MANONMANIAM SUNDARANAR UNIVERISTY,
TIRUNELVELI-12

SYLLABUS

UG - COURSES – AFFILIATED COLLEGES

Course Structure for B. Sc. Physics
(Choice Based Credit System)
(with effect from the academic year 2024-2025 onwards)

Semester-IV				
Part	**Subject Status**	**Subject Title**	**Subject Code**	**Credit**
I	LANGUAGE	TAMIL/MALAYALAM/HINDI	F1TL41/ F1MY41/ F1HD41	3
II	ENGLISH	ENGLISH	F2EN41	3
III	CORE	OPTICS AND LASER PHYSICS	FCPH41	4
III	CORE	PHYSICS PRACTICAL IV	FCPHP4	2
III	ELECTIVE	ALLIED CHEMISTRY FOR PHYSICAL SCIENCES - II	FECH41	3
		PRACTICAL – SYSTEMATIC ANALYSIS OF ORGANIC COMPOUNDS	FECHP4	3
IV	SEC 5	MAINTENANCE OF ELECTRONIC APPLIANCES	FSPH41	2
IV		VALUE BASED EDUCATION	FVBE41	2
IV	NAAN MUDHALVAN	INSTRUMENTATION PHYSICS II		2

Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks

A. **Scheme for internal Assessment**:
Maximum marks for written test: **20 marks**
3 internal tests, each of **I hour** duration shall be conducted every semester.
To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:
Written test- 20 marks; Assignment -5 marks Total - 25 marks

B. Scheme of External Examination
3 hrs. examination at the end of the semester
A – Part : 1 mark question two - from each unit
B – Part : 5 marks question one - from each unit
C – Part : 8 marks question one - from each unit

- **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

- **Cumulative Grade Point Average (CGPA)**

$$\mathbf{CGPA} = \frac{\mathbf{\Sigma\,(GP \times C)}}{\mathbf{\Sigma C}}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

- **Classification**
  a) First Class with Distinction : CGPA $\geq$ 7.5*****
  b) First Class : CGPA $\geq$ 6.0
  c) Second Class : CGPA $\geq$ 5.0 and $<$ 6.0
  d) Third Class : CGPA$<$ 5.0

Part 1 TAMIL

பொதுத்தமிழ் 4 - தமிழும் அறிவியலும்

அலகு 1: தமிழரின் அறிவியல் சிந்தனைகள்

1. அறிவியலும் மனித வாழ்வும்
2. ஐந்திணைப் பகுப்பும் சூழலியலும்
3. தொழில்நுட்ப மேலாண்மை
4. நேர் நிலம் மேலாண்மை

அலகு 2: பழந்தமிழ் இலக்கியங்களில் அறிவியல் சிந்தனைகள்

1. நிலவியல்
2. உலோகவியல்
3. வானவியல்
4. உயிரியல்
5. உளவியல்

அலகு 3: இடைக்கால இலக்கியங்களில் அறிவியல் சிந்தனைகள்

1. காப்பியங்களில் அறிவியல்
2. சிற்றிலக்கியங்களில் அறிவியல்
3. உரைநூல்களில் அறிவியல்

அலகு 4: இணையத் தமிழ்

1. இணையத் தமிழ் பயன்பாடு - அறிமுகம்
2. இணையத் தமிழ் கல்விக்கழகம்
3. இணைய நூலகம்
4. செயற்கை நுண்ணறிவியல்
5. தமிழ்நாட்டு அறிவியல் ஆளுமைகள்

அலகு 5: கடிதம் எழுதுதலும் கட்டுரை எழுதுதலும்

1. உறவு முறைக் கடிதப் பயிற்சி
2. அலுவலகக் கடிதப் பயிற்சி
3. விண்ணப்பப் படிவம் எழுதும் பயிற்சி
4. தன் விவரப் படிவம் எழுதும் பயிற்சி
5. கருத்து விளக்கக் கட்டுரைகள் எழுதும் பயிற்சி
6. பத்திரிகைகளுக்குக் கட்டுரை எழுதும் பயிற்சி

Text Books;

1. அறிவியல் தமிழ் இன்றைய நிலை - இராதா செல்லப்பன், உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை
2. மாணவ முஸ்தபா. தமிழில் அறிவியல் படைப்பிலக்கியம், மணவை பூப்பிளிகேஷன், சென்னை.
3. கலைச்சொல்லாக்கம் - மங்கை, ரங்கராசபுரம், சென்னை

Reference Books:

1. தமிழர் மேலாண்மை மரபுகள் - இல). செ. கந்தசாமி
2. சங்க இலக்கியத்தில் வேளாண் சமுதாயம், பொ. மாதையன், நியூ செஞ்சுரி புக் ஹவுஸ்

Websites:

1. https://www.chennailibrary.com/
2. முகப்பு - சிறுகதைகள்
3. www.tamilvirtualuniversity.org
4. Buy tamil books online 10% to 50% discount, Tamil Novels, Tamil Audio Books online – Buy tamil books online – Established 2010
5. www.katuraitamilblogspot.com

Part I MALAYALAM

DESKTOP PUBLISHING AND PRINTING IN MALAYALAM

UNIT I

This unit introduces basics of the printing technology, History of Malayalam printing-publishing-Newspapers-Journals-Social commitment -Propagation of ideas- Social struggle against invasion product of industrialization-printing in new era- - Data entry, DTP, editing, layout and Book publishing, e-publishing -: Significance of ISBN and ISSN..

UNIT II e -Malayalam – Malayalam in cyber space Detailed Study :

1. Malayalam computing-charithravalokanam.Dr.Mahesh Mangalatt ,Cyber Malayalam Sunitha T.V.(Ed)
2. Vayana, Ezhuthu, prasadhanam digital yugathil Dr.B.Iqbal(Grandhalokam- June 2013)

UNIT III e-Vayana- Reading in digital era Detailed Study :

1. E.vayana innathe Vayana– E-malayalam.Sunitha T.V State Institute of Languages.Thiruvananthapuram
2. Malayalam wiki media samrambhangal.Shiju Alex Cyber Malayalam .Sunitha T.V (Ed).Current Books.
3. Web magazinukal-Ini Vayana E Vayana.V.K Adarsh D C Books

UNIT IV Modern Media

Tools in Cyber space-editing tools

Unicode- Fonts- Drawing Tools, Painting tools. M S Paint- File Types (jpg ,IMG, XMP, Gif, PNG)

Resolution-Layers-Palattes, Greyscale, image, image recognition, Colour space, image transformation- image preview.

Detailed Study:

Unicode – Ini vayana e vayana – V.K Adarsh - D C Books

UNIT V

Proof reading techniques and cataloguing, cover designing, blurb writing

Detailed study:

Proof thiruthal.Vanijyaparamaya kathidapadukal.G.R.Pilla,
State Institute of Languages.Thiruvananthapuram

Reading List (Print and Online)

1. https://www.amazon.com/Desktop-publishing-Bittukumar/dp/9350570130
2. Computer parichayavum prayogavum.Dr.Achythsankar S Nair State Institute of languages.Thiruvananthapuram
3. Malayalam computing parimithikalum sadhyathakalum (Combiled.) Dr.Smitha K Nair
4. Sankethika patham-kerala University Publications
5. Computer Gurukulam-DTP ,Kairali Publications Thiruvananthapuram
6. Pusthaka nirmaanam - The state Institute of languages, Thiruvananthapuram
7. Proof reading - The state Institute of languages
8. Printing A to Z - K.J. Sam kutti
9. Ini vayana e vayana- V.K. Adarsh, D.C. books.
10. 1Printing Technology and Compositing- The State institute of Language s . T Thiruvananthapuram
11. Navamadhyamangal Bhaasha sahityam samskaram- Jose K Manuel, N B S
12. Cyber aadhunikata @ Malayalam – Jose K Manuel ,Athma Books
13. Bookstalgia- P.K. Rajasekharan- Mathrubhumi books
14. Pusthakam Untakunnathu- V.K. Haridas, Poorna publications, Kozhikode
15. An Introduction to Book Publishing D,Raghavan
16. Copy Editing- Judith Butcher
17. E Malayalam –Sunitha T.V- The State Institute of Language s

PART I HINDI
Hindi Bhasha aur Computer

Course Objectives
The Main Objectives of this course are to:
- Knowing about computer in Hindi
- Understanding Technical Hindi
- E-Learning and its aspects
- Hindi application with the Technical tools

Unit I
Computer aur Hindi
- Computer ka Parchay aur Vikas
- Computer mein Hindi ke Vividh Prayog

Unit II
Proudyogiki aur Hindi
- Unicode
- Dewanagari Lipi
- Hindi ki Vibhinna Website – Ek Parichay

Unit III
Computer ke madhyam se Hindi shikshan
- Vibhinna Shikshan Takkini ki
- Sarkari aur gair sarkari sansthao mein prayukt Hindi Bhasha

Unit IV
Vividh Paksh
- Internet par Hindi Bhasha
- Hindi SMS
- Hindi Tankan
- Hindi ke Vibhinna Prayukthi

Unit V
Pratiyogi priksha par aadharit Computer sambandhit prashikshan Karya
- Hindi mein Powerpoint banana
- Hindi mein Google Document thaiyar karna
- Hindi mein Google form taiyar karna
- Vibhinna pratiyogi parikshao ke bare mein suchna pradan karna

Reference Books

1. Social Networking: Naye Samay ka Samvad – Ed. Sanjay Dwivedi
2. Jansanchar aur Maas Culture – Jagdeeshwar
3. Media: Bhumandalikaran aur Samaj – Ed. Sanjay Dwivedi
4. Naye Jamane ki Patrakarita – Sourabh Shukla
5. Patrakarita se Media tak – Manoj Kumar

Related Online Contents (MOOCs, SWAYAM, NPTEL, YouTube, Websites, etc.)

1. https://techshindi.com/%E0%A4%AB%E0%A4%BC%E0%A5%89%E0%A4%A8%E0%A5%8D%E0%A4%9F%E0%A4%95%E0%A5%8D%E0%A4%AF%E0%A4%BE-%E0%A4%B9%E0%A5%88%E0%A4%82-%E0%A4%94%E0%A4%B0-%E0%A4%AF%E0%A5%87-%E0%A4%95%E0%A4%BF%E0%A4%A4%E0%A4%A8/
2. https://www.techyukti.com/2020/12/computer-font-kya-hai.html
3. https://chti.rajbhasha.gov.in/pdf/Chap4HindiShabadSansadhan2ndEditionPart2.pdf

Part II ENGLISH

UNIT I GOAL SETTING (UNICEF)

Life Story

1.1 From Chinese Cinderella – Adeline Yen Mah
1.2 Why I Write - George Orwell

Short Essay

1.3 On Personal Mastery – Robin Sharma
1.4 On the Love of Life – William Hazlitt

UNIT II INTEGRITY

Short Story

2.1 The Taxi Driver – K.S. Duggal
2.2 Kabuliwala - Rabindranath Tagore
2.3 A Retrieved Reformation – O Henry

Extract from a play

2.4 The Quality of Mercy (Trial Scene from the Merchant of Venice - Shakespeare)

UNIT III COPING WITH EMOTIONS

Poem

3.1 Pride – Dahlia Ravikovitch
3.2 Phenomenal Woman – Maya Angelou

Reader's Theatre

3.3 The Giant's Wife A Tall Tale of Ireland –William Carleton
3.4 The Princess and the God : A Tale of Ancient India

UNIT IV Language Competency Sentences

4.1 Simple Sentences
4.2 Compound Sentences
4.3 Complex Sentences

Direct and Indirect Speech

UNIT V Report Writing

5.1 Narrative Report
5.2 Newspaper Report

Drafting Speeches

5.3 Welcome Address
5.4 Vote of Thanks

Text Books (Latest Editions)

1. Oxford Practice Grammar , John Eastwood, Oxford University Press
2. Cambridge Grammar of English , Ronald Carter and Michael McCarthy
3. George Orwell Essays, Penguin Classics

Web Resources

1. http:/www.gradesaver.com/George-orwell-essays/study/summary
2. O' Henry. A Retrieved Reformation. https://americanenglish.state.gov/files/ae/resource_files/a-retrieved-reformation.pdf
3. Maya Angelou. Phenomenal Woman. https://www.poetryfoundation.org/poems/48985/phenomenal-woman
4. The Quality of Mercy, https://poemana1ysis.com
5. https://www'.oxfordscho1ar1yeditions.coin/disp1ay/10.1093/actrade/9780199235742.book.1/actrade-9780199235742-div1-106-William Hazilitt

OPTICS AND LASER PHYSICS

OBJECTIVES

- To provide an in-depth understanding of the basics of various phenomena in geometrical and wave optics;
- To explain the behaviour of light in different mediums;
- To understand the differences in the important phenomena namely interference, diffraction and Polarization and apply the knowledge in day to day life;
- To understand the design of optical systems and methods to minims aberrations;
- To understand the working and applications of laser

UNIT-I

LENS AND PRISMS:

Lens: Lenses and its types – Equivalent focal length of two thin lenses in contact and separated by a distance – power of a lens.

Aberrations: Spherical aberration, Methods of minimizing Spherical Aberration and chromatic aberrations.

Prism: Dispersion by a prism, Angular dispersion and Dispersive power, Achromatic combination of prisms- Deviation without dispersion and Dispersion without deviation.

Eyepieces: Eyepiece - Huygen‘s and Ramsden‘s eyepieces, construction and working – comparison

UNIT-II

INTERFERENCE:

Interference – Conditions – Theory of Interference - Fresnel‘s biprism – Experimental determination of the wavelength of light - Colours of thin films - Production of colours in thin films – Air wedge (Wedge-shaped film) – Newton‘s rings.

Michelson‘s interferometer – Applications, (i) determination of the wavelength of a monochromatic source of light and (ii) determination of a thickness of a mica sheet.

UNIT-III

DIFFRACTION: Fresnel and Fraunhofer diffraction - Fresnel‘s explanation of Rectilinear propagation of light - zone plate – action of zone plate for an incident spherical wave front – differences between a zone plate and a convex lens – diffraction pattern due to a straight edge – plane transmission diffraction grating– experiment to determine wavelengths.

UNIT-IV

POLARISATION: Polarisation of light -double refraction – Nicol prism – Plane, circularlyand elliptically polarized light –quarter wave plate – half wave plate –

production and detection of circularly and elliptically polarized lights – Optical activity - Fresnel‘s explanation – Laurent half shade polarimeter – experiment to determine specific rotatory power.

UNIT-V

LASERS: general principles of lasers – properties of lasers action – spontaneous and stimulated emission – population inversion – optical pumping – He-Ne laser (principle and working) – CO2 laser (principle and working) – laser applications – holography and its applications.

TEXT BOOKS

1. Subrahmanyam. N, Brijlal and Avadhanulu. M.N, 2014, A textbook of optics, 25th Edition, S.Chand and Co.
2. Murugeshan. R and Kiruthiga Sivaprasath, 2014, Optics and Spectroscopy, 9th Edition, S.Chand and Co.

REFERENCE BOOKS

1. Sathyaprakash, 1990,Optics, VII edition, Ratan Prakashan Mandhir, New Delhi.
2. Ajoy Ghatak, 2009, Optics, 4th Edition, PHI Pvt Ltd, New Delhi.
3. Jenkins A.Francis and White, 2011, Fundamentals of Optics, 4th edition, McGraw Hill Inc., NewDelhi.

PHYSICS PRACTICAL IV

COURSE OBJECTIVES

- Demonstrate various optical phenomena principles, working, apply with various materials and interpret the results. Also, construct circuits to learn about the concept of electricity and magnetism.

Minimum of Six Experiments from the list:

1. Determination of refractive index of prism using spectrometer.
2. Determination of refractive index of liquid using hollow prism and spectrometer
3. Determination of dispersive power of a prism.
4. Determination of radius of curvature of lens by forming Newton‘s rings.
5. Determination of thickness of a wire using air wedge.
6. Determination of Cauchy‘s Constants.
7. Determination of resolving power of grating
8. Determination of refractive index of a given liquid by forming liquid lens
9. Determination of refractive index - by forming Newton‘s rings
10. Spectrometer - grating – oblique incidence - dispersive power
11. Tangent Galvanometer – Horizontal earth‘s magnetic induction

12. Spectrometer - grating – oblique incidence -Wave length of Mercury spectral lines
13. Ballistic Galvanometer – Absolute capacity of a condenser
14. Ballistic Galvanometer – Comparison of Capacitances (C1 / C2)
15. Determination of refractive index using Laser.

Note: Use of digital balance, digital screw gauge, digital calipers are permitted

CHEMISTRY FOR PHYSICAL SCIENCES II

(FOR MATHEMATICS AND PHYSICS STUDENTS)

Objectives of the course

This course aims at providing knowledge on the Co-ordination Chemistry and Water Technology

- Carbohydrates and Amino acids
- basics and applications of electrochemistry
- basics and applications of kinetics and catalysis

UNIT- I

Co-ordination Chemistry and Water Technology

Co-ordination Chemistry: Definition of terms-IUPAC Nomenclature Werner'stheory EAN rule Pauling's theory- Postulates Applications to [Ni(CO)4], [Ni(CN)4]2-, [Co(CN)6]3-Chelation Biological role of Haemoglobin and Chlorophyll (elementary idea) Applications in qualitative and quantitative analysis.

Water Technology: Hardness of water, determination of hardness of water using EDTA method, zeolite method-Purification techniques- BOD, COD.

Unit –II

Carbohydrates and Amino acids

Carbohydrates: Classification, preparation and properties of glucose, fructose and sucrose. Discussion of open chain ring structures of glucose and fructose. Glucose-fructose interconversion. Properties of starch and cellulose.

Amino acids: Classification preparation and properties of alanine, preparation of dipeptides using Bergmann method. RNA and DNA (elementary idea only).

UNIT- III

Electrochemistry

Galvanic cells Standard hydrogen electrode calomel electrode - standard electrode potentials -electrochemical series. Strong and weak electrolytes ionic product of water pH, pKa, pKb. Conductometric titrations - pH determination by colorimetric method - buffer solutions and its biological applications electroplating Nickel and chrome plating-Types of cells-fuel cells-corrosion and its prevention.

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UNIT –IV

Kinetics and Catalysis

Order and molecularity. Integrated rate expression for I and II (2A Products) order reactions, Pseudo first order reaction, methods of determining order of a reaction Half-life period - Catalysis - homogeneous and heterogeneous, catalyst used in Contact and Haber's processes. Concept of energy of activation and Arrhenius equation.

UNIT -V

Photochemistry

Grothus Drapper's law and Stark-Einstein's law of photochemical equivalence, Quantum yield Hydrogen -chloride reaction. Phosphorescence, fluorescence, chemiluminescence photosensitization and photosynthesis (definition with examples)

Recommended Text

1. V.Veeraiyan, Textbook of Ancillary Chemistry; High mount publishing house, Chennai, first edition, 2009.
2. S. Vaithyanathan, Text book of Ancillary Chemistry; Priya Publications, Karur, 2006.
3. ArunBahl, B.S.Bahl, Advanced Organic Chemistry: S.Chand and Company, New Delhi, twenty third edition, 2012.
4. P.L.Soni, H.M.Chawla, Text Book of Organic Chemistry; Sultan Chand & sons, New Delhi, twenty ninth edition, 2007.

Reference book

1. P.L.Soni, Mohan Katyal, Text book of Inorganic chemistry; Sultan Chand and Company, New Delhi, twentieth edition, 2007.
2. R.Puri, L.R.Sharma, M.S.Pathania, Text book Physical Chemistry: Vishal Publishing Co., New Delhi, forty seventh edition, 2018.
3. B.K,Sharma, Industrial Chemistry; GOEL publishing house, Meerut, sixteenth edition, 2014

CHEMISTRY FOR PHYSICAL SCIENCES QUALITATIVE INORGANIC ANALYSIS

Objectives of the course

- To develop the skill on systematic analysis of inorganic salts.

Course Outline

Semi-Micro Qualitative Analysis

1. Analysis of simple acid radicals: Carbonate, sulphide,sulphate, chloride, bromide, iodide, nitrate
2. Analysis of interfering acid radicals: Fluoride, oxalate, borate, phosphate.
3. Elimination of interfering acid radicals and Identifying the group of basic radicals
4. Analysis of basic radicals (group wise): Lead, copper, cadmium, nickel, cobalt, barium, ammonium.
5. Analysis of a simple salt containing one cation and one anion.

Reference Books:

1. V.Venkateswaran, R.Veera swamy and A.R.Kulandivelu, Basic Principles of Practical Chemistry, Sultan Chand & Sons, New Delhi, second edition, 1997.

Website and e-learning source

1. https://www.vlab.co.in/broad-area-chemical-sciences

MAINTANANCE OF ELECTRONICS APPLIANCES

COURSE OBJECTIVES

- This course enables the students to understand the operations and safety handling of certain commonly used domestic appliances. The paper needs a basic knowledge in electricity and magnetism and the learners are expected to gain knowledge to design and trouble shoot electrical circuits.

UNIT-I

SOLDERING TECHNIQUES Soldering tools- soldering iron-soldering station-dry solder joint, cold solder joints-Good and bad solders joints. Groove board, bread board and printed circuit board

UNIT-II

POWER SUPPLY AND MEASURING INSTRUMENTS Transformer Zener voltage regulators-Dual Power supply IC‘S 7805, 7905-switch mode power supply (SMP‘S), principle of SMP‘S-block diagram of SMP‘S. Practical uses of Multimeter (analog and digital) –testing and measurements of resistor, capacitor and transistor

UNIT-III

MAINTENANCE OF ELECTRONICS HOME APPLIANCES LED/LCD TV-music player, CCTV Camera block diagram-its working - cathode ray oscilloscope – its principle and block diagram- Measurement of Frequency, AC and DC using CRO

UNIT-IV

MAINTENANCE OF COMPUTER SYSTEMS Various parts of computer-its assembling-installing windows operating systems, software and antiviruscomputer hardware maintenance-formatting and maintenance-Basic network installation-IP address setting and its maintenance. Modem-working principle.

UNIT-V

SOLAR POWER SYSTEMS AND INVERTERS Solar Panels -Solar Inverter – their principle & operation, power rating-, Protection circuits used in inverters– Solar Battery- battery level, over load, over charging. Various faults and its rectification.

TEXT BOOKS

1. Principles of Electronics by V K Mehta, S Chand & Co., 5th edition2001.0
2. Functional Electronics by Ramanan.
3. Solar Power Hand Book, Dr. H. naganagouda (2014) 2. Green Power: Eco-Friendly Energy Engineering‖, Khartchenko . N.V, ―Tech Books, and New Delhi, 2008.

REFERENCE BOOKS

1. Basic Electronics, 6th edition by B Grob, McGraw Hill NY1
2. Integrated electronics-Millman and Halkias
3. Electronic principles - Malvino 6 th edition
4. Operational amplifier – Gyakwar
5. Basic electronics B. Basavaraj, H.N.Shivasankar University press

VALUE BASED EDUCATION

Unit-I Introduction to Value based Education

a. Value: meaning and Classification

b. Value based Education: Meaning, Characteristics, Components and Contents

c. Value Erosion and Inculcation: Value crises in social life, economic life, and political life - Value inculcation: need and importance - Role of Parents and Teachers in inculcating values

Unit-II Harmony in Being and Living

a. Harmony of the self (I) with the body: Nurturing of the body- Understanding myself as co-existence of the self and the body- Understanding needs of self and needs of the body- Understanding the activities in the self and activities in the body.
b. Harmony in the Family, Society and Nature: Family as a basic unit of human interaction and values in relationships - Affection, care, guidance, reverence, Glory, gratitude, and love – Harmony in society: Justice preservation, Production Work, Exchange Storage Harmony in nature: four orders in nature- The holistic perception of harmony in existence.

Unit III: Social Issues, Social Justice and Human Rights

Social issues – causes and magnitude - alcoholism, drug addiction, poverty, unemployment

Social Justice: Definition and need – factors responsible for social injustice: caste and gender – contributions of social reformers.

Human Rights: Concept and Principles of human rights – human rights and

Indian constitution – Rights of Women and children – violence against women

Unit IV: Values and Mass Media

Mass media: Meaning, functions and characteristics – Effects and Influence on youth and children – **Media Power** – socio, cultural and political consequences of mass mediated culture - consumerist culture – Globalization – new media- prospects and challenges – Role of media in value building

Unit V: Ethics

Ethics: Meaning and importance

Social ethics: tolerance, equity, justice for all, sensitivity towards mankind, love for nature and creatures, nationalism-love for nation, pride for nation, Honour to the law, Indian culture and traditions – Civic Sense: Being a good civilian

Professional Ethics: Dedication to work and duty – Commitment to the Profession

References:

1. Allport, G.W., Vermon, P.E., and Lindzey, G. (1970) study of values, Buston: Houghton Mifflin.
2. Central Board of Secondary Education (1997), Value Education: A Handbook for Teachers, Delhi: Central Board of Secondary Education.
3. Delors, J. (1996), Learning: The Treasure within- Report of the International Commission on Education for the Twenty-First Century, Paris: UNESCO.
4. Morris, Charles W. (1956). Varieties of Human Values. Chikago: University of Chicago Press.
5. Shukla, R.P. (2005). Value Education and Human Rights. Sarup& Sons, New Delhi
6. Satchidananda. M.K. (1991), "Ethics, Education, Indian Unity and Culture" – Delhi, Ajantha Publications
7. Saraswathi. T.S. (Ed) 1999. Culture", Socialisation and Human Development: Theory, Research and Application In India" – New Delhi Sage Publications.
8. Venkataiah. N (Ed) 1998, "Value Education" New Delhi Ph. Publishing Corporation.
9. Chakraborti, Mohit (1997) "Value Education: Changing Perspectives" New Delhi: Kanishka Publications.

Web Resources

1. https://testbook.com/ugc-net-paper-1/value-education

NAAN MUTHALVAN/ INSTRUMENTATION PHYSICS – 2

COURSE OBJECTIVES

- The paper provides a basic knowledge in basic physics and some advance technology in medical instruments.

UNIT-I

BASIC ELECTRONIC & DIGITAL INSTRUMENTS

Electronic multimeters – Q meters – Vector meters – RF voltage and power measurements - Comparison of analog and digital techniques – digital voltmeter – digital multimeters

UNIT-II

TRANSDUCERS

Active transducers: Piezoelectric type transducers and Photovoltaic type transducer Passive transducer - Photoelectric type resistive transducers - Inductive transducer.

UNIT-III

MICROSCOPE

Optical and Electron microscope - Comparison between optical and electron microscope – Resolving power - Magnification power - Types of electron microscope - TEM – SEM - Comparison between TEM and SEM.

UNIT-IV

ADVANCES IN MEDICAL INSTRUMENTS

X-ray machine - Comparison of Fluoroscopy and Radiography - Lasers in medicine - Cryogenic surgery MRI (basics and instrumentation).

UNIT-V

OSCILLOSCOPE

Oscilloscope - Basic principle - CRT features – Block diagram of oscilloscope - Simple cathode ray oscilloscope.

TEXT BOOKS

1. Albert D. Helfrick and William D. Cooper, Modern Electronic Instrumentation and Measurement Techniques, Prentice-Hall of India Pvt. Limited, Reprint 2002.
2. M. Arumugam, Biomedical Instrumentation, Anuradha Agencies, Reprint 2002.
3. H.S.Kalsi, Electronic Instrumentation, Tata McGraw Hill Education Pvt. Limited, Reprint 2012.

REFERENCEBOOKS

1. David A. Bell, Electronic Instrumentation, and measurements, Prentice Hall of India Pvt Ltd, 2003
2. B.C. Nakra and K.K. Choudhry, Instrumentation, Measurement and Analysis, 2nd Edition, TMH, 2004