be valued.

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	100	40	60	Nil	24	40
Project	100	Nil	Report - 60 marks Viva Voce - 40 marks	Nil	40	40

POSTGRADUATE COURSES

SUBJECT	TOTAL MARKS	CIA TEST	SEMESTER EXAMINATION	PASSING MINIMUM		
				CIA EXAM.	SEM. EXAM.	OVER ALL
Theory	100	25	75	nil	38	50
Practical	100	40	60	nil	30	50
Project	100	nil	Report - 60 marks Viva Voce - 40 marks	nil	50	50

DIVISION OF MARKS FOR CIA TEST

SUBJECT	MARKS	ASSIGNMENT FOR UG / ASSIGNMENT OR SEMINAR FOR PG	REGULARITY	RECORD NOTE	TOTAL MARKS
Theory	20	5	--	--	**25**
Practical	30	--	5	5	**40**

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.
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. Three internal practical tests of 25 marks each will be conducted for science students in the even semester and the best two out of the three will be taken. The total 50 marks of the best two tests will be converted to 30 by using the following formula:

$$\left(\begin{array}{c}\text{Marks secured in the first best Practical Test (Out of 25)}\\ +\\ \text{Marks secured in the next best Practical Test (out of 25)}\end{array}\right) \text{X } 0.6$$

7. The Heads of Science Departments are requested to keep a record of attendance of practicals for students to assign marks for regularity.

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 carries 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**