മഹാത്മാഗാന്ധി സർവ്വകലാശാല, കേരളം

സംഗ്രഹം

CBCS 2017 - B.Sc Electronics Model III & B.Sc Electronics and Computer Maintenance Model III- സിലബസിലുള്ള മാറ്റങ്ങൾ അംഗീകരിച്ച് -ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

അക്കാദമിക് എ 9 സെക്ഷൻ

നമ്പർ. 2468/AC A 9/2019/എം.ജി.യു പ്രിയദർശിനി ഹിൽസ്,തീയതി: 06.06.2019

പരാമർശം:-1. 16 / 04 / 2019 തീയതിയിൽ സർവകലാശാലയിൽ വച്ച് കൂടിയ യു .ജി ഇലക്ടോണിക്സ് ബോർഡ് ഓഫ് സ്റ്റഡീസ് യോഗത്തിന്റെ മിനിട്സ്

2 .വൈസ് ചാൻസലറുടെ 0 3 / 06 / 2019 തീയതിയിലെ ഉത്തരവ്

ഉത്തരവ്

പരാമർശം(1)പ്രകാരം 16/04/2019 തീയതിയിൽ കൂടിയ യു .ജി ഇലക്ടോണിക്സ് ബോർഡ് ഓഫ് സ്റ്റഡീസ് യോഗം , താഴെപറയുന്ന ശിപാർശകൾ അംഗീകാരത്തിനായി സമർപ്പിച്ചിരുന്നു

CBCS 2017 റഗുലേഷൻ പ്രകാരമുള്ള,

1.B.Sc Electronics Model III & B.Sc Electronics and Computer Maintenance Model III പ്രോഗ്രാമുകളുടെ അഞ്ചാം സെമസ്റ്റർ Core Course ആയ EL5CRT15: Environmental Awareness, E-Waste Management and Human Rights ന്റെ പരിഷ്കരിച്ച സിലബസ് .

2 .B.Sc Electronics Model III & B.Sc Electronics and Computer Maintenance Model IIIപ്രോഗ്രാമുകളുടെ ഒന്നാം സെമസ്റ്റർ കോർ കോഴ്സായ EL1CRT02: Methodology of Science ന്റെ സിലബസ് പരിഷ്കരിച്ചു 2019 അഡ്മിഷൻ മുതൽ ബാധകമാക്കുന്നതിനും പരിഷ്കരിച്ച കോഴ്സിന് EL1CRT20 :Methodology of Science എന്ന കോഴ്സ്കോഡും സംജ്ഞയും നൽകുന്നതിനും.

3 .B.Sc Electronics Model III & B.Sc Electronics and Computer Maintenance Model III പ്രോഗ്രാമുകളുടെ നാലാം സെമസ്റ്റർ കോർ കോഴ്സായ EL4CRT13: Instrumentation Electronics ന്റെ സിലബസ് പരിഷ്കരിച്ചു 2018 അഡ്മിഷൻ മുതൽ ബാധകമാക്കുന്നതിനും പരിഷ്കരിച്ച കോഴ്സിന്, EL4CRT21 :Instrumentation Electronics എന്ന എന്ന കോഴ്സ്കോഡും സംജ്ഞയും നൽകുന്നതിനും.

മേൽ ശിപാർശകൾ പരാമർശം (2) മഹാത്മാഗാന്ധി സർവകലാശാല ആക്ട് 1985, അധ്യായം 3, വകുപ്പ് 10 (17) പ്രകാരം വൈസ് ചാൻസലർ 03/06/2019 തീയതിയിൽ അംഗീകരിച്ചു.

തദനുസരണം ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

ദിലീപ് കുമാർ .ആർ

അസിസ്റ്റന്റ് രജിസ്ട്രാർ 3 (അക്കാദമിക്)

രജിസ്ട്രാർക്ക് വേണ്ടി

പകർപ്പ്

1.P.S to V.C

2.PA to Registrar/CE

3.BOS Chairman ,Electronics (U.G)

4.JR I/DR IV/AR XV(Exam)

5.JR II(Admn)/ DR II/ AR III(Academic)

6.Content Management Section

7.System Manager/CETEX/IQAC

8.Stock File/File Copy

EL5CRT15 ENVIRONMENTAL AWARENESS, E-WASTE MANAGEMENT AND HUMAN RIGHTS

(Common to BSc Electronics and BSc Electronics & Computer Maintenance)

SEMESTER V

Aims & Objectives of the course

- Environmental Education encourages students to research, investigate how and why things happen, and make their own decisions about complex environmental issues by developing and enhancing critical and creative thinking skills. It helps to foster a new generation of informed consumers, workers, as well as policy or decision makers.

- Environmental Education helps students to understand how their decisions and actions affect the environment, builds knowledge and skills necessary to address complex environmental issues, as well as ways we can take action to keep our environment healthy and sustainable for the future. It encourages character building, and develop positive attitudes and values.

- To develop the sense of awareness among the students about the environment and its various problems and to help the students in realizing the inter-relationship between man and environment and helps to protect the nature and natural resources.

- To help the students in acquiring the basic knowledge about environment and the social norms that provide unity with environmental characteristics and create positive attitude about the environment.

- To impart awareness on, Human rights and E-waste management

Hours/Week : 4
Contact hours : 72
Credits : 4

Course Outline

Module I

Unit 1 : Multidisciplinary nature of environmental studies (2 Hours)

Definition, scope and importance. Need for public awareness.

Unit 2 : Natural Resources (8 Hours)

Renewable and non-renewable resources: Natural resources and associated problems.

a) **Forest resources**: Use and over-exploitation, deforestation, case studies.

Timber extraction, mining, dams and their effects on forest and tribal people.

b) **Water resources**: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

c) **Mineral resources**: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d) **Food resources**: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e) **Energy resources**: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, Case studies.

f) **Land resources**: Land as a resource, land degradation, man induced and slides, soil erosion and desertification

- Role of individual in conservation of natural resources.
- Equitable use of resources for sustainable life styles.

Unit 3: Ecosystems **(6 Hours)**

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the given ecosystem:- Forest ecosystem

Text Book:

Bharucha Erach, Text Book of Environmental Studies for undergraduate Courses. University Press, IInd Edition 2013

Module II

Unit 1: Biodiversity and its conservation (**8 Hours**)

- Introduction
- Biogeographical classification of India

- Value of biodiversity: consumptive, productive, social, ethical, aesthetic and option values.
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts
- Endangered and endemic species of India

Unit 2: Environmental Pollution (6 Hours)

Definition

Causes, effects and control measures of: -

a. Air pollution
b. Water pollution
c. Soil pollution
d. Marine pollution
e. Noise pollution
f. Thermal pollution
g. Nuclear hazards

- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides.

Text Book:

Bharucha Erach, Text Book of Environmental Studies for undergraduate Courses. University Press, IInd Edition 2013

Module III (14 Hours)

E- Waste

E-waste growth- An overview, hazards of E-waste, what is E-waste, digital dump yard, how to minimize E-waste, Hazardous substances waste Electrical and Electronic Equipment, characteristics of pollutants, batteries, electrical and electronic components, plastic and flame retardants, circuit boards, pollutants in waste electrical and electronic equipment

Text Book:

1. E-Waste Managing the Digital Dump Yard, Edited by Vishakha Munshi, ICFAI University Press (Chapter 1)

2. E-waste: Implications, Regulations and Management in India and Current Global Best Practices, Edited by Rakesh Johri, The Energy and Resources Institute, New Delhi (Chapter 1, 5)

Module IV (14 Hours)

E-Waste Recycling

Technologies for recovery of resources from electronic waste, resource recovery potential of e-waste, steps in recycling and recovery of materials-mechanical processing, technologies for recovery of materials

Text Book: E-waste: Implications, Regulations and Management in India and Current Global Best Practices, Edited by Rakesh Johri, The Energy and Resources Institute, New Delhi (Chapter 12)

Module – V (14 Hours)

Unit 1 - Human Rights

An Introduction to Human Rights, Meaning, concept and development – History of Human Rights-Different Generations of Human Rights-Universality of Human Rights- Basic International Human Rights Documents - UDHR ,ICCPR,ICESCR.-Value dimensions of Human Rights

Unit 2 - Human Rights and United Nations

Human Rights co-ordination within UN system- Role of UN secretariat**-** The Economic and Social Council- The Commission Human Rights-The Security Council and Human rights- The Committee on the Elimination of Racial Discrimination- The Committee on the Elimination of Discrimination Against Women- the Committee on Economic, Social and Cultural Rights-The Human Rights Committee- Critical Appraisal of UN Human Rights Regime.

Unit 3- Human Rights National Perspective

Human Rights in Indian Constitution – Fundamental Rights- The Constitutional Context of Human Rights-directive Principles of State Policy and Human Rights- Human Rights of Women-children –minorities-Prisoners- Science Technology and Human Rights- National Human Rights Commission- State Human Rights Commission- Human Rights Awareness in Education.

Case Study:

Screen the movie ‘Samaksham’ produced by Mahatma Gandhi University Creations. Students need to submit an assignment based on this movie.

REFERENCES

1. Clark.R.S., Marine Pollution, Clanderson Press Oxford (Ref)
2. Cunningham, W.P.Cooper, T.H.Gorhani, E & Hepworth, M.T.2001 Environmental Encyclopedia, Jaico Publ. House. Mumbai. 1196p . (Ref)
3. Dc A.K.Enviornmental Chemistry, Wiley Eastern Ltd.(Ref)
4. Down to Earth, Centre for Science and Environment (Ref)
5. Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment, Cambridge University Press 1140pb (Ref)
6. Jadhav.H & Bhosale.V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284p (Ref)
7. Mekinney, M.L & Schock.R.M. 1996 Environmental Science Systems & Solutions. Web enhanced edition 639p (Ref)
8. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co. (TB)
9. Odum.E.P 1971. Fundamentals of Ecology. W.B. Saunders Co. USA 574p (Ref)
10. Rao.M.N & Datta.A.K. 1987 Waste Water treatment Oxford & IBII Publication Co.Pvt.Ltd.345p (Ref)
11. Rajagopalan. R, Environmental Studies from crisis and cure, Oxford University Press, Published: 2016 (TB)
12. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut (Ref)
13. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell
    Science (Ref)
14. Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (Ref)
15. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (Ref)
16. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p (Ref)
17. (M) Magazine (R) Reference (TB) Textbook

Human Rights

1. Amartya Sen, The Idea Justice, New Delhi: Penguin Books, 2009.
2. Chatrath, K. J.S., (ed.), Education for Human Rights and Democracy (Shimla: Indian Institute of Advanced Studies, 1998)

3. Law Relating to Human Rights, Asia Law House,2001.
4. Shireesh Pal Singh, Human Rights Education in 21st Century, Discovery Publishing House Pvt.Ltd, New Delhi,
5. S.K.Khanna, Children And The Human Rights, Common Wealth Publishers,1998. 2011.
6. Sudhir Kapoor, Human Rights in 21st Century,Mangal Deep Publications, Jaipur,2001.
7. United Nations Development Programme, Human Development Report 2004: Cultural Liberty in Today's Diverse World, New Delhi: Oxford University Press, 2004.

EL1CRT20 METHODOLOGY OF SCIENCE

(Effective from 2019 Admission)

SEMESTER I

Hours/Week : 4
Contact Hours : 72
Credits : 4

Course Outline

Module I (14Hours)

The History of Science – Science as a process - Philosophy of science -European origins of Science-Contributions of Early India

Module II (14 Hours)

Science in the Middle Ages- Europe, The fall of Aristotelean Universe, Bruno, Copernicus and Galileo- Medical Sciences - Advancement in India, Modern Scientific Outlook , Gilbert,Bacon and experimental method

Module III (16 Hours)

Newton and after: A century of Genius, The Newtonian Synthesis, The Great Contemporaries of Newton – Mathematics - The century after Newton - Industrial revolution and its impact on Science- The mechanistic universe and scientific determinism

Module IV (12 Hours)

Basic concepts in the philosophy of science –What is science , science and pseudo science – Scientific reasoning ,Deduction and Induction – The components of science – observation and measurement ,experimentation ,Interpretation and theory

Module V (16 Hours)

Electronics-Early Days, Early Electrical Communication- Telegraph, Telephone-Wireless Communication, Modulation- Father of Radio, The Dawn of Electronics- Evolution of Vacuum Tubes, The Electronics Era-Amateur radio, Television, Fibre Optics

The Big Break- Semiconductors, Electronics in Medicine, Electronics in Navigation, The Computer Generations.

Text Book: 1. An Introduction to the History and Philosophy of Science, R V G Menon, Pearson India (Module I-IV)

2. The Third Element: A Brief History of Electronics, Alfred Corbin, Author House Publications (Module V)

EL4CRT21 INSTRUMENTATION ELECTRONICS

(Common to BSc Electronics and BSc Electronics & Computer Maintenance)

SEMESTER IV

Aim of the course:

This course aims to impart an in-depth knowledge in the field of transducers, Signal Conditioners and electronic instruments.

Hours/Week : 4
Contact Hours : 72
Credits : 4

Course Outline

Module I-Transducers (18 Hours)

Generalized Measurement systems - Static and dynamic characteristics – Time Domain Analysis- Classification of transducers - Resistive, inductive and capacitive transducers - strain gauge and gauge factor, Temperature transducers –RTD, Thermistor, Thermo couples, LVDT, Capacitive transducers-Different Configurations, Piezo-Electric transducers
(Ref 1 Ch 1, 2, 4, 25)

Module II – Signal Conditioning and Data conversion (14 Hours)

Bridge measurements – Wheatstone Bridge, Maxwell,(Ref 2 Ch11) Instrumentation Amplifier-Chopper amplifiers,(Ref 2. Ch.14)Principle of operation of DAC- Weighted resistor network- Binary Ladder – resolution-linearity offset-principle of operation of ADC-simultaneous converter - counter method - successive approximation- single slope and dual slope integration (Ref 3.Ch 12)

Module III- Electronic Measurements and Display Instruments (14 Hours)

Digital Multimeter – Block representation- Cathode ray Oscilloscopes - block schematic –Dual trace oscilloscope- Storage oscilloscope - Strip chart recorder - X-Y recorders. Flow Meter- Electromagnetic flow meter (Ref 2)

Module IV - Analyzers and Controllers (14 Hours)

Signal generators – standard signal generator- Function generator- Simple frequency counter, Wave analyzer, Harmonic distortion analyzer -Spectrum analyzer - Control Systems-open and closed Loop- ON OFF Control- Proportional Control -Programmable Logic Controller - Distributed Control Systems (Ref 2)

Module V –Medical Instrumentation (Detailed analysis not required) (12 Hours)

Origin of bio electric signals - block diagram description of a Electro cardio graph – block diagram description of electro encephalo graph – Measurement of pulse rate –ECG Telemetry system –Block diagram of X – ray machine – Basic principle of X –ray computed Tomography -Basic principle of Magnetic resonance imaging systems (Ref 4)

Text Books:

1. A course in Electrical and Electronics Measurements and Instrumentation, A K SawhneyDhanpath Rai & Co
2. Electronic Instrumentation – H S Kalsi– TMH
3. Digital Principles and Applications- Donald P Leach TMH
4. Hand book of Biomedical Instrumentation – R.S. Khandpur- TMH

Reference Books:

1. Alan. S. Morris, Principles of Measurements and Instrumentation, Prentice Hall of India, 2nd edn., 2003.
2. Joseph J. Carr, Elements of Electronic Instruments and Measurements.