SAURASHTRA UNIVERSITY

Accredited Grade "A"
by NAAC

DDU Kaushal Kendra
Curriculum for
BACHELOR of VOCATION
in
RADIATION & IMAGING TECHNOLOGY
(Under UGC-DDU Kaushal Kendra sanctioned to shree Manibhai Virani & Smt.Navalben Virani Science College -Rajkot)

B.Voc. Semester - 1
Choice Based Credit System (CBCS)
Effective From June - 2015-16

Saurashtra University
University Campus Rajkot - 360 005,
Gujarat, India

Website : www.saurashtrauniversity.edu

Physics Board Meeting Dt. 09-09-2015,
Resolution No. 6
SYLLABUS

Saurashtra University

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B.Voc. Semester I

Choice Based Credit System (CBCS)

Effective from June 2015-16
1) Basic concepts: Basic Units, Heat, Acoustics etc. Basic concepts of power, work, force, energy - Einstein's formula - Electronics, Electricity & Magnetism - electromagnetic waves - Units and measurements - temperature and heat-SI units of above parameters - Atomic structure - Nucleus - Atomic Number, Mass Number - electron orbit and energy levels - Periodic table - Isotopes-Isobars-Ionisation and excitation.

2) Introduction to Vector Algebra: Basics Concepts of vector, Vector addition Resolution of Vectors into component in 2 and 3 dimension Vector and Scalar products.

3) Properties of Matter: -
   Solid Mechanics: - Introduction to different elastics constant, Practical applications of elasticity
   Fluid Mechanics: - Pascal Law and hydraulic lift, Bernoulli's equation and its applications Viscosity and stock's law and terminal velocity, Molecular interpretation of surface tension

4) Basics of Electricity and Electronic
   Electricity: - Ohm's Law and Concept of Resistance, Series and Parallel Connections of Resistance, e.m.f., internal resistance and terminal Voltage of cell, Whetstone Bridge and Potentiometer circuit
   Electronic: - Introduction to PN Junction Diode, LED and Photo Diode, Basics of Transistor and characteristics of transistor logic gates. - triode valves - cathode ray oscilloscopes. Self rectifying circuits

5) Fundamental of Optics
   Ray optics: - Laws of reflection and mirror formula, Laws of refraction, change in height, depth, Image formation by lenses and Lens formula
   Wave optics: - Interference, Young's experiment and condition of constructive and destructive interference, Introduction to Diffraction and Polarization
   Solid Mechanics: - Introduction to different elastics constant, Practical applications of elasticity
   Fluid Mechanics: - Pascal Law and hydraulic lift, Viscosity and stock's law and terminal velocity, Molecular interpretation of surface tension
1. General Anatomical Terms

2. Different parts of the body


4. Structure of General Tissues
   Epithelium; simple and complex epithelia; glands skin. Connective tissue; fibrous tissue; cartilage; bone; Haversian systems; blood numbers and types of cells in blood clotting of blood. Muscle tissue; involuntary, voluntary and cardiac muscle. Nerve tissue.


6. Bones, joints and locomotor system: General description of bones, their main processes and attachments


8. Heart and Blood Vessels: Structure and function of the heart, pericardium, peripheral vascular system; names of main arteries and veins, circulation. Common terms used in connection with diseases of this system.

9. Respiratory system: Nasal passages and accessory nasal sinuses, pharynx and larynx, trachea, bronchi and lungs; pleura, nature and function of respiration. Common terms used in connection with diseases of this system.

10. Lymphnode Groups: Lymph and tissue fluid, main lymphatic gland groups and drainage areas, lymphoid tissue and tonsil.
B. Voc. Radiation & Imaging Technology

SEMESTER I

BVRT: 103 Basics of X-Ray technology

1) Basic of X-rays: Discovery of x-rays-properties-production-x-ray spectrum-bremsstrahlung and characteristic x-rays-X-ray tube; Coolidge tube, tube design, line focus principle-space charge effect, tube cooling-Modern x-ray tubes-stationary anode, rotating anode, grid controlled x-ray tubes, heel effect, off focus radiation, tube insert and housing-Tube rating-Quality and intensity of x-rays-factors influencing them.

2) X-ray generator circuits: Vacuum tube diodes-semiconductor diodes-transistor-rectification, half and full wave-self rectification - X-ray generator; filament circuit-kilo voltage circuit-single phase generator-three phase generator-constant potential generator Fuses, switches and interlocks-Exposure switching and timers-HT cables-earthling


Saurashtra University
B. Voc. Radiation & Imaging Technology
SEMESTER I

BVRIT: 104 Basic Functional English

1. Grammar
   Determiners

2. Writing Comprehension

3. Report Writing:

   Job Application / Resume Writing, Introduction, a Cover Letter, Curriculum Vitae / Resume

   Letters of Appointment & Resignation
   Conversations based on everyday situation / Dialogue Writing, Introduction, Nature of Conversations, Purpose of conversation, Guidelines for Effective

4. Conversation Skills:
   Proverbs used in Everyday Conversation with their Meanings / Explanations Comparisons used in Everyday Conversation, Practical Conversations

   (1) Communication – Meaning, Features & Process
   (2) Verbal & Non – Verbal comm.

   Verbal, Oral Communication, Written Communication, Non – Verbal, Body language, Space Para language, others Group discussion skills, Meaning, Characteristic, Do’s & Don’ts, Relevance, Moderating a group discussion, Presentation skills, Meaning, Planning a presentation skills, Preparing a presentation skills Delivering a presentation skills, Presentation skills, Public Speaking, Meaning, Essential of effective public speaking Facing Interviews, Importance, Do’s & Don’ts
Laboratory course of B.Voc. Radiation & Imaging Technology includes practicals based on the following subjects.

- Fundamental physics
- Human Anatomy & Physiology 1
- Basics of X – Ray technology
- Basic Functional English