



UNDER GRADUATE COURSES

NON-MAJOR ELECTIVE SUBJECTS

CURRICULUM AND SYLLABI

(For students admitted from the academic year 2015-16 onwards)

(UNDER CHOICE BASED CREDIT SYSTEM)

**FACULTY OF SCIENCE AND HUMANITIES
SRM UNIVERSITY
SRM NAGAR, KATTANKULATHUR – 603 203**

DEPARTMENT OF TAMIL

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of LTP	C
III	ULT15E81	அடிப்படைத் தமிழ்-I (Basic Tamil- I)	2			2	2
	ULT15E82	பயன்பாட்டுத் தமிழ் – I (Applied Tamil)	2			2	2
IV	ULT15E83	அடிப்படைத் தமிழ்-II (Basic Tamil- II)	2			2	2
	ULT15E84	நாடகத் தமிழ் (Tamil Drama)	2			2	2

DEPARTMENT OF HINDI

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	ULH15E81	COMMUNICATION HINDI-I	2			2	2
	ULH15E82	BASIC HINDI-I					
	ULH15E83	MEDIA LEKHAN					
IV	ULH15E84	COMMUNICATION HINDI-II	2			2	2
	ULH15E85	BASIC HINDI-II					
	ULH15E86	PRAYOJAN MULAK HINDI					

DEPARTMENT OF FRENCH

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	ULF15E81	COMMUNICATION FRENCH-I	2			2	2
	ULF15E82	BASIC FRENCH-I	2			2	2
	ULF15E83	LE FRANCAIS HOTELLERIE ET TOURISM-I	2			2	2
	ULF15E84	LE FRANCAIS SCIENTIFIC AND TECHNICAL-I	2			2	2
IV	ULF15E81	COMMUNICATION FRENCH-II		2			2
	ULF15E82	BASIC FRENCH-II		2			2
	ULF15E83	LE FRANCAIS HOTELLERIE ET TOURISM-II		2			2
	ULF15E84	LE FRANCAIS SCIENTIFIC AND TECHNICAL-II		2			2

DEPARTMENT OF ENGLISH

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	ULE15E81	THEATRE STUDIES	2			2	2
	ULE15E82	CREATIVE WRITING	2			2	2
IV	ULE15E83	WORLD CLASSICS	2			2	2
	ULE15E84	CORPORATE COMMUNICATION	2			2	2

DEPARTMENT OF MATHEMATICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UMA15E81	BASIC STATISTICS	2			2	2
	UMA15E82	BASIC MATHEMATICS	2			2	2
IV	UMA15E83	NUMERICAL METHODS	2			2	2
	UMA15E84	RESOURCE MANAGEMENT TECHNIQUES	2			2	2

DEPARTMENT OF VISUAL COMMUNICATION

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UVC15E81	CREATIVE ART		1	1	2	2
	UVC15E82	NEWS READING PRACTICES					
IV	UVC15E83	DIGITAL PHOTOGRAPHY		1	1	2	2
	UVC15E84	CREATIVE ADVERTISING					

DEPARTMENT OF COMPUTER APPLICATIONS (UG)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UCA15E81	OFFICE AUTOMATION	1		1	2	2
	UCA15E82	PRINCIPLES OF INTERNET					
	UCA15E83	PROGRAMMING IN C					
IV	UCA15E84	WEB DESIGN	1		1	2	2
	UCA15E85	SPSS					
	UCA15E86	PROGRAMMING IN C++					

DEPARTMENT OF COMPUTER SCIENCE

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UCS15E81	OFFICE AUTOMATION	1		1	2	2
	UCS15E82	INTERNET CONCEPTS					
	UCS15E83	HTML					

IV	UCS15E84	TALLY	1		1	2	2
	UCS15E85	SPSS					
	UCS15E86	DHTML AND XML					

DEPARTMENT OF BIOTECHNOLOGY

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UBT15E81	HEALTH AND FITNESS	1		1	2	2
	UBT 15E82	MUSHROOM CULTIVATION					
IV	UBT 15E83	HERBAL MEDICINE	1		1	2	2
	UBT 15E84	NUTRITION THROUGH LIFE CYCLE					

DEPARTMENT OF COMMERCE

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UCM15581	INDUSTRIAL	2			2	2
	UCM15582	RISK AND INSURANCE MANAGEMENT					
	UCM15583	ADVERTISING AND SALESMANSHIP					
IV	UCM15584	LOGISTICS AND SUPPLY CHAIN MANAGEMENT	2			2	2
	UCM15585	CREATIVITY AND INNOVATION MANAGEMENT					
	UCM15586	RETAIL MARKETING					

DEPARTMENT OF COMMERCE (A&F and CS)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UAF15E81/	GENERAL	2			2	2
	UAF15E82/ UCC15E82	ELEMENTS OF ACCOUNTANCY					
	UAF15E83/ UCC15E83	FINANCIAL AND MANAGEMENT ACCOUNTING					
IV	UAF15E84/ UCC15E84	FUNDAMENTALS OF MARKETING	2			2	2
	UAF15E85/ UCC15E85	INDIAN BANKING					
	UAF15E86/ UCC15E86	ELEMENTS OF INSURANCE					

DEPARTMENT OF JOURNALISM AND MASS COMMUNICATION

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UJM15E81	CORPORATE COMMUNICATION	1	1		2	2
	UJM15E82	PUBLIC RELATIONS					
IV	UJM15E83	ADVERTISING	1	1		2	2
	UJM15E84	FILM STUDIES					

DEPARTMENT OF CAREER DEVELOPMENT

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	CDCE81	INTERVIEW SKILLS & RESUME WRITING	1	1		2	2
	CDCE82	CORPORATE ETIQUETTE					
	CDCE83	GROUP DISCUSSION					
	CDCE84	LOGICAL REASONING AND MATH PLAYGROUND					
IV	CDCE85	MATH MAGIC	1	1		2	2
	CDCE86	MATH OLYMPIAD					
	CDCE87	CURRENT AFFAIRS & GENERAL KNOWLEDGE					
	CDCE88	PUBLIC SPEAKING – AN INTRODUCTION					

DEPARTMENT OF MATHEMATICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UMA 15E81	Formal Languages and Automata	2	-	-	2	2
	UMA 15E82	Data Structures and Algorithms					
IV	UMA 15E83	Statistical Applications (Practical)	2	-	-	2	2

DEPARTMENT OF PHYSICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UPY15E81	ENERGY PHYSICS	2	-	-	2	2
	UPY15E82	ELECTRICAL APPLIANCES					
IV	UPY15E83	MEDICAL PHYSICS	2	-	-	2	2
	UPY15E84	ELECTRONIC COMMUNICATION					

DEPARTMENT OF ECONOMICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UES15E81	ISSUES OF INDIAN ECONOMY	2			2	2
	UES15E82	INTERNATIONAL ECONOMICS					
IV	UES15E83	FISCAL ECONOMICS	2			2	2
	UES15E84	ENVIRONMENTAL ECONOMICS					

DEPARTMENT OF CHEMISTRY

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
III	UCY15E81	BIOCHEMISTRY	2			2	2
	UCY15E82	FOOD CHEMISTRY					
IV	UCY15E83	BASICS OF BIOINFORMATICS	2			2	2
	UCY15E84	MOLECULAR MODELING & DRUG DESIGN					

பருவம்	பாடகுறியீடு எண்	பாடத் தலைப்பு	L	T	P	Total of LTP	C
III	ULT15E81	அடிப்படைத்தமிழ்-1 (Basic Tamil- I)	2	0	0	2	2

அலகு-1: எழுத்துகள் அறிமுகம்- உயிர் எழுத்து-குறில்-நெடில், மெய்யெழுத்து- வல்லினம், மெல்லினம், இடையினம்- உயிர்மெய்யெழுத்து-ஆய்தயெழுத்து, தமிழ் எண்கள்.

அலகு-2: சொற்கள் கற்றல்- ஒரெழுத்து சொற்கள், ஈரெழுத்து சொற்கள்- தொடர் மொழி- ஒருமை-பன்மை—இறந்தகாலம், நிகழ்காலம், எதிர்காலம்

அலகு -3: எழுதும் பயிற்சி – ஒலிவேறுபாட்டால் பொருள் மாற்றம்- ர-ற,- ல-ழ-ள, ண-ந-ன,

அலகு -4: சிறுதொடர் கற்றல்- எழுவாய், பயனிலை, செயப்படுபொருள் அமைய சிறு தொடர்கள் உருவாக்குதல்.

அலகு -5: வழக்குச் சொற்கள்- உறவுப் பெயர்கள், காய்கள், பழங்கள், நிறங்கள், கிழமைகள், மாதங்கள், உடல் உறுப்புகள்.

பார்வை நூல்கள்:

- முனைவர் எஸ்.தியாகமணி, அடிப்படைத் தமிழ், கருணா பதிப்பகம், வேலூர், 2012.
- அ.கி.பரந்தாமனார், நல்ல தமிழ் எழுத வேண்டுமா?, அல்லி நிலையம், 2010.
- எம். ஏ நுஃமான், அடிப்படைத் தமிழ் இலக்கணம், வாசகர் சங்கம், 2000.
- இரா. தமிழ்ப்பிரியன், அனைவருக்கும் பயன் தரும் அடிப்படைத் தமிழ் இலக்கணம், நற்பவி பிரசுரம், 2008.

பருவம்	பாடகுறியீடு எண்	பாடத் தலைப்பு	L	T	P	Total of	C
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						LTP	
III	ULT15E82	பயன்பாட்டுத் தமிழ்-1 (Applied Tamil)	2	0	0	2	2

அலகு-1: அகரவரிசைப்படுத்துதல்- கலைசொல்லாக்கம்-பிழை நீக்கியெழுதுதல்

அலகு-2: கற்றல் திறன்கள் – கேட்டல், எழுதுதல், படித்தல், பேசுதல்

அலகு-3: எழுத்தாற்றல்- கடிதம்- கட்டுரை எழுதுதல்

அலகு-4: படைப்பாற்றல்- கதை- கவிதை- படைத்தல்

அலகு-5: மொழிபெயர்ப்பு- மரபுத்தொடர்

பார்வை நூல்கள்:

1. க.இராமச்சந்திரன், பயன்பாட்டுத்தமிழ் இலக்கணம், குமரன் பதிப்பகம், 2012.
2. இரா. தமிழ்ப்பிரியன், அனைவருக்கும் பயன் தரும் அடிப்படைத் தமிழ் இலக்கணம், நற்பவி பிரசுரம், 2008.
3. கோ பெரியண்ணன், அடிப்படை எளிய தமிழ் இலக்கணம், வனிதா பதிப்பகம், 2003.

பருவம்	பாடகுறியீடு எண்	பாடத் தலைப்பு	L	T	P	Total of LTP	C
IV	ULT15E83	அடிப்படைத்தமிழ்-2 (Basic Tamil- II)	2	0	0	2	2

அலகு-1: சொல் வகைகள்- பெயர், வினை, இடை, உரி.

அலகு-2: பெயரடை, வினையடை, பெயரெச்சம், வினையெச்சம்

அலகு-3: ஒரு சொல் பல பொருள்- பல சொல் ஒரு பொருள்

அலகு-4: நீதிப்பாடல்கள்- ஆத்திச்சூடி-ஒளவையார், பாரதியார், கதைகள்

அலகு-5: மொழிபெயர்ப்பு- ஆங்கிலத்திலிருந்து தமிழுக்கு சொற்கள் மற்றும் சிறு வாக்கியங்களை மொழிபெயர்த்தல்.

பார்வை நூல்கள்:

1. முனைவர் எஸ்.தியாகமணி, அடிப்படைத் தமிழ், கருணா பதிப்பகம், வேலூர், 2012.
2. அ.கி.பரந்தாமனார், நல்ல தமிழ் எழுத வேண்டுமா?, அல்லி நிலையம், 2010.
3. எம். ஏ நுஃமான், அடிப்படைத் தமிழ் இலக்கணம், வாசகர் சங்கம், 2000.
4. இரா. தமிழ்ப்பிரியன், அனைவருக்கும் பயன் தரும் அடிப்படைத் தமிழ் இலக்கணம், நற்பவி பிரசுரம், 2008.

பருவம்	பாடகுறியீடு எண்	பாடத் தலைப்பு	L	T	P	Total of LTP	C
IV	ULT15E84	நாடகத் தமிழ் (Tamil Drama)	2	0	0	2	2

அலகு: 1 நாடகத் தோற்றுவாய்: நாடகம் – அறிமுகம், தொல்காப்பியம் – எட்டுவகை மெய்ப்பாடுகள், கூத்துமரபு.

அலகு: 2 நாடக வளர்ச்சி வரலாறு: சிலப்பதிகாரத்தில் நாடகக் கூறுகள், பிற்காலச் சோழர் கால நாடகங்கள், பள்ளு, குறவஞ்சி நாடக வகைகள்

அலகு: 3 பத்தொன்பதாம் நூற்றாண்டு நாடக மரபு: முறைப்படுத்தப்பட்ட நாடகங்கள் – மேடை நாடக அமைப்பு, நாடக ஆசிரியர்கள் - சங்கரதாஸ் சுவாமிகள், பம்மல் சம்பந்த முதலியார், நாடக வகைகள் – வரலாறு, விடுதலை, சமூகம், விழிப்புணர்வு.

அலகு: 4 நவீன நாடக மரபும் குழுக்களும்:

அ) ந.முத்துசாமி – கூத்துப்பட்டறை

ஆ) பிரளயன் - சென்னைக் கலைக்குழு

இ) ஞாநி - பரீக்ஷா

ஈ) அ.மங்கை - மரப்பாச்சி.

உ) வேலுசரவணன் – ஆழி குழந்தைகள் நாடகக்குழு.

அலகு: 5 நாடகப் பனுவல்கள்

அ) மாண்டவர் மீண்டது – பம்மல் சம்பந்த முதலியார்

ஆ) மனசின் அழைப்பு – அரவாணிகள்

பார்வை நூல்கள்:

1. தமிழ்நாடகம் - நேற்று இன்று நாளை, முனைவர் மு. இராமசுவாமி, ருத்ரா பதிப்பகம், தஞ்சாவூர், 1998.
2. தமிழ் நாடகம் - நேற்றும் இன்றும், கு. பகவதி (பதிப்பு.), உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை, 2000.
3. தமிழில் நாடகப் பதிவுகள், சி. அண்ணாமலை, காவ்யா, சென்னை, 2004.
4. தமிழில் நவீன நாடகம், கா. சிவத்தம்பி, உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை, 1996.

DEPARTMENT OF HINDI

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULH15E81	COMMUNICATION HINDI - I	2	0	0	2	2

Objective :

- To encourage greater written skills through comprehension writing and composition writing.
- Improve their oral and written skills through a combination of theory and practice.

Unit - I

1. Akshar Gyan

a. Swar Vyanjan

Unit - II

1. Rozmara ke prayog me aane vale Shabd

a. Kriyatmak Shabd (Action Word)

2. Samanya Baatcheet (Conversation about Food)

Unit –III

1. Rangon ke Naam (Names of the colors)

2. Baatcheet (Conversation in the Vegetable Market)

Unit –IV

1. Hindi Ginti

2. Baatcheet (Conversation About Food)

Unit – V

1. Sharir ke angh (Parts of the Body)

Reference Book:

Hindi Me Bolo –Dr. Anjana Sandhir

Semester	Subject Code	Subject Title	L	T	P	Total of	C
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						LTP	
III	ULH15E82	BASIC HINDI – I	2	0	0	2	2

Objective :

- To encourage greater written skills through comprehension writing and composition writing.
- Improve their oral and written skills through a combination of theory and practice.

Unit-I

Hindi Alphabet (Swar, Vyanjan aur Barah Khadi)

Unit-II

Swar aur Vyanjan se bane Sabd.

Unit –III

Samanya Sabd: (a) Phalon ke Naam (5Words)

(b) Sabjiyon ke Naam (5 Words)

(c) Rango Ke Naam (5Words)

(d) Saptaha Ke Naam (5 Words)

(e) Mahino ke Naam (5Words)

(f) Sharir Ke ango k Naam(5 Words)

(g) Rishton Ke Naam(5 Words)

(h) Aakar

(i) Swaad

(j) Quantity

Unit –IV

Ginti (1-20 Numbers)

Unit –V

Action Words

Teaching Method: 1. PowerPoint Presentation, Teaching Aid.

Refrence Books:

1. Learn Hindi & Hindi Film Songs (Author : Dr. Anjana Sandhir)
2. Dictionary (Hardev Bahari, Rajpal & Son, Dwarka Prasad, Rajkamal Prakashan)

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULH15E83	MEDIA LEKHAN	2	0	0	2	2

Objective :

- Improve their oral and written skills through a combination of theory and practice.
- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training

Unit -I

1. Media Ka Swarup aur Parkar
2. Print Media Aur Lekhan

Unit -II

1. Drishya Media Aur Lekhan
2. Sravya Media Aur Lekhan

Unit -III

1. Sub-Title Lekhan

Unit -IV

1. Swandh Lekhan

Unit -V

1. Nara Lekhan

Less theory more practical

Reference Book :

Pathkatha Lekhan (Author : Manohar S.Joshi)

Katha-Pathkatha (Author : Mannu Bhandari)

Television Lekhan (Author : Asgar Wajhat)

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULH15E84	COMMUNICATION HINDI – II	2	0	0	2	2

Objective :

- Improve their oral and written skills through a combination of theory and practice.
- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training

Unit – I

Greetings

- Personal Introduction
- Simple Conversation
- Introducing a friend

Unit -II

Name of the Week Days

- Names of the month

Unit –III

Names of Vegetables

- conversation ; In the Vegetable Market.

Unit –IV

Names of Fruits

- Dry Fruits
- conversation : In a Fruit Shop

Unit –V

Family and Relatives

- Family Tree
- My Family

Reference Book:

Hindi Me Bolo –Dr. Anjana Sandhir, Parshwa Publication, Edition ,2003

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULH15E85	Basic Hindi -II	2	0	0	2	2

Objective :

- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training.
- Consolidate the knowledge of theoretical aspects of grammar with examples provided from different angles: from present day literature, day to day conversation.

Unit-I

1. Sabdharth
2. Paryayavachi Sabd
3. Vilom Sabd

Unit -II

1. Muhuvara
2. Lokokaktyan

Unit -III

1. Chitr Dwara Spast karna
2. Sawa Parichay

Unit -IV

1. Anek ke lye ek Sabd
2. Ek din Ek Shabd

Unit –V

Kavita

Reference Books:

1. Hindi Vyakran (SHABD AUR AARTH –Author- Hardev Bahari)
2. Dictionary (Hardev Bahari, Rajpal & Son, Dwarka Prasad, Rajkamal Prakashan)

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULH15E86	Prayojan Mulak Hindi	2	0	0	2	2

Objective :

- To encourage greater written skills through comprehension writing and composition writing.
- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training.

Unit -I

1. Prayojan Mulak Hindi –Paribhasha Swarup aur Kshetra
2. Prayojan Mulak Hindi aur Anuvad ka Anthasambandh

Unit – II

1. Patr Vyavhar

Unit – III

1. Prayojan Mulak Hindi Aur Paribhashik Shabdavali

Unit – IV

1. Prashashanik Hindi
2. Vaanijiyik Hindi

Unit – V

1. Hindi Computing
- Less theory more practical

Book Reference:

1. Prayojan Mulak Hindi – Dr. Ramprakash aur Dinesh Gupta
2. Computer Aur Hindi – Harimohan

DEPARTMENT OF FRENCH

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULF15E81	Français Parlé-I (Communicating French-I)	2	0	0	2	2

Objective :

- To encourage greater written skills through comprehension writing and composition writing.
- Improve their oral and written skills through a combination of theory and practice.

Unité-I

La conversation - Comme la première rencontre - Ex: Bonjour, comment ça va ? etc. - Les jours de la semaine - Les mois de l'année

Unité-II

(i) Quel jour est-ce-aujourd'hui? ii) La conversation de logement - La salutation - (iii) La conversation - Vous êtes marié ?

Unité-III

(i) Les numéros 1 jusqu'a 10 - (ii) Les numéros 11 jusqu'a 100 - (iii) La conversation de la nationalité

Unité-IV

La conversation de la profession - La conversation du weekend habituel- La conversation du weekend passé- Ma famille

Référence Livre :

1. “**Zoom 1**”, Catherine Jonville, Jean-François Moulière, Manuela Ferreira Pinto, Jocelyne Quinson, Edition Maison Des Langues, Paris
2. “**Synchronie**” K.Madanagobalane, Goyal Publication & Distribution, 2011, Chennai.
3. “**Le kiosque**” Céline Himber, Charlotte Rastello, Fabienne Gallon, Hachette, 2014, Paris,

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULF15E82	Français Élémentaire-I (Basic French-I)	2	0	0	2	2

Objective :

- To encourage greater written skills through comprehension writing and composition writing.
- Improve their oral and written skills through a combination of theory and practice.

Unité-I

Bienvenue! – Saluer – se présenter- identifier quelqu’un – Epeler un prénom en français – identifier des sons et des mots français

Unité-II

Bonjour ! – Saluer – se Présenter/Présenter quelqu’un – Dire et Demander comment ca va – Remercier – identifier un objet

Unité-III

C’est la fête ! – Dire et Demander son âge – compter jusqu’à 10- Présenter sa famille – Dire et Demander ce que l’on aime ou pas

Unité-IV

A l’école – Dire et demander ce que l’on possède – Situer des objets – Exprimer ses goûts – Compter jusqu’à 20

Référence Livre ;

“ Zoom 1” , Catherine Jonville, Jean-François Moulière, Manuela Ferreira Pinto, Jocelyne Quinson, Edition Maison Des Langues, Paris

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULF15E83	Le Français de l’hôtellerie et du tourisme -I	2	0	0	2	2

Objective :

- Improve their oral and written skills through a combination of theory and practice.
- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training

Unité-I

A l'hôtel "Namasté", Les pronoms sujets, les pronoms toniques, Les *verbes* : *être, avoir, s'appeler, parler, apprendre* ; les articles définis au singulier, *c'est* + nom/pronom/pronom tonique, l'interrogation-intonation, la négation, les adjectifs possessifs (*mon, ma*), les prépositions de lieu (*à, pour*)

Unité-II

Prendre une réservation, Les noms, les articles définis & indéfinis, les adjectifs interrogatifs, les adjectifs possessifs au singulier, *il y a*, verbes en *er* (*parler, aimer, chercher*), verbes en *ir*, verbes : *venir, connaître, faire*, les articles contractés avec *à* et *de*, les expressions du lieu, l'adjectif qualificatif, l'interrogation-intonation, la négation-*ne...pas*

Unité-III

A la réception de l'hôtel, Les *verbes* : *travailler, aller, lire, apprendre* ; les *expressions du temps* : *souvent, depuis* ; *c'est+adjectif* ; l'interrogation : *intonation & est-ce que* ; *faire du/de la* ; L'affirmation-la négation

Unité-IV

L'hôtel est complet, Les adjectifs démonstratifs, les *verbes* : *prendre, acheter, voir, devoir*, les expressions du lieu

Unité-V

La chambre est confortable, Les *verbes* au présent de l'indicatif: *vouloir, pouvoir, mettre, boire*, le passé composé, l'impératif, les articles partitifs, la possession-les adjectifs possessifs, les expressions de la quantité, les expressions du temps

Référence Livre :

Symphonie, "Le Français de l'hôtellerie et du tourisme" Samhita Publications, Chennai, 2015

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULF15E84	Le français Science et Technique - I	2	0	0	2	2

Objective :

- Improve their oral and written skills through a combination of theory and practice.
- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training

Unité-I

La science dans le monde – Nom de scientifique célèbres – comprendre et rédiger une courte biographie – Présenter un scientifique – Les matières et types de cours – Les spécialités scientifiques

Unité-II

Une expo à la cité des sciences – Les lieux de sorties – quelques termes scientifiques – Les termes de l'exposition – Les expressions familières pour accepter une invitation

Unité-III

Un dîner bien français – Les habitudes alimentaires – La cuisine française – La nourriture – Les ingrédients – Les expressions de quantité – Les expressions familières avec les noms de fruits et légumes

Unité-IV

On se voit au colloque – Les fêtes et jours fériés français – Les expressions pour proposer une invitation

Unité-V

La science en application – un peu de culture générale scientifique – Quelques noms de grandes entreprises – Le secteur privé et public de la recherche – Le processus de fabrication de quelques éléments – Les expressions pour parler d'un projet

Référence Livre:

“**Tech French**”, Ingrid Le Gargasson, Shariva Naik and Claire Chaize, 2011, Goyal Publisher

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULF15E85	Français Parlé-II (Communication French-II)	2	0	0	2	2

Objective :

- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training.
- Consolidate the knowledge of theoretical aspects of French grammar with examples provided from different angles: from present day literature, day to day conversation.

Unité-I

La conversation de la famille - La présentation - L'alphabet

Unité-II

La phonétique - Les sons avec les exemples - Les exemples de sons

Unité-III

La liaison avec les exemples - L'entraînement de lire avec les textes

Unité-IV

L'entraînement de lire avec le texte 2 - L'épreuve finale

Référence Livre :

1. “**Zoom 1**”, Catherine Jonville, Jean-François Moulière, Manuela Ferreira Pinto, Jocelyne Quinson, Edition Maison Des Langues, Paris
2. “**Synchronie**” K.Madanagobalane, Goyal Publication & Distribution, 2011, Chennai.
3. “**Le kiosque**” Céline Himber, Charlotte Rastello, Fabienne Gallon, Hachette, 2014, Paris.

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULF15E86	Français Élémentaire-II (Basic French-II)	2	0	0	2	2

Objective :

- Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training.
- Consolidate the knowledge of theoretical aspects of French grammar with examples provided from different angles: from present day literature, day to day conversation.

Unité-I

Soirée Pyjama ! – Dire et Demander ce que l’on veut – Proposer une activité – Exprimer des sentiments et des sensations – Dire et Demander de situer une personne ou un objet

Unité-II

A la cantine – Donner/Comprendre un ordre – Demander quelque chose – Exprimer des besoins – Exprimer des goûts

Unité-III

En colonie de vacances- décrire physiquement quelqu’un – Exprimer des sensations – Dire et Demander les activités après l’école

Référence Livre :

“ Zoom 1 ” , Catherine Jonville, Jean-François Moulière, Manuela Ferreira Pinto, Jocelyne Quinson, Edition Maison Des Langues, Paris

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
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IV	ULF15E87	Le Français de l'hôtellerie et du tourisme - II	2	0	0	2	2
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Objective :

- Consolidate the knowledge of theoretical aspects of French grammar with examples provided from different angles: from present day literature, day to day conversation.
- Improve their oral and written skills through a combination of theory and practice.

Unité-I

Premier circuit, Le comparatif, les prépositions de lieu, les adjectifs qualificatifs (pluriel et place des adjectifs), *il faut*+nom, le passé composé, les constructions avec l'infinitif, le verbe *penser*, les expressions avec *avoir*.

Unité-II

Deuxième circuit (Le voyage en train). Les pronoms compléments d'objet direct, les pronoms compléments d'objet indirect

Unité-III

Arrivée à New Delhi-3ème circuit, Le futur, les verbes au présent : *partir, revenir*, les expressions d'enchaînement, le futur proche, les pronoms compléments d'objet direct, *dès que*, le négatif : *ne...ni...ni*, la restriction : *ne...que*

Le verbe *savoir*, le passé composé avec *être*, les verbes pronominaux, l'interrogation-inversion du sujet

Unité-IV

4ème circuit, Impératif- *savoir, avoir, être*. Pronom *en*. Le Passé Composé

Unité-V

5ème circuit, Adverbes, mots interrogatifs. Faire du..., La condition avec *SI*

Référence Livre :

Symphonie, "Le Français de l'hôtellerie et du tourisme" Samhita Publications, Chennai, 2015

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULF15E88	Le français Science et Technique - II	2	0	0	2	2

Objective :

- Consolidate the knowledge of theoretical aspects of French grammar with examples provided from different angles: from present day literature, day to day conversation.

- Improve their oral and written skills through a combination of theory and practice.

Unité-I

TP de chimie – Un TP au laboratoire – La chimie : Les Eléments chimiques et le matériel – La formulation des équations chimiques – Le corps humain -

Participer à un projet de groupe – Les projets de groupe en classe – Les transports en commun – Les transports en commun

Unité-II

Résoudre un exercice de maths – Les signes et formulations mathématiques – Les verbes utilisés dans les exercices de mathématiques -

Parcours de jeunes ingénieurs – Le parcours académique – Le monde du travail

Unité-III

Au cœur des télécommunications : cours sur « la fibre optique » - Le contexte du cours en France – La fibre optique – Les adjectifs descriptifs

Unité-IV

La méthode de l'exposé et les énergies renouvelables – La principe de l'exposé – L'exposé – Les énergies renouvelables - **Le tri, mais pour quoi faire ?** L'écologie, le tri sélectif et le recyclage en France – Le déchets, le recyclage et le tri – Les emballages

Unité-V

Des ondes dans le cerveau – Les jeux vidéo en France – L'informatique – L'ordinateur et ses périphériques

Référence Livre :

“**Tech French**”, Ingrid Le Gargasson, Shariva Naik and Claire Chaize, 2011, Goyal Publisher

DEPARTMENT OF ENGLISH

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULE15E81	Theatre Studies	2	0	0	2	2

Theatre Studies

Semester:III

Credit: 2

Category : Non Major Elective

Objectives :

- To train students to direct and current plays.
- To train students in different forms of acting.

Unit-I

(i) Introduction to Practical Theatre ii) Folk an Traditional act

Unit-II

(i) Inter relation between Body, Mind and Soul ii) Design- Graphics and Plastic Arts iii) Direction iv) Making Masks to make up

Unit-III

(i) Hayavadana ii) Monkey's Paw iii) The Death of an Anarchist iv) Street car named Desire

Unit-IV

Practical Theatre- The whole class will be part of it and direct few acts on stage

Reference Books :

- 1 Greek Theatre Performance - David Willes, Cambridge University Press, 1999
2. Some aspects of Sanskrit drama and dramaturgy, S.S. Janaki- The Kuppuswamy Sastri Research Institute, Mysore University , 2009

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	ULE15E82	Creative Writing	2	0	0	2	2

Objectives :

- To enable the students to explore their creativity
- To make the students aware of the possible avenues in the field of writing

Unit-I

PROSE i) Descriptive writing ii) Argumentative Writing iii Subjective Writing

Unit-II

POETRY Subjective – Sonnet – Ode – Lyrics – Free Verses Objective – Ballad – Epics

Unit-III

DRAMATICS - Drama – Writing Television Scripts- Writing for Radio – Video Scripts

Unit-IV

OTHER WRITINGS - Journalistic – Narrative – Short Stories – Novels – Writing for Media - Event Coverage

Reference Books :

1. Wilson, Maja. Rethinking Rubrics in Writing Assessment. Heinemann, 2006.
2. Wolitzer, Hilma. The Company of Writers. Penguin, 2001.

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULE15E83	World Classics	2	0	0	2	2

Objectives :

- To introduce the students to World Literature and Classics.
- To allow students to understand the essence of Classical Literature.
- Cultivate creativity and idealism.

Unit-I

Translations of Ramayana (Valmiki or Kambar)

Unit-II

The Odyssey by Homer (selected chapters)

Unit-III

Ibsen's 'Doll's House'
Shakunthala

Unit-IV

Plutarch's Life

References

1. Homer. The Odyssey, Translated by Robert Fagles. New York: Penguin Books, 1996
2. Henrik Ibsen's 'Doll's House', Dover Thrift edition, Dover Publications, 1992

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	ULE15E85	Corporate Communication	2	0	0	2	2

Objectives :

- To enhance students' proficiency in English language.

- To enable the students to think in English and communication in English.
- To equip students for employment in corporate.
- To engage in ongoing professional development.

Unit-I

Introduction- English as a global language- English as the First and Second language- Uses of English in corporate sector.

Unit-II

Difference between Curriculum Vitae, Resume, Personal profile and Institutional profile- Report writing- Email drafting and Etiquettes- Preparing agenda and writing minutes for meetings and proceedings

Unit-III

Fluency in oral communication- Appropriate use of register, style and body language- Verbal and Non- Verbal communication- Barriers in Communication- Types and preparations of interviews

Unit-IV

Project – Report writing on real time event- Oral presentation - public speaking – Social awareness- Preparing and Presenting of Seminars- Conducting interviews. (How to prepare questionnaire for the interview)

References

1. Cees B.M. Van Riel & Charles J. Fombrum. 'Essentials of Corporate Communication'. Oxon. Routledge publication, 2007.
2. Ur. Penny (1991). 'A Subject in Language Teaching.' Cambridge University Press. 2007, New York

DEPARTMENT OF MATHEMATICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of LTP	C
III	UMA15E81	BASIC STATISTICS	2	0	0	2	2

Objectives:

- (i) To apply basics statistics in our day to day life.
- (ii) To solve practical problems.

UNIT I: Basics of statistics

Statistics- Definition - Primary and secondary Data- Limitations of statistics – Statistical methods .

UNIT II : Diagrammatic Representation

Graphical representation of data- Bar chart- Pie diagram- Classification of data- frequency Histogram- Polygon- Ogive curves

UNIT III : Measures of Central Tendency

Mean-Median- Mode- properties – Merits- Demerits- graphical method

UNIT IV : Measures of Dispersion

Measures of Dispersion – Range- Mean deviation about mean –Standard Deviation-Properties- Coefficient of variation.

UNIT V : Correlation

Simple correlation- Types of Correlation - Rank correlation- Repeated Ranks.

Text Book:

1. Pillai, R.S.N, Bagavathi, V. (2009), Statistics, Theory and Practice, 7th Edition, S.Chand Ltd, New Delhi.

BOOKS FOR REFERENCE:

1. Ken Black, (2013), Business Statistics for Contemporary Decision Making, 7th Edition, John Wiley Publications
2. Gupta, S.P. (2011), Applied Statistical Methods, 4th Edition, Sultan Chand & Sons, New Delhi.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of LTP	C
III	UMA15E82	BASIC MATHEMATICS	2	0	0	2	2

Objectives:

- (i) To apply basics of Mathematical techniques for its usage in Information Technology.
- (ii) To solve practical problems.

Unit I : Sets, Relations and Functions

Sets - representation of set - types of sets - operation on sets -Venn diagram.

Unit II: Symbolic Logic

Logic: Statements, connectives – conjunction- disjunction – negation – tautology- contradiction- logical equivalence

UNIT III : Normal Forms

Tautological implications- Disjunctive Normal form – Conjunctive normal form – Principal Disjunctive normal form - Principal Conjunctive normal form (Truth table method)

Unit IV: Matrices

Types of matrices – addition – subtraction - multiplication of matrices- inverse of the matrix

Unit V : Solution of Linear Equation

Matrix method-Cramer's Rule – Rank of the matrix.

Text Book:

- (1) Vittal.P.R.(2012), Business Mathematics, 3rd Edition Reprint, Margham Publications, Chennai.
- (2) Veerarajan, .T.(2006) Discrete Mathematics, 7th Edition, Tata-Macgrawhill, New Delhi.

BOOKS FOR REFERENCE:

- (1) Vittal.P.R.(2007), Mathematica Foundation, Re-Edition(2007), Margham Publication, Chennai.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of LTP	C
IV	UMA15E83	NUMERICAL METHODS	2	0	0	2	2

Objectives:

- (i) To apply Numerical methods for prediction purpose.
- (ii) To solve problems in real life situations.

Unit I : Solution for system of linear equations

Gauss elimination method - Gauss – seidal method

Unit II : Solution for algebraic and transcendental equations :

Bisection method,-Regula - falsi method,- Newton - Raphson method

Unit III: Interpolation

Newton's Forward- backward difference table - Newton forward - backward difference formula for equal intervals.

Unit IV : Numerical Differentiation

First derivative by Newton's forward and Backward method.

UNIT V: Numerical Integration

Numerical Integration by Trapezoidal rule -Simpsons 1/3 rd rule - Simpsons 3/8 rule.

Unit v: Solution for first order differential equations:

Taylor's method - Euler's method - Fourth order Runge-Kutta method(for first order differential equations only).

Text Book:

(1)Numerical Methods by Kandasamy.P, Thilagavathy.K, Gunavathy.K. (2013),Numerical Methods, Reprint S.Chand and Company Ltd., New Delhi.

BOOKS FOR REFERENCE:

- (1)Sivaramakrishna Das, P,Vijayakumari, C ,(2013)A Textbook of Numerical Methods,3rdEdition,Dorling Kindersley(India) Pvt. Ltd, licensees of Pearson Education in South Asia.
- (2)Vittal. P.R , & Malini.V. (2003),Statistical and Numerical methods Margham Publications, Chennai.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of LTP	C
IV	UMA15E84	RESOURCE MANAGEMENT TECHNIQUES	2	0	0	2	2

Objectives:

- (i) To apply basics of Mathematical techniques for its usage in Information Technology.
- (ii) To solve practical problems.

UNIT I

Introduction to operation Research- Principal Components of a decision problem-Phases of Operation research- Linear programming problem – Formulation - Graphical method.

UNIT II

Transportation problem – North west corner rule method-Least cost method- Row minima method- Column minima method- Vogel's approximation method(Initial Basic feasible solution only).

UNIT III

Assignment problem - Unbalanced Assignment problem -Travelling Salesmen Problem

UNIT IV

Zero sum game- Strategies- two person zero sum game- minimax - maximin rule- Games with saddle point- Games without saddle point- Mixed strategies - Graphical method

UNIT V

Sequencing problem: Processing each of n jobs through m machines - processing n jobs through 2 machines – processing n jobs through 3 machines.

Text Book

(1)Sundaresan, V, Ganapathy Subramanian, K.S. and Ganesan,K(2011),Resource Management Techniques,A.R.Publications, Nagapattinam.

BOOKS FOR REFERENCE

- (1)Vittal. P.R. (2003), Operations Research, Margham Publications, Chennai.
 (2).Kanti Swarup, Gupta, P.K. and Manmohan(2006),Operations Research,12th Edition-Sultan Chand & Sons, New Delhi.

DEPARTMENT OF VISUAL COMMUNICATION

OBJECTIVES

1. To understand the basics of Drawing
2. To apply the techniques in Design
3. To solve practical problems in the real life situations.

Class Exercise

(Students have to practice all FIVE exercises) (Each exercise carries 8 marks)
 (Five exercises x 8 marks = 40 marks & 10 marks for Regularity & Discipline- Total- 50 Marks)

1. Basic Drawing- Pencil Sketch, Light & Shadow Practice : 2 Weeks

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UVC15E81	CREATIVE ART	0	1	1	2	2

- Minimum 2 class works : Record works- 2 nos
2. **Still Life- Different Shapes** : 2½ Weeks
 Minimum 2 class works : Record works- 1 nos.
3. **Shape Making & Colouring- Geometrical** : 2½ Weeks
 Minimum 2 class works : Record works- 2 nos.
4. **Face Mask Making** : 2½ Weeks
 Minimum 2 class works : Record works- 1 nos.
5. **Pot Painting** : 2½ Weeks
 Minimum 2 class works : Record works- 1 nos.

(Each exercise should have minimum 1 number of works with rough Thumbnail sketch followed by fair works)

(The Students have to submit all exercise as Record Work for Practical exam, which will be evaluated by the External Examiner)

MANUALS FOR PRACTICALS

1. John Montague (2013). Basic Perspective Drawing- A Visual Approach, First Edition, John Wiley & Sons, New Jersey
2. William F Powell (2012). Art of Basic Drawing, First Edition, Walter Foster Creative Team, New York
3. Christopher Hart (2012), Basic Drawing made Amazingly Easy, First Edition, Crown Publishing Group, New York

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UVC15E82	NEWS READING PRACTICES	0	1	1	2	2

OBJECTIVES

1. To understand the basics of News Casting
2. To apply the techniques in Electronic Media
3. To solve practical problems in the real life situations.

Class Exercise

(Students have to practices all FIVE exercises) (Each exercise carries 8 marks)

(Five exercises x 8 marks = 40 marks & 10 marks for Regularity & Discipline- Total- 50 Marks)

UNIT- I

News Reading- Basics; Observing News Readers- Radio and Television; News Presentation- style, skills and techniques

UNIT- II

Voice modulation- its importance; Low pitch and high pitch; Tone and voice sound; Clarity in presenting news; Necessity of pause in News Reading, avoid “um”, “ah” & “well”; Practice in speaking and reading aloud.

UNIT- III

Pronunciation- Words and numbers; Usage of words; Language- News Reader’s deliver; Reading will improve the vocabulary.

UNIT- IV

Spontaneity & Delivering; News speech – case study; Presence of mind- body language, holding head and shoulder; Facial expression- eye contacts; Learning to read from distance.

UNIT- V

Exercises on reading practice.

Record Work

1. Live Reporting (outdoor/ spot) or Live News Recording

2. Panel of News desk or News oriented debate/ discussions or Live commentary (non political/ political)

(The Students have to submit any two exercises as Record Work in the Digital form for Practical exam, which will be evaluated by the External Examiner)

MANUALS FOR PRACTICALS

1. Alan R. Stephenson (2013). Broadcast Announcing Work text: A Media Performance Guide, First Edition, Focal Press, UK
2. Michael Faulkner (2006). VJ: Audio-Visual Art and VJ Culture, Second Edition, Laurence King Publishing Ltd, UK
3. Thomas Fensch (2001). Television News Anchors, Second Edition, New Century Books, USA

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UVC15E83	DIGITAL PHOTOGRAPHY	0	1	1	2	2

OBJECTIVES

1. To understand the basics of Photography
2. To apply the techniques in Digital Photography
3. To solve practical problems in the real life situations.

UNIT- I

Photography- definition & concept; Historical development of Photography; Evolution of Camera: Pinhole, Box, TLR, SLR & Digital; Introduction to Digital camera: Parts & Functions of Camera- Aperture, Shutter, F-Stop and ISO.

UNIT- II

Film Photography Vs Digital Photography- an Introduction; Sensor- basics & types; Film to Digital- Digital Storage & Digital Storage process; Types of Digital Storage- Compact Flash (CF), Secure Digital Card (SD), Mini SD Card, Micro SD & etc.

UNIT- III

Lens- definition; Characteristics of Lens; Types of Lens- Wide angle, Normal & Tele; Special Lens- Zoom, Fish eye & Macro Lens; Focal Length- basics & types

UNIT- IV

Exposure - Depth of Field, Aperture Priority & Shutter Priority; Digital Filters- definition & types; Automatic Mode- basics & types.

UNIT- V

Lighting- definition; Characteristics of Light; Understanding Light- Indoor & Outdoor; Types of Light- Natural & Artificial; Standard Lighting- Key, Fill & Back Light; Types of Lighting Equipments- Pro-lit, Soft Box, Flash & etc.

MANUALS FOR PRACTICALS

1. Roger Watson (2013). Capturing the Light, First Edition, Macmillan Publishers, UK
2. Don Giannatti (2013). Professional Photography, First Edition, Amherst Media, USA
3. Martin Evening (2012). Adobe Photoshop CS6 for Photographers, First Edition, Focal Press, UK

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UVC15E84	CREATIVE ADVERTISING	0	1	1	2	2

OBJECTIVES

1. To understand the basics of Advertising
2. To apply the techniques in Creative Advertising
3. To solve practical problems in the real life situations.

UNIT- I

Advertising- definition, scope & role; Importance of Advertising; History of Advertising- Abroad & India; Advertising- functions & types; Advertising- impact & ethics.

UNIT- II

Advertising Agency- structure & functions; Types of Advertising Agency- full service, independent, In-house & specialized agencies; Advertising agencies- legal & ethical issues; Advertising agencies in India & abroad.

UNIT- III

Branding management- brand image, brand personality, brand awareness, brand extension & brand equity; brand positioning strategies; Unique selling proposition (USP).

UNIT - IV

Creativity- definition & concepts; role of creativity in advertising; elements of creative advertising; client brief & account planning; planning creative strategy; creative process; style & appeals of advertising; conceptualization & ideation;

UNIT- V

Copywriting- role of copywriting; layouts- stages of layout & types of layout; components of print advertising; headlines- importance & types of headlines; writing style- typography, scripting & story board; Advertising Media- Print, Electronic Media & Online Advertising.

BOOKS FOR TEXT AND REFERENCE

1. George E Belch (2010). Advertising and Promotion, First Edition, Tata McGraw Hill company Ltd., New Delhi
2. Vilanilam J.V (2004). Advertising Basics A Resource Guide for Beginners, Second Edition, Jain Books, New Delhi
3. David Ogilvy (1985). Ogilvy on Advertising, Fifth Edition, Random House, USA

DEPARTMENT OF COMPUTER APPLICATIONS (UG)

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCA15E81	OFFICE AUTOMATION	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To have clear understanding in open source software
2. To have hands on experience in open office

UNIT I - WRITER — THE WORD PROCESSOR (6 Hours)

Creating a Document -Opening a Document -Laying Out the Page-Setting paper size, margins, and orientation -Creating headers and footers -Numbering pages -Entering and Editing Text-Modifying text-Moving and copying text -Finding and replacing text -Correcting mistakes automatically-Printing

UNIT II - WRITER — THE WORD PROCESSOR (6 Hours)

Adding character to your characters -Planning Your Paragraphs-Aligning paragraphs -Spacing your lines -Making Lists -Bulleting lists-Numbering lists-Using a style -Creating a style - tables and columns

UNIT III - CALC — THE SPREADSHEET (6 Hours)

Creating a Spreadsheet -Inputting Your Data -Entering your data -Editing your data -Filling cells automatically -Managing Columns and Rows-Copying, pasting, cutting, dragging, and dropping your cells -Adding the Art -Formula Basics-Adding, Subtracting, and More -Adding and other arithmetic - Adding with the Sum function –

UNIT IV - CALC — THE SPREADSHEET (6 Hours)

Rocketing into Orbit with Functions Using the AutoPilot: Functions dialog box -Editing functions - Entering functions manually -Copying and pasting formulas -Creating formula arrays -Recalculating formulas -Creating Magic Formula-Nesting functions -Creating conditional formulas

UNIT V - IMPRESS — THE PRESENTATION (6 Hours)

Creating a Presentation -Opening an existing presentation -Adding Slides -Adding text to a slide - Saving Your Presentation for Posterity - Making Presentations Picture Perfect -Adding Images - Clipping art -Drawing objects -Coloring Backgrounds -Creating a plain-colored background -Creating a gradient background -Hatching a background -Using a bitmap image as a background -Creating 3-D text-Inserting 3-D objects -Animating Impressively -Using Text Effects Effectively -Creating Animation Effects -Creating Animated GIF files -Adding Slide Transition Effects - Showing a Presentation -Setting slide timing -Hiding slides -Specifying slide show settings -Delivering a Slide Show .

TEXT BOOKS

1. Keir Thomas and Andy Channelle with Jaime Sicam (2009), “Beginning Ubuntu Linux” , Apress.(Unit I & II)
2. Gurdy Leete, Ellen Finkelstein, and Mary Leete (2004), “Openoffice.org for dummies”, Wiley Publishing, Inc.(Unit III,IV & V)

BOOK FOR REFERENCE

1. Andy channelle (2009), “Beginning OpenOffice 3”, Apèss.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCA15E82	PRINCIPLES OF INTERNET	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To acquire basic knowledge about Internet
2. To gather extensive knowledge about uses of Internet

UNIT I (6 Hours)

Introduction to Internet - The Internet's underlying Architecture

UNIT II (6 Hours)

Connecting to the Internet – Communicating on the Internet

UNIT III (6 Hours)

How the World Wide Web works. Common Internet tools

UNIT IV (6 Hours)

Multimedia on the Internet – Intranet and shopping on the Internet

UNIT V (6 Hours)

Safeguarding the Internet

TEXT BOOK

How the Internet works , Fourth Edition, Techmedia – Preston Gralla Millennium Edition.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCA15E83	PROGRAMMING IN C	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

3. To acquire basic knowledge about Programming in C
4. To gather knowledge in C programming and developing programming skills
5. To strengthen the knowledge on structures, arrays etc., of C programming

UNIT I - OVERVIEW OF C (6 Hours)

Introduction- Importance of C- Basic Structure of C program- Tokens-Variables- Data types- Operators and Expression- Managing Input and Output Operators.

UNIT II - CONDITIONAL STATEMENTS (6 Hours)

If statement- switch statement- goto statement- while statement- do statement-for statement- continue statement- break statement.

UNIT III - ARRAYS (6 Hours)

One dimensional array- Two dimensional array- Multidimensional array

UNIT IV - FUNCTIONS (6 Hours)

Built in functions (Library functions): String Handling functions-User defined functions.

UNIT V – STRUCTURES AND UNIONS (6 Hours)

Structure definition- Arrays of structures- Structures and functions- Unions

TEXT BOOK

1. Balagurusamy.E, (2008), "Programming in ANSI C" , Second Edition, Tata McGraw Hill.

BOOKS FOR REFERENCE

1. Kamthane Ashok.N, (2013), "Programming in C", 2nd Edition, Pearson Education.
2. Yashvant P. Kanetkar, (2008), "Let us C", 8th Edition, Infinity science press.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCA15E84	WEB DESIGN	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To learn the concepts of HTML and web page designing.
2. To design websites.

UNIT I (6 Hours)

BASIC INTERNET CONCEPTS: What is Internet – History – Host Machines and Host Names- Client / Server Model – Domain Names – Protocols- IP Address.

UNIT II (6 Hours)

ADVANCED INTERNET CONCEPTS: Anatomy of an Email Message – Viewing - Sending – Replying - Search Engines – Meta Search Engine.

UNIT III (6 Hours)

HTML INTRODUCTION: History of HTML – HTML Document – Anchor Tags – Hyper Links- Sample HTML Documents.

UNIT IV (6 Hours)

HEAD AND BODY SECTIONS: Header Section – Title – Prologue – Links – Comment – Heading – Horizontal Rule – Paragraph – Images and Pictures - Ordered and Unordered List.

UNIT V (6 Hours)

TABLES: Table Creation – ColSpan, RowSpan – Cell Spacing, Cell Padding – Nested Tables. FRAMES: Frameset Definition – Frame Definition – Nested Frames. FORMS: Action Attribute – Method Attribute – Drop Down List – Sample Forms.

TEXT BOOKS

1. Wendy G. Lehnert, “Internet 101 - A Beginners Guide to Internet and the World Wide Web”, Addison Wesley. UNITS I & II
2. Xavier.C, “World Wide Web design with HTML”, Tata McGraw Hill Publishing Limited, New Delhi. UNITS III, IV & V

BOOK FOR REFERENCE

1. Bryan Pfaffenberger and Bill Karow, “HTML 4 Bible”, 2nd Edition, IDG Books Worldwide, Inc

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCA15E85	TALLY	1		1	2	2

1. Creating a new company
2. Creation of essential ledgers
3. Capital account
4. Purchase account
5. Sales account
6. Direct expenses
7. Cash account

8. Profit & Loss account
9. Debtors account
10. Creditors account
11. Creation of inventory
12. Stock group Unit of measure Stock item
13. Creation of ledge
 - a. Single ledgers
 - b. Multiple ledgers
14. Voucher posting
15. sales order
16. Making actual sales
17. Purchase order
18. Making actual purchase
19. Returns accounting for receipts and payments
20. Reports

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCA15E86	PROGRAMMING IN C++	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To learn the concepts of class & objects.
2. To perform Inheritance, Overloading of operators, functions and constructors

UNIT I - PRINCIPLES OF OBJECT ORIENTED PROGRAMMING (6 Hours)

Object Oriented Programming Paradigms- basic concept of OOPS- benefits of OOP- what is C++- simple C++ program-structure of C++ program- creating a source file – compiling and linking.

UNIT II - TOKENS, EXPRESSION AND CONTROL STRUCTURES (6 Hours)

Tokens-keywords-identifiers and constants-basic data types-user defined data types-derived data types-type compatibility-declaration of variables-dynamic initialization of variables-reference variables-operators in C++-manipulators-type cast operator-implicit conversion-operator overloading-control structures.

UNIT III - CLASS AND OBJECTS (6 Hours)

Functions in C++- function overloading-Specifying a class- defining member function-arrays within a class-arrays of objects- objects as function arguments- friendly functions-constructor and destructor

UNIT IV - INHERITANCE (6 Hours)

Single inheritance-multilevel-multiple inheritance-hierarchical-hybrid.

UNIT V - POLYMORPHISM (6 Hours)

Virtual base class-abstract classes - operator over loading- rules for operator overloading

TEXT BOOK

1. Balagurusamy.E, (2008), “Object Oriented Programming with C++”, Tata McGraw-Hill Publication.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCS15E81	OFFICE AUTOMATION (Microsoft Based)	1		1	2	2

MS-WORD

a) Text Manipulation

Change the font size and type

Aligning and justification of Text

Underlining the Text

Indenting the Text

i) Prepare a Bio-data

ii) Prepare a Letter

b) Usages of Numbering, Bullets, Footer and Headers.

Usages of Spell check and find and replace

i) Prepare a document in newspaper format

ii) Prepare a document with bullets, footers and Headers

c) Tables and manipulation

Creation, Insertion, Deletion (Columns & Rows) and usage of Auto format.

a) Create a calendar and Auto format it

b) Create a marksheet using table and find out the total marks.

ii) Picture insertion and alignment

Prepare a greeting card

iii) Creation of documents using templates

Creation of templates.

a) Prepare a letter using and template

b) Prepare a biodata using various kinds of templates

iv) Mail Merge Concepts

Prepare an invitation to be sent to specific addresses, in the data source.

MS-EXCEL

CELL EDITING

i) Usage of formulate and Built – in – Functions

ii) Describe the types of functions

iii) File Manipulations

iv) Data sorting – Ascending and Descending (both numbers and alphabets)

v) Worksheet preparation

vi) Marklist preparation for a student

vii) Individual Pay Bill preparation

viii) Electricity Bill preparation

ix) Inventory Report preparation

x) Invoice Report preparation

xi) Drawing Graphs. 5

MS-POWERPOINT

a) Inserting Clip and Pictures

Frame movements of the above

v) Create a slide show presentation for a seminar (choose your own topic)

a) Enter the text in outline view

b) Create Non-Bulleted and Bulleted body Text

c) Apply the appropriate Text attributes.

b) Insertion of New Slides

Preparation of Organization Charts

i) Create a slide preparation for an invitation

a) Insert an object from a Bitmap file

b) Enter the text in the slide view

c) Apply appropriate text attribute

d) Rotate the object to 45 degree (approximately)

e) Apply shadow to the object

c) Preparation using wizards

Usage of design templates

vi) Create a slide show presentation to display percentage of marks in each semester for all students

- a) Use bar chart(X-axis: Semester, Y-axis: % marks)
b) Use different presentation template and different transition effect for each slide.
Use different text attribute in each slide.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCS15E82	INTERNET CONCEPTS	1	0	1	2	2

Objectives

1. To explain the theoretical concepts of Internet Concept
2. To explain the application in Internet

UNIT I

Introduction: Definition of Internet – History of Internet – Internet service providers – ISDN Service – Direct ISP Service through leased line – Modem – Cable Modem.

UNIT II

Internet tools – Search Engines – web browser – Internet Protocol (IP) – IP addresses – Types of Internet addressing – Transmission Control Protocol (TCP)

UNIT III

How does the Internet work – Intranet & Extranet – Internet Infrastructure - Applications of Internet – HTTP – SMTP – TFTP – RIP – IMAP – POP – IMAP Vs POP – FTP.

UNIT IV

Introduction to HTML: What is HTML – Basic Tags of HTML – HTML Tag – TITLE Tag – BODY Tag: Formatting of Text: Headers – Formatting Tags: BOLD, ITALICS, UNDERLINE, PARAGRAPH, TT, STRIKETHROUGH, EM, BR and HR tags – PRE Tag – FONT Tag – Special Characters – Working with Images – META Tag.

UNIT V

Links – Anchor tag - Lists – Unordered Lists – Ordered Lists – Definition Lists; Tables – TABLE, TR and TD Tags – Cell Spacing and Cell Padding – Colspan and Rowspan; Frames: Frameset – FRAME Tag – Frame inside other frames – NOFRAMES Tag; Forms: FORM and INPUT Tag – Text Box – Radio Button – Check box – SELECT Tag and Pull Down Lists: Hidden – Submit and Rest; Some Special Tags: COLGROUP – THREAD, TBODY, TFOOT - _blank, _self, _parent, _top – IFRAME – LABEL – Attribute for<select>-textare

Text Book:

1. Xavier, New Age International Publishers
2. Internet and Web Design – rameshbangia, Firewall Media

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCS15E83	HTML	1	0	1	2	2

1. Develop a HTML document, which displays your name as <h1> heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.

2. Write names of several countries in a paragraph and store it as an HTML document, world.html. Each country name must be a hot text. When you click India (for example), it must open india.html and it should provide a brief introduction about India.

3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.
4. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.
5. Develop complete set of web pages to describe you skills in various areas using HTML.
6. Develop a web site to publish your family and the details of each member-using HTML.
7. Develop a HTML document to display a Registration Form for an intercollegiate function.
8. Develop a HTML document to design Alumni Registration form of your college.
9. Create a HTML table with rows and columns and split them using Rowspan and Colspan.
10. Create a web page in the format of front page of a news paper using Text links. Align the text with colors

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCS15E84	TALLY	1	0	1	2	2

Creating a new company
 Creation of essential ledgers
 Capital account
 Purchase account
 Sales account
 Direct expenses
 Cash account
 Profit & Loss account
 Debtors account
 Creditors account
 Creation of inventory
 Stock group Unit of measure Stock item
 Creation of ledge
 Single ledgers
 Multiple ledgers
 Voucher posting
 sales order
 Making actual sales
 Purchase order
 Making actual purchase
 Returns accounting for receipts and payments
 Reports

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCS15E85	SPSS - STATISTICAL PACKAGE FOR SOCIAL SCIENCES	1	0	1	2	2

1. Construction of Frequency tables: Univariate Frequency tables -- Cross- Tabulation
2. Graphical representation of Data: Bar diagram – Simple Bar diagram, Multiple Bar Diagram, Sub divided Bar Diagram, Histogram Pie Diagram
3. Calculation of Measures of Central Tendencies: Mean, Median and Mode, Geometric mean
4. Calculation of Methods of Dispersion - Standard Deviation, Quartiles, Skewness, Kurtosis
5. Calculation of Correlation Coefficient: (a) Karl Pearson's Correlation Coefficient, (b) Spearman's Rank Correlation Coefficient
6. Calculation of Regression Trend: (a) Trend Line
7. Test of Significance for Single and two Samples – Large Sample Test (Z-Test) (a) Test for Mean, (b) Test for Proportion, (c) Test for Standard Deviation
8. Test of Significance for Single and two Samples – Small Sample Test (t-Test, F-test) (a) Test of Mean, (b) Test of Variances

9. Non-Parametric Test (a) One –Way Chi-square test (test for Homogeneity) (b) Two–Way Chi-square test (test for Attributes)

10. Test of Homogeneity of Means for more than 2 samples (a) One –Way ANOVA (b) Two–Way ANOVA

Reference Books:

1. Tally Bible by V. Sundaramoorthy

2. Tally – V. Palanivel , Margham Publications, Chennai

3. SPSS for Beginners, 1999 Vijay Gupta, Published by VJBooks Inc.

4. Levine's Guide to SPSS for Analysis of Variance.2nd Edition, Melanie C. Page, Sanford L. Braver and David P. MacKinnon, LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS2003 Mahwah, New Jersey, London.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCS15E86	DHTML and XML	1	0	1	2	2

Unit I

Intro, DHTML coding, examples, Pong Program, Database Design - Normalization Readings, Pong

Unit II

Normalization, Database Design, ASP and SQL examples, XML, DOM and XSL, Database examples- Normalization practice - XML resume with DOM, XSL

Unit III

Normalization and XML review, Intro to Java, Basic applet IO, control structures, methods, tracing the runtime stack - Applet In, Applet Out, Km to miles - Read and write code examples

Unit IV

2 dim arrays, OOP, multiple classes, inheritance and polymorphism, arrays of classes - Magic Square Rolodex

Unit V

Final, Programming help, Data Structures, Dynamic Memory, Recursion

Text Book:

1. DHTML: Learning by Example, Robert B. Mellor
Franklin, Beedle & Associates, Incorporated, 2003.

2. Xml: The Complete Reference By Williamson Tata McGraw-Hill Education,2001.

DEPARTMENT OF BIOTECHNOLOGY

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	UBT15E81	HEALTH AND FITNESS	2	0	0	2	2

Objectives

To enable the students to Learn about the terms related to health and fitness

Comprehend the interaction between fitness and nutrition

UNIT I:

Health:Concept of Health, changing concepts definitions of health, dimensions of health, concept of well being, spectrum of health, determinants of health, ecology of health, right to health, responsibility for health, indicators of health.

UNIT-II:

Exercise and Health related fitness:Health related fitness, health promotion, physical activity for health benefits.Sports related fitness:Role of nutrition in sports, nutrition to athletic performance.

UNIT-III:

Body weight and composition for Health and Sports: Ideal body weight, values and limitations of the BMI, composition of the body, Diet during training, prior to competition, during Dietary supplements after competition for sports.

UNIT-IV:

Exercise performance: Energy expenditure during physical activity, carbohydrate metabolism and performance, fat metabolism and performance, effect of exercise on protein requirements, physique and sports performance.

UNIT-V:

Exercise programmes: Resistance exercise training, aerobic exercise, types of exercise, effective for weight contrast, -dieting or exercise, weight reduction programme for young athletes.

REFERENCES:

- 1.K. Park Test book of preventive and social medicine, 15th edition, MIS Banarsidas Bhano Publishers, Jabalpur, 1997.
- 2.Melvin H.Williams, Nutrition for Health, fitness and Sports, 7th edition, MC Graw Hill international Edition, 2005.
- 3.Micheal J.Gibney, Ian A Macdonald and Helan M.Roche, Nutrition and Metabolism, Blackwell Publishing Company, Bangalore, Reprint 2004

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	UBT15E82	MUSHROOM CULTIVATION	2	0	0	2	2

Objective

To provide students with a basic understanding and knowledge of mushroom cultivation.

To develop awareness among students about storage and utility of mushroom.

UNIT – I: INTRODUCTION

Mushroom Technology - Introduction, History and Scope - Edible and Poisonous Mushrooms. Vegetative characters - Formation and development of Basidiocarp, structure of basidiocarp - *Agaricus*. Importance and nutritive value of edible mushrooms. Research Centres - National level and Regional level.

UNIT II: MUSHROOM TECHNOLOGY

Cultivation of button mushroom (*Agaricus bisporus*), oyster mushroom (*Pleurotus sajorcaju*) and paddy straw mushroom (*Volvariella volvcea*). Isolation and culture of spores, culture media preparation. Production of mother spawn, multiplication of spawn - Inoculation Technique - Cultivation technology - Substrates, composting technology, bed, polythene bag preparation, spawning - casing - Cropping - Mushroom production - Harvest - Storage methods and marketing. Factors affecting the mushroom bed preparation.

UNIT III: STORAGE AND NUTRITION

Short-term storage (Refrigeration - upto 24 hours) Long term Storage (canning, pickles, papads), drying, storage in salt solutions. Nutrition - Proteins - amino acids, mineral elements nutrition - Carbohydrates, Crude fibre content - Vitamins.

UNIT-IV: PESTS AND DISEASES OF EDIBLE MUSHROOMS :

Pests and diseases of Edible mushrooms: Environmental, fungal, bacterial, viral, insect pests and Nematode diseases and competitor moulds.

UNIT V: FOOD PREPARATION

Types of foods prepared from mushroom - western and Indian recipes - Soup, Cutlet, Omelette, Samosa, Pickles, Curry, powders. Cost benefit ratio - Marketing in India and abroad, Export Value.

Text Book

1. Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991) Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.

REFERENCE BOOKS

1. Swaminathan, M. (1990) Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
2. Tewari, Pankaj Kapoor, S.C., (1988). Mushroom cultivation, Mittal Publications, Delhi.
3. Nita Bahl (1984-1988) Hand book of Mushrooms, II Edition, Vol. I & Vol.II.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	UBT15E83	HERBAL MEDICINE	2	0	0	2	2

Objective

1. To provide students with a basic understanding and knowledge of dietary supplements often used by patients to self-treat a health condition or to maintain a healthy body and mind.
2. To develop awareness among students about herbal remedies and their utility.

Unit I

Terminologies – Definitions – Classification of medicinal plants based on their effects – Ecological status with special reference to India.

Unit II

Allergens – types – sources – active principles – Chemical nature – Cell modifiers – Lectins – mutagens, teratogens – Allergic reactions with known examples.

Unit III

Drugs acting on brain and nervous system – Rheumatic arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.

Unit IV

Cardiovascular diseases – blood pressure – cardiac drugs of plant origins – alkaloids, anticoagulants – basic mechanism of action. Pulmonary / respiratory disorders – asthma – bronchitis – common cold – allergy – Remedy from plants.

Unit V

Drugs for urinogenital disorders – roots of *Withania somnifera* – Memory stimulants – *Centella asiatica* – Drugs for dissolving kidney stones – *Musa paradisiaca* (pseudostem) – Antiinflammatory drugs – *Cardiospermum* – Anticancer drugs – *Catharanthus roseus*.

TEXTBOOK:

1.Gokhale, S.S., C.K.Kokate and A.P. Purohit (1994) *Pharmacognosy*. Nirali Prakashan. Pune.

REFERENCES

- 1.Tyagi, Dinesh Kumar (2005) *Pharma Forestry. Field Guide to Medicinal Plants*. Atlantic Publishers and Distributors, New Delhi.
- 2.Faroogi, A.A., and B.S. Sreeramu (2004). *Cultivation of Medicinal and Aromatic Crops*. University Press (India) Pvt. Ltd., Hyderabad.
- 3.Singh & Jain (1985) *Taxonomy of Angiosperms*. Rastogi Publications, Meerut.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	UBT15E84	NUTRITION THROUGH LIFE CYCLE	2	0	0	2	2

Objectives

To understand the Nutritional needs from birth to adult and old age.

To develop an attitude for planned nutritional diet.

UNIT-I :

RDA for Indian basis for requirement, computation of allowance based on energy expenditure, components of energy expenditure. General concepts about growth and development through different stages of life.

UNIT-II

Nutrition in Infancy, Preschool and School going age:a.Preschool -

Growth and development of preschool children, Food habits and nutrient intake of preschool children. Dietary allowances and supplementary

foods.b.School going age -Physical development, Nutritional status of school children, school lunch program, factors to be considered in planning a menu, food habits and nutritional requirement, packed lunch.

UNIT-III

Nutrition during Adolescence and Adults:a.Adolescence: Changes of growth characteristics of adolescents. Nutritional needs of the adolescents. Eating disorders.b.Adults: Nutrition for adults. Basis for requirement. Nutrition and work efficiency.

UNIT-IV :

ICMR Nutrient allowances, Dietary guidelines. Common nutrition related problem of pregnancy and Lactation. Current scenario in the field of Nutrition in pregnancy and Lactation.

UNIT-V

1.Geriatric Nutrition Nutrition allowances -Dietary Guidelines-Nutrition and work efficiency modifications in diet. Physiological changes in aging-psycho social and economical factors affecting eating behavior.

2.Infancy Rate of growth, weight as the indicator, Nutrition allowances for the infants. Breast feeding.Weaning foods suitable for infants. Premature infant and their feeding infant formulas. Lactose intolerance

Reference

- 1.Clark, N., Sports Nutrition Guide Book, Versa Press, U.S.A., 1997.
- 2.Williams, M.H Nutrition Aspects of Human, physical and Athletic performance, II Edition, Spring field publication, Illinois, 1995.
- 3.Lankford, R.T. Marie and Steward, J., Nutrition and physical fitness, Foundation of Normal and Therapeutic Nutrition, Wiley Medical publication, New York, 1985.
- 4.William, Sue Rodwell -Nutrition and Diet Therapy (1985) 5thedition Moshey Co., St Louis.
- 5.M. Swaminathan "Principles of Nutrition and Dietetics" 1993, Bappeo 88, Mysore Road, Bangalore-5600018.
- 6.Maurice E, Shils, James A. Olson, Moshe Shike "Modern Nutrition in health and disease" eighth edition, Vol I, II Lea & Febiger Philadelphia, A Waverly Company, 1994

DEPARTMENT OF COMMERCE

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCM15E81	INDUSTRIAL RELATIONS LABOUR WELFARE AND LABOUR LAWS	2			2	2

Objective:

- To understand basic concepts in Industrial Relations and Labour Laws.
- To educate the students about the importance industrial relations, labour welfare, functions of trade unions and participation of workers in management.

Unit – I

Industrial Relations - Meaning – Definitions of Industrial Relations – Industrial Relations Systems – Objectives of Industrial Relations – Importance of Industrial Relations – Scope of Industrial Relations – New frontiers of Employees Relations.

Unit – II

Labour Welfare – Meaning – Definitions of Labour Welfare – Objectives of Labour Welfare – Principles of Labour Welfare - Reasons for the Welfare Activities in India

Unit – III

Historical Development of Labour welfare in India / Evolution of Labour Welfare in India – Labour Welfare Officer – Agencies for Labour Welfare Work in India – Labour Welfare – Central Sector – Craftsmen Training Scheme – National Employment Service – welfare of Labour – Second National Commission on Labour – Child Labour – Rehabilitation of Bonded Labour – Women Labour – Occupational Safety and Health

Unit – IV

Trade Unions - Meanings – Definitions of Trade Union – Nature and Characteristics of Trade Union - Objectives of Trade Union – Advantages and Importance of Trade Unions

Unit – V

Workers' Participation in Management - Meaning – Definitions of Workers' Participation – Features of Workers' Participation in Management – Objectives of workers participation in management – Need for participation – Levels of participation – Forms of participation – Five interpretation of participation.

TEXT BOOK

Nandhakumar B, (2014), Industrial Relations, Labour Welfare and Labour Laws, Vijay Nicole Imprints, Chennai

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCM15E82	RISK AND INSURANCE MANAGEMENT	2			2	2

Objective:

- To impart the knowledge on risk management in commerce and trade.
- To introduce the students to the origin and functions of life insurance business and its importance in Indian Financial Markets.

Unit – I

Risk – Meaning – Nature – Concept of Risk – Causes of Risks – Dangers of Uncontrolled Risks – Characteristics of Insurable Risks - Important Classification of Risks.

Unit – II

Risk Management – Definition – Nature – Importance – Advantages - Limitations – Process of Risk Management – Principles of Risk Management.

Unit – III

Meaning and Definition of Insurance – Functions of Insurance – Importance of Insurance – Benefits of Insurance - Scope of Insurance Business – Reinsurance – Types of Insurance.

Unit – IV

Principles and Documents of Insurance Contract – Essential Elements of a contract of Insurance – Insurance Documents – Proposal forms – Cover Note – Certificate of Insurance – Endorsement

Unit – V

Life Insurance – Life Insurance Corporation of India (LIC) – Introduction – Concept of Insurance Market – Characteristics of Life Insurance Services – Life Insurance Marketing Mix – 4 C's of LIC Marketing – Bancassurance – Meaning – Types – Benefits.

TEXT BOOK

Periasamy. P, (2013), Risk and Insurance Management, Vijay Nicole Imprints, Chennai.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCM15E83	ADVERTISING AND SALESMANSHIP	2			2	2

Objective:

- To understand basic concepts of Marketing.
- To introduce the students about the importance of the promotional aspects of Marketing and the strategies of Advertising and Copy-writing.

Unit – I

Marketing Communication - Introduction – The Marketing Mix – Identifying Target Audience — Advertising and Promotion Mix – Factors Influencing Promotional Mix Product Related Factors – Meaning of Advertising – Evolution of Advertising – Development of Advertising in India – Functions of Advertising – Classification of Advertising

Unit – II

Economic Aspects of Advertising – The Responsibility of the Advertiser – Meaning – Importance of Advertising Agency – functional Departments of an Advertising Agency – Functions of Advertising Agencies – Advertising Budget – Methods of Determining the Advertising Budget Appropriation – Definition of Advertising Campaign – The Copy – Purpose of the copy – Designing Individual Advertisements – Purpose of Layout – Functions of the Layout – Direct and Indirect Advertising – Need for Measuring Advertising Effectiveness

Unit – III

Personal Selling and Salesmanship – Definition - Features – Classification of Salesmen – Qualities of a Successful Salesman – Steps in the Personal Selling Process – AIDAS Theory of Selling – Importance of Sales Organisation – Meaning of Recruitment and Selection –

Processes of Recruitment – Sources of Recruitment – Motivation of Salesmen – Meaning of Motivation – Method of Motivation – Tools of Motivation

Unit – IV

Sales Promotion & Publicity – Concept – Benefits – Objectives – Communication – Medium of Reach – Tools Employed for of Sales Promotion – Planning Sales Promotion Programmes- Definition – Classification of Buying Motives – Sizing Up of Customers – After Sales Service

Unit – V

Publicity - Meaning and Definition – consumer movement in India – consumer Legislations in India – The Consumer Protection Act, 1986 – Introduction – Purposes of Advertising Research – Advertising Strategy Research – Sources of Information

Text Book

P. Saravanavel & S.Sumathi, 2014, Advertising and Salesmanship, Margham Publication. Chennai.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCM15E84	LOGISTICS AND SUPPLY CHAIN MANAGEMENT	2			2	2

Objective:

- To impart basic knowledge of Logistics and Supply Chain Management.
- To provide awareness on the functions of Logistics and Supply Chain Management like material handling, packaging, EDI, and demand forecasting.

Unit – I

Supply Chain Management - Introduction – Definition of Logistics – Definition of Supply Chain – Importance of Logistics and Supply Chain – Objectives of Business Logistics – Functions of Logistics Management - Customer Service - Customer Service Elements – Dimensions of Customer Service – Operational Performance – Supply Chain Relationships – Channel Structure – Relationship Management – Warehouse Management – Types of Warehouses – Functions of public warehouses – Documents used in public warehouses

Unit – II

Material Handling - Material handling consideration – Space Layout – Types of Layout for order picking – Importance of effective transportation system – Modes of transportation – Cost Characteristics by mode – Selection of a Mode of Transportation – Various factors used for classification

Unit – III

Consumer Packaging – Industrial Packaging – Physical Environment – Element environment – Importance of communication in Logistical – Principles of logistics information – Electronic data interchange (EDI) – Distribution Networks – factors influencing distribution network design – components of customer Service – Advantages / Disadvantages – Manufacturer storage with direct shipping and in-transit merge – Advantages and Disadvantages

Unit – IV

Sourcing - Meaning - Forecast – Definition – Nature of Demand – Forecast components – Approaches – Techniques – Organisational structures - Teaming and Learning – Problems in forming teams.

Unit – V

Drivers of supply chain performance – Classification of supply Chain Drivers – Components of facilities – Components of inventory - Factors influencing network design decisions – Locating plants and warehouses simultaneously – Methodology for evaluating supply chain decisions – Models representing uncertainty of factors – Government Policies and Regulations.

Text Book

Natarajan. L Logistics and Supply Chain Management, 2014, Margham Publication. Chennai.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCM15E85	CREATIVITY AND INNOVATION MANAGEMENT	2			2	2

Objective:

- To teach fundamentals of creativity and innovation management.
- To provide awareness on the attributes of thinking, sources of innovation, creative problem solving, and techniques of unblocking creativity.

Unit – I

Introduction – Definitions – Main Components – Individual and Group Creativity – Creativity at an Individual Level – Brain Processes - Barriers for Individual Creativity – Barriers to Organizational Creativity – Developing Creativity – Creating a Climate for Creativity – Convergent Thinking – Divergent thinking – Difference between Convergent and Divergent thinking – Idea Generation Techniques: Sparking Creativity – Thinking Hats Methods.

Unit – II

Attributes of Good Thinkers – Components of Critical Thinking - Creative Process – The Creative Person – qualities of a creative person – Differences between Critical and Creative Thinking – Thinking of Left and Right Brain – Right Brain Vs. Left Brain – Mental Fitness Exercises for the brain - Lateral Thinking – Vertical Thinking – Difference between Lateral and Vertical thinking – Attitudes Towards Lateral Thinking – Basic nature – Need – Uses – Techniques

Unit – III

Innovation – Sources of Innovation- Making Sense of Innovation – Categories of Innovation – Managing Innovation Development within Organizations – Managerial Roles and Behaviors in support of Innovation- Invention – Difference between innovation and invention- Suspend judgement- Analogies- Lateral Thinking – Creativity Exercises.

Unit – IV

Problem – problem solving – Creative Problem Solving – Steps in the Creative Problem Solving Process – Rules for Creative Problem Solving – Models of Techniques of Creative Problem Solving – Brainstorming- Mind Mapping - Mental Gym quiz

Unit – V

Blocks to Creativity – Techniques help to overcome blocks of creativity – Strategies for Unblocking – Fears and Disabilities – Energy for your Creativity – Making the Environment More Creative

Text Book:

Rizwan Ahmed, P Creativity and Innovation Management, Margam Publications (2015)

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCM15E86	RETAIL MARKETING	2			2	2

Objective:

- To instill the fundamentals of retailing and retail marketing in the minds of students.
- To provide the knowledge of marketing mix, consumerism, pricing in retail marketing, E-tailing, and the dynamics in retail marketing.

Unit – I

Definitions of Retailing –Importance of Retailing – Organised Retailing in India- Functions of Retailing – Characteristics of Retailing – Retail Marketing – Types of Retailers – Itinerant retailers – Departmental Stores – Hyper markets – Franchising

Unit – II

Marketing Mix – The four Ps of Marketing mix – Retail Price Mix – Meaning and definition of Pricing – Factors influencing pricing – Pricing and the Relationship to value – Consumer behavior and retail operations – Retail buying roles – Need for studying consumer behavior in the retail context – Pricing policies – Cost oriented pricing policies (Break – even analysis) – Competition – Oriented pricing policy – Value – Based pricing

Unit – III

Consumerism – Definition of Consumerism – Reasons for consumerism – Evolution of Legislations for consumer protection – Business Ethics – Characteristics Making Business Decisions Ethical

Unit – IV

E- Tailing – Meaning- Reasons for the Growth of E-tail Market – Challenges to the growth of e-tailing – Global Scenario – E-Tailing in India

Unit – V

Factors involved in retailing – Reasons of internationalization – Factors contributing to the growth of internationalization – Common Market Entry Strategies – Future of Retailing – Various Strategies for entering Foreign Markets

Text Book:

Natarajan . L, Retail Marketing –, Margham Publications (2015)

DEPARTMENT OF COMMERCE (A&F)

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UAF15E81/UCC15E81	General Commercial Knowledge	2	0	0	2	2

Objectives

To understand the concept and commercial knowledge in this area

UNIT-I

Commerce, Trade, Industry - Meaning - Scope and Importance of Commerce - Economic Basis of Commerce.

UNIT-II

Forms of Business Organizations - Sole Trade - Partnership Features - Merits and Demerits.

UNIT-III

Joint Stock Company - Features - Memorandum and Articles - Contents - Prospects and Contents - Shares and Debentures - Types - Co-operatives - Features - Types - Advantages.

UNIT-IV

Office Organization - What is an Office? Functions of Office - Office Accommodation and Environment - Office Layout - Office Manual.

UNIT-V

Handling of Mail, Filing and Indexing - Inward / Outward Mail - Filing and Indexing - System, Essentials and Classification - Methods - Horizontal vs Vertical Filing - Centralized and Decentralized – Indexing.

TEXT BOOK

Nagarajan. K.L. “Principles of Commerce and General Commercial Knowledge” S. Chand & Co, New Delhi, Editiond 2012.

REFERENCE BOOKS

1. Vinayagam & Radhasamy “A text book of Commerce” - S. Chand & Co, New Delhi.
2. Reddy. P.N. & Gulshan S.S – “Principles & Practice of commercial knowledge” – Tata McGraw Hill- New Delhi.
3. Bahl J.C. & Dhongde. E.R “Elements of Commerce & Business Methods”- New Book & Co., Mumbai.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UAF15E82/UCC15E82	Elements Of Accountancy	2	0	0	2	2

Objectives

To know the basic concept of accountancy

UNIT-I

Definition of Accountancy – Book Keeping – Accounting Concepts and Conventions – Double entry System – Accounting Rules – Journal Entries.

UNIT-II

Posting of Journal to Ledger – Balancing of Ledger Accounts – Trial Balance.

UNIT-III

Preparation of Three Columnar Cash Book – Contra Entry – Petty Cash Book – Imprest System

UNIT-IV

Final Accounts – Trading and Profit and Loss account and Balance Sheet – Format.

UNIT-V

Final Accounts –Simple adjustments – Closing Stock, Outstanding and Prepaid Expenses, Depreciation and Provision for Bad and Doubtful Debts.

TEXT BOOK

Reddy. T.S & Murthy. A – “Financial Accounting”, Margham Publications, Chennai
Edition 2013

REFERENCE BOOKS

- 1.Shukla M.C. & Grewal. T.S. – Advanced Accounts, S.Chand & Co.Ltd., New Delhi,
Edition 2012
- 2.Jain. S.P & Narang. K.L. – Advanced Accountancy, Kalyani Publications, New Delhi,
Edition 2013
- 3.Gupta. R.L. & Gupta. V.K. – Financial Accounting, Sultan Chand & Sons, New
Delhi, Edition 2013
- 4.Vinayagam. N. & Mani P.L - Principles of Accountancy, S.Chand Co. Ltd., New Delhi
Edition 2013

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UAF15E83/UCC15E83	Financial And Management Accounting	2	0	0	2	2

Objectives

To examine the financial statements in financial accounting

UNIT 1

Introduction to management – meaning- definition, objectives, advantages and disadvantages

UNIT 2

Financial accounts – income statements and balance sheet: concepts and uses.

UNIT 3

Analysis of financial statements: meaning, objectives, types and methods: comparative – common size and trend analysis

UNIT 4

Budgets and budgetary control: meaning, significance, pros and cons- Types: financial base budgets (cash budgets only)

UNIT 5

Marginal costing- concept, objectives, uses, MCS computation of PV ratio, BEP, MOS

TEXT BOOK

Arulanandam. A – “*Advanced Accounting*” Himalaya Publishing House. Edition 2013

REFERENCE BOOKS

- 1 Gupta & Radhasamy, *Advanced Accounting*, Sultan Chand & Sons. Edition 2013
- 2 Shukla & Grewal. T.S. *Advanced Accounting*, S.Chand & Company. Edition 2013
- 3 Jain & Narang, *Advanced Cost Accounting*, Kalyani. Publications. Edition 2013

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UAF15E84/UCC15E84	Fundamentals Of Marketing	2	0	0	2	2

OBJECTIVE:

1. To enable the students to understand the elements of the complex world of marketing.
2. To make the students to appreciate the need for marketing science in the modern business world.
3. To help the students to appreciate the various components of marketing.

Unit 1: INTRODUCTION TO MARKETING

Definition of markets, marketing and marketing management – Marketing and consumer, Environment – marketing mix – understanding the consumer and consumer market . Segmentation.

Unit 2: PRODUCT

Product – new product development – product mix and product life cycle - Strategy – product levels and product lines – branding, packaging and labeling.

Unit 3: PRICING

Pricing – factors to consider for pricing – internal and external, including pricing objectives – methods of pricing.

Unit 4: CHANNELS OF DISTRIBUTION

Marketing channels and its nature – their functions and types – channel design management – channel behavior, organization and conflict.

Unit 5: PROMOTION

Promotion – a view of the communication process – setting the communication objectives – steps in developing effective communication.

TEXT BOOK:

1. Philip Kotler , *Principles Of Marketing*, Prentice Hall Publishers, Edition 2011.

REFERENCE BOOKS:

1. Dr.Varshney. R. L. & Dr. Gupta. S. L., *Marketing management, - an Indian Perspective*, Sultan Chand and Sons, New Delhi, Edition 2003.
2. William J. Stanton, Michael J Etzel, Bruce J Walker, *Fundamentals of Marketing*, Tata Mc Graw – Hill Publishers, New Delhi, Edition 2003.
3. Philip Kotler & Gary Armstrong, *Marketing Management*, PHI Publications, New Delhi, Edition 2002.

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UAF15E85/UCC15E85	Indian Banking	2	0	0	2	2

OBJECTIVE:

1. To expose the students to various concepts in Indian Banking system.
2. To make the students understand the provisions of the Banking Regulations Act, 1949.

Unit 1: BANKING – AN OVERVIEW

Nature and functions of commercial banks – Deposit mobilization – Branch expansion – Priority sector financing – Village adoption scheme – Branch banking – Unit banking – Deposit banking – Investment banking – Correspondents banking. Reserve bank of India - Functions – Regulatory powers.

Unit 2: BANKER & CUSTOMER

Relationship between banker and customer – Honoring of cheques – Secrecy of customers' account – General lien – Right to set off.

Unit 3: CHEQUES

Legal characteristics of a Cheque – Endorsement and crossing of cheques – Collection and payment of cheque.

Unit 4: LOANS & ADVANCES

Secured and unsecured loans and advances – Principles of lending – kinds of lending.

Unit 5: OTHER FUNCTIONS

Electronic banking – ATM – Credit cards – Debit cards – Telephonic banking – Door to door banking – Merchant banking – Nature and scope – Project appraisal – Credit syndication – SEBI guidelines – Venture capital – Underwriting.

TEXT BOOK

REFERENCE BOOK:

1. Varshney and Sundaram, *Banking and Financial System of India*, Sultan Chand Publishers, Edition 2000.
2. Sekar, *Banking Theory & Practice*, Vikas Publishing House, Edition 1999.
3. Vasant Desai, *Indian Banking*, Bookwell Publishers, New Delhi, Edition 1997

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UAF15E86/UCC15E86	Elements Of Insurance	2	0	0	2	2

Objectives

To understand the concept and rules and regulations of Insurance Industry in India.

UNIT-I : INTRODUCTION

Insurance - Definition - Functions of Insurance - Nature of Insurance - Benefits of Insurance to Individuals, Business Units and the Society.

UNIT-II: PRINCIPLES OF INSURANCE

Basic Principles of Insurance - Utmost good faith - Insurable Interest - Material Facts - Indemnity - Proximate Cause. Economic Principles of Insurance - Sharing - Subrogation - Contribution. Financial Principles of Insurance - Premium Funds - Investments - Reserves - Surplus - Valuation of Surplus.

UNIT-III : CLASSIFICATION AND TYPES –Life Insurance

Classification of Insurance - Life Insurance - Types of Life Insurance: Pure and Terms –

UNIT IV: General Insurance

General Insurance - Types of General Insurance: Fire, Marine, Motor, and Miscellaneous.

UNIT-V: AGENTS AND UNDERWRITING

Law relating to Agents - Procedure for becoming an Agent - License, Cancellation of License. Underwriting Procedures - Assignment and Nomination

TEXT BOOK

Mishra, M.N.: *Modern Concept of Insurance*, New Delhi, S.Chand & Co Ltd, Edition 2004.

REFERENCE BOOKS:

1. Tripathy and Prabir Pal : “*Insurance Theory and Practice*”, Prentice- Hall of India Pvt Ltd, Edition 2005.
2. Mishra, M.N.: *Insurance Principles and Practice*, New Delhi, S.Chand & Co Ltd., Edition 2005

Department of Journalism and Mass Communication

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	UJM15E81	CORPORATE COMMUNICATION	2	0	0	2	2

OBJECTIVES:

- To introduce basics of corporate communication.
- To impart basic understanding of corporate communication in companies.

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

Unit I:

Definition, nature and scope of Corporate Communications. Comparison with Public Relations, advertising, publicity and propaganda. Corporate communication - Basic tools, strategies and planning, core functions of Corporate Communications.

Unit II:

Corporate Communications - structure and management, corporate communications in industry, dealing with internal public. Corporate Communication in Brand Promotion. Media for corporate communication, House journal and open house.

Unit III:

Corporate communications tools for internal and external audiences. Media relations – Media conferences and releases, media queries, rejoinders, media expectations (both print and electronic). Pressure groups.

Unit IV:

Corporate communications with regards to community, investor relations, marketing communications. Corporate advertising and exhibitions.

Unit V:

Corporate social responsibility, social audit, corporate philanthropy and social service, corporate communication during crisis. The government as corporate. Corporate communications in local bodies & Non-Governmental Organizations (NGOs).

TEXT BOOK:

1. Scot Ober, Contemporary business communication, fifth edition, biztantra.
2. Lesiler&Flat lay, Basic Business communication. Tata McGraw Hill.

Books for REFERENCES

1. Cutlip, Center & Broom, EFFECTIVE PUBLIC RELATIONS, Prentice Hall International, USA, 2000.
2. Fernandez, Corporate Communications – A 21st Century Primer, Response Books (Sage Publications India Private Limited), New Delhi, 2004.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
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III	UJM15E82	PUBLIC REALTIONS	2	0	0	2	2
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Objective of the subject:

To impart the skills of PR in media relations, employee communication, crisis management etc. To teach them how to write a press release, organize a press conference and to publish a house journal. Students will get to know the functioning of PR department, ethical aspects in PR and research and its application in PR.

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT I:

Public Relations-working definitions, evolution of PR, Tools (Interpersonal, Mass media and Selective media), Functions, Present status of PR, Public Relations practice in Indian Context (public and private sector), PIB and its organizational structure, Ethics and PR, Public Opinion and Propaganda, types of Propaganda.

UNIT II:

PR Models and Theories-Four Classic Models of PR, Theories of management, Role of PR in organization, in-house PR departments and PR consultancies, functioning of PR department, PR and goodwill, Defining Publics, internal and external publics, Public Relations for internal and external communication, Community Relations, Employee Relations, Government Relations, Lobbying.

UNIT III:

Stages of PR-Planning, Implementation, Research, Evaluating Feedback, Budgeting and Media Planning, Media Relations and Publicity, Types of Publicity, Advertising for PR communications

UNIT IV:

Communication and PR- oral communication in PR, organizing press conference, writing news releases, reports and proposals, press kits, PR functions and events, role of PRO in event management, House journals and periodicals, types of PR periodicals : internal and external, advantages and limitations.

UNIT V:

Crisis management and Risk management- types of crisis, crisis communication and PR, Public Relations and social responsibility, PR research- types of PR research, Public Relations case studies for Crisis communication.

TEXT BOOKS:

1. Management of Public Relations and Communication –Sengupta, Vikas Publishing House 2005 Paperback Edition.
2. A Textbook of PR & Corporate Communications – Parvati Mahalanobis, Dominant Publishers and Distributors 2005 Edition.

Books for REFERENCES:

1. The HP Way: How Bill Hewlett and I built our company, Packard D, Collins, 2006,
2. Crisis Communications, Fearn, Banks, Kathleen, Evbaum Associates, 2007.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	UJM15E83	ADVERTISING	2	0	0	2	2

Objectives

- Define and explain advertising objectives, its role and functions.
- To give an understanding of ad agency and its functioning.
- To impart skill of ad making.
- To make students aware of ad industry and its issues

Unit – I: Advertising – Definitions –Meaning, Nature, Scope- Types of Advertisements- Role of Advertising in Society- Advertisements and Ethics.

Unit – II: Advertising Agency : Role and function, media selection, idea generation. The Advertising department : Organisation –Above the line & below the line –Working and supervising an agency – Below - the line – in – house responsibilities.

Unit – III: Layout and typography – Planning the ad – AIDCA – Stages in Design – the eight laws of design – Headlines – Typography –Radio commercials & TV commercials .

Unit IV: Copy writing; Types of Copy; How to prepare; Principles of writing; Main features; Copy writer: qualities, duties and responsibilities; Copy for electronic media and print media; Ad-administration and Video production.

Unit V: Ethics in advertising, media laws concerning advertising, apex bodies in advertising-

Indian Society of Advertisers (ISA), Advertising Agencies Association of India (AAA1), Advertising clubs, Advertising business-the national and global advertising scene, Portrayal of women in advertising-social effects of advertising.

TEXT BOOK :

1. “ Advertising and Promotion” – Geroage E- Belch & Michael. A. Belch- Tate McGraw-Hill – Sixth Edition.
2. “ Promotion Management” –John –J. Bunnelt- West Publishing Company.

Book for REFERENCE:

1. “Foundations of Advertising Theory and Practise”- Chunawallah, S.A. and K.C. Sethia (2000): Himalaya Publishing House, Mumbai.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	UJM15E84	FILM STUDIES	2	0	0	2	2

OBJECTIVES:

- To introduce basics of Film Studies.
- To impart basic understanding of development of World Cinema.

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

Unit I

Advent of cinema. Indian (Hindi, Tamil & other languages), Film form and film History: Early Cinema (1893-1903). Development of Classical Hollywood cinema (1903-1927). Studio System. Classical Hollywood Cinema after the coming of sound.

Unit II

German expressionism (1919-1924). French Impressionism and Surrealism (1917-1930). Soviet Montage (1924-1930). Italian neo-realism (1942-1951). The French New wave (1959-1964). Japanese cinema. Cinema in the third world. Contemporary trends.

Unit III

Mise-en-scene-Realism, the power of mise-en-scene, aspects of mise-en-scene. space and time, narrative functions of mise-en-scene. Cinematographer properties-the photographic image, framing, duration of the image, montage and long take. Editing- dimensions of film editing, continuity editing, alternative to continuity editing. Sound-the powers of sound, fundamentals of film sound, dimensions of film sound, functions of film sound.

Unit IV

The concept of form in films, principles of film, narrative form, non-narrative form, dividing a film into parts and Genres (language, style, grammar, syntax.) Style as a formal system, narrative unity, ambiguity, a non-classical approach to narrative films, space and time, disunity, form, style and ideology.

Unit V

Planning, pre-production- Concept / Story development, Scripting / Screen play writing, Budgeting, Casting, Locations, Financing. Production-Shooting, Direction & Cinematography. Post production- Editing, Sound recording, Dubbing, Special effects, Graphics & Final mixing. Distribution & Exhibition.

TEXT BOOKS

1. Jill Neldes, *Introduction to Film Studies*, Routledge; 5 edition, 2011
2. Kuhn, A and Westwall, G *Dictionary of Film Studies*, Oxford Univ. Press, 2012

Books for REFERENCES:

1. David Bordwell, *Film Art: An Introduction*, McGraw-Hill, 2012
2. Thoraval, Yves, *The Cinema of India*, Praeger 2000

DEPARTMENT OF CAREER DEVELOPMENT

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	CDC15E81	INTERVIEW SKILLS AND RESUME WRITING	1	1	0	2	2

OBJECTIVES: At the end of this course, the students will be able to,

- Identify general theoretical principles related to interviewing including the major types of interviews
- Explain the parties involved in interviews, the roles enacted during interviews, the role of perception in interviews, and the nature of communication interactions.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to take up mock interview and create a video profile as part of the internal assessment.

UNIT – I

Interviews – Structure – Preparation - Research

UNIT –II

Pre-Interview: Managing Questions – Types – Probing Techniques – Structuring answers

UNIT –III

During Interview: Communication: Do's and Don'ts – Body Language – Gestures - Negotiation

UNIT –IV

Post Interview: Checklist: Asking for feedback – Reviewing your last interview - Planning for next interview

UNIT –V

Resume Writing: Introduction – Purpose – Types – Common Errors

REFERENCES

- Jayaprakash.S, The Art of Writing A Resume, Himalaya Publishing House Pvt. Ltd , 2010
- The Guide to Basic Resume Writing, Tata McGraw Hill, 2004

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	CDC15E82	CORPORATE ETIQUETTE	1	1	0	2	2

OBJECTIVES: At the end of this course, the students will be able to,

- Understand the concept of Corporate Etiquette
- Summarize the principles of proper courtesy as practiced in the workplace.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT – I

Corporate Etiquette: Workplace Courtesy- Practicing common courtesy and manners in a workplace- Etiquette at formal gatherings- Professional qualities expected from an employer's perspective - Hierarchy and Protocol

UNIT –II

Corporate Communication: Verbal Communication - Non-Verbal Communication- Facial Expression and Body Language- Active Listening- Virtual Communication – Usage of Official email and office phone

UNIT –III

Diversity and Cultural Awareness at Workplace: Impact of diversity- Cultural Sensitivity – Taboos and Practices – Inter-Cultural Communication

UNIT –IV

Attire Guide: Dress Code – Business Formal – Business Casual – Semi Formal – Festive Attire – Dressy Casual - Casual

UNIT –V

Presentation Skills: Individual presentations (General / Persuasive) – Group presentations – Creating – Delivering and Attending a presentation.

REFERENCE BOOKS:

- Shital Kakkar Mehra, *Business Etiquette: A Guide For The Indian Professional*, Harper Collins Publisher (2012)
- Nina Kochhar, *At Ease with Etiquette*, B. Jain publishers (2011)
- Nimeran Sahukar, Prem P. Bhalla, *The Book of Etiquette and Manners*, Pustak Mahal publishers (2004)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	CDC15E83	GROUP DISCUSSION	1	1	0	2	2

OBJECTIVES: At the end of this course, the students will be able to,

- Understand the concept of Group Discussion
- Summarize the techniques of brain storming discussions among the group.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to participate in mock group discussions and their skills will be evaluated for internal assessment.

UNIT – I

Group Discussion – Communication skills in Group Discussion

UNIT –II

Structure of Group Discussion – GD Process – Do's and Don'ts

UNIT –III

Group Discussion Techniques – Successful Group Discussion Techniques – Pre-requisites - Benefits

UNIT –IV

Skills Required – Leadership and Co-ordination

TEXT BOOKS:

1. Richard Denny, "Communication to Win; Kogan Page India Pvt. Ltd., New Delhi, 2008.

REFERENCE BOOKS:

1. Rousing Creativity: Think New Now Floyd Hurr, ISBN 1560525479, Crisp Publications Inc. 1999
2. Geoffrey Petty," how to be better at Creativity", The Industrial Society 1999

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	CDC15E84	LOGICAL REASONING AND MATH PLAYGROUND	1	1	0	2	2

COURSE OBJECTIVES: At the end of this course, the students will be able to,

- Critically evaluate various real life situations by resorting to Analysis of key issues and factors
- Demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to answer a model aptitude test for internal assessment.

UNIT –I

- Seating Arrangement
- Blood Relations
- Direction sense test

UNIT –II

- Venn Diagram
- Binary Logic
- Family Tree

UNIT –III

- Problems on assumption
- Problems on conclusions
- Problems on inferences

UNIT –IV

- Letter and Number series
- Brainteasers
- Logic Brainteasers

UNIT –V

- Riddles
- Traditional Riddles
- Logic Riddles

Reference

R S Agarwal, 'A modern approach to Logical reasoning' S.Chand Publishers

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	CDC15E85	MATH MAGIC	1	1	0	2	2

COURSE OBJECTIVES: At the end of this course, the students will be able to,

- Critically evaluate various real life situations by resorting to Analysis of key issues and factors
- Demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to answer a model aptitude test for internal assessment.

UNIT –I

- Problems on number Odd man out
- Problems on letter Odd man out
- Problems on verbal Odd man out

UNIT –II

- Placement logic puzzles
- Number puzzles
- Shape Puzzles

UNIT –III

- Tricky Puzzles
- Simple Puzzles
- Games Puzzles

UNIT –IV

- Cause and effect
- Brain bashers

UNIT –V

- Logical puzzles
- Word puzzles

REFERENCE

- Pam Schiller Big Book of Fun with Maths – Viva Books Private Limited (2011)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	CDC15E86	MATH OLYMPIAD	1	1	0	2	2

COURSE OBJECTIVES: At the end of this course, the students will be able to,

- Critically evaluate various real life situations by resorting to Analysis of key issues and factors
- Demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to answer a model quantitative aptitude test for internal assessment.

UNIT I

- Number systems
- Arithmetic of integers
- Complex numbers

UNIT II

- Inequalities
- Systems of linear equations
- Quadratic equations and expressions

UNIT III

- Trigonometry
- Geometry

UNIT IV

- Finite series
- Infinite series

UNIT V

- Permutations and combinations
- Probability

Reference

V.Krishnamurthy, C.R.Pranesachar, K.N. Ranganathan and B.J. Venkatachala “Mathematics Olympiad Primer” (Interline Publishing Pvt. Ltd., Bangalore).

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	CDC15E87	CURRENT AFFAIRS AND GENERAL KNOWLEDGE	1	1	0	2	2

OBJECTIVES: At the end of this course, the students will be able to,

- Be adept in the day to day happenings domestically and internationally.
- Improve the General Awareness and gear up for various competitive examinations

COURSE REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT 1

National Events

International Events

UNIT 2

Economy and Energy

India and The World

UNIT 3

Science and Technology

Defence and Environment

UNIT 4

Awards and Prizes

Sports

UNIT5

News Paper Analysis on Daily Basis

Analysis of Magazines on Weekly Basis

REFERENCES:

- Mammen Mathew, Manorama Year Book 2015 (50th Edition), Manorama Publishers (2014)
- SAP, The Best Book of General Knowledge 2015 + Most Popular Objective Current Affairs 2014, Student Aid Publishers (2015)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
IV	CDC15E88	PUBLIC SPEAKING: AN INTRODUCTION	1	1	0	2	2

OBJECTIVES: At the end of this course, the students will be able to,

- Decipher the importance of communication in personal and professional environments
- Gain experience of interpersonal, group and public communication
- Develop strategies for overcoming speech anxiety

COURSE REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT – I

Just A Minute: Preparing to Speak- Researching Your Subject- Organizing Your Speech- Preparing Supporting Materials- Using Language Effectively- Presenting Your Speech

UNIT –II

Speeches: Introductory - Informative – Persuasive – Special Occasions – Vote of Thanks

UNIT –III

Block and Tackle: Debating skills – Prepare – Practice – Perform – Express Vs Impress

UNIT –IV

Extempore: Analysis of famous and historic speeches from sections of literature and media – Impromptu talks

UNIT –V

Walk the Talk: Projects – TV Newscast – Adzap and a Major Speech

REFERENCE BOOKS:

- Carmine Gallo, **Talk Like TED, General Non Fiction (2014)**
- Dale Carnegie, **Public Speaking For Success, Manjul Publishing House (2008)**
- Dale Carnegie, **How To Develop Self Confidence And Influence People By Public Speaking, Pocket Books (1991)**
- Dale Carnegie, **The Quick And Easy Way To Effective Speaking, Pocket Books (1990)**

DEPARTMENT OF MATHEMATICS

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
III	UMA 15E81	FORMAL LANGUAGES AND AUTOMATA	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
1.	To study formal languages and automata and establish some of the properties of such systems.					
2.	To familiarize the students with some theories of mathematics in computer science.					

UNIT I: Finite Automata and Regular Expressions

Finite state systems – Basic definitions – Non-deterministic finite automata – Finite automata with ε moves – Regular expressions.

UNIT II: Properties of Regular Sets

The Pumping lemma for regular sets – Closure properties of regular sets – Decision algorithms for regular sets – The Myhill-Nerode theorem.

UNIT III: Context-Free Grammars

Introduction - Context-Free Grammars – Derivation trees – Simplification of Context-Free Grammars – Chomsky normal form.

UNIT IV: Pushdown Automata

Informal description – Definitions – Pushdown automata and context-free languages.

UNIT V: Turing Machines

Introduction – The turing machine model – Computable languages and functions – Techniques for Turing machine construction.

TEXT BOOKS:

1. Dr. M.K. Venkatraman, Dr. N. Sridharan, N. Chandrasekaran, Discrete Mathematics, Unit XII, Sections 1 to 12 (Units 1 & 2)
2. Rani Sironmoney, Formal Languages and Automata, The Christian Literature Society, Chennai (Unit 3, 4 & 5).

REFERENCES:

1. John E. Hopcroft, Jeffrey D. Ullman, Introduction to Automata Theory and Computations, Narosa Publishing House.
2. Ragade B.R., Automata and Theoretical Computer Science, Pearson Education.
3. Bernard M. Moret, The Theory of Computation, Pearson Education.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
III	UMA 15E82	DATA STRUCTURES AND ALGORITHMS	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
	1.	This language independent data structures enable to design algorithms using pseudocode and then build them into programs				
	2.	Learn the basic techniques to collect and analyze the data in respective project.				

UNIT I: Pseudocode – Algorithm analysis – Pseudocode examples – Abstract Data Type (ADT) – Data structure – ADT Operations.

UNIT II: Searching – Sequential search – Sentinel search, probability search, ordered list search – Binary search.

UNIT III: Linear lists – Linked lists – Linked list algorithm (create node, insert node, delete node algorithms only) – Stacks – Applications – Reversing data, backtracking.

UNIT IV: Queues – Operations – Array implementation – Recursion – Examples (Factorial, Fibonacci numbers algorithms only) – Tree – Basic tree concepts – Binary tree.

UNIT V: Sorting concepts – Insertion sort – Selection sort – Heap sort – Bubble sort.

TEXT BOOK:

Richard F.Gilberg and Behrouz A.Forouzan, Data structures a Pseudocode approach with C, Brooks/Cole Publishing Company, 2002.

REFERENCES:

Trembley and Sorenson, Data structures with applications, TMH, 3rd Edition, 1991.

Ellis Horowitz, Sartaj Sahni, Fundamentals of Data Structure in PASCAL, Galgotia Publications, 1996.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
III	UMA 15E83	STATISTICAL APPLICATIONS (PRACTICAL)	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
1.	To introduce some basic concepts and give practice on different statistical techniques using SYSTAT.					

List of Experiments:

1. Calculation of measures of central tendency.
2. Calculation of measures of dispersion.
3. Coefficient of variation.
4. Measures of skewness.
5. Calculation of correlation coefficient.
6. Finding regression lines.

REFERENCES:

1. Ajai S.Gaur, Sajaya S.Gaur, Statistical methods for practice and research, A division of SAGE publications, 2007.
2. Neil J.Salkind, Statistics for people who hate (Think They) Statistics, Sage publications, 2005.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
IV	UMA 15E84	GENERAL MATHEMATICS-I	2	-	-	2

	INSTRUCTIONAL OBJECTIVES					
	1.	Learn the basic techniques of complex number and differentiations.				

Unit -I: Complex numbers, roots of unity, polynomials, rational functions over $\mathbb{R}$ or $\mathbb{C}$, polar decomposition.

Unit-II: Sequences, Limit of a sequence, convergent and divergent sequences, bounded and monotone sequences, operations on convergent sequences, limit superior, and limit inferior. Series, tests of convergence.

Unit-III: Functions of real variable, limits, continuity, properties of continuous functions, differentiation, properties, mean value theorem, maxima and minima.

Unit-IV: Elementary functions, exponential, logarithm, sine, cosine functions, inverse functions, definition of Taylor's theorem, L'hospital's rule.

Unit-V: Integration, Integrals of continuous functions, fundamental theorem of calculus, partial differentiation, line and surface integrals. Elementary vector calculus, gradient, divergence and curl.

REFERENCES:

1. Tom M. Apostol, Calculus, Vol. 1: One-Variable Calculus with an Introduction to Linear Algebra, Wiley; 2 edition, 1967.
2. Thomas & Finney: Calculus.
3. Robert G. Bartle and Donald R. Sherbert, Introduction to Real Analysis, 3rd Edition, Wiley; 1999.
4. R. R. Goldberg: Methods of Real Analysis.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
IV	UMA 15E85	GENERAL MATHEMATICS-II	2	-	-	2
	INSTRUCTIONAL OBJECTIVES					
	1.	To learn about vector spaces.				

Unit-I: System of linear equations, Gauss elimination method. Matrices, various types of matrices.

Unit-II: Vector spaces, examples, sum of subspaces, basis and dimension. Linear transformations.

Unit-III: kernel, image, the correspondence between linear transformations and matrices, rank and nullity theorem.

Unit-IV: Eigenvalues, determinant. Differential equations of first and second order, Laplace transform.

Unit-V: Discrete probabilities, combinatoric language of probabilities, conditional probabilities, Baye's formula, binomial, poisson and normal distribution and applications.

REFERENCES:

1. K. Hoffman and R. Kunze: Linear algebra (PHI).
2. T. M. Apostol: Calculus (Vol. 2), Wiley; 2 edition, 1969.
3. G. F. Simmons: Differential Equations (McGraw-Hill), 1991.
4. E. Kreyszig: Advanced Engineering Mathematics.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
IV	UMA 15E86	OPTIMIZATION THEORY	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
	1.	Solve LPP using different techniques				
	2.	Be familiar with game theory				

Unit-I: Linear programming, Simplex method, Duality.

Unit-II: Transportation problems, Game theory.

Unit-III: Calculus in normed linear spaces, Quadratic programming, Conjugate gradients,.

Unit-IV: Farkas - Minkowski lemma, Kuhn-Tucker condition.

Unit-V: Calculus of variations: Euler-Lagrange equation and some sufficient conditions, Isoperimetric inequality

REFERENCES:

1. Frank H. Clarke: Optimization and Nonsmooth Analysis. Society for Industrial Mathematics 1987.
2. David G. Luenberger: Introduction to linear and non-linear programming.
3. Mokhtar S. Bazaraa, Hanif D. Sherali, C. M. Shetty : Nonlinear Programming: Theory and Algorithms. Wiley-Interscience 2006.
4. Bruce van Brunt: The Calculus of variations. Springer 2003.
5. S. Tijs: Introduction to Game Theory.

DEPARTMENT OF PHYSICS

COURSE	COURSE TITLE	L	T	P	Total	C
CODE					L+T+P	
UPY15E81	ENERGY PHYSICS	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1	To learn the fundamentals of energy sources and applications					
2	To learn Photothermal based energy systems and applications					
3	To learn basic principles and applications of Photovoltaic systems					
4	To learn the principles of energy from biomass, wind energy and other sources					

UNIT I - INTRODUCTION TO ENERGY SOURCES

World's reserve - Commercial energy sources and their availability-Conventional and non-conventional sources of energy, comparison – Coal- Oil and natural gas - applications - Merits and Demerits-Structure and characteristics of sun-Solar constant -Solar spectrum-Solar radiations outside earth atmosphere - Solar radiation at the earth surface.

UNIT II - PHOTOTHERMAL APPLICATIONS

Basic Principles of Liquid flat plate collector –Materials for flat plate collector - Construction and working-Parameters and efficiency of solar concentrators - Advantage and disadvantage-Solar distillation–Solar disinfection - Solar drying-Solar cooker(box type).

UNIT III - PHOTOVOLTAIC SYSTEMS

Introduction-Photovoltaic principle-Basic Silicon Solar cell- Power output and conversion efficiency-Limitation to photovoltaic efficiency-Basic photovoltaic system for power generation-Advantages and disadvantages-Types of solar cells-Application of solar photovoltaic systems - PV Powered fan – PV powered area lighting system – A Hybrid System.

UNIT IV - ENERGY FROM BIOMASS

Introduction-Biomass conversion technologies-Bio-gas generation-Factors affecting bio-digestion -Working of biogas plant-Advantages and disadvantage of floating and fixed dome type plant-Bio-gas from plant wastes-Methods for obtaining energy from biomass-Advantages and disadvantages of biological conversion of solar energy.

UNIT V - WIND ENERGY AND OTHER ENERGY SOURCES

Wind Energy Conversion-Classification and description of wind machines, wind energy collectors-Energy storage-Wind data-energy audit- Energy and power from waves- wave energy conversion devices- Fuel cells- and application of fuel cells-batteries- advantages of battery for bulk energy storage- Hydrogen as alternative fuel for motor vehicles.

TEXT BOOKS

1. Kothari D.P., K.C. Singal and Rakesh Ranjan, *Renewable energy sources and emerging Technologies*, Prentice Hall of India, 2008.
2. Garg H.P. and Prakash J., *Solar Energy Fundamentals and Application*, TataMcGraw - Hill Publishing, 7th Reprint 2006.

REFERENCES

1. Chetan Singh Solanki, *Solar Photovoltaics Fundamentals, Technologies and Applications*, 2nd Edition, PHI Learning Private Limited, 2011.
2. Rai G. D, *Non conventional Energy sources*, 4th Edition, Khanna Publishers, 2010.
3. Jeffrey M. Gordon, *Solar Energy: The State of the Art*, Earthscan, 2013.
4. Kalogirou S.A., *Solar Energy Engineering: Processes and Systems*, 2nd Edition, Academic Press, 2013.
5. Zobaa A.F. and Ramesh Bansal, *Handbook of Renewable Energy Technology*, World Scientific, 2011.

COURSE CODE	COURSE TITLE	L	T	P	Total L+T+P	C
UPY15E82	ELECTRICAL APPLIANCES	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To understand the fundamentals of electrical connections.					
2.	To make the learner familiarize with working of Generators and Motors.					
3.	To acquire knowledge on principles of transformer.					
4.	To understand the working principle of electrical appliances.					

UNIT I - ELECTRICAL CONNECTIONS

Resistance - Capacitance – Inductance - Electrical charge - Current - Potential and measuring meters –Galvanometer- Ammeter- Voltmeter and multimeter - Electrical energy - Power - Watt - kWh - Consumption of electrical power - AC and Dc - Single phase and three phase connections - RMS and peak values -

House wiring - overloading - Earthing - Short circuiting - Fuses - Colour code for insulation wires - Inverter - UPS - Generator - Motor - Circuit breaker - Electrical switches.

UNIT II - HEATING and WELDING

Electric heating - Modes of transfer of heat - Methods of electric heating - Resistance heating - Induction heating - High frequency eddy current heating - Dielectric heating - Resistance - Welding - Electric arc welding - DC and AC - Welding Equipment - Energy storage welding occupational hazards due to chemical reactions - Industrial heating and welding.

UNIT III - DC GENERATORS and MOTORS

Electro-mechanical energy conversion principle and EMF - Electrical machines - DC Generators - Construction and materials used for various parts of DC generator - Functions of various parts of DC Generator - Working Principle - Working principle of DC motor - back emf - Torque equation for DC motor - DC motor starters - Construction and working of DC motor starters.

UNIT IV - PRINCIPLES AND APPLICATIONS OF TRANSFORMERS

Principle of operation - Constructional details - Core type- Shell type - Classification of transformers - EMF equation - Voltage Ratio - Current ratio - Transformer on no-load - Auto transformer - Principle - Applications. Three phase Transformer - Connections - Star - Star- Star – delta- Delta-star - Parallel operation of transformers - Load sharing - Cooling of transformers - Protective devices and accessories - Losses in transformer.

UNIT V - DOMESTIC ELECTRIC APPLIANCES

Electrical bulbs - Fluorescent lamps - Street lighting - Flood lighting - Electrical fans - wet grinder - Mixer - Water heater - Storage and instant types - Electric iron box - induction heater- Stabilizer - Refrigerator - Microwave oven - Washing Machine - Air Conditioner.

TEXT BOOKS

1. Teraja B.L., *A Text book in Electrical Technology*, S. Chand and Co., 2005.
2. Taylor E.O., *Utilisation of Electrical Energy*, Orient Longman Private Ltd., 2006.

REFERENCES

1. Fitzgerald A. E., David E Higginbotham and Arvin Gabrel, *Basic Electrical Engineering*, Tata McGraw-Hill Education, 2009.
2. Roman Malaric, *Instrumentation and Measurement in Electrical Engineering*, Brown Walker Press, 2011.
3. Clive Maxfield, John Bird, Tim Williams, Walt Kester and Dan Bensky, *Electrical Engineering: Know It All*, Elsevier Inc, 2008.
4. Despande, M.V, *Electrical Machines*, PHI Learning, 2011.
5. Bhattacharya K, *Electrical Machines*, Tata Mc Graw Hill, 1998.

COURSE CODE	COURSE TITLE	L	T	P	Total L+T+P	C
UPY15E83	MEDICAL PHYSICS	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To bring out the important and modern methods of imaging techniques. To provide latest knowledge of medical assistance / techniques and therapeutic equipments.					
2.	To provide an acquaintance of the physiology of the heart, lung, blood circulation and circulation respiration. Biomedical applications of different transducers used					
3.	To introduce the student to the various sensing and measurement devices of electrical origin and to provide awareness of electrical safety of medical equipments					
4.	To provide the latest ideas on devices of non-electrical devices.					

UNIT I - PHYSIOLOGY, BIO-POTENTIAL AND TRANSDUCERS

Cell and its structure – Resting and Action Potential – Nervous system- Functional organisation of the nervous system – Structure of nervous system- Neurons - synapse –Transmitters and neural communication – Cardiovascular system – respiratory system – Origin of Biopotential-Electrical activity of cell-Action Potential and its propagation- Basic components of a biomedical system - Transducers – selection criteria – Piezo electric-Ultrasonic transducers - Temperature measurements - Fibre optic temperature sensors.

UNIT II - ELECTRO – PHYSIOLOGICAL MEASUREMENTS

Bio-potential electrodes- Electrode theory - Electrode - Electrolyte interface – Limb electrodes – Floating electrodes – Pregelled disposable electrodes – Micro-Needle and surface electrodes – Amplifiers- Preamplifiers- Differential amplifiers-Chopper amplifiers – Isolation amplifier. ECG – EEG – EMG – ERG – Lead systems and recording methods – Typical waveforms- Electrical safety in medical environment-shock hazards.

UNIT III - CARDIOVASCULAR AND ELECTROCHEMICAL MEASUREMENTS

Measurement of blood pressure – Cardiac output – Heart rate – Heart sound – Pulmonary function measurements – Spirometer – Photo Plethysmography - Body Plethysmography – Blood Gas analysers -pH of blood –Measurement of blood pCO₂- pO₂- Finger-tip oxymeter – ESR- GSR measurements .

UNIT IV - IMAGING TECHNIQUES

X-Ray Generation and X-ray Machine - Fluoroscopic techniques - Digital X-ray imaging and computed tomography - Image quality - QA of conventional diagnostic X-ray equipment - Magnetic Resonance Imaging - Ultrasonography - Endoscopy - Thermography - Different types of biotelemetry systems and patient monitoring - Introduction to Biometric systems.

UNIT V - THERAPEUTIC AND LIFE SUPPORT SYSTEMS

Pacemakers - Defibrillators - Ventilators - Nerve and muscle stimulators - Diathermy - Heart - Lung machine - Audio meters - Dialysers and Ventilators - Lithotripsy.

TEXT BOOKS

1. Khandpur R.S., *Hand Book of Bio-Medical Instrumentation*, Tata McGraw Hill Publishing Co Ltd., 2003.
2. Leslie Cromwell, Fred J.Weibell, Erich A.Pfeiffer, *Bio-Medical Instrumentation and Measurements*, 2nd Edition, PHI/Pearson Education, 2010.

REFERENCES

1. Joseph J. Carr and John M. Brown, *Introduction to Biomedical Equipment Technology* PHI/Pearson Education, 4th Edition, 2008.
2. Laud B.B, *Electromagnetics*. 2nd Edition, New Age International Publication, 2005.
3. Mahajan A.S. and Rangwala A.A, *Electricity and Magnetism*, Tata Mc Graw Hill, 1988.
4. Kip A.F, *Fundamentals of Electricity and Magnetism*, Mc Graw, Hill, International Student Edition, 2008.
5. Berkeley, *Physics Course: Electricity and Magnetism*, 2nd Edition, Tata Mc Graw Hill, 2007.

COURSE CODE	COURSE TITLE	L	T	P	Total L+T+P	C
UPY15E84	ELECTRONIC COMMUNICATION	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To Understand the basic knowledge about amplitude and frequency modulation.					
2.	To Impart the knowledge about the transmission lines.					
3.	To Understand the basic idea about the television.					
4.	To develop the knowledge in RADAR and digital communication systems.					

UNIT I - AMPLITUDE AND FREQUENCY MODULATION

Modulation - Definition - Types of modulation AM-FM- PM – Expression for amplitude modulated voltage - Wave form of amplitude modulated wave - Collector modulation circuit - Single side band generation - Balanced modulator - AM transmitter - Block diagram and explanation - Frequency modulation - Expression for frequency modulated voltage - Side bands in FM- AM production by transistor modulator - Comparison of AM-FM- PM.

UNIT II - TRANSMISSION LINES

Demodulation - Definition - Diode detection of AM signals - FM detection - Foster Seely discriminator - Radio receivers - Straight receivers - TRF receivers - Super heterodyne receivers - Block diagram - Explanation of each stage - FM receivers – Block diagram – Single and independent side band receiver- Demodulation of SSB and receiver types - Transmission Lines – Characteristics impedance - Losses in transmission line - Standing waves - Smith chart and its applications.

UNIT III - TELEVISION FUNDAMENTALS

Television systems and standards – Black and white transmission - Black and white reception - Plumbicon - Vidicon - Scanning and interlaced scanning – Block diagram of TV transmitter and receiver - Colour TV - Generation R, G, B signals - Simplified block diagram of colour TV transmitter and receiver – TV transmitting antennas - dipole panel - TV receiving antenna - Yagi antenna - Log antenna - Log periodic antenna.

UNIT IV - RADAR SYSTEMS

RADAR - Principle of radar – Radar performance factors - Radar equation - Radar – Pulsed systems - Basic pulsed radar system - Antennas and scanning - Display methods - Pulsed radar systems - Moving target indication - Radar beacons - Transmitting systems - Radar antennas - Duplexer - Radar receivers uses of radar.

UNIT V - DIGITAL COMMUNICATIONS

Digital communications - Digital technology - Fundamentals of data communication systems - Binary number system - Digital electronics – Emergence of data communication systems - Characteristics of data transmission circuits – Digital codes - Error detection and correction - Data sets and inter connection - Requirements - Modern classification - Modern interfacing.

TEXT BOOKS

1. Gupta and Kumar, *Hand book of Electronics*, Pragati Prakhasan, 2005.
2. Kennedy and Davis, *Electronics Communication Systems*, Kennedy and Davis, TMH, 2009.

REFERENCES

1. Wayne Tomasi, *Electronic communication systems*, Dorling Kindersely India Pvt Ltd., 2009.
2. Roy Blake, *Electronic communication system*, Delmar/Thomson Learning, 2002.
3. Bakshi U.A. and Godse A.P., *Basic Electronics Engineering* , Technical Publication, 2009.
4. Godse A.P.and Bakshi U.A., *Basic Electronics* ,Technical Publication,2009.
5. Tomasi, Wayne. *Advanced Electronic Communication Systems*. Prentice Hall PTR, 1993.

DEPARTMENT OF ECONOMICS

Semester -III Non-Major Elective - I

COURSE CODE	COURSE TITLE	L	T	P	Total Of LTP	C
UES15E81	Issues of Indian Economy	2	0	0	2	2

UNIT I: POPULATION GROWTH AND POLICY

Theory of Demographic Transition – population growth – Density of Population – Quality of population – population policy during plan periods – population projections.

UNIT II: UNEMPLOYMENT, POVERTY AND INFLATION

Nature and Types of unemployment – Schemes to reduce unemployment in India - Concept and Magnitude of Poverty – Poverty Eradication Programmes during plan periods - Concept- Types – Causes and effects of Inflation – Anti-inflationary measures.

UNIT III: ECONOMIC PLANNING IN INDIA

Objectives and Strategies of Indian Planning – Achievements and Failures of Indian Planning.

UNIT IV: PUBLIC FINANCE

Meaning and objectives of budget - Budget procedure in India – Union Budget at a Glance - Taxation in India: Direct and Indirect Taxes of Union Government - Public Expenditure in India: Plan and Non-Plan Expenditure - Trend and problems of public debt - Deficit Financing in India.

UNIT V: EXTERNAL SECTOR

Volume, Direction and Composition of India's Foreign Trade – Balance of Payments position in India – Globalisation and its impact on India's External sector.

REFERENCES:

1. Dutt and Sundaram : Indian Economy, S. Chand & Co., New Delhi 2007.
2. Mishra & Puri : Indian Economy, Himalaya Publishing House, New Delhi.
3. Dhingra, I.C. Indian Economy
4. Agarwala, D.N. : Indian Economy
5. Sankaran, S. : Economic Development of India
6. Hariharan N.P. : Issues and Shades of Indian Economy, Vishal Publishing Company, Jalandhar.

Semester -III
Non-Major Elective - I

COURSE CODE	COURSE TITLE	L	T	P	Total Of LTP	C
UES15E82	International Economics	2	0	0	2	2

UNIT - I: INTRODUCTION

Difference between inter - regional trade and international trade - characteristics features of international trade - classical theory of international trade - Adam smith and Ricardo - Absolute and Comparative cost doctrines - Modern theory of International trade - Heckscher and Ohlin - H.O theorem.

UNIT - II: GAINS FROM TRADE

Meaning - Factors determining the gains from trade - terms of Trade - Factors affecting terms of trade – Free and protection

UNIT - III: COMMERCIAL POLICY

Tariffs and quotas - meanings and types - Effects of Tariffs - Effects of Quotas - Exchange control - Meanings - Objectives of Exchange control - Methods of Exchange control - its merits and demerits.

UNIT - IV: BALANCE OF PAYMENTS

Meaning and Components - Balance of Trade and balance of Payments - Current account and Capital account - Causes for disequilibrium in the balance of Payments - measures to correct disequilibrium in Balance of Payments - Foreign Exchange rate - Meaning - Fixed and Flexible exchange rates.

UNIT V: INTERNATIONAL ECONOMIC RELATIONS

IMF - IBRD - UNCTAD - SAARC - SDR - GATT - WTO - Euro - Dollar Market - NIEO - Globalisation.

REFERENCE

- a. International Economics. M.L.Jinghan, Virinda Publications (P) Ltd., Delhi.
- b. International Economics. Rana & Verma, Vishal Publishing Co, Jalandhar
- c. International Economics, - Francis Cherunnilam Tata Mc Graw - Hill Publishing Company Ltd.
- d. International Economics, Devairakkam & Saraswathy Jothi Publishing Thirunelveli.
- e. Money, Banking, Trade and Finance K.P.M Sundhram Sultan Chand & Sons New Delhi.
- f. Money, Banking & International Economics, T.T.Sethi S.Chand & Company Ltd., New Delhi

Semester -IV
Non-Major Elective - I

COURSE CODE	COURSE TITLE	L	T	P	Total Of LTP	C
UES15E83	Fiscal Economics	2	0	0	2	2

UNIT I: INTRODUCTION

Public Finance - Meaning, nature and scope - Private finance and public finance a comparison - Principle of Maximum Social Advantage.

UNIT - II: PUBLIC EXPENDITURE

Public Expenditure - Causes for the Growth of Public Expenditure in India - Effects of Public Expenditure - Role of Public Expenditure in a developing economy.

UNIT - III: PUBLIC REVENUE

Public revenue - Sources of public revenue (Center and States) - Canons of Taxation - Direct and Indirect taxes - Characteristics of a good tax - System - Impact, shifting and Incidence of Taxation - Factors determining incidence of Taxation.

UNIT - IV: PUBLIC DEBT

Public Debt - Meaning - Classification - Causes for the growth of Public Debt in India - Burden of public Debt - Methods of Redeeming public debt - Role of public Debt. in a developing economy.

UNIT V: FEDERAL FINANCE

Federal finance - Union and state financial relations - Finance commissions with special reference to IX, X and XI Finance Commission - Local Finance.

TEXT BOOKS

1. Public finance - Cauvery, Nayaik Sudha (S.Chand & Co.,)
2. Money banking and international trade public finance - D.M.Mithani (Himayalaya Publishing House)

REFERENCES

1. Money Banking and International Trade Public Finance - T.N.Hajela (Shiva lal Publication)
2. Money Banking and International Trade Public Finance - M.C.Vaish
3. Public Finance - B.P.Tyagi4. Agarwal, S.N.,*India's Population Problem*, Tata McGraw Hill, Mumbai, 1985.

Semester -IV
Non-Major Elective - II

COURSE CODE	COURSE TITLE	L	T	P	Total Of LTP	C
UES15E84	Environmental Economics	2	0	0	2	2

UNIT I: INTRODUCTION

Definition, Nature, Scope and significance of Environmental Economics - Economic Growth and Environmental change in terms of material - Balance model and Transformation curves - Integration of conservation and development

UNIT II: ENVIRONMENTAL ECOLOGY

Environmental segment - Eco System - Biotic and Abiotic factors - Biotic community - Productivity and energy flow - Food chain and food web - Ecological pyramid

UNIT III: MARKET FAILURE AND EXTERNALITIES

Market failure - Concept of welfare economics - Competitive economy and social welfare - Maximum competitive economy and social welfare - Maximum social welfare in terms of indifference curves - Paretian conditions of optimality - Externalities - Environmental Quality as public goods - Tragedy of commons.

UNIT IV: ECONOMICS OF RESOURCE USE

Classification of Resources - Classical, Neoclassical and modern theories of resource use - Methods of conservation - Material substitution, Product life extension - Recycling - Optimum recycling - Pollution taxes - Waste Reduction

UNIT V: POLLUTION

Global warming - Green House Effect - Pollution - Air, Water, Soil and Noise pollution causes and effects - Acid rain - Transfrontier pollution - Population and Environment - Environmental protection - Legislative measures - Sustainable Development.

TEXT BOOKS

1. Environmental Economics - S.Sankaran, Margham Publications
2. Environmental Economics - Cauvery, Sterling publishers
3. Environmental Economics - Rajalakshmi and Dulasi Brinda, Allied Publishers

REFERENCES

1. Environmental Pollution and Protection - Garg Tamilnadu Book House Publishers
2. Environmental Analysis - Chhatwal - Tamilnadu Book House Publisher

DEPARTMENT OF CHEMISTRY
NON-MAJOR ELECTIVES
SEMESTER-III

Subject Code	Title of the Subject	CREDITS			
		L	T	P	C
UCY15E81	BIOCHEMISTRY	2	0	0	2
INSTRUCTIONAL OBJECTIVES					
(i)	To gain knowledge about amino acids and proteins				
(ii)	To study in depth about enzymes and lipids				
(iii)	To learn in detail about carbohydrates and nuclei acids				

UNIT I - AMINO ACIDS AND PROTEINS

Living Cell – Plant and Animal cell. Cell membrane – organelles – functions of major and sub cellular components. Anabolism and catabolism and their relation to metabolism. Amino acids – classification, synthesis of amino acids and their identification. Peptide bond- stereochemistry, synthesis of peptides by solution and solid phase techniques. Proteins – classification – properties-3D structure. Determination of amino acid sequence. Denaturation and renaturation of protein molecules. Separation and purification of proteins – dialysis – gel filtration - electrophoresis. Catabolism of amino acids - Transamination, oxidative deamination, decarboxylation. The urea cycle and other possibilities of detoxification of ammonia.

UNIT II - ENZYMES

Nomenclature, classification and properties-specificity, factors influencing enzyme action. Mechanism of enzyme action – Lock and Key model and induced fit models. Coenzymes – cofactors – prosthetic groups of enzymes (TPP, NAD, NADP, FAD, ATP). Their importance in enzyme action. Mechanism of inhibition (competitive, non- and uncompetitive and allosteric). Immobilization of enzymes. Enzyme specificity.

UNIT III -LIPIDS

Classification - neutral lipids, Phospho lipids (lecithines, cephalins, plasmalogens) and glycolipids – importance, synthesis and degradation. Fatty acids – saturated, unsaturated fatty acids, EFA. Properties – hydrolysis - acid number, saponification number. Auto-oxidation (Rancidity), addition reactions - Iodine value, Polenske number, Reichert-Meissl number and acetyl number. Hydrogenation of Cholesterol – biosynthesis. Bile salts derived from cholesterol. Metabolism - oxidation of glycerol – oxidation of fatty acids. Biosynthesis of lipids – synthesis of fatty acids and synthesis of triglycerides.

UNIT IV - CARBOHYDRATES

Classification – reducing and non-reducing sugars. Glucose – structure, conformation and stability. Carbohydrates of the cell membrane – starch, cellulose and glycogen. (Structure and utility). Metabolism - Glycolysis and its reversal. TCA cycle - relation between glycolysis and respiration. Principles of bioenergetics, electron transport, chain and oxidative phosphorylation.

UNIT V - NUCLEIC ACIDS

Nucleosides and nucleotides – purine and pyrimidine bases. Nucleic acids - difference between DNA and RNA, classification of RNA. Biosynthesis of DNA - replication. Biosynthesis of mRNA: Transcription. Genetic code – mutations and mutants. DNA repair. Biosynthesis of proteins. DNA sequencing and PCR, recombinant DNA technology, DNA polymorphism.

TEXT BOOK

1. David L. Nelson and Michael M. Cox (2005): Lehninger, Principles of Biochemistry, 4th edn, Worth Publishers, New York.
2. L. Veerakumari (2004): Biochemistry, MJP publishers, Chennai.

REFERENCE

1. Lubert Stryer (1975): Biochemistry, W. H. Freeman and company, New York..
2. Robert L. Caret, Katherine J. Denniston, Joseph J. Topping, (1993): Principles and Applications of organic and biological chemistry, WBB publishers, USA.
3. J. L. Jain (1999): Biochemistry, Sultan Chand and Co.
4. Mazur and B. Harrow (1971): Text book of biochemistry, 10th Edition, W.B. Saunders Co., Philadelphia.

SEMESTER - III

Subject Code	Title of the Subject	CREDITS			
		L	T	P	C
UCY15E82	FOOD CHEMISTRY	2	0	0	2
INSTRUCTIONAL OBJECTIVES					
(i)	To gain necessary details and informations acquainted with the properties and composition of food.				
(ii)	The student will have an idea about the various constituents of foods, sources, energy and nutritional requirements and their functions.				

UNITI - FOOD SCIENCE

Food requirements - Consumer safety – Objectives of food science – Constituents of food – Food as a source of energy – Energy requirement in human body – Food health and disease. Water – Role of water in food– Dietary requirements and sources – Important physical properties of water – concept of water activity – Water binding in foods – water activity and activity of microorganisms – Controlling of water activity in foods – Experimental determination of water activity in foods

UNITII- CARBOHYDRATES

Chemistry of carbohydrates – composition and structure- Definition, classification, importance, monosaccharides- structure and properties- disaccharides- maltose, lactose, sucrose. Oligosaccharides- raffinose. Polysaccharides- starch, cellulose, pectins, seed gum, sea weed and algal polysaccharides (application only). Dietary sources – Functional properties of dietary carbohydrates- Biological role of Dietary fibre– Nutrition - Flavor and colour development Sweetness – Texturing characteristics of carbohydrates – Plasticizing action and Humectancy of carbohydrates.

UNITIII - FATS AND OILS

Definition and classification of fat –biological role and uses of lipids proximate composition of cereals, pulses, tubers, oil seeds, fruits and vegetables – Fat group classification – Dietary sources – Fatty acids in foods nomenclature – Triglycerides – composition and structure – Physical properties of triglycerides – Polymorphism of triglycerides – Plasticizing properties of fats – Emulsifying properties of fats – Rancidity and reversion of fats and activity

UNITIV - PROTEINS AND ENZYMES

Classification, structure and functions of amino acids and proteins- Role of proteins and requirements- Functions of proteins in foods- physical and chemical properties of proteins important protein sources- Milk, Meat, Fish Egg and cereal proteins- Enzymes-Endogenous enzymes in foods and activity of endogenous enzymes

UNIT V - VITAMINS AND MINERALS

Definition of vitamins – Classification, general sources, structure, properties, functions and dietary requirements – deficiency symptoms of vitamins A,D,E,K,C thiamins, riboflavin, niacin and biotin- role of minerals – Food colours and flavors – Food additives – classification and purpose – Role of thickeners, sweeteners, stabilizers, emulsifiers, leaveners, colours, flavoring agents, preservatives – examples.

TEXT BOOK

1. Sivasankar, B., (2002): Food processing and preservation” Prentice – Hall of India Pvt. Ltd. New Delhi
2. Srinivasan Damodaran, Kirk L. Parkin, and O.R. Fennema, E., (2007) Food Chemistry, 4th Edition, CRC Press, New York.
3. Fox, B. A. and Cameron, A.G., (2005) Food Science, Nutrition and Health", 5th Edition, Edward Arnold, London.

REFERENCE

1. Charley, H, (1982) Food Science” John Wiley and Sons Inc., New York
2. Birch, G.G., Brennan, J. G. and Parker, K. J., (1977) :The Sensory Properties of Foods” Applied Science Publication, London.
3. Robinson, D. S., (1987): Food – Biochemistry and Nutritional Value Longman Scientific and Technical, London.

SEMESTER IV

Subject Code	Title of the Subject	CREDITS			
		L	T	P	C
UCY15E83	BASICS OF BIOINFORMATICS	2	0	0	2

INSTRUCTIONAL OBJECTIVES

(i)	To teach how to transform a chemical structure into a language for computer representation and manipulation
(ii)	To provide how to extract knowledge from chemical reactions
(iii)	To teach QSAR model generation and virtual screening
(iv)	Provide applications of computational models

UNIT I - REPRESENTATION AND MANIPULATION OF CHEMICAL STRUCTURES

2D Chemical Structures: Computer representation of chemical structures, Structure and substructure searching, Reaction databases. 3D Chemical Structures: 3D Pharmacophore, Conformational search and analysis of 3D database, Methods to derive 3D pharmacophores.

UNIT II - INTRODUCTION TO PROTEIN MODELING

Amino acids, Protein structure and conformational properties, Ramachandran Plot and dihedral angles, Enzyme mechanisms: Michaelis–Menten kinetics, Introduction of Protein Data Bank (PDB): file format.

UNIT III - COMPUTATIONAL MODELS

Introduction, Deriving a Quantitative Structure Activity Relationship (QSAR) Equation: Simple and Multiple Linear Regression, Designing a QSAR Experiment: Selection of Descriptors, Experimental Design, Indicator variables, Molecular field analysis and Partial Least Squares.

UNIT IV - DRUG DESIGN AND DEVELOPMENT

Drug Discovery Process, Target Identification and Validation, Lead Discovery, Lead Modification, Identification of active part: Pharmacophore, functional group modification,

UNIT V - APPLICATION OF COMPUTATIONAL CHEMISTRY

Prediction of properties of compounds, Lead finding and Optimization, Molecular docking: Searching and scoring algorithm, Computer assisted synthesis design, Design of Combinatorial Chemistry.

TEXT BOOK

1. Andrew R Leach, Valerie J Gillet, "An Introduction to Chemoinformatics", Kluwer academic publishers, 2003.
2. Rick NG, "Drugs: from Discovery to Approval", John Wiley & sons, 2004.
3. Andrew R Leach, "Molecular Modelling- Principles and applications", Prentice Hall, II edition, 1996.

REFERENCE

1. Johann Gasteiger, Thomas Engel, "Chemoinformatics- A Textbook", Wiley- VCH, 2003.
2. Jürgen Bajorath, "Chemoinformatics: Concepts, Methods, and Tools for Drug Discovery", Humana press, 2004.
3. Garland R Marshall, "Chemoinformatics in Drug Discovery", John Wiley & Sons, 2006.

SEMESTER IV

Subject Code	Title of the subject	CREDITS			
		L	T	P	C
UCY15E84	MOLECULAR MODELING & DRUG DESIGN	2	0	0	2

INSTRUCTIONAL OBJECTIVES

(i)	To understand the basic concepts of molecular structure, the relationship amongst biomolecular structure, function and force field.
(ii)	To understand the postulates of quantum mechanics and be able to apply knowledge to electronic structure calculations.
(iii)	To understand the molecular mechanisms, torsional energy and electrostatic interactions.,

(iv)	To identify drug like properties and associated empirical rules and active sites for target based drugs.
(v)	To calculate structure, energy and free energy through simulations using molecular models.

UNIT I - CONCEPTS IN MOLECULAR STRUCTURE

Basic concepts of molecular structure (bond length, bond angle, torsion angle and non-covalent interactions – Molecular structure and internal energy – Energy minimization of small molecules – Empirical representation of molecular energies – Use of force fields and the molecular mechanics method – Discussion of global energy minimum – Molecular representation in graphics.

UNIT II - QUANTUM MECHANICS

Postulates of quantum mechanics, electronic structure calculations, ab initio, semi-empirical and density functional theory calculations, molecular size versus accuracy. Approximate molecular orbital theories.

UNIT III - EMPIRICAL FORCE FIELD MODELS

Molecular Mechanisms, energy calculations, Bond stretch, angle bending, torsional term. Electrostatic interaction- Vander waals interactions. Miscellaneous interaction.

UNIT IV - DRUG DESIGNING

Physicochemical properties of drugs & Introduction to drug designing- Concept of receptor/target site- Lead identification and structure modification- Concepts in molecular recognition, Drug like properties and associated empirical rules, structure based drug design Conformational search technique- Target structure based Drug Design (Active site identification).

UNIT V - WATER AND SMALL ORGANIC MOLECULES

Non-polarizable and polarizable rigid models. Flexible models and calculation of force constants. Structural and dielectric properties of a polar medium : Continuum models versus molecular models. Calculation of structure, energy and free energy through simulations using molecular models.

TEXT BOOK

1. Principles and applications of modelling by Leach
2. Molecular Modelling by Hans Pieter, Heltje & Gerd Folkens, VCH.

REFERENCE

1. Chemical Applications of Molecular Modelling by Jonathan Goodman. Computational Chemistry by Guy H, Grant & W. Graham Richards, Oxford University Press.
 2. Alan Hinchliffe, Molecular Modelling for Beginners, John-Wiley, 2003.
 3. N. Cohen (Ed.), Guide Book on Molecular Modeling in Drug Design, Academic Press, San Diego, 1996.
- D. Frenkel and B. Smith, Understanding Molecular Simulations. From Algorithms to Applications, Academic Press, San Diego, California, 199