



# Interdisciplinary Courses for Undergraduate Programm

## Semesters I to IV

**Interdisciplinary Course Matrix**

Code	Name of the Course	Hours	Marks			Credits
			IA	Exam	Total	
UG-ID-Che	Chemistry for Entrepreneurs	2	15	35	50	2
UG-ID-Eco	Economics in Daily Life	2	15	35	50	2
UG-ID-Ele	Electronics for All	2	15	35	50	2
UG-ID-Mat	Elementary Mathematics	2	15	35	50	2
UG-ID-Com	Introduction to Income Tax	2	15	35	50	2
UG-ID-Phy	Physics in Everyday Life	2	15	35	50	2
UG-ID-Soc	Sociology and society	2	15	35	50	2
UG-ID-Jor	Understanding Media	2	15	35	50	2

## UG-ID-Che : Chemistry for Entrepreneurs

**Lecture Hrs : 27**

**Internal Marks : 15**

**Exam Marks : 35**

**Objectives of the course are:** 1. The student will acquire a foundation of chemistry of sufficient breadth and depth to enable them to understand and critically interpret the primary chemical literature.

2. The *course* serves as a template for context-based, *interdisciplinary* teaching that ... *chemistry* with other disciplines by rethinking *course objectives* and content.

3. The student will learn professionalism, including the ability to work in teams and apply basic ethical principles.

4. The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.

### Course Outcome:

1. A general study of food flavours, colours and preservatives, artificial sweeteners.
2. Introduction to cosmetics and perfumes, preparation and uses of the following: Hair dye, hair spray. Shampoo. Sun-tan lotions, face powder, lipsticks. talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours.
3. Determine composition and pH of soil, which can be useful in agriculture.
4. Study of pharmaceutical aids like talc, diatomite, kaolin, bentonite, gelatin and natural colours Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, anti-inflammatory agents (Aspirin); antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), central nervous system.
5. Introduction to Material Science Understand the space lattices.
6. Synthesis of Nanomaterials Understand the classification nanostructured materials.
7. Understood the principles and Background to nanotechnology

### Unit-I: INSTRUMENTATION, COSMETICS AND PERFUMES

**Hours**

Working principle of the following instruments and their applications: pH meter, conductometer, UV-visible spectrophotometer, Flame photometer, AFM (atomic force microscopy) and STM. Applications of the above instruments for the analysis of perfumes, soaps and detergents.

#### COSMETICS AND PERFUMES:

Classification of raw materials used in the cosmetic industry for the manufacture of finished products.

Indian Standard specification laid down for sampling and testing of various cosmetics in finished form by the bureau of Indian standards.

Brief introduction of the following cosmetic formulation and a study on their quality control: Shampoo, Tooth paste, nail polish, lipstick and hair dyes.

Raw materials in Perfumery- History of Perfumes –Determination of water content, acid value and ester content.

General information about allergies related to cosmetics and perfumes.

### Unit - II: NUTRITION , FOOD AND ADULTERANTS, SOIL AND WATER

**Hours**

Nutritional value of foods, idea about food processing and food preservations.

Adulteration- Introduction, Types, Tests for adulterants, Control .Analysis of food adulteration in edible oil, ghee, coffee powder, tea, chilli powder, dhal, and turmeric.

Detection of pesticides in fresh fruits (grapes, apples) and vegetables (cauliflower, brinjal, cabbage, tomato)

Additives – Introduction – Types – Study of preservatives, colours.

Antioxidants -synthetic and natural, methods of their estimation.

**SOIL AND WATER:**

1. Soil chemistry:- Particle size distribution, aggregate size analysis, soil texture and organic carbon determination total porosity, soil moisture constants, Soil pH and electrical conductivity.

Water soluble salts and available nutrients in soil.

2. Chemistry of water;- Introduction, physical, chemical and biological characteristics of water.

Drinking water standards, physicochemical analysis of water.

**Unit - III: PHARMACEUTICAL PRODUCTS AND TOXICOLOGY OF DRUGS, NANOMATERIALS IN DAILY LIFE**

**Hours**

Introduction to drugs: - Definition, nomenclature sources with example. Dosage forms- Tablets, Capsules, Injections, Ointments, Creams, Oral solution, Aerosol. Pharmacopoeia , Impurities and Limit test

Narcotics- heroin and cocaine. Stimulants- caffeine, amphetamines. Depressants - Barbiturates, Benzodiazepines. Hallucinogens- LSD.

**NANOMATERIALS IN DAILY LIFE:**

Use of Nanomaterials in cosmetics, detergents, stains removers, water purification, medicine and drug delivery, food industry.

**TEXT BOOKS**

College Chemistry -VI: L.Indira and G. R. Chatwal.

Gupta, P.K.; Gupta, S.K.(2011),Pharmaceutics and Cosmetics, PragatiPrakashan

**REFERENCE BOOKS**

1. Text book of Herbal Cosmetics: M.vimaladevi.
2. College Chemistry-IV: L.Indira and G. R. Chatwal
3. Handbook of Nutrition and Food, Third Edition by Carolyn D.

## UG-ID-Eco : Economics in Daily Life

**Lecture Hrs : 27**

**Internal Marks : 15**

**Exam Marks : 35**

**Objectives of the course are:**

1. To train the students in the fundamental theories in economics.
2. Understanding of some basic economic concepts and development of economic reasoning which the learners can apply in their day to day life as citizens, workers and consumers.
3. Realization of learner's role in nation building and sensitivity to the economic issues that the nation is facing today.

**Course Outcome:**

The students will learn how markets organise core economic activities and also be made aware of how microeconomic concepts can be applied to analyse real-life situations.

**Unit-I: Introduction:**

**3Hours**

Basic problems of an economy, Types of Economies.

**Unit - II: Banking:**

**8 Hours**

Commercial Bank-Meaning, Types and Functions; e-banking and its instruments; Central Bank-Meaning and Functions.

**Unit - III: Capital market:**

**8Hours**

Meaning, Types, role, importance, instruments, online trading, Bulls and Bears, BSE- NSE & NASDAQ.

**Unit - IV: Budget:**

**8 Hours**

Meaning, Types, Classification of Budget-Union-State & Local Budget, Importance of Budget, Latest Union Budget & Recent Budget of Government of Karnataka.

**TEXT BOOKS**

Rudradutt&Sundaram :Indian Economy,S Chand & Co Ltd publication,2016  
 Jhingan M. L :Monetary Economics Vrinda Publications P Ltd.,2014  
 Gordon &Natarajan : Indian Financial System ,Himalaya Publishing House,2015  
 Tyagi B.P :Public Economics,Jai PrakashNath& Co., Meerut,2015  
 Lekhi R. K :Public Finance,Kalyani Publishers / LyallBk Depot,2015  
 Cherunilam. F :International economics,McGraw Hill Education,2017

**REFERENCE BOOKS**

Meir Kohn: Financial Institutions and Markets, Oxford University Press,2004  
 Peacock A and Shaw G K : The Economic Theory of Public Policy,St Martin 'Press, 2014  
 RBI : <https://www.rbi.org.in>  
 Ministry of Finance  
 Government of India : [https://Ministry of Finance \(India\)](https://Ministry of Finance (India))

<b>UG-ID-Ele : Electronics for All</b>		
<b>Lecture Hrs : 27</b>	<b>Internal Marks : 15</b>	<b>Exam Marks : 35</b>
<p><b>Objectives of the course are:</b></p> <ol style="list-style-type: none"> <li>1. To create interest in Electronics</li> <li>2. To create awareness about basic electronics components</li> <li>3. To make them to understand the usage of Electronics devices in our daily life.</li> <li>4. To realize how electronics is used in our communication system.</li> </ol>		
<p><b>Course Outcome:</b>  <b>After studying this paper students will be able to recognize the basic components used in their electronics equipment. They also realize the importance of electronics in daily life.</b></p>		
<b>Unit-I: Introduction to Electronic Components</b>		<b>7 Hours</b>
<p>Basic Concepts: Charge, Energy, Current, Potential, Power, AC and DC.                      Passive Components: Resistors, Capacitors, Inductor, Switches                      Active Components: Transformers, Diodes, Zener diodes, Transistors, Op-Amps.                      Power Supplies: Battery, Cell, Digital Components: Gates</p>		
<b>Unit – II: Basic Electronic Circuits</b>		<b>7 Hours</b>
<p>Bio Medical Instrumentation: Origin of bioelectric signals, Types of bioelectric signals, recording electrodes, ECG, EEG, EMG, Patient Monitoring System, Blood Pressure measurement, Blood Flow Meters, Pacemakers and Defibrillators</p>		
<b>Unit – III: Electronic Devices in Day today Gadgets</b>		<b>7 Hours</b>
<p>Renewable source of energy using electronic devices.                      Sensors, Actuators and transducers: Introduction, classification, working (brief) and applications.                      Insides of a mobile, TV, Refrigerator, washing machines, music players, printers, 3D printers.(Advantages, Disadvantages and hazards)</p>		
<b>Unit – IV: Communication Systems</b>		<b>6 Hours</b>
<p>Basic Block Diagram of a Communication System, Types of Communication systems, Cellular communication System, Bluetooth, Wi-Fi, Wi-Max, GPS, LTE, Zig-Bee, LI-Fi Technology.</p>		
<b>TEXT BOOKS</b>		
<p><b>Study material by Dept of Electronics, The National college, Basavanagudi</b></p>		
<b>REFERENCE BOOKS</b>		
<p><b>Basic electronics-vol I and Vol II by Basavaraju</b></p>		

## UG-ID-MAT : Elementary Mathematics

**Lecture Hrs : 27**
**Internal Marks : 15**
**Exam Marks : 35**

**Objectives of the course are:** Students will feel a sense of accomplishment in their increasing ability to use mathematics to solve problems of interest to them or useful in their chosen fields. Students will attain more positive attitudes based on increasing confidence in their abilities to learn mathematics.

**Course Outcome:** Use number-theory arguments to justify relationships involving divisors, multiples and factoring. Solve discrete mathematics problems that involve: computing permutations and combinations of a set. Find percentages of different quantities. Calculate percentage increases and decreases.

<b>Unit-I: Number System and Number Series</b>	<b>4 Hours</b>
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Numbers and their classification-test for divisibility of numbers-general properties of divisibility-test of a prime number-division and remainder-remainder rules-number series-two line number series.

<b>Unit - II: Ratio-Proportion</b>	<b>4 Hours</b>
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Introduction-properties of ratio-dividing a given number in the given ratio-comparison of ratios-useful results on proportion-continued proportion-relation among the quantities more than two.

<b>Unit - III: Percentage</b>	<b>4 Hours</b>
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Introduction-fraction to rate per cent-rate per cent to fraction-rate per cent of a number-expressing a given quantity as a percentage of another given quantity-converting a percentage into decimals-converting a decimal into a percentage

<b>Unit-IV: Average</b>	<b>3 Hours</b>
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Introduction-average of different groups-addition or removal of items and change in average-replacement of some of the items- problems on specific formulae.

<b>Unit-V: Permutation and Combination</b>	<b>4 Hours</b>
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Introduction-definition-fundamental principles of association-different formulas on permutation-find the number of permutations of  $n$  different things taken  $r$  at a time-to find the number of permutations of  $n$  things taken them all at a time when  $p$  of the things are alike of one kind-circular permutations-combinations.

<b>Unit-VI: Linear Equations- Their Application and Problems Based on Age</b>	<b>4 Hours</b>
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Definition-solution of a linear equation in one variable-problem involving linear equations of one variable-simultaneous linear equations in two variables-applications of simultaneous linear equations

<b>Unit-VII: Set Theory</b>	<b>4 Hours</b>
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Operations of union-intersection-complement-inclusion-exclusion principle-applications of set theory.

### REFERENCE BOOKS

1. Quantitative Aptitude: Dr. R.S. Agarwal.
2. Quantitative Aptitude: Abhijit Guha
3. Quantitative Aptitude: Konzept Books.

## UG-BMOE.C1: Title: Introduction to Income Tax

**Lecture Hrs : 27**

**Internal Marks : 15**

**Exam Marks : 35**

**Objectives of the course are:**

- To expose the students to the specific provisions of Income Tax Act relating to computation of individual income.

**Course Outcome:**

- Students who complete this course will be able identify the difference between tax evasion and tax planning.
- By the end of the course students will able to describe how the provisions in the corporate tax laws can be used for tax planning.
- Students of the course will able to explain different types of incomes and their taxability and expenses and their deductibility.

**Unit-I: INTRODUCTION**

**07Hours**

History Of Income Tax- Meaning, Types of Tax, Basic concepts: Person - Assessee - Assessment Year- Previous Year- Income-Agricultural Income, Gross Total Income- Total Income- Revenue And Capital- Receipts, Expenditure .( Theory Only).

**Unit - II: RESIDENTIAL STATUS OF INDIVIDUALS**

**08 Hours**

Residential Status- Individual only and Incidence of Tax (Simple Problem).

**Unit - III: INCOME FROM SALARY**

**12 Hours**

Income from Salary- Features of Salary Income-Basic Salary- Allowances-Perquisites, Provident Fund, Fully Exempted and Partly Exempted Allowances, Simple Problems on House Rent Allowance- Leave Encashment, Commutation of Pension and Gratuity.

**TEXT BOOKS**

- a) Bhagwathi Prasad- Direct Taxes
- b) Dr. Vinod K Singhania- Direct Taxes- Law & Practice
- c) Dr. S Rajesh Kumar & Dr. Sreekanta- Income Tax

**REFERENCE BOOKS**

1. Gaur & Narang- Income Tax
2. Dr. B. Mariyappa. – Income Tax – 1



## UG-ID-PHY : PHYSICS IN EVERYDAY LIFE

**Lecture Hrs : 24**

**Internal Marks : 15**

**Exam Marks : 35**

**Objectives of the course are:** To understand the Physics and its relation to dynamics of daily life.

**Course Outcome:** The student will be able to look into Science and Physics involved, in and around his daily life activities.

**Unit-I: Mechanics & Properties of matter:**

**8 Hours**

Physics an introduction, measurement – physical quantity –unit. Force –inertia, motion of planet angular motion, banking of roads, conservation laws, motion of a fluid, streamlines motion. Periodic motion, oscillations, Period and frequency, measurement of time using them. Elastic nature of matter, properties of liquids and gases

**Unit – II: Optics and Imaging:**

**8 Hours**

Light, Sources of visible light, mechanism of emission of light, Filament lamp, fluorescent lamp, LED bulbs – efficiency comparison. Properties of light – reflection, plane and spherical mirrors – real and virtual images, refraction, concave and convex lens, instruments using lens and mirrors – telescope, microscope. Fiber optics – optical fibers, its use in communication. Imaging techniques – Ultra sound scan, X-ray imaging, CT scan, Magnetic resonance imaging (MRI)

**Unit – III: Universe Through Time Line:**

**8 Hours**

**Early Concepts Of Universe** - 4236BC Ancient Egyptians Calendar of 360 days - Aristotle, Ptolemy, Arayabhata , Omar Khayyam and others contribution to development of early concepts of universe.

**Helio Centric Universe-** Contributions of Nicolas Copernicus, Tycho Brahe, Johannes Kepler, Galileo Galilei and others for development of concepts of Helio centric universe .

**Gravity Binds Universe** - universe in the eyes of Issac Newton and Einstein. Important terrestrial telescopes and their discoveries .Concepts of Expanding universe, Blackholes and Super Nova .

**New windows to look at the Universe-** Orbiting

Telescopes, COBE, HUBBLE, CHANDRA, WMAP, KEPLAR, HERSHEL, PLANCK, JAMES WEBB SPACE TELESCOPE Their mission and discoveries. Future of Universe.

An over view of India and Space - Indian satellites , Chandrayan , MOM-Mars Orbiter Mission .

**TEXT BOOKS : Self designed course. Notes prepared by teachers**

**REFERENCE BOOKS** Any introductory book on 1. Mechanics & Properties of matter 2. Optics and Imaging 3. Universe Through Time Line. Will do.

## UG-ID-SOC: SOCIOLOGY AND SOCIETY

**Lecture Hrs : 27**

**Internal Marks : 15**

**Exam Marks : 35**

**Objectives of the course are:** To aware students about the basic sociological concepts and its application.

To inculcate the values of studying sociology in different themes and perspectives.

To sensitize students about the current problems, communities and basic social institutions.

**Course Outcome:** The students would be able to understand the society in Sociological Perspective.

It helps in competitive examinations like UPSC, KPSC, etc.

It enables students in creating awareness among them about the current social problems

<b>Unit-I: The concept of Sociology; Nature and Scope of Sociology, Importance of Sociology in global perspective.</b>	<b>5Hours</b>
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<b>Unit - II: Basic Sociological Concepts; Society, Community, Association, Institutions, Culture and Socialisation</b>	<b>6Hours</b>
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<b>Unit - III: Social Institution; Family, Marriage.</b>	<b>5Hours</b>
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<b>Unit - IV: Communities; Tribal, Rural and Urban.</b>	<b>5Hours</b>
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<b>Unit - V: Current Social Problems; Over Population, Child Labourers, Alcoholism and Drug addiction, Violence against women.</b>	<b>6Hours</b>
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**REFERENCE BOOKS :**

1. H.E. Barnes An Introduction to the History of Sociology, Chicago University Press.
2. T.B. Bottomore, Sociology: A Guide to Problems and Literature, Barns & Noble.
3. Alex Inkeles, 1991 What is Sociology- Prentice Hall India Ltd. New Delhi.
4. John J, Macionis 2000, Society: The Basics, Pearson Education, New Delhi,
5. John J. Macionis, Sociology (10th Edition), Pearson Education, 2004.
6. Patricia Uberoi (Ed): Family, Kinship and Marriage in India, Oxford University Press, 1994.
7. Ram Ahuja, Social Problems in India, Rawat Publications, Jaipur

## UG-ID-JOR : Understanding Media

**Lecture Hrs : 27**

**Internal Marks : 15**

**Exam Marks : 35**

**Objectives of the course are:**

Understanding basic concepts communication and Mass Communication tools.  
To understand the basic concept of Journalism and Kinds of Journalism.

**Course Outcome:**

Students will understand concept communication and Journalism which will help them to understand how to write. It helps students writing skills.

**Unit-I: Introduction to Communication**

**6 Hours**

Meaning and Definition of communication, Principles of Communication, Function of communication, Types of Communication, Levels of communication

**Unit - II: Media for Communication**

**8 Hours**

Print Media – Newspaper and Magazine

Electronic Media – Television and Radio

New Media – SNS, Blogs,

Traditional Media / Folk Media

**Unit - III: Introduction to Journalism**

**6 Hours**

Meaning and Definition of Journalism, Principles of Journalism, Function of Journalism

**Unit - IV: Kinds of Journalism in India**

**7 Hours**

Kinds of Journalism- Community , Development, Yellow, and Photo Journalism

**REFERENCE BOOKS**

1. Keval. J. Kumar: Mass Communication in India- (4 th Revised Edition), Jaico Publishing house, Mumbai,2014
2. NareshRao and SuparnaRao ‘Introduction to Mass Communication and Journalism’.

