SRI BALAJI VIDYAPEETH (SBV)
(Deemed to be University)
U/S 3 of UGC Act 1956
Puducherry-607402

This document contains the details of the

Value added course in Radiation Safety,

conducted by Internal Quality Assurance Cell,

Sri Balaji Vidyapeeth, Deemed to be University.

(This document is attested from pages 1- 23)

REGISTRAR
SRI BALAJI VIDYAPEETH
(Deemed University u/s 3 of UGC ACT, 1956)
Accredited by NAAC with 'A' Grade
Pillaiyarkuppam, Pondicherry-607 402.

NAAC 2020

SRI BALAJI VIDYAPEETH (SBV)
(Deemed to be University)
U/S 3 of UGC Act 1956
Puducherry-607402

Criteria 1

Metrix 1.3 : Curriculum Enrichment

1.3.2

Index Page

Details of **Value added course in Radiation safety**

Links to documents (Click on the links to navigate to the page)

1. Link to Prospectus
2. Course Content
3. Sample Certificate
4. Enrolled List of students
5. Feedback Response
6. Event Report

Value Added Course in

Radiation safety

Course Content

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 x-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. *

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DEEMED TO BE UNIVERSITY
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INTERNAL QUALITY ASSURANCE CELL

Shri. M.K. RAJAGOPALAN
Chancellor, SBV

Prof. SUBHASH CHANDRA PARIJA
Vice-Chancellor, SBV

VALUE ADDED COURSES

On campus – Pondicherry at Mahatma Gandhi Medical College

Course on Hospital infection control (17th & 18th February 2020)
Course on medico legal case (19th & 20th February 2020)
Course on critical care nursing (24th & 25th February 2020)
Course on fire safety (24th & 25th February 2020)
Course on public administration in health (6th & 7th March 2020)

Off campus – Chennai at Sri Sathiya Sai Medical College

Course on radiation safety
Data analytics in health care management
Course in quality assurance in operation theater

Resource Person

Q- TEAM
MUMBAI

This document is attested from pages 1-17

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CURRICULUM VITAE

V. VIJAYAN

Radiation Safety Consultant/Advisor
Radiation Safety Trainer
BARC Radiation Safety Officer (RSO)- Level III
(Bhabha Atomic Research Centre, Mumbai)

Chennai, **INDIA**

Mobile No.: +91- 9500154192 (WhatsApp)

Email: pirtndt@gmail.com

Profile

A dynamic **Radiation Safety Consultant/Advisor & Radiation Safety Trainer, BARC Radiation Safety Officer (RSO)- Level III** having proven leadership skills on Radiation Safety, providing Consultancy, Training on Radiation Safety. With high integrity and Dedication for maintaining high quality standards in work. Able to work on own initiative and as part of a team.

Professional Experience Summary

Having 28 years of Experience in Radiation Protection, Radiation Safety, Training and Certification, Consultancy, and Teaching.

Educational Qualification

M.S in Physics [MSc - Physics] (1989, Madras University) [1st class]

Diploma in Radiation Protection/Radiological Physics [1990, Bhabha Atomic Research Centre (BARC), Mumbai] [1st class, 1 Year Course]

Certification

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BARC Radiation Safety Officer - Level III [Certificate No. RP/90/173]

Experience, Skills and Attributes

- Experience in Providing Training and Certification on Radiation safety for Medical and Industrial users of Radioactive isotopes/X-ray products
- Providing advice to Clients on Radiation safety matters/issues.
- Specialist and Proficient in Radiation Protection/Safety and Regulatory Norms and Procedure for application of radiation in Medical and Industry,
- Hands on experience in Training & Lecturing of Radiation safety.
- Preparation and Approval of written Procedures for various applications of Radioactive isotopes/X-ray products as per the requirements of the users.
- Providing radiation safety related advices.
- Preparation of Study Material and Model Question Bank for Radiation Safety Officer/ Radiation Safety Examinations
- Industrial Radiation Protection Training
- Radioactive waste management, Radon/Thoron Measurement
- Measures against Internal and external exposures
- Characterization of radioactive waste management
- Radioactive waste storage and disposal procedures
- Maintaining of Records related with Radiation activities
- Decommissioning of plant and equipment from radioactivity
- Familiar with Regulatory norms of Radiation equipments
- Radiation Safety Survey, Inspection & Audit
- Radiological Impact Assessment; Shielding calculations
- Personnel Radiation Monitoring; Radiation Safety Records
- Training on Radiation Safety; Decontamination procedures
- Health Physics
- Analysis and Identification of isotopes
- Environmental radioactivity monitoring
- Gamma ray Spectroscopy
- Alpha & Beta Counting Systems
- Dosimetry, Exposure Assessment, Dose Estimations
- development and implementation of emergency instructions.
- Manage the Source Database
- .Calibration/maintenance of radiation survey meters

- Data acquisition & analysis; ALARA principle
- Nuclear Instrumentation; Radiation Monitoring devices
- Industrial Radiation Protection Training
- Safe work procedures; Radiation emergency handling
- Leakage testing of sealed Radioactive sources
- Preparation of Radiation Safety Reports/Manuals
- Radiation Safety for storage/transportation/disposal of sources etc.
- Safety of X-ray units/ Accelerators/ Radiography systems/Radioactive sources.
- Conducting radiation safety audits on project sites.
- Conducting the Interview/Trade Test and Select Radiation Technicians/RSO for Clients as per their requirements
- Calibration & maintenance of Radiation equipments.
- Calibration of radiation survey meters & other safety equipments.
- Developing emergency plans/Safety procedures.
- Familiar with rules for transportation and safety of Radioisotopes.
- Responding to any incidents involving radiation.
- Conducting Radiation Safety training to Radiation workers.
- Conducting radiation safety training to users.
- Personnel/Worker's Dose monitoring
- Handling radiation emergencies in Industrial Radioactive sources
- Import/Export of regulation of radioactive materials.
- IAEA, ICRP, NCRP Radiation Safety standards
- Safety of X-ray units/ Accelerators/ Radiography systems/Radioactive sources.
- Conducting radiation safety audits on project sites.
- Calibration & maintenance of Radiation equipments.
- Calibration of radiation survey meters & other safety equipments.
- Developing emergency plans/Safety procedures.
- Familiar with rules for transportation and safety of Radioisotopes.
- Responding to any incidents involving radiation.
- Conducting Radiation Safety training to Radiation workers.
- Conducting radiation safety training to users.
- Personnel/Worker's Dose monitoring
- Handling radiation emergencies and Import/Export of radioactive materials.
- Management of Radiation Safety Training / Certification
- Computer knowledge: MS Packages and proficiency in computer usage

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3

Professional Experience

Position: RADIATION SAFETY TRAINER/CONSULTANT, RSO

Institute/Company Name: Praveen Institute of Radiation Technology, INDIA

Period: From 17.03.2007 – Till date

Position: RADIATION SAFETY OFFICER (RSO)

Institute/Company Name: Radiation Safety Division, Institute Of Physics (Bhabha Atomic Research Centre, Govt. of India), Bhubaneswar, INDIA

Period: From 01.11.1990 to 15.03.2007.

OVERSEAS/ GULF COUNTRIES EXPERIENCE

Position: RADIATION SAFETY TRAINER & CONSULTANT

Company Name: PEMCO Inspection Company, Doha, QATAR

Alpha Inspection & Engineering Services LLC, Muscat, OMAN

Period: Dec. 2011 – Dec. 2017

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PERSONAL DETAILS

Full Name : Vijayan Venkatathri

Date of Birth : 02.08.1966

Sex : Male

Nationality : Indian

Marital Status : Married

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DATA TEMPLATE FOR FEEDBACK RESPONSE

- **Feedback obtained on VALUE ADDED COURSES-Radiation safety**
- **Feedback provided by** Participants
- ***Feedback obtained from* Date *24.02.2020 / 25.02.2020***

Sr. No.	Feedback questions *(Please enter the questions from the feedback form)*	Number of responses				
		Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1	The theme of the workshop was relevant	10	16	-	-	-
2	The facilitator delivered the content effectively	10	11	04	-	01
3	Time was well managed	09	14	02	01	-
4	The knowledge and skills I learned is useful to me	10	14	02	-	-
5	I would recommend this workshop to others	06	16	03	01	-

Compiled by:

Dr. Carounanidy Usha

28.02.2020

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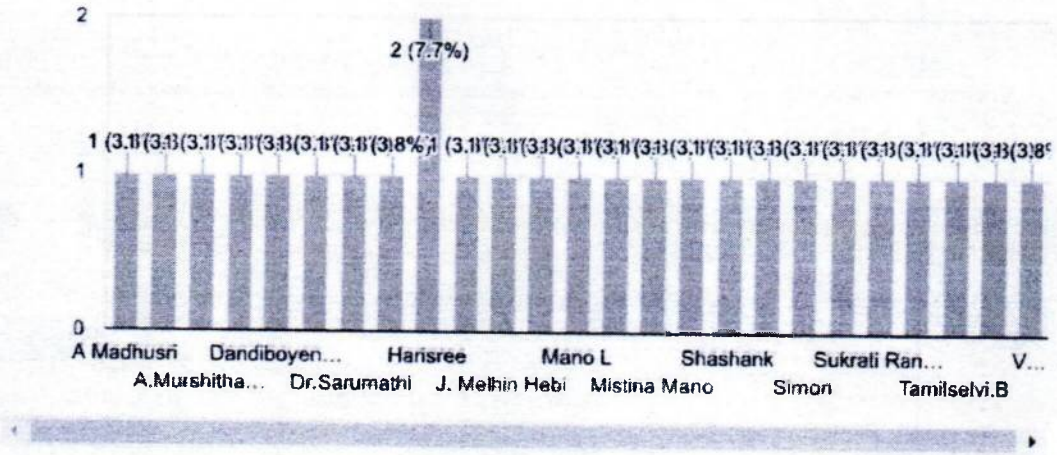
Value Added Course on" Radiation Safety " - Feedback Form

26 responses

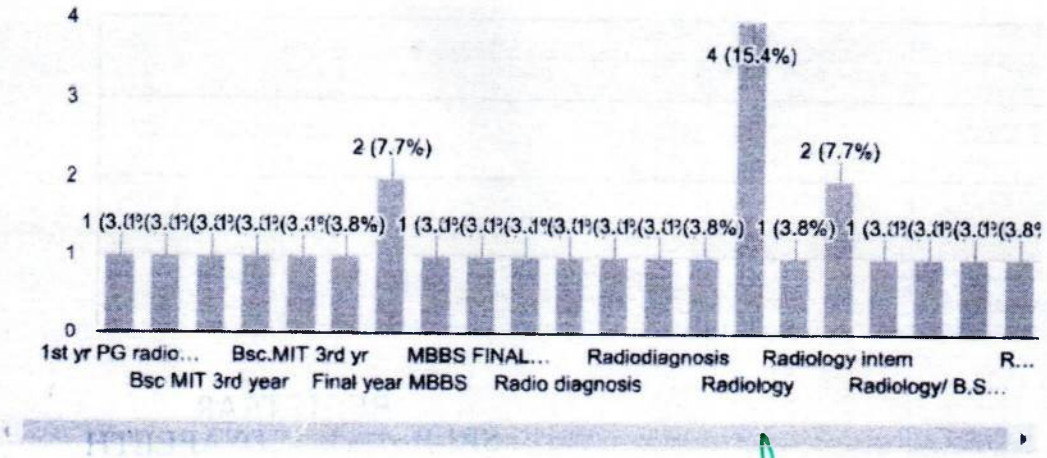
Name

26 responses

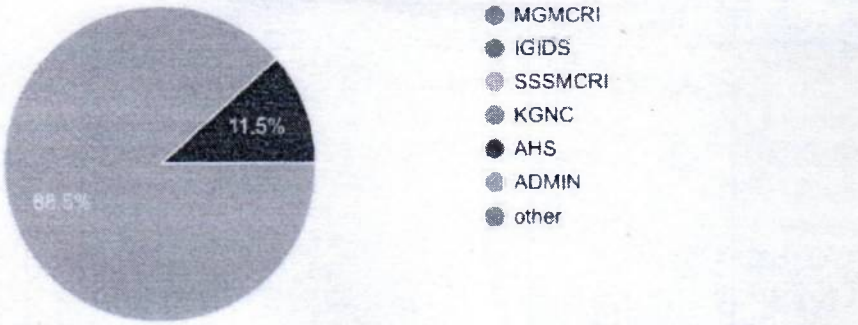


Department / Designation

26 responses

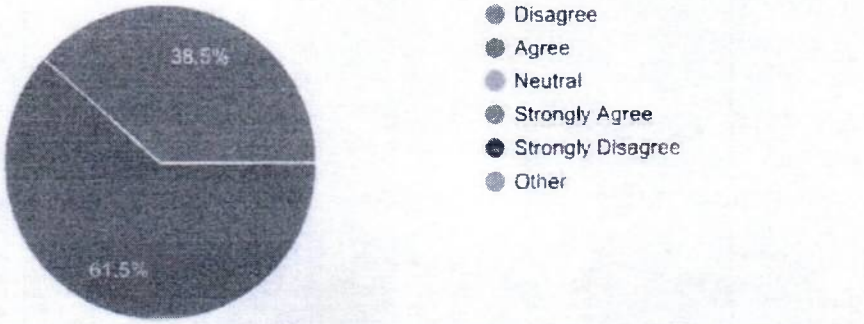


Institution
26 responses



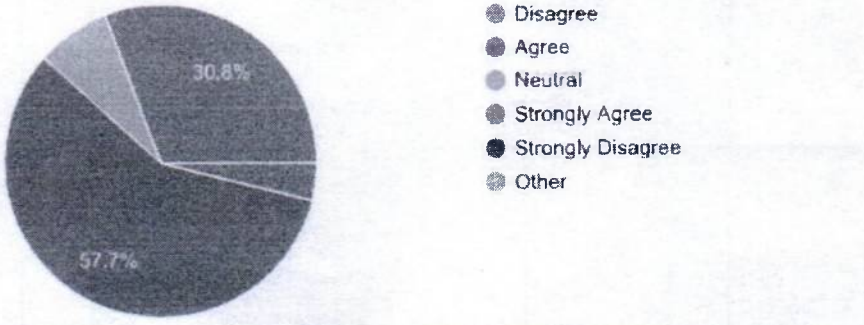
01. The theme of the workshop was relevant

26 responses



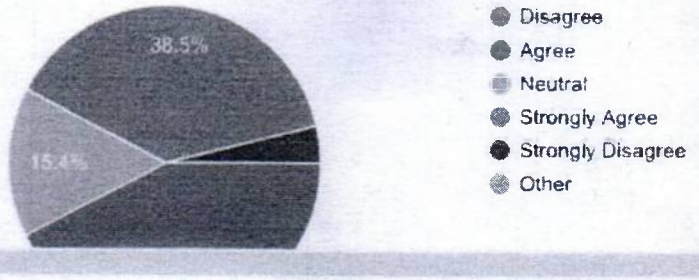
2. Time was well managed

26 responses



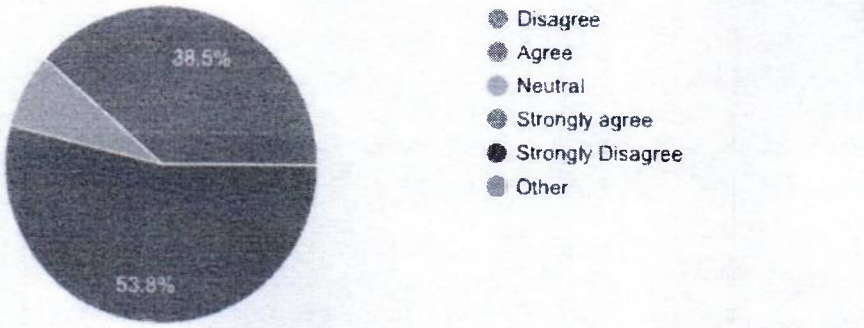
3. The facilitator delivered the content effectively

26 responses



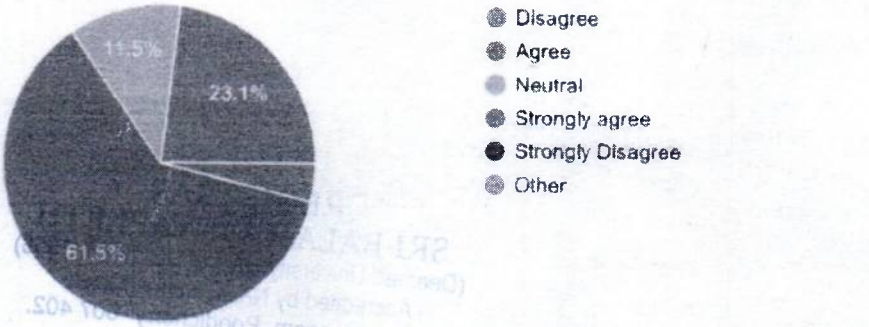
4. The knowledge and skills I learned was useful to me

26 responses



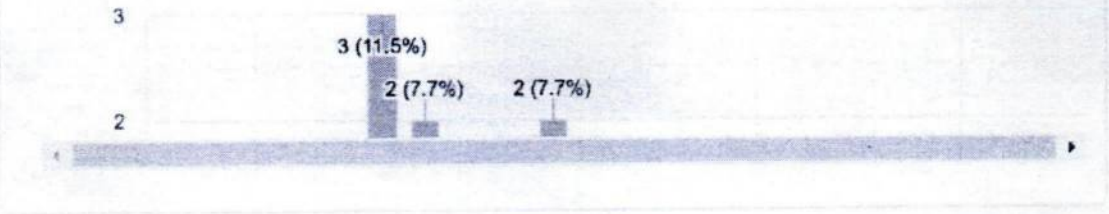
5. I would recommend this workshop to others

26 responses



6. Suggestion or comments to improve the workshop in future

26 responses



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EVENT REPORT FORM
MAPCOM/ WEB INFORMATION

Details of the Program	
Name/ Title of the Program	**Value added courses – Radiation Safety**
Type of the Program *(Please mention if this is a CME/CDE/CNE/Conference/ workshop/ seminar/ symposium/ panel discussion/ Faculty development program/ student enrichment program) (Also please mention the level, if this is Regional/ National/ International/ Institutional/ University)*	Student enrichment program
Conducted by *(Please mention the department name)*	IQAC, SBV
Date	24 & 25 february,2020
Venue	SSSMCRI-SBV Off Campus, Chennai.
Target Audience/ Stakeholders	Under graduates and Post graduates.
Number of participants registered / attended	25
Program sponsors	Sri Balaji Vidyapeeth Management
Credit points/ hours	-
Objectives of the Program	To Learn about the Radiation safety among the Students of various Healthcare Professions.
Activities conducted in the Program	1. Welcoming the audience by Dr.Guru prasath.. 2. Lamp Lightening by Resource Person & dignitaries. 3. Self Introduction given by all participants. 4. Few interactive Games have been conducted among students.

Resource Persons involved					
Sl. No.	**Name**	**Designation**	**Affiliation**	**Email id/ Phone Numbers**	**Topic taken**
1	V.Vijayan.	Radiation safety consultant(BARC)	-	enquiry@qteam.co.in +91-981-955-5560	**Radiation safety**

Detailed report of the Program

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EVENT REPORT FORM
MAPCOM/ WEB INFORMATION

Session on 24th Feb-2020

The audience was welcomed by Dr. Guru Prasath. And the traditional Lamp Lightening ceremony was done by our Dignitaries and one of the participants. Dr.Jeneth Berlin Raj, one of the Core Team members has given a brief Introduction about the Resource person and The Resource person discussed in power point that how Radiation exposures can be controlled and taught many methods to prevent it. The Resource person conducted many interactive games in between the sessions to make the Topic more interesting. After lunch, the session started and the resource person made the topic more interesting by conducting group discussion among the students. The day ended with Tea & Snacks.

Session on 25th Feb-2020

The second session started on the next day and the Resource person conducted some Communication skill competitions among students by grouping them into 4 groups and it was very useful and taught the students about how they are important to their Profession and their day to day life . Many presentations were shown as videos, audios & PowerPoint presentations. The day ended with tea & snacks with vote of thanks.

Summary of the report

(in minimum 150 words, in a prose format for web information, social media and press)

Internal Quality Assurance Cell (IQAC) of Sri Balaji Vidyapeeth has organized a 2-days Program on Value added courses on ***Radiation safety.*** The objective was to improvise the Radiation safety among the students for their profession in future. The resource person Mr.Vijayan,Radiation Safety consultant in Bhabha atomic research centre. has given a brief explanation about the Radiation safety skills to be developed by students in profession. The feedback from the participated students indicated that the program was effective and has stimulated interest in them to attend more specific workshops & Programs.

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EVENT REPORT FORM
MAPCOM/ WEB INFORMATION

Feedback analysis/ Interpretation and future Action Plan for further improvement
Enclosed herewith in the annexes

Enclosures Check List			
Invitation/ Brochure/ Circular	✓	Analyzed feedback report in graphical form	✓
Sample certificate		Geo-tagged photographs and other Photographs are enclosed.	✓
Sample feedback form	✓	Data template/ Feedback analysis and action to be taken in the next program	✓

Compiled by:
IQAC-SBV

Endorsed by

Dr. Carounanidy Usha
27.02.2020

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Noble International UNIVERSITY

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IQAC-SBV

Certificate of Completion

This is to certify that Mr/Ms ..... UIN .....

of ..... has successfully completed 16 Hours Value added course in

RADIATION SAFETY

conducted by IQAC , Sri Balaji Vidyapeeth,

in association with Q-Team , Mumbai & Noble International university , USA on ..... 2020.

President
Noble International University

Chancellor
Noble International University

Course Coordinator
Dr. Jenith Berlin Raj
HOD, Dept of Physiology, MGMCRI

Director of Accreditation
Dr. Usha Carounanidy

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Q-TEAM
MUMBAI

ATTENDANCE FOR COURSE ON RADIATION SAFETY(24.02.2020 AND 25.02.2020)

SI NO	NAME	SIGNATURE			
		24.02.2020		25.02.2020	
		MORNING	AFTERNOON	MORNING	AFTERNOON
1	Dr.LEENA				
2	Dr.MEENAL				
3	Dr.SUKRATI				
4	Dr.FRASER GOMES				
5	Dr.SARUMATHI				
6	Dr.SUMUKH MITHUNKUL				
7	SHASHANK				
8	SHOEB				
9	VIKAS				
10	MISTINA				
11	MURSHITA				
12	TAMIL SELVI				
13	PUNITHA				
14	LOGESHEWARI				
15	SRIVIDHYA				
16	THIVAKAR				
17	HARISRI				
18	MADHUSHREE	A.Madhu Sri	A.Madhu Sri	A.Madhu Sri	A.Madhu Sri
19	INIYA SANJANA				
20	NANDHA KUMAR				
21	NITHYA				
22	MELHIN HEBI				
23	MANO				
24	SIMON				
25	BHARATH				

Head, Department of Physiology
Mahatma Gandhi Medical College &
Research Institute, Puducherry - 607 402.

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