SRI BALAJI VIDYAPEETH

(ACCREDITED WITH 'A' GRADE IN THE FIRST CYCLE BY NAAC)

Pillaiyarkuppam, Pondicherry - 607 402

PROSPECTU

CERTIFICATE COURSE in RADIATION SAFETY

Q-TEAM

Managing Healthcare...with care

SRI BALAJI VIDYAPEETH

ACCREDITED BY NAAC WITH 'A' GRADE

DEEMED TO BE UNIVERSITY
DECLARED U/S 3 OF THE UGC ACT, 1956

PONDICHERRY

VISION & MISSION

VISION

- Sri Balaji Vidyapeeth will strive to be a premier global health sciences university leading in the frontiers of education, research and patient care.

MISSION

- To create an innovative ecosystem that facilitates the development of health care professionals.
- To contribute to the health care workforce with competent and committed professionals.
- To provide preventive, curative and palliative high quality evidence – based care that is affordable and accessible.
- To foster a culture of scientific inquiry, research and innovation in contemporary and emerging health and related sciences.
- To be inclusive and committed in promoting wellness and empowerment of the society.

VALUES

- Inclusiveness, Integration, Innovation
- Engagement, Empowerment, Excellence

CHANCELLOR'S MESSAGE

Dear Students,

You are our National Treasure, and our Country's Future is in your safe Hands. Our Nation looks forward to utilizing your talents in service to the Society. We firmly believe that the moulding of the student into a well-rounded professional largely depends on the broad vision of an educational Institute.

Sri Balaji Vidyapeeth is an embodiment of a broader vision and planned development of a sound education system... where the environment is conducive and pleasant to study, live and work, where education and research hand in hand flourish... where the hidden and inherent skills and talents of the students are nurtured and developed for the benefit of the society, for generations to come.

Come, join our world. Let us create a better, viable, integrated global community of shared benefits, responsibilities and values for the benefit of all things living. Our origins and lives may be different, but we do share the same planet and belong to the same Mother Earth. And remember.... you are the nation's greatest gift and we are duty bound to do our best to our Nation.

Shri. M. K. Rajagopalan

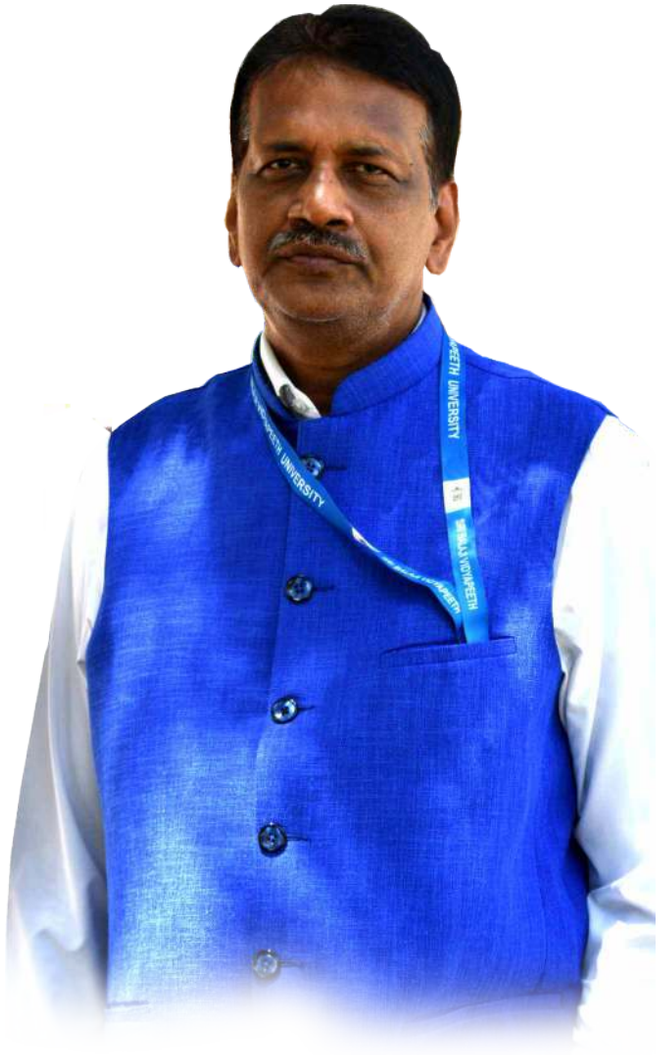
Founder and Hon'ble Chancellor, SBV

VICE-CHANCELLOR'S MESSAGE

Welcome to SBV & your future

The millennium has ushered in challenges which will have a profound impact on the role of private universities. Professional competence will be highly sought after in India and around the globe. The challenge - shared by all Universities - is to bestow the requisite knowledge and skills, and cultivate proper etiquette and attitude to produce top-notch professionals who will be valued both for their professional competence and their inherent ability to solve problems.

Sri Balaji Vidyapeeth, Deemed to be University and accredited by NAAC with 'A' Grade is dedicated to its mission in order to nurture healthcare professionals in Medicine, Dentistry, Nursing and Allied Health Sciences, who would contribute and strive ceaselessly towards caring for the comfort of the sick. The constituent colleges of SBV are already noted for the excellence in various avenues including teaching, research, and service to the community, especially those who are marginalised and underserved. SBVis endowed with committed, dedicated and outstanding faculty- a healthy mix of the young & veterans and excellent infrastructure. Our challenge for the future is to capitalize on this good start and establish ourselves firmly among the comity of leading Universities.



The reputation of any institution is essentially based on the quality of its output; the management and the academic staff do realise this and I promise that they will do their best to train and educate you well. You, the research scholars who have gained entry into the portals of SBV this year realise your ambition and must perform well with dedication and diligence and emerge as competent research professionals and makeyour parents and educators proud. We wish you all the very best and hope that you would soon emerge as a researcher par excellence.

WITH LOADS OF GOOD WISHES,

PROF. SUBHASH CHANDRA PARIJA, MBBS , MD , PhD ,DSc, FRCPath, FAMS, FICPath , FABMS , FICAI,FISCD, FIAVP, FIATP and FIMS
Hon'ble Vice Chancellor, Sri Balaji Vidyapeeth

INTRODUCING SRI BALAJI VIDYAPEETH

Young, Modern & Marching Ahead

- Sri Balaji Vidyapeeth (SBV) is a young deemed University, proud of its modernity, yet firmly grounded in rich educational heritage.
- SBV aims to excel in academic and clinical medicine; research and training; nurturing passion and enthusiasm into achievement and converting theoretical knowledge into evidence based practice and research.
- SBV was granted 'Deemed University' status by the University Grants Commission (UGC) under section 3 of the UGC Act of 1956 in 2008, in recognition of its outstanding quality of providing education, potential for excellence and obtained NAAC "A" Grade in 2015, with CGPA of 3.11 on 4 point scale.
- SBV has been placed in the top 100 for three consecutive years 2016, 2017 & 2018 at the National Institutional Ranking Framework (NIRF) and is in the top 25 among the Medical colleges through its flagship institute, namely Mahatma Gandhi Medical College & Research Institute.
- SBV(DU) thus enjoys complete autonomy to develop and implement innovative curriculum and academic programs and to design its own education process that is responsive and tailored to the evolving needs and changes of health sciences.
- The Deemed University's constituent colleges and courses are all duly accredited and recognised by the respective statutory bodies such as the Medical Council of India, Dental Council of India and the Indian Nursing Council. Graduates of SBV(DU) are eligible to register with any state council or pursue further education in any part of India.
- SBV(DU) ensures that its programs and courses are recognised internationally, by registering under appropriate provisions of various statutory and registration authorities around the world to enable its graduates the right to qualify for practice in any nation, including appearing for USMLE, (USA) PLAB, MRCP/MRCS/etc (UK), MCCQE (Canada), AMC (Australia),CGFNS/NCLEX (Nursing, USA) etc.
- SBV(DU) is a research oriented university and the establishment of state-of-the-art Central Interdisciplinary Research Facility pledges considerable resources and investment for Biomedical Research.
- SBV's research output has been consistently high in quality and impact, as evident from its rapidly growing research publication record that inspires our students, a fact attested by the region-wise lead position in number of ICMR sponsored STS research projects (Short Term Studentship) undertaken and ably accomplished by our undergraduate medical and dental students.
- SBV caters to the needs of the pateints in the form of alternate medicine. The presence of Yoga and Music Therapy is an innovative move to step forward from Illness to Wellness and treating the patients through complementary medicine. MoU signed by SBV for a collaborative doctoral program in music therapy with the IMC University of Applied Sciences, Krems, Austria and with Kaivalyadhama Yoga Institute for Yoga research are noteworthy milestones and bear ample testimony.
- The Centre of Health Professions Education brings together all health professionals to achieve academic excellence through training and research in pedagogical sciences, which saw SBV signing a long term partnership with Partners Medical International, USA.
- Every year is a year of challenges, accomplishments as we attain our targets, setting newer goals and constantly striving to renew our commitment for better medical training, scientific research and clinical practice.
- SBV is governed by an enlightened collegium of eminent scholars, clinicians and scientists, headed ably by our visionary Chairman and Chancellor, Shri. M. K. Rajagopalan; Vice Chancellor Prof.SC.Parija, a well recognised medical educationist; Renowned teacher, Prof.N.Ananthakrishnan, Dean of Faculty & Allied Health Sciences; Prof. M. Ravishankar, Dean, Faculty of Medicine, providing leadership and stewardship towards excellence.

Introduction of the course

Name of the course	**CERTIFICATE COURSE IN RADIATION SAFETY**
Duration and Frequency	2 days / year (8.00am-5.00pm & 2hrs self study/day)
Intended Audience	Undergraduate students of SBV
Intended Learning Outcomes	• Identify the parts of the x-ray machine and explain their purpose and function. • Explain how x-rays are produced and how they travel. • Demonstrate use of the controls on a x-ray machine and explain how they influence the x-ray beam. • Compare the effects that x-radiation has on a variety of biological and non-biological materials. • Describe and follow the methods employed in veterinary hospitals and clinics to protect employees and veterinarians against radiation exposure. • Follow methods used to develop x-ray films.

SYLLABUS

REQUIRED STUDENT COMPETENCIES:

Items with an asterisk indicate tasks the student must be able to perform since they are listed as "essential tasks," and tasks with two asterisks (**) indicate tasks considered to be "recommended tasks" by the Accreditation Policies and Procedures of the Committee on Veterinary Technician Education and Activities of the American Veterinary Medical Association. Tasks with no asterisks are considered neither "essential" nor "recommended", but are taught based on instructor, SAC, and/or advisory committee recommendations. This course content guide specifies which tasks students are required to perform (as indicated in the task description) and the tasks on which they have been educated and have observed but individual performance is not required.

1.0 Parts of the X-Ray Machine

INSTRUCTIONAL GOAL:

The goal is for the student to learn the parts of the x-ray machine, its purpose and function.

OBJECTIVES:

1.1 List and describe the function of each of the following parts of the x-ray machine

2.0 Physical Principles of Radiography

INSTRUCTIONAL GOAL:

The goal is for the student to develop basic knowledge about the physics of x-rays and how they are produced.

OBJECTIVES:

2.1 Define the following

2.2 Describe the spectrum of electromagnetic radiation.

2.3 List the following parts of a x-ray tube Times New Roman; font-weight:700>

2.4 Discuss the difference between a rotating anode and a fixed anode.

2.5 Discuss the advantages to the utilization of a rotating anode.

2.6 Discuss which types of machines today have fixed and which have rotating anodes.

2.7 Discuss the principles by which x-rays are produced.

3.0 FACTORS AFFECTING THE X-RAY BEAM

INSTRUCTIONAL GOAL:

The goal is for the student to develop a basic understanding of the controls on a x-ray machine and how they influence the x-ray beam.

OBJECTIVES

3.1 List the four variable controls that directly influence the x-ray beam.

3.2 Compare the effects of kV, mA, and time on the x-ray beam to a model of a grain conveyor belt.

3.3 Define alternating current, direct current and rectification.

3.4 Define mA and kV in physical terms related to electricity.

3.5 Describe the effects of kV, mA, and time on the x-ray beam.

3.6 Describe the effects of distance on the x-ray beam.

3.7 Discuss the heel effect.

4.0 THE INTERACTION OF X-RADIATION WITH MATTER

INSTRUCTIONAL GOAL:

The goal is for the student to develop a basic knowledge of the effects that s-radiation has on both biological and non-biological materials.

OBJECTIVES:

4.1 Describe the methods by which x-rays interact with matter.

4.2 Describe the methods that are used to decrease the number of x-rays that enter the body during diagnostic x-ray procedures.

4.3 Describe what a screen is and where they are located.

4.4 Discuss the reasons that cassettes and screens are used in diagnostic radiography.

4.5 List the different types of screens and the relative speeds of each.

4.6 Describe which of the interactions of x-rays with matter may result in biological damage.

4.7 List the two results that may occur when x-rays interact with biological materials.

4.8 Tell at which stage of the life cycle of cells are most sensitive to the effects of radiation.

4.9 List the various types of tissues in order of decreasing sensitivity which are affected by ionizing radiation.
4.10 List and describe the units of measure of radiation.
4.11 List the lethal dose indices for radiation.
4.12 Describe the symptoms of the lethal dose indices.
4.13 Describe the latent effects of 25 rems of radiation in a single dose.
4.14 Be able to calculate the Maximum Permissible Dose based on age.
4.15 Describe the effects of ionizing radiation on the body.
4.16 Discuss the reasoning for aluminum filtration to be added to the x-ray machine.
4.17 Discuss the concept and sequelae of acute excessive radiation exposure vs. chronic radiation exposure.
4.18 Discuss the differences between the way x-rays interact with the body for diagnostic purposes vs. therapeutic purposes.

5.0 RADIATION SAFETY PRINCIPLES

INSTRUCTIONAL GOAL:

The goal is for the students to develop a basic knowledge of the methods employed in veterinary hospitals and clinics to protect employees and the veterinarians themselves against radiation exposure.

OBJECTIVES:

5.1 Discuss the veterinarian's moral and legal responsibilities to his/her employees concerning radiation safety.
5.2 Discuss the principle factors in reducing radiation exposure to personnel.
5.3 Discuss distance in relation to reducing exposure.
5.4 Discuss collimation in relation to reducing exposure.
4.5 Discuss the methods to hold animals in relation to reducing exposure.
5.6 Describe the protective attire worn by personnel to reduce exposure.
5.7 Discuss the State Radiation Protection rules.
5.8 Discuss personnel monitoring devices.
5.9 Discuss methods used to restrain animals without the aid of human assistance.
5.10 Explain scattered radiation and list the various causes.
5.11 Describe the methods used to diminish scattered radiation.

6.0 X-RAY FILM DEVELOPING

INSTRUCTIONAL GOAL:

The goal is for the students to understand the principles and methods used to develop x-ray films.

OBJECTIVES:

6.1 Discuss the principles by which x-ray films are developed.
6.2 Discuss the steps used to develop x-ray films using hand tanks.

6.3 Discuss the methods used to fill hand tanks with chemicals.
6.4 Discuss the cleaning of hand tanks between filling.
6.5 Discuss loading and unloading cassettes.
6.6 Demonstrate the method in which a film is attached to a film holder.
6.7 Discuss the principles in which films are developed in an automatic processor.
6.8 Demonstrate the method in which to run a film through an automatic processor.
6.9 Discuss the advantages and disadvantages of each method of developing film.
6.10 Discuss the problems that can occur when working with developing chemicals.
6.11 Discuss methods of cleaning the different types of screens and perform the same. *

7.0 QUALITY CONTROL AND RECORD KEEPING

INSTRUCTIONAL GOAL:

The goal is for the student to develop an understanding of the tasks necessary to maintain equipment and keep accurate records of radiographs taken.

OBJECTIVES

7.1 Define quality control.
7.2 Describe the tests employed to assure quality control.
7.3 Discuss trouble-shooting in the maintenance aspect of the following:
7.4 Discuss the data needed for a good X-ray Log Book. *
7.5 Be able to label, file, and store film. *

Assessment & Assignment

Pre-test & Post-test will be conducted

Certificate

Certificate will be provided for students with 100%attendance and Pass percentage of >80%

Feedback

Online feedback will be obtained at the end of the course.