Evaluative Report of the Centre for Medical Physics
(July 2009 – June 2013)

1. Name of the Department : **Centre for Medical Physics**

The Centre for Medical Physics was created in 2007, as joint venture of Panjab University and Post Graduate Institute of Medical Education & Research (PGIMER) to utilize technology, dependent specialties coming out of the new scientific innovations for the immediate need of the society, i.e. good health. The Medical Physics encompasses into its fold: Diagnostic radiology physics (diagnostic imaging with x-rays and gamma-rays), Nuclear medicine physics (diagnostic imaging with radio-nuclides), Radiation Oncology physics (treatment of cancer with ionizing radiation) and Health physics (study of radiation hazards and radiation protection). The aim of the Medical Physics course at the postgraduate level is to generate the expertise and overcome the scarcity of the manpower for the cancer treatment facilities. In addition a certification from the Atomic Energy Regulatory Board (AERB) (for the Radiation Safety Officer, level-III) to the students is mandatory for the competence in the handling of the patients care and running the radiation facilities independently.

2. Year of establishment : **2007**

3. Is the Department part of a School/Faculty of the university? **Yes, Faculty of Science**

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D. Sc., D.Litt., etc.)

Name of the Programme	**Specialization**	**Duration**	**Full-time /Part-time**
M.Sc. in Medical Physics	--	3 Years (2years+ 1 year internship)	Full time

5. Interdisciplinary programmes and departments involved: Nil
6. Courses in collaboration with other universities, industries, foreign institutions, etc.
   PGIMER, Chandigarh

7. Details of programmes discontinued, if any, with reasons Nil
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System
   Semester System

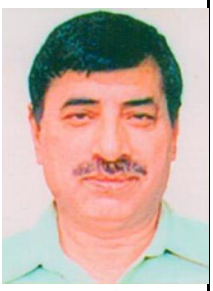
9. Participation of the department in the courses offered by other departments:
   Department provides faculty for teaching and practical in the following Departments:

Centre for Nuclear Medicine

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned	**Filled**	**Actual (including (CAS & MPS)**
Professor	1		
Associate Professors	1		
Asst. Professors	2	1	
Others			

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	**Qualification**	**Designation**	**Specialization**	**Experience (# of years)**	**No. of Ph.D./ M.Phil. students guided for the last 4 years**
 D. K. Dhawan	Ph.D., DMRIT	Coordinator and Professor	Radiation Biophysics and Radiation Medicine	32	10
 Vivek Kumar	Ph.D.	Assistant Professor	Exp. Nuclear Physics, Radiation Medical Physics	07	01(Guiding)

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors : Nil

13. Percentage of classes taken by temporary faculty – programme-wise information:
M.Sc. : 25%

14. Programme-wise Student Teacher Ratio : **16 : 1**

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

Category	Number of Permanent Employees	Number of Vacant Positions	Number of permanent positions filled during the Year	Number of positions filled temporarily
Administrative Staff	01	01	NIL	01
Technical Staff	01	01	NIL	-

16. Research thrust areas as recognized by major funding agencies:
Radiation Medical Physics *(PURSE-DST)*
Nuclear Physics (Expt.) (IUAC, UGC)

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise: **02 (Two)**

Project Title	**Funding Agency**	**Total Grant**
PET facility and the advanced medical imaging detector	PURSE-DST	Approx 13.08 lakhs
Nuclear electromagnetic moments using PAD technique	IUAC (UGC)	Approx 6.51 lakhs

18. Inter-institutional collaborative projects and associated grants received : Nil

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.: Nil

20. Research facility / centre with
- state recognition : Nil
- national recognition : Nil
- international recognition : Nil

21. Special research laboratories sponsored by / created by industry or corporate bodies: Nil

22. Publications:

- Number of papers published in peer reviewed journals (national / international) : 57 in last 5 years
- Chapters in Books : 3
- Edited Books : Nil
- Books with ISBN with details of publishers : Nil
- Number listed in International Database (For *e.g.* Web of Science, Scopus,
    - Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)
- Impact Factor – range / average : **3-6**
- h-index :**16.0 and 7.0**

23. Details of patents and income generated : one

24. Areas of consultancy and income generated : Nil

25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad: Prof. D.K Dhawan and Dr. Vivek Kumar Prof.D.K.Dhawan visited Baylor, Medical Centre, USA in 2010 and 2013 on UICC fellowship.

26. Faculty serving in
    a) National committees : Nil
    b) International committees : Nil
    c) Editorial Boards:

Name of the faculty with designation	**Name of the Board / Details**	**Position held**	**Duration**
Dr. Vivek Kumar Assistant Professor	Journal of Nuclear Physics, Material Sciences, Radiation and Applications (Research Journal)	Member	2012 – Till date

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).
    a) The faulty at the Assistant Professor level doing Refresher and Orientation courses in their streams.
    b) The faculty is also encouraged to take part in workshops, seminars etc. to enhance their teaching and technical skills.
    c) The faculty is facilitated to learn computer-based instrumentations.

28. Student projects

- percentage of students who have done in-house projects including inter-departmental projects : 20% M.Sc. students per year
- percentage of students doing projects in collaboration with other universities / industry / institute : 100% students in third year of M.Sc.

29. Awards / recognitions received at the national and international level by

- Faculty : Nil
- Doctoral / post doctoral fellows **:** Nil
- Students **:** Nil

30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any. **:** Nil

31. Code of ethics for research followed by the departments :
Punctuality, sincerity towards the system and the research work done by the researchers as per the Supervisor's consents. They are also assigned teaching duties and maintaining the decorum of the research lab.

32. Student profile programme-wise:

Name of the Programme (refer to question no. 4)	**Applications received**	**Selected**		**Pass percentage**	
		Male	Female	Male	Female
M.Sc. Medical Physics (1st year)	145 Approx.	15	22	100	100

33. Diversity of Students

Name of the Programme (refer to question no. 4)	**% of students from the same university**	**% of students from other universities within the State**	**% of students from universities outside the State**	**% of students from other countries**
M.Sc. Medical Physics (2010-2013)	*80*	-	*20*	

34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

There is no NET in Medical Physics subject.

35. Student progression

Student progression	Percentage against enrolled
UG to PG	NA
PG to M.Phil.	NA
PG to Ph.D.	5%
Ph.D. to Post-Doctoral	
• Campus selection • Other than campus recruitment	**65%** **35%**
Entrepreneurs	**NA**

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	0%
from other universities within the State	0%
from universities from other States from	100%
Universities outside the country	0%

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period : Nil

38. Present details of departmental infrastructural facilities with regard to

a) Library : Approx 70 Books

b) Internet facilities for staff and students : Nil

c) Total number of class rooms : 02

d) Class rooms with ICT facility : Nil

e) Students' laboratories : 02

f) Research laboratories: 01

39. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university : Nil

b) from other institutions/universities : Nil

40. Number of post graduate students getting financial assistance from the university: 02

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. Nil

42. Does the department obtain feedback from

a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

Yes,
All issues related to teaching-learning-evaluation are discussed at the departmental meetings on a regular basis. Suggestions for improving them are placed before the board of Studies (BoS) for approval and implementation.

b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

The subject teacher gets feedback on curriculum, teaching-learning process etc from students on a regular basis. All issues related to teaching-learning-evaluation are discussed in a comprehensive manner.

c. alumni and employers on the programmes offered and how does the department utilize the feedback?

Department is in touch with some of the alumni through personal contacts as well as social network. They offer suggestions for the improvement of the curriculum as well as teaching-learning-evaluation

43. List the distinguished alumni of the department (maximum 10): Nil

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

- Tutorials, Computers, Internet information technology, Audio-video aids, Computer aided packages.

- ❖ Multi-media facilities are utilized in class room lectures. New experiments have been introduced in postgraduate students. Faculty is involved in developing methods and techniques for popularizing science.
- ❖ By problem solving sessions and mid-semester examination and the end semester examinations

45. List the teaching methods adopted by the faculty for different programmes.

Teaching methods includes:

- ❖ *Lectures;*
- ❖ *Demonstrations;*
- ❖ *Discussions;*
- ❖ *Student presentations;*
- ❖ *Group projects; and*
- ❖ *Guest speakers from institutes.*

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

Research scholars and faculty participated in CHASCON programme for the last five years through oral and poster presentation. Faculty periodically visits various institutes.

47. Highlight the participation of students and faculty in extension activities.
Department faculty and students actively participate in Seminars, Group Discussions etc.

48. Give details of "beyond syllabus scholarly activities" of the department.
Quality components such as projects, student presentations etc. and Department of Radiotherapy, PGIMER Visits.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.
MSc in Medical Physics course is approved by AERB, Mumbai

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

The faculty actively engaged in Front line Research in Nuclear Physics (experiment) at CERN Laboratory and IUAC New Delhi. Research works in the areas of spectroscopy and radiation physics are notable. Faculty is also doing research in radiation physics in collaboration of PGIMER, Chandigarh.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths: *Publications, Research Projects, collaboration with national and international research departments.*

Weaknesses: *shortage of teaching as well as administrative staff, lack of equipment for the experiments, lack of special funds for equipments and instrumentations.*

Opportunities and Challenges

Recruiting faculty in the frontiers of medical physics is the need of the hour. Then the department shall be in a position to take up new challenges in the area of Medical physics, radiation oncology, MRI etc.

The challenge before the department is to keep pace with the expanding horizons of scientific knowledge, through judicious recruitment of faculty and to impart basic knowledge to M.Sc. students so that they can take up Basic Science Research as a career. Starting of the Ph.D. Program is also the need of the hour. The Ph.D. students should be trained to take up new research problems which have scientific and social relevance.

52. Future plans of the department.

The department collectively, shall strive not just to maintain but improve the high standards set so far, of producing technically competent students and quality work in frontier areas of research.