



YEARLY STATUS REPORT - 2020-2021

Part A

Data of the Institution

Part A	
Data of the Institution	
1.Name of the Institution	HOMI BHABHA NATIONAL INSTITUTE
• Name of the Head of the institution	P. R. Vasudeva Rao
• Designation	Vice Chancellor
• Does the institution function from its own campus?	Yes
• Phone no./Alternate phone no.	02225597638
• Mobile no	9566535738
• Registered e-mail	vcoff@hbni.ac.in
• Alternate e-mail address	registrar@hbni.ac.in
• City/Town	Mumbai
• State/UT	Maharashtra
• Pin Code	400094

2.Institutional status						
• University			Deemed			
• Type of Institution			Co-education			
• Location			Urban			
• Name of the IQAC Co-ordinator/Director			Prof. A. K. Dureja			
• Phone no./Alternate phone no			02225597629			
• Mobile			9969102829			
• IQAC e-mail address			registrar@hbni.ac.in			
• Alternate Email address			dureja@hbni.ac.in			
3.Website address (Web link of the AQAR (Previous Academic Year))			http://www.hbni.ac.in/pdf/aqar/stsrpt19_20.pdf			
4.Whether Academic Calendar prepared during the year?			Yes			
• if yes, whether it is uploaded in the Institutional website Web link:						
5.Accreditation Details						
Cycle	Grade	CGPA	Year of Accreditation	Validity from	Validity to	
Cycle 2	A+	3.4	2021	16/03/2021	15/03/2026	
6.Date of Establishment of IQAC			27/06/2014			
7.Provide the list of Special Status conferred by Central/ State Government-UGC/CSIR/DST/DBT/ICMR/TEQIP/World Bank/CPE of UGC etc.						
Institution/ Department/Faculty		Scheme		Funding agency	Year of award with duration	Amount
Homi Bhabha National Institute		Special autonomy status by UGC		UGC	2018	0
8.Whether composition of IQAC as per latest NAAC guidelines			Yes			
• Upload latest notification of formation of IQAC			View File			
9.No. of IQAC meetings held during the year			2			

<ul style="list-style-type: none"> The minutes of IQAC meeting and compliance to the decisions have been uploaded on the institutional website. (Please upload, minutes of meetings and action taken report) 	Yes
<ul style="list-style-type: none"> (Please upload, minutes of meetings and action taken report) 	No File Uploaded
10. Whether IQAC received funding from any of the funding agency to support its activities during the year?	Yes
<ul style="list-style-type: none"> If yes, mention the amount 	591411
11. Significant contributions made by IQAC during the current year (maximum five bullets)	
Developed a methodology to assess parameters such as Program Outcome (PO), Program Specific Outcome (PSO) and Course Outcome (CO).	
A systematic student feedback analysis was carried out. Actions were taken to mitigate the issues raised by the students. Lectures by eminent entrepreneurs has been arranged regularly to create awareness to the students about opportunities and challenges in setting up start-ups. A module on IPR has been introduced in Research Methodology Course, offered by HBNI Central Office. A consultant has been appointed to guide students on IPR related issues.	
Publication of HBNI newsletter illustrating scientific events and achievements of the institute.	
Conducted the faculty induction programme for the newly added faculties	
Presentation on Research, Innovation and Extension	
12. Plan of action chalked out by the IQAC in the beginning of the Academic year towards Quality Enhancement and the outcome achieved by the end of the Academic year	
Plan of Action	Achievements/Outcomes
Offer a mandatory course on Nuclear Science and Technology for all the students who enrolled for PhD program in the institute	An online course on Nuclear Science and Technology was conducted by HBNI during February 2021 to May 2021 for the benefit of Ph.D students. The course was coordinated by Prof. B.S. Tomar, Institute Chair Professor, HBNI and the lectures were streamed live on HBNI YouTube Channel (HBNI webinar). The online course imparted basic knowledge about nuclear science to students followed by an overview of the applications of nuclear energy in nuclear power generation as well as applications of radiation and radioisotopes in different fields such as healthcare, industry, agriculture and food technology.
Introduction of a value added course on Foreign language	The syllabus for the course has been formulated and the course is scheduled to offer in the year 2022
Focus on project works and summer internship programs for students in industries	Academic council has approved the student internship program for Ph.D students

Development of methodology to calculate and assess program parameters	A methodology to assess parameters such as Program Outcome (PO), Program Specific Outcome (PSO) and Course Outcome (CO) has been developed by HBNI
Conducting student feedback analysis	A systematic feedback analysis was collected from students. Actions were taken to improve the academic and related activities. Decisions were taken to mend the evaluation and examination systems with emphasis on stress management without declining the quality of assessments
Faculty Induction Programme	A faculty induction programme has been conducted for the benefit of the newly inducted faculty members so as to familiarise them with the academic processes in HBNI

13. Whether the AQAR was placed before statutory body? Yes

- Name of the statutory body

Name	Date of meeting(s)
Council of Management	21/01/2022

14. Whether NAAC/or any other accredited body(s) visited IQAC or interacted with it to Assess the functioning? Yes

15. Whether institutional data submitted to AISHE

Year	Date of Submission
2020-2021	28/03/2022

16. Multidisciplinary / interdisciplinary

17. Academic bank of credits (ABC):

18. Skill development:

19. Appropriate integration of Indian Knowledge system (teaching in Indian Language, culture, using online course)

20. Focus on Outcome based education (OBE): Focus on Outcome based education (OBE):

21. Distance education/online education:

Extended Profile

1. Programme

1.1		36
Number of programmes offered during the year:		
File Description	Documents	
Data Template	No File Uploaded	
1.2		7
Number of departments offering academic programmes		
2.Student		
2.1		4267
Number of students during the year		
File Description	Documents	
Data Template	No File Uploaded	
2.2		527
Number of outgoing / final year students during the year:		
File Description	Documents	
Data Template	No File Uploaded	
2.3		3481
Number of students appeared in the University examination during the year		
File Description	Documents	
Data Template	No File Uploaded	
2.4		0
Number of revaluation applications during the year		
3.Academic		
3.1		1184
Number of courses in all Programmes during the year		
File Description	Documents	

Data Template	No File Uploaded
3.2 Number of full time teachers during the year	1122
File Description	Documents
Data Template	No File Uploaded
3.3 Number of sanctioned posts during the year	1361
File Description	Documents
Data Template	No File Uploaded
4.Institution	
4.1 Number of eligible applications received for admissions to all the Programmes during the year	153085
File Description	Documents
Data Template	No File Uploaded
4.2 Number of seats earmarked for reserved category as per GOI/ State Govt. rule during the year	101
File Description	Documents
Data Template	No File Uploaded
4.3 Total number of classrooms and seminar halls	182
4.4 Total number of computers in the campus for academic purpose	5689
4.5 Total expenditure excluding salary during the year (INR in lakhs)	38711.546

Part B

CURRICULAR ASPECTS**1.1 - Curriculum Design and Development**

1.1.1 - Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes(PSOs) and Course Outcomes(COs) of the Programmes offered by the University

The academic programmes offered by HBNI aim to assimilate basic research with technology development. HBNI has uniquely designed the academic programmes in such a way that they can build the required manpower in the research and development area of various domains, particularly in the field of Nuclear Science and Technology. The diverse academic programmes at HBNI also intend to create professionals in the areas of Engineering, Mathematics and Medical research etc., as per the requirements of the society.

Some of the post graduate level programs offered by HBNI are unique in their aspects and are able to address the needs of the country. Post-graduate diploma programs are offered at BARC Training schools at Mumbai, Kalpakkam, Hyderabad and Indore. The courses offered as part of these programs also meet the requirement of M. Tech / MSc(Engg) programs. These courses are designed to meet the mission needs of the concerned centers. For example, courses at IGCAR, Kalpakkam focus on the needs of the fast reactor program, while courses at RRCAT focus on the needs of the accelerator program. Since many of the vital domains of activity in DAE are multidisciplinary in nature (e.g. Nuclear fuel cycle, accelerator science), courses are also designed to give a multidisciplinary flavor by introducing the science as well as technology elements. Thus these courses address human resources of the country in the vital domain of indigenous development of nuclear science and technology. The curriculum is also designed to cater to M. Tech students from defense organizations, who get trained to engage in associated defense programs through exposure to elements of nuclear technology and radiation safety.

HBNI offers various academic programmes in Medical and Health Sciences which fulfill the national requirements of expertise and knowledge base in the treatment of various types of cancers prevalent in India. With continuous rise of cancer cases in the country, the early diagnosis and treatment is essential and researches in this direction are the need of the hour. The academic programmes at HBNI play a significant role in establishing a knowledge base and contributing towards cancer research.

Applications of radioactivity and various types of radiation are steadily increasing in a number of industries and particularly in healthcare industry. The requirement of specialists who could ensure radiation safety in the hospitals and industries has become an important need for the country, and the programme "Diploma in Radiation Protection" run by HBNI is a highly sought-after programme, with benefits accruing to a diverse set of stake holders.

While designing the above programmes, HBNI also ensures the quality of the programmes and the periodic revision of the syllabus and introduction of new courses are carried out to stay in tune with the latest developments.

File Description

Documents

Upload relevant supporting document

[View File](#)

1.1.2 - Number of Programmes where syllabus revision was carried out during the year

5	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.1.3 - Total number of courses having focus on employability/ entrepreneurship/ skill development offered by the University during the year	
1.1.3.1 - Number of courses having focus on employability/ entrepreneurship/ skill development during the year	
1184	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.2 - Academic Flexibility	
1.2.1 - Number of new courses introduced of the total number of courses across all programs offered during the year	
17	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.2.2 - Number of Programmes in which Choice Based Credit System (CBCS)/elective course system has been implemented during the year	
25	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.3 - Curriculum Enrichment	
1.3.1 - Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum	
<p>The academic programmes of HBNI are designed to develop human resources in the area of nuclear science and technology and allied subjects including mathematics. HBNI is committed to fostering an environment of academic rigour and ethical values. HBNI ensures the complete development of the student by providing exposure to important issues such as gender sensitivity, consciousness of environment, sustainability and most importantly, professional ethics.</p> <p>Gender Sensitization</p>	

In order to create the right mind set among the students towards issues related to gender, the different constituent institutions of HBNI organise series of lectures delivered by experts in the field of gender sensitization. HBNI as well as all its CIs/OCC has Women's Cell and Grievance Redressal Cell to provide counselling to students, promote gender equity among students and also deal with related issues of safety and security of female students, staff and faculty.

Professional Ethics and Moral Values

HBNI is taking all necessary measures to impart knowledge about ethical practices in the conduct of scientific research to its students. In this regard, HBNI organizes lectures by senior professors periodically, which cover issues related to plagiarism (including self-plagiarism) and attributing authorship of papers to individuals who have not contributed. HBNI has also conducted several workshops with the help of Administrative Training Institute of DAE to brief students as well as faculty about correct and ethical practices. A mandatory course on Research Methodology is included in the curriculum of research scholars which is designed to include aspects of professional ethics. This course also deals with issues of morality and Human values. HBNI and its constituent institutions celebrate days of National and International importance as Republic day, Independence Day, Teacher's day, International Women's day, International Yoga Day etc. which nurture the moral, ethical and social values in the students.

Environment and Sustainability

For the indigenous development of nuclear science and technology, the emphasis on sustainable development, environmental impact and safety are important cross cutting issues. The majority of students who pursue post-graduate and doctoral programs in the R & D units of DAE come from outside the DAE environment. Accordingly, the courses run at the DAE units such as BARC, IGCAR, VECC and RRCAT create adequate awareness on safety issues among the students. Chemical safety, radiation safety, reactor safety and industrial hygiene are dealt with in detail in the courses at introductory level as well as advanced level. Sustainability and environment protection are therefore, invariably knitted into courses. In fact, one specific program run in BARC is PG diploma in Radiation Protection. BARC Training School also runs a program on Radiation Safety which includes courses on Environmental chemistry, Environmental Impact Assessment methodologies, Environment modelling, Radiation risk assessment and Epidemiology. With regards to the issue of environment and sustainability, tree plantation and cleanliness drives are also organized regularly for students and faculty members.

As part of programs in Medical and Health sciences, regular courses are held on imparting training in Good Clinical Practice and following ethical principles in the clinic and in the conduct of clinical research. It is mandatory for all postgraduate students to undergo certificate training in Good Clinical Practice. The PG Diploma and doctoral programs in biology also include courses on bioethics. All efforts are made in the clinics to maintain patient confidentiality and privacy. TMC also conducts lectures on medical humanities.

File Description	Documents
Upload relevant supporting document	View File

1.3.2 - Number of value-added courses for imparting transferable and life skills offered during the year

27

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.3.3 - Total number of students enrolled in the courses under 1.3.2 above	
1.3.3.1 - Number of students enrolled in value-added courses imparting transferable and life skills offered during the year	
870	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.3.4 - Number of students undertaking field projects / research projects / internships during the year	
2329	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
1.4 - Feedback System	
1.4.1 - Structured feedback for design and review of syllabus - semester wise / is received from Students Teachers Employers Alumni	• Any 3 of the above
File Description	Documents
Upload relevant supporting document	View File
1.4.2 - Feedback processes of the institution may be classified as follows	• Feedback collected, analysed and action taken and feedback available on website
File Description	Documents
Upload relevant supporting document	View File
TEACHING-LEARNING AND EVALUATION	
2.1 - Student Enrollment and Profile	
2.1.1 - Demand Ratio	
2.1.1.1 - Number of seats available during the year	

769

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

2.1.2 - Total number of seats filled against reserved categories (SC, ST, OBC, Divyangjan, etc.) as per applicable reservation policy during the year (Excluding Supernumerary Seats)

2.1.2.1 - Number of actual students admitted from the reserved categories during the year

104

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

2.2 - Catering to Student Diversity

2.2.1 - The institution assesses the learning levels of the students and organises special Programmes for advanced learners and slow learners

HBNI recognizes that the learning programs have to be adequately flexible and provide for different pace of learning among students. Accordingly, the CIs/OCC of HBNI have schemes to cater to advanced learners as well as slow learners.

For M.Sc. and Integrated M.Sc. programmes, option of credit overload is available for advanced learners. Under this option, if a student has CGPA ≥ 8.0 , credit overload of a 4 credit course is permissible in a semester. However, performance of such students is carefully monitored by the Dean-Academic/academic committee so that the student is under no stress. Such students are also given an option at the beginning of a course for waiver. If a student feels that a course is a just repetition for him/her, the student can be exempted from attending the course after clearing a designated test. The student can utilize this period to study an advanced audit course from any department guided by the academic committee and as per the student's interest. In some cases, the student can also be permitted to be absent from the regular lectures, but submit assignments/projects, and take the tests.

Slow learners in the integrated MSc program are also permitted to opt for credit underload as well as remedial / bridge courses during summer vacation to bring parity amongst student population. In case of a credit underload, the duration of the overall academic programme is accordingly extended with the upper limit of 2 years. Students are also permitted to improve their performance in mandatory core courses by repeating the courses up to three times. Students also have the option to replace a particular elective course with another to improve their grades. For the 1st year students who fail in any of the courses, NISER has introduced Supplementary Examinations twice in an Academic Year during the summer and winter vacation.

The M.Tech. (Engineering Physics) programme at RRCAT is open to both engineering (B.E./B. Tech. passed) and physics (M.Sc. passed) students. To accommodate the different entry level qualification of the two categories, bridge courses are designed and offered to the students. The bridge courses are followed by one semester of compulsory core courses, and then in the final semester the students take several specialized courses with emphasis on the science and technology of

lasers and accelerators. For all the students, a second chance is given after 3 weeks of the end semester to clear a course, if needed or to improve marks in certain cases.

It is the practice at the BARC Training Schools to organise courses on advanced topics under the 'QUEST' programme. Some of the topics in which 'QUEST' courses were conducted in recent past include Process Modelling, Simulation and Optimization, Signal Conditioning and Recovery, Reliability Engineering, State-space approach to Reactor Control and Natural Circulation Based Passive Safety Systems for Advanced Reactors. These courses provide motivation to the bright students to broaden their domains of learning. For the weaker students, the BARC Training schools also have provision to repeat a course in training school and appearance in re-examination.

File Description	Documents
Upload relevant supporting document	View File
Link For Additional Information	http://www.hbni.ac.in/aqar/2021/C2/m2_2_1/

2.2.2 - Student - Full time teacher ratio during the year

Number of Students	Number of Teachers
4267	1122

File Description	Documents
Upload relevant supporting document	View File

2.3 - Teaching- Learning Process

2.3.1 - Student centric methods, such as experiential learning, participative learning and problem-solving methodologies are used for enhancing learning experiences

All the CIs/OCC of HBNI adopt student-centric pedagogies that provide the student a memorable learning experience. HBNI being a research University, most of the students are required to adopt a participative, hands-on approach to learning. Discussion sessions further enhance the learning experience to help the students become independent researchers. The coursework for doctoral students, in most cases, involves credit seminars and annual reviews, which provide students the challenge of not only learning a subject but also developing their communication skills, and provide them opportunities to have discussions with peers and experts. Doctoral students are also encouraged to take up self-study courses and discuss their understanding with the mentor / doctoral committee on a regular basis.

The courses offered by HBNI invariably have tutorials and assignments that help students in problem-solving. The PG Diploma programs run in BARC Training Schools in various CIs include a mini-project of 2 months, ending with a presentation to an expert committee. A guide is associated with the mini-project to mentor the student to understand the critical components of the project and the approaches to handle a technical problem at hand. The end-semester viva voce exams assess the student's ability for integration of knowledge of various subjects acquired during the semester.

Recently, HBNI has launched "HBNI Research Scholar Forum" in order to advance/promote academic links between the research scholars of HBNI and to provide them a platform to grow their skills in communication, management and organizational

domains.

Webinars by HBNI students across all its CIs/OCC are conducted regularly under this forum.

The students of medical and health sciences are exposed to hands-on activities (Supervised Surgery, Radiation therapy treatment planning, Chemotherapy administration, etc.) and also management of side effects and sequelae of treatment. The students are also exposed to the management of medical emergencies in the operating room and clinics. In medical and health sciences programme of HBNI, the structured teaching programs also include discussions based on personal experiences of the teachers. Students are encouraged to participate in case discussions and debates in the wards and also in the day-to-day clinics. In para-medical specialties, the students are posted in rotation to various areas of learning to acquire experience and necessary skills.

HBNI strongly encourages "study tour" of its students to other research centres of DAE. The students of the PG diploma programs in nuclear science and technology, in particular, have a study tour built in as part of their curriculum, which provides a great deal of experiential learning. During such tours, students are exposed to unique research facilities available in the research centres, and encouraged to interact with scientists and students in the different environment.

HBNI provides financial assistance to Ph.D scholars for attending international conferences to present their work, interact with peers and experts and discuss their work to get further inputs. Such participation in conferences aids in participative learning of advanced subjects through discussions with experts. Students are also encouraged to participate in pre-synopsis viva voce and the final defence examination of other students, ask questions and learn from the discussions, in order to fine tune their own thesis and communication skills. Research scholars are also encouraged to organize technical meets to gain organizational experience, under the guidance of the experts.

File Description	Documents
Upload relevant supporting document	View File

2.3.2 - Teachers use ICT enabled tools including online resources for effective teaching and learning processes during the year

This is the age of digital learning- while conventional blackboard teaching has still its merits, the techniques of teaching have evolved in digital format, with the availability of several types of ICT resources, offering several advantages. All the institutions of HBNI have implemented ICT based teaching. Classrooms are equipped with LCD projector facility and internet connectivity. The CIs/OCC have auditorium with state-of-the art facilities for projection and recording. The CIs are linked with HBNI central office by videoconferencing, through a dedicated network "Anunet". At the Central Office, two videoconferencing facilities exist which have been extensively used in the past year to organise value added courses, webinars, doctoral committee meetings, credit seminars, etc. At HBNI, an Anunet website "Pathshala" (<http://pathshala.anunet.in>) has been set up, which hosts course content obtained on a variety of subjects from NPTEL, as well as lectures video graphed by HBNI. The students across the CIs benefit from this resource. Recently, HBNI has also started its YouTube channel, "HBNI Webinar" where all webinars conducted by HBNI stream live. The recordings of webinars are also available on the channel for the benefit of students/faculty across all educational institutions in India.

Faculty members of HBNI use online resources for effective teaching and learning. There are a large number of scientific and engineering computer codes available in public domain as online resources which are used for this purpose. Some of the examples of such codes are finite element codes for structural, thermal, electro-magnetic and material modelling; codes for reactor physics calculations; radiation damage calculation (eg. SHRIMP code); simulation of material properties

code (VASP, CASTEP); codes related to geo-physics and geo-technical calculations; codes for assessment of migration of radio-nuclides in atmosphere and water bodies; general ab initio quantum chemistry package for electronic structure calculations; ab-initio simulation package with pseudopotential; Carr-Parrinello molecular dynamics package, thermochemical modeling packages, etc. Students are exposed to use of such codes for modelling and simulation, as part of the curriculum and research.

Some CIs and in particular, the Institute of Mathematical Sciences (IMSc), have established multi-functional facilities to handle video conferencing and web streaming, Video recordings and meetings. These have enhanced the impact of teaching in the sense that students from other CIs can also benefit from such lecture programs. Using this unique facility, IMSc has hosted a large number of video lectures and courses in mathematics, physics and computational biology, in its website <http://ekalavya.imsc.res.in>, and also hosted them in the YouTube channel "MATSCIENCE". This channel is a highly sought-after e-resource for lectures on advanced mathematics, not only by the HBNI-IMSc faculty but also several visiting faculty including foreign faculty. At IGCAR, a similar "smart class" room with videoconferencing / video recording facilities has been established.

File Description	Documents
Upload relevant supporting document	View File

2.3.3 - Ratio of students to mentor for academic and other related issues during the year

2.3.3.1 - Number of mentors

967

File Description	Documents
Upload relevant supporting document	View File

2.4 - Teacher Profile and Quality

2.4.1 - Total Number of full time teachers against sanctioned posts during the year

1122

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

2.4.2 - Total Number of full time teachers with Ph.D./D.M/M.Ch./D.N.B Superspeciality/D.Sc./D'Lit. during the year

1042

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
2.4.3 - Total teaching experience of full time teachers in the same institution during the year	
2.4.3.1 - Total experience of full-time teachers	
9596 years	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
2.4.4 - Total number of full time teachers who received awards, recognition, fellowships at State, National, International level from Government/Govt. recognised bodies during the year	
28	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
2.5 - Evaluation Process and Reforms	
2.5.1 - Number of days from the date of last semester-end/ year- end examination till the declaration of results during the year	
Nil	
2.5.1.1 - Number of days from the date of last semester-end/ year- end examination till the declaration of results year wise during the year	
54	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
2.5.2 - Total number of student complaints/grievances about evaluation against total number appeared in the examinations during the year	
1	
File Description	Documents
Upload relevant supporting document	View File

2.5.3 - IT integration and reforms in the examination procedures and processes (continuous internal assessment and end-semester assessment) have brought in considerable improvement in examination management system of the institution

The examination process adopted in CIs/OCC of HBNI depends on the academic program, and has a high degree of flexibility, ranging from closed book, closed notes exams to open book, indefinite time exams. This flexibility has helped in tapping creative potentials among students.

The examination system for the Ph.D students ensures that the student acquires a broad base of knowledge related to his field of work, and originality and innovation in the research. An Open General Comprehensive Examination after completion of the coursework, annual reviews by a student-specific doctoral committee, an open pre-synopsis viva to confirm adequate quantity and quality of work and independent, critical and robust evaluation of the thesis ensure the quality of the research as well as that of the thesis. The evaluation process for the thesis was fine-tuned and the ordinances modified to permit the Deans to contact three reviewers simultaneously and proceed for viva voce examination based on first two positive results. For the viva voce, participation of one of the examiners through videoconference mode has been permitted. These steps have helped in ensuring that after the submission of the thesis, the process of evaluation, viva voce and declaration of result are completed within a time period of around 6 months.

The students pursuing M. Tech/ PGDNS programs do their coursework in the BARC Training Schools. The written examination for selection of students is fully ICT based, to handle the large number of applicants from all over India (over 1.5 lakhs). The progress of learning in the Training Schools is regularly assessed through assignments, presentations, and periodic examinations for classroom and laboratory courses as well as a mini project and two (mid-term and final) viva voce examinations. Additionally, students are also given assignments, and tutorials are conducted to carry out continuous evaluation. The examination process has been streamlined with the introduction of several measures such as a monitoring system for tracking the receipt of results and online communication to students of the updated results. Mark sheets and certificates are generated by Trainee Management System (TMS) portal. Before declaring the results, the answer papers for every subject are shown to them and any change or alteration, if needed is made.

The Integrated MSc program offered at NISER involves written and practical examinations at different stages. Examinations for theory courses consist of: (i) continuous assessment, running over the entire semester and with typical weightage of 30%, (ii) mid-semester examination with a typical weightage of 30% and (iii) end-semester examination with 40% weightage. The weightage of the different components is mandatorily announced to the students by the course instructors. The continuous assessment includes quizzes, assignments and presentations etc. Laboratory examinations consist of continuous assessment (weightage of 60%) and end semester examination (40% weightage). In the 5th year of the programme more emphasis is given on a year-long research oriented project, which is evaluated by a committee based on a project report and presentation by the student.

File Description	Documents
Upload relevant supporting document	View File

2.5.4 - Status of automation of Examination division along with approved Examination Manual

A. 100% automation of entire division & implementation of Examination Management System (EMS)

File Description	Documents
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Upload the data template	View File
Upload relevant supporting document	View File

2.6 - Student Performance and Learning Outcomes

2.6.1 - The institution has stated learning outcomes (generic and programme specific)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents

The academic programmes offered by HBNI can be divided into three categories: Professional programmes (M.Tech., PG Diploma, DipRP, MD, DM, M.Ch., M.Sc. (Nursing), DMRIT etc.), Research orientated programmes (M.Sc.(Engg), M.Phil., Integrated Ph.D. and Ph.D.), and Science education programmes (integrated M.Sc. and M.Sc.). Many of the programmes are conducted at more than one Constituent Institutions (CIs)/ Off-Campus Centre (OCC). In every case, the design of the programmes aims at a wholesome development of the student, preparing him/her to undertake a challenging career.

Professional programmes (PG Diploma and M. Tech.) offered by HBNI prepare students for a lifelong career in DAE, including working for large hi-tech projects, undertaking activities such as design, construction, quality assurance or operation. The programme outcomes (POs) and the programme specific outcomes (PSOs) are therefore, in line with the DAE mission and strategic projects. Accordingly, all the courses offered and their projected outcomes are also in conformity with DAE requirements.

The outcomes from all the other programmes offered by HBNI are also formulated carefully, maintaining their generic nature and preparing the student for a rewarding scientific career with the confidence to migrate to other challenging areas if necessary. Although some of the programmes are conducted at more than one CIs/OCC, the POs are maintained the same for a particular programme. But, the PSOs are formulated differently, after taking into account the domain area of the specific programme and the thrust area of the CI/OCC offering the programme. The courses offered are mainly of three types: Foundation, Core and Elective. These courses, their formulated syllabi and outcomes are related to one or more POs and PSOs. HBNI lays a lot of emphasis on the development of analytic and problem-solving skills. The domain knowledge as well as strong basic concepts in other related areas prepare the students to take up the challenging research problems in multidisciplinary fields. These are clearly stated in the PSOs and the course outcomes.

The outcome of the courses is assessed through quiz tests, assignments, seminars, oral examinations and end-semester/tri-semester examinations. For the post-graduate medical programme, the combination of both formative and summative assessment is vital for the successful completion of the programme. The learning experience derived by the students from their ward visits and treatments to the patients under the guidance of the mentor is assessed, and it forms the major part of their programme outcomes. Information on the POs and PSOs of all the programmes, and syllabi of the various courses offered under the given programme along with their outcome is made available on the HBNI website for the benefit of all the stakeholders.

File Description	Documents
Upload relevant supporting document	View File

2.6.2 - Attainment of Programme outcomes, Programme specific outcomes and course outcomes are evaluated by the institution during the year

HBNI is a Research University established by DAE as an academic tool to develop indigenous strengths in nuclear science and technology. HBNI and DAE have been closely monitoring the results of the academic programs to assess whether the

mandates have been met by the programs. Parameters such as publications in journals and development of new processes and products for the Department's program and for societal needs have been taken as broadly indicative of the attainment of the objectives of the academic program. In the context of HBNI as a Deemed University, the methodology to be adopted for measuring the level of attainment of POs, PSOs and COs in quantitative terms was discussed in the IQAC, and based on its suggestions, a methodology based on the aggregate percentage of marks/CGPA was adopted for the measurement, except for the Research Orientated Programmes. It was decided to consider all POs, PSOs and COs in the particular programme to be of equal weightage and the attainment level in POs, PSOs and COs as equal to the programme level attainment. The programme level attainment on the scale of 1 to 3 was approved with the following methodology for calculation of level attainment for the programmes, in which the aggregate percentages are awarded.

Minimum pass % \leq aggregate % < Minimum pass % + 5%, then Level=1

Minimum pass % + 5% \leq aggregate % < Minimum pass % + 10%, then Level=2

Minimum pass % + 10% \leq aggregate %, then Level=3

For the programmes in which grade point average system on a ten-point scale is implemented, the below mentioned level attainment formula was approved.

Qualifying CGPA to pass \leq CGPA obtained < Qualifying CGPA +1, then Level=1

Qualifying CGPA +1 \leq CGPA obtained < Qualifying CGPA +2, then Level=2

Qualifying CGPA +2 \leq CGPA obtained, then Level=3

Program level attainment = $\sum niLi / N$, where ni is the number of students attaining the Level 'i' and 'N' is the total number of students in the programme.

% Program level attainment = (Program level attainment/3) \times 100

Research orientated programmes, such as M.Sc.(Engg), M.Phil., Integrated Ph.D. and Ph.D., are expected to impart advance knowledge in theory and experimental/computational techniques in the domain and related areas of the research problem, and development of analytical and critical thinking skills for solving complex applied/fundamental problems. Attainment of the non-research aspects is judged during the course work, practical and viva voce for M.Sc.(Engg) and M. Phil students. The Ph.D. students are judged at various stages by Oral General Comprehensive Examination, the number and quality of publications in conferences and refereed journals, pre-synopsis viva, and thesis examination by two external examiners. For all the research-orientated programmes, the degree is awarded only after the thesis work is successfully defended. Due to stringent criteria for passing the various performance assessment tests, all the degree holders in this category can be considered to have obtained the program attainment of 100%.

File Description	Documents
Upload relevant supporting document	View File

2.6.3 - Number of students passed during the year

2.6.3.1 - Total number of final year students who passed the university examination during the year

514

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

2.7 - Student Satisfaction Survey

2.7.1 - Student Satisfaction Survey (SSS) on overall institutional performance (Institution may design its own questionnaire) (results and details need to be provided as a web link)

http://www.hbni.ac.in/aqar/2021/C2/m2_7_1/

RESEARCH, INNOVATIONS AND EXTENSION**3.1 - Promotion of Research and Facilities**

3.1.1 - The institution Research facilities are frequently updated and there is well defined policy for promotion of research which is uploaded on the institutional website and implemented

The CIs/OCC of HBNI are organizations with a long tradition of research in frontier areas of science and technology, particularly related to nuclear energy. All CIs/OCC have a strong component of research in addition to education and training. A significant fraction of students of HBNI are in fact, research scholars pursuing Ph.D and other research-based programs. Research is pursued with sophisticated instruments and complex experimental facilities set up in-house for specific research programs. Being at the forefront of research in the country as well as globally, the organizations under the umbrella of HBNI update their experimental facilities on a regular basis, based on the research needs. The research problems selected are all based on the mission of the individual CIs/OCC; however, since all funding is given by DAE, the broad contour of programs is also approved by DAE. Thus, the overall research promotion policy is decided by DAE. Within this envelope, the individual CIs/OCC articulate their research goals, consistent with their mission and strengths. Adequate funding is provided by DAE to all the institutions under its umbrella, and therefore, the institutions do not face constraints for upgrading the research facilities periodically. Such up gradation is done through capital projects, which enable both addition of new facilities, as well as refurbishing or updating existing facilities. For the promotion of research, an organizational incentive scheme is implemented, which encourages multidisciplinary mission-oriented research.

The core function of HBNI is to integrate the academic activities at the CIs and OCC under one framework, provide faculty opportunities for academic collaborations, and provide students opportunities to work on multidisciplinary problems and utilize the state-of-art research facilities available across the CIs/OCC. As a result of this policy, HBNI students are able to undertake research using sophisticated state-of-the art instruments, and unique facilities such as neutron beams at reactor, synchrotron radiation facility, high temperature loops, high performance computers, etc. HBNI also provides a strong mechanism for enhancing the quality of research and synergizing basic research strengths of some of the CIs/OCC with the technology development efforts at other CIs. For example, Ph.D programs can be co-guided by faculty from science and engineering disciplines, or faculty with specialization in different branches of science (eg. Maths and biology). The ordinances and guidelines of HBNI enable mobility of students and faculty across the CIs/OCC, and empower students to

choose guides, problems and facilities. The thesis evaluation schemes also ensure high standards in the research work as well as publications, adherence to high ethical standards and promotion of the spirit of inquiry among employee students.

The research promotion policy of HBNI has been framed to focus on its vision, mission and core values, and has been outlined in the policy document displayed on HBNI website. This document was approved by the Council of Management, the Apex body of HBNI chaired by Secretary, DAE.

File Description	Documents
Upload relevant supporting document	View File

3.1.2 - The institution provides seed money to its teachers for research (amount INR in Lakhs)

0

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

3.1.3 - Number of teachers receiving national/ international fellowship/financial support by various agencies for advanced studies/ research during the year

9

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

3.1.4 - Number of JRFs, SRFs, Post-Doctoral Fellows, Research Associates and other research fellows enrolled in the institution during the year

1935

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

3.1.5 - Institution has the following facilities to support research Central Instrumentation Centre Animal House/Green House Museum Media laboratory/Studios Business Lab Research/Statistical Databases Moot court Theatre Art Gallery

A. Any 4 or more of the above

File Description	Documents
Upload relevant supporting document	View File

3.1.6 - Number of departments with UGC-SAP, CAS, DST-FIST, DBT, ICSSR and other recognitions by national and international agencies during the year	
7	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.2 - Resource Mobilization for Research	
3.2.1 - Extramural funding for Research (Grants sponsored by the non-government sources such as industry, corporate houses, international bodies for research projects) endowments, Chairs in the University during the year (INR in Lakhs)	
1870803462.3	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.2.2 - Grants for research projects sponsored by the government agencies during the year (INR in Lakhs)	
428764898.1	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.2.3 - Number of research projects per teacher funded by government and non-government agencies during the year	
1	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.3 - Innovation Ecosystem	
3.3.1 - Institution has created an eco-system for innovations including Incubation centre and other initiatives for creation and transfer of knowledge	
<p>HBNI has under its academic umbrella eleven institutions of DAE as its constituent institutions (CIs)/off- campus centre (OCC). Out of these, seven are grant-in-aid institutes of DAE, most of which are engaged in fundamental research (eg. HRI, IIMSc, IoP, SINP) or education programmes at MSc level (NISER, HRI) or medical research (TMC). Due to the mandates of these institutions, activities in these institutions are not oriented to technology development.</p>	

In the DAE units under HBNI (BARC, IGCAR, VECC and RRCAT initiatives for creation, transfer and exploitation of knowledge are pursued vigorously. One of the mandates of HBNI is to develop knowledge base and technology solutions for indigenous development of nuclear science and technology, and thus the results of research work of HBNI students in DAE units is often directly relevant to DAE's own programs. Such developments get converted into technologies and products / processes in the industrial units (eg. Nuclear Fuel Complex, Heavy Water Board), commercial unit (Board of Radiation and Isotope technology) and public sector companies (eg. NPCIL, ECIL) under DAE, which thus play the role of incubation as well as implementation centres. Recently, on the occasion of 111th birth anniversary of Dr. Homi Jehangir Bhabha on October 30, 2020, Shri K.N. Vyas, Secretary DAE, Chairman, AEC and Chairman, Council of Management, HBNI remotely inaugurated technology Incubation centres at BARC, IGCAR, RRCAT and IPR. This move is in line with the government's decision regarding opening up technologies developed by DAE institutions to private partners as part of the "Aatmanirbhar Bharat" campaign of the Government of India. An IPR cell at DAE provides guidance and assistance to the CIs/OCC in filing patents.

BARC, a CI of HBNI, has a Technology Transfer and Collaboration Division (TTCD) to assist in the transfer of the technologies developed in BARC as well as other DAE units for commercial exploitation. This division is presently headed by a senior professor of HBNI. In addition, some of the CIs, like BARC, IGCAR, RRCAT, VECC and IPR, have a technology transfer cell/committee which coordinates with TTCD and arranges the logistics for transferring technology developed in the Centre to the industry. The technologies developed in BARC as well as other DAE for public utilization are available for transfer on non-exclusive basis, on the BARC website (<http://www.barc.gov.in/technologies/index.html>) under various areas: Agriculture and Bioscience, Radiation Technology, Advanced Instrumentation, Medical Equipments, Engineering, Environment, Chemical and Water Technologies. In fact, BARC has entered into MoUs with several Agricultural Universities for incubation of technologies for new varieties of seeds. A technology developed by BARC, "Hand held USB powered gamma spectrometer based on CsI single crystal scintillators" is presently available for incubation to the industry (see <http://www.barc.gov.in/technologies/incubation.html>).

IPR has set up Facilitation Centre for Industrial Plasma Technologies (FCIPT) to promote the commercial exploitation of plasma technologies through development, incubation, demonstration, manufacturing and transfer. FCIPT has generated several advanced and non-conventional plasma based technologies for material processing and environmental remediation.

File Description	Documents
Upload relevant supporting document	View File

3.3.2 - Number of workshops/seminars conducted on Research Methodology, Intellectual Property Rights (IPR), Entrepreneurship and Skill Development during the year

Nil

3.3.2.1 - Total number of workshops/seminars conducted on Research methodology, Intellectual Property Rights (IPR), entrepreneurship, skill development year wise during the year

3

File Description	Documents
Upload the data template	View File

Upload relevant supporting document	View File
3.3.3 - Number of awards / recognitions received for research/innovations by the institution/teachers/research scholars/students during the year	
3.3.3.1 - Total number of awards / recognitions received for research/innovations won by institution/teachers/research scholars/students year wise during the year	
41	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4 - Research Publications and Awards	
3.4.1 - The institution ensures implementation of its stated Code of Ethics for research	
3.4.1.1 - The institution has a stated Code of Ethics for research and the implementation of which is ensured through the following	
<ol style="list-style-type: none"> 1. Inclusion of research ethics in the research methodology course work 2. Presence of institutional Ethics committees (Animal, chemical, bio-ethics etc) 3. Plagiarism check 4. Research Advisory Committee 	A. All of the above
File Description	Documents
Upload relevant supporting document	View File
3.4.2 - The institution provides incentives to teachers who receive state, national and international recognitions/awards Commendation and monetary incentive at a University function Commendation and medal at a University function Certificate of honor Announcement in the Newsletter / website	
	D. Any 1 of the above
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4.3 - Number of Patents published/awarded during the year	
3.4.3.1 - Total number of Patents published/awarded year wise during the year	
12	

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4.4 - Number of Ph.D's awarded per teacher during the year	
3.4.4.1 - How many Ph.D's are awarded during the year	
194	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4.5 - Number of research papers per teacher in the Journals notified on UGC website during the year	
2	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4.6 - Number of books and chapters in edited volumes published per teacher during the year	
3.4.6.1 - Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings during the year	
681	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4.7 - E-content is developed by teachers For e-PG-Pathshala For CEC (Under Graduate) For SWAYAM For other MOOCs platform For NPTEL/NMEICT/any other Government Initiatives For Institutional LMS	C. Any 3 of the above
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.4.8 - Bibliometrics of the publications during the year based on average Citation Index in Scopus/ Web of Science/PubMed	

Scopus	Web of Science
Nil	Nil

File Description	Documents
Any additional information	No File Uploaded
Bibliometrics of the publications during the year	No File Uploaded

3.4.9 - Bibliometrics of the publications during the year based on Scopus/ Web of Science - h-Index of the University

Scopus	Web of Science
Nil	Nil

File Description	Documents
Bibliometrics of publications based on Scopus/ Web of Science - h-index of the Institution	No File Uploaded
Any additional information	No File Uploaded

3.5 - Consultancy

3.5.1 - Institution has a policy on consultancy including revenue sharing between the institution and the individual and encourages its faculty to undertake consultancy

DAE strongly encourages sharing of knowledge base and expertise through consultancy. The CIs and OCC of HBNI have a large pool of talent with great expertise in several unique domains that are of high value to other national missions such as space and defense, industries and society at large. The faculty in DAE Units (BARC, IGCAR, VECC and RRCAT) in fact, offer consultancy to several national programs, and particularly for space and defense. BARC also offers consultancy to farmers and other private entities to set up food irradiators, NISARGRUNA plants, production of high yielding / salt tolerant crop varieties, etc (for details refer to <https://technologies.britatom.gov.in/licensees/agriculture-bioscience>). However, the Government rules do not permit DAE scientists to engage in consultancy on individual basis, and therefore sharing of revenue does not arise.

The Grant-in-aid institutions of HBNI do engage in consultancy, and where applicable, they also permit faculty to receive a share of the revenue (eg. NISER). The R & D Manual of NISER, available at the link below, explicitly indicates the policy of consultancy, including sharing of revenue with faculty. <https://www.niser.ac.in/docs/rnd-manual.pdf>

As per this policy, a consultation fee / honorarium can be paid to the faculty members and supporting staff of the institute engaged in the project, up to a maximum of 40% of the cost of the project. The fee would depend on several factors such as importance of the advice and experience of the faculty. However, with the emphasis on meeting the mandates of the institutions, there have been no instances of individuals providing consultancy.

File Description	Documents
Upload relevant supporting document	View File

3.5.2 - Revenue generated from consultancy and corporate training during the year (INR in Lakhs)

3.5.2.1 - Total amount generated from consultancy and corporate training during the year (INR in lakhs)

4.55

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

3.6 - Extension Activities

3.6.1 - Extension activities in the neighbourhood community in terms of impact and sensitising students to social issues and holistic development during the year

CI's/OCC of HBNI has a long tradition of interacting with the community in the neighborhood. The faculty of HBNI takes pride in extending their knowledge base to train and educate the community, through a large number of professional bodies that are functional in these organizations. Faculty also participates as resource persons in the extension/out-reach programs organized by DAE across the country.

Due to nationwide lockdown imposed from March 2020 and later on due to Covid-19 restrictions, educational visits to CI's or outstation outreach activities could not be undertaken by CI's of HBNI. However, dissemination of knowledge to school/college /teachers across the educational institutes across country continued through several webinars conducted by CI's. For example, during the period April 2020-March 2021, IPR, Gandhinagar conducted a total of 27 webinar events for various levels of students as well as science teachers across India and total number of participants for these events was 1475. HRI, Prayagraj also carried its outreach activities in the online mode and various talks were organized for high school students in Mathematics and Physics disciplines which were streamed live on the You Tube channel of institute. (<https://www.youtube.com/channel/UCArkeAUqzwKZT8khGbvDyTQ>).

IMSc. Chennai organized 31 webinars on Computational Biology during the period July - December 2020. The webinars were conducted by speakers from both national and international educational institutes. The detailed information on the webinars is available at the institute website. IOP, Bhubaneswar organized 40+ seminars, colloquia and workshops and conducted outreach programmes targeted at students of schools, colleges and Universities for the popularization of science, Covid-19 pandemic awareness as well as DAE's programmes related to atomic energy. Some of the HBNI faculty from NISER gave webinars on various interesting topics including a talk on Physics Nobel Prize -2020. Under the Vigyan Pratibha Programme, SINP organized various discussion seminars during the year and the participants were trained in various topics based on science and mathematics through discussions and various hands-on activities.

Tata memorial Centre, Mumbai conducted many COVID - 19 awareness and training sessions among healthcare students and professionals in Mumbai metropolitan region. On world cancer day, TMC organized webinar on early diagnosis & prevention of common cancers for student's awareness. Several virtual lectures on cancer risk factors & its prevention, tobacco & alcohol health hazards was delivered on national science day to aware the students about various health issues, and attract them towards medical science carrier.

File Description	Documents
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Upload relevant supporting document	View File
3.6.2 - Number of awards received by the Institution, its teachers and students from Government /Government recognised bodies in recognition of the extension activities carried out during the year	
3.6.2.1 - Total number of awards and recognition received for extension activities from Government / Government recognised bodies during the year	
0	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.6.3 - Number of extension and outreach programs conducted by the institution including those through NSS/NCC/Red cross/YRC during the year(including Government initiated programs such as Swachh Bharat, Aids Awareness, Gender Issue, etc. and those organised in collaboration with industry, community and NGOs)	
71	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.6.4 - Total number of students participating in extension activities listed at 3.6.3 above during the year	
2702	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
3.7 - Collaboration	
3.7.1 - Number of collaborative activities with other institutions/ research establishment/industry for research and academic development of faculty and students during the year	
3.7.1.1 - Total number of Collaborative activities with other institutions/ research establishment/industry for research and academic development of faculty and students during the year	
144	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

3.7.2 - Number of functional MoUs with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the year

38

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

INFRASTRUCTURE AND LEARNING RESOURCES

4.1 - Physical Facilities

4.1.1 - The institution has adequate facilities for teaching - learning. viz., classrooms, laboratories, computing equipment, etc.

All the eleven CIs/OCC of HBNI have adequate state-of-art teaching-learning facilities. The BARC Training School, Mumbai has sprawling building with 14 classrooms and six lecture halls. All classrooms and lecture halls are equipped with LCD facilities as well as internet connection over the BARC LAN. There are two computer laboratories exclusively for students. There is a Process Control Laboratory and a Nuclear Physics Laboratory in the building. Additionally, students have access to more than 150 laboratories in BARC to carry out laboratory work at the cutting edge of science & technology.

Similarly, the BARC Training school at IGCAR operates in a dedicated complex with classrooms provided with thin Client, Projector and LAN facility.

In HRI, there are ten classrooms and discussion rooms for the lectures. Classrooms have projector based teaching facility and are equipped with ICT facilities. There are state-of-art laboratories and a high performance Cluster Computation Facility for scientific computing. The hostels too have Wi-Fi connectivity.

IMSc has adequate class rooms, office rooms and seminar halls for faculty and students. The Office rooms and Class rooms are equipped with fast internet access and have LCD Data projector, Motorized white screen, Black/Green board, LAN &Wi-Fi. A Media center is used for e-learning through video contents. A multi-functional studio is available for video conferencing, web streaming, video recordings, meetings, etc. Remote classroom activities are executed by faculty for other elite institutes.

IOP has four Wi-Fi and internet based classrooms for students. It has two seminar halls equipped with LCD Projectors, white boards and internet connectivity to conduct conferences, seminars and workshops for students and faculty. It also has a computer facility dedicated for scientific computation and IT services.

RRCAT has 4 classrooms for regular teaching, some of them equipped with ICT facilities. The laboratory work is carried out in the 40 departmental laboratories equipped with pertinent equipment and trained manpower. All PhD Scholars and PG students are provided with personal computers and network based centralized high performance computing facilities for research work.

In SINP, there are five classrooms equipped with LCD projector and Wi-Fi facilities. In addition, SINP has a computer lab with more than 30 desktops with internet and computing facilities for the first year PhD students undergoing course work.

There are two lecture halls for seminars and colloquiums; and one large auditorium with audio-visual system for special lectures and events, cultural and outreach programmes.

TMC has adequate facilities of classrooms, teaching aids and access to all relevant journals and books in the library. Students receive training both through didactic lectures and are encouraged to present work in seminars, CMEs and workshops. For practical training, they get adequate exposure to the day-to-day management of patients in the clinic, wards and OTs.

File Description	Documents
Upload relevant supporting document	View File

4.1.2 - The institution has adequate facilities for cultural activities, yoga, games (indoor, outdoor) and sports. (gymnasium, yoga centre, auditorium, etc.)

All the CIs/OCC have excellent facilities for sports, yoga and cultural activities. For the sake of brevity, facilities available in some of the institutions are described below. A majority of the students and the faculty of BARC stay in Anushakti Nagar. The colony has many Badminton courts, Tennis courts, Basket Ball court, Cricket grounds, Football grounds, and multi-purpose halls for indoor games and yoga. There are two community halls for cultural activities. In addition, DAE Convention Centre is used to organize seminars/conferences beside conducting many cultural activities. All these facilities are open for use by students.

HRI encourages sports by providing excellent facilities to the students, faculty, non-teaching staff and postdocs. It has facilities for many indoor/ outdoor sports facilities, viz. badminton court, table tennis facility, swimming pool, football ground, cricket ground, gymnasium, track and field (400 metres), volleyball court, etc. There is a well-equipped community centre for recreational purpose. There is a lounge area in guesthouse where yoga classes are held regularly. Many outdoor games are also organized in football ground.

At IGCAR, the research scholars stay in an Enclave with exclusive facilities of mess, sports, indoor and outdoor games and cultural activities. There are sports facilities exclusively for the research Scholars and also common facilities which can be used by other Students. Some of the facilities are shuttle court, swimming pool, cricket and hockey grounds, tennis court, table tennis, chess, carom, etc. Students participate in various sports competitions within institution and also at inter unit levels. Institute of Physics has an auditorium of 330 capacity where Colloquia, Seminars, Workshops, Conferences, Cultural activities, Social programs are organized regularly. The Institute campus has housing facilities for the students. Both indoor and outdoor games and sports facilities along with minigym are also available in the campus. The Institute also has a guest house, auditorium, and dispensary in the campus.

SINP has indoor game facilities for table tennis, carrom, chess, gymnasium etc. and also facilities for badminton and volleyball. The institute has a joint cultural committee (JCC) with representatives from academic and support staff and research fellows, which organizes annual sports, cricket and football tournaments in the nearby sports facilities. JCC also organizes cultural programmes in SINP auditorium with participation from students and employees. The student hostel of the Institute of Plasma Research has sports room for indoor games. The Gymnasium room has manual treadmill, flat bench, inclined bench, multifunctional machine, dumbbells, rotatable stand, etc. The outdoor games such as shuttle badminton, volleyball are played by the students. Sports event competitions are also conducted in the institute.

TMC has adequate facilities for sports, games (indoor, outdoor), gymnasium, yoga centre and cultural activities. Students participate in sports and cultural activities organized by Recreation Club, such as badminton, table tennis, athletics, cricket, etc. Students are also members of TMH cricket team. Annual events are held during Diwali, Hospital Foundation

Day and Hindi Divas.

File Description	Documents
Upload relevant supporting document	View File

4.1.3 - Availability of general campus facilities and overall ambience

The CIs/OCC of HBNI is world class institutions with excellent campus facilities and related infrastructure. Many of them are situated in idyllic locations with natural bounty, and great emphasis is placed on maintenance of the campus facilities with highest standards. The Central Office of HBNI is situated in Anushakti Nagar which is one of the residential townships of DAE.

The CIs and OCC, especially the DAE units, have sprawling complexes with lush green landscape interspersed with clean wide internal roads having adequate lighting. The campuses of DAE units are guarded 24 x 7. The overall ambience of BARC is awe-inspiring, with buildings of unique world class architecture (eg. the Modular Laboratories building which is one of the longest buildings of such kind). There are 1430 species of plants in BARC campus, which reflects the excellent floral and plants diversity. The campuses of the CIs/OCC also have auditoria of different capacities, post-office, bank, dispensary, several canteens, a co-op. society, etc.

DAE has townships at its major sites and these offer residential facilities for employees, hostels for students, guest houses for visitors, sports and medical facilities for all residents including students, schools for children of employees, recreation centres and shopping centres. Construction and maintenance of these townships follow the policies of the Government including disabled-friendly measures. All hostels have mess, clean toilets and housekeeping facilities; high degree of security with CCTV coverage of some sites (eg. BARC hostel). A variety of sports and cultural events are organised in the townships throughout the year in which students and faculty participate actively. Some campuses nurture birds and animals, eg. peacocks in IPR and RRCAT campuses. Tree planting and growing of flowers are given special emphasis on all campuses, resulting in beautiful ambience. Tree cover attracts birds, eg. greenery of IoP attracts hundreds of migratory birds on their way to the Chilka lake of Odisha, during every winter.

More than 30% of HBNI students pursue their academic programs in BARC. Majority of them stay at Anushaktinagar, a beautiful township, fully self-contained with entertainment, recreation and shopping facilities, swimming pool and other sports facilities. The students are provided with internet and library facilities at HBNI building. A large Convention centre has been established in Anushaktinagar, with multiple halls, to organise conferences and other meetings. HBNI students at BARC are provided accommodation on sharing basis in Anushaktinagar. A new, one-thousand room Hostel for students is now in an advanced stage of completion. For healthcare needs of the students as well as faculty, there are many dispensaries providing for several diagnostic procedures and preventive and curative treatments under the Contributory Health Service Scheme (CHSS) of DAE. There is also a multispecialty hospital (BARC hospital) for specialist and intensive care treatment.

The salubrious and secure facilities and environment in BARC and other CIs/OCC and their townships is very conducive for students and faculty to make their best contributions in their respective domains.

File Description	Documents
Upload relevant supporting document	View File

4.1.4 - Total expenditure excluding salary for infrastructure augmentation during the year (INR in Lakhs)**38711.54649**

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

4.2 - Library as a Learning Resource

4.2.1 - Library is automated using Integrated Library Management System (ILMS) and has digitisation facility

The CIs and OCC of HBNI all have large libraries with extensive collection of books, reports and other documents to serve the faculty as well as students. All these libraries are fully automated using Integrated Library Management System. While some of the CIs are using Libsys, several of the CIs have migrated to KOHA Library Management System. The management of library and its resources at other CIs/OCC are similar, except for scale.

BARC Central Library is one of the most comprehensive and biggest of its kind in Asia with a collection of more than 7,00,000 documents including 1,10,000 books and 1,50,000 bound volumes on fields related to nuclear science and technology. Automation is essential to manage such a large collection.

Automation of the library services in BARC started in 1999 with barcode based check-in and check-out of documents and computer-based library management and upgradation of ILMS with all modules like Acquisition, Cataloguing, Circulation, Serials, OPAC (Online Public Access Catalogue), etc. In 2012, an ISO15693 / 18000-3 compliance based 13.56 MHz RFID System was implemented and integrated with the then existing ILMS. Currently this system is being extensively used by the readers with Self-Kiosk RFID system. RFID technology using Hand-held Stock/ Inventory System, Staff stations for RFID tagging, etc., have improved the efficiency of the Library services.

OPAC is an important module of ILMS in readers being able to know the availability of books and the status of its issue through the campus-wide network SARASWATI (<http://saraswati.barc.gov.in>), which also enables access to a large number of documents such as standards and reports on the Users' desktops. A large number of users access OPAC for renewal and reservation of books while more than 70% transactions happen on Self-Kiosk RFID system.

BARC Library makes available to its members various subscribed online resources such as Journals, Standards, Databases and eBooks through the online Information Gateway LAKSHYA (<http://lakshya.barc.gov.in>). While LAKSHYA is available only within the BARC Trombay, the readers are now able to access the resources on LAKSHYA from anywhere through a cloud facility HOoA (Home Office or Anywhere).

Digitisation of various types of content is an inseparable part of automation. BARC library has been digitising various documents, such as reports, BARC Newsletters, BARC reports, PhD theses from BARC scientists, which originated in the institute and not protected by copyright. A large numbers of reports in the form of micro- fiche films and micro-cards sourced from various international nuclear science laboratories have been digitized. BARC Library has also been archiving various news items on nuclear science related news items appearing in the print media since 2000.

In the year 20-21, HRI has installed RFID based Security Gate integrated with Koha LMS, Version 19.11.12, at cost of Rs. 16.19 Lakhs

File Description	Documents
Upload relevant supporting document	View File
4.2.2 - Institution has subscription for e-Library resources Library has regular subscription for the following: e - journals e-books e-ShodhSindhu Shodhganga Databases	A. Any 4 or all of the above
File Description	Documents
Upload relevant supporting document	View File

4.2.3 - Annual expenditure for purchase of books/ e-books and subscription to journals/e-journals during the year (INR in Lakhs)

5627.7992

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

4.2.4 - Number of usage of library by teachers and students per day (foot falls and login data for online access)

2900

File Description	Documents
Upload relevant supporting document	View File

4.3 - IT Infrastructure**4.3.1 - Number of classrooms and seminar halls with ICT - enabled facilities such as LCD, smart board, Wi-Fi/LAN, audio video recording facilities during the year**

182

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

4.3.2 - Institution has an IT policy, makes appropriate budgetary provision and updates its IT facilities including Wi-Fi facility

The CIs/ OCC of HBNI are all research institutions of high eminence, pursuing a large variety of research programs in different disciplines. Some of them have very large number of staff, which makes it very important to have a campus wide network of IT facilities to enable academic as well as administrative processes. All CIs of HBNI also pursue computational and modelling activities as part of their research, for which the IT infrastructure is essential. Due to security reasons, the network in some of the institutions are restricted with regard to access. However, in many of the CIs, Wi-Fi facility is available across the campus. All CIs/OCC of HBNI have set up and periodically upgraded their IT facilities through funding made available by DAE.

All the desktops of the faculty, students, post-doctoral fellows and visiting fellows are periodically upgraded with the newer version of Operating Systems. Newer versions of several applications software and packages are time-to-time upgraded on users' systems, computer centre and conference room systems, enabling the researchers to do their numerical and analytical calculations faster and obtain more precise results.

Since many CIs of HBNI are strategic facilities, protection of the network and websites through elaborate security systems is an important requirement. Since data security is a prime concern in the DAE organizations, the access to these facilities is governed by a comprehensive Internet and Network Security Policy. The antivirus programs are frequently updated. Firewall rules are time-to-time modified to increase the security level of the servers. All the servers facing

direct Internet are well protected. Users' machines are also well protected and are behind the firewall. While most of the academic software are open source, a few commercial software for academic use are also loaded on servers and standalone machines for use in computations by the faculty and students.

All the administrative staff including the project and contractual staff have also been provided a desktop each with the required software so that they can do their work efficiently and timely.

For use in computation-intensive research and development programs, high performance computation facilities have been established by several CIs. For example, at BARC, the Anupam series of in-house developed supercomputers offer high computational capability. Similar high performance computation clusters are available at IGCAR, RRCAT, HRI, IoP etc. Such systems are periodically updated to enhance the computation capability as required by the research programs. HBNI is committed to exploit the advantages of digital initiatives and use its IT infrastructure to deliver quality course content to students, to serve as a medium to interact with students and faculty, and to facilitate secure and easy updation of data.

File Description	Documents
Upload relevant supporting document	View File

4.3.3 - Student - Computer ratio during the year

Number of students	Number of Computers available to students for academic purposes
4267	4567

4.3.4 - Available bandwidth of internet connection in the Institution (Leased line)

- ≥1 GBPS

File Description	Documents
Upload relevant supporting document	View File

4.3.5 - Institution has the following Facilities for e-content development Media centre Audio visual centre Lecture Capturing System(LCS) Mixing equipment's and softwares for editing

- A. All of the above

File Description	Documents
Upload relevant supporting document	View File
Upload the data template	View File

4.4 - Maintenance of Campus Infrastructure

4.4.1 - Total expenditure incurred on maintenance of physical facilities and academic support facilities excluding salary component during the year

10962.79

File Description	Documents
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Upload the data template	View File
Upload relevant supporting document	View File

4.4.2 - There are established systems and procedures for maintaining and utilizing physical, academic and support facilities - laboratory, library, sports complex, computers, classrooms etc.

The CIs/OCC of HBNI have world class academic and physical infrastructure in terms of laboratory facilities, library, computing systems, etc., and also other supporting facilities such as hostels and sports complexes. High emphasis is placed on maintenance of these facilities and periodic upgradation so that the productivity of the organisations is sustained and improved. Every CI/OCC has set up dedicated administrative structures for this purpose. In larger CIs (eg. BARC, IGCAR), a separate Division looks after the library or computation facilities. Maintenance of computers and attending to the breakdown / repair issues is done by contract. The Scientific & Information Resource Divisions in CIs, eg. BARC, IGCAR and RRCAT look after the library facilities, including periodic refurbishment, renewal of contracts and utilization of the library. The larger CIs/OCC also have a Human Resource Development Division which also looks after the classroom infrastructure, and technical services section / division to provide maintenance support to the infrastructure. In smaller establishments under DAE, committees are formed that include academicians and administrative personnel (and often as an invitee, students representative) to take care of the maintenance and upgradation of the academic facilities (eg. HRI). The committees make recommendations for any upgradation that is put up for sanction of Director, subsequent to which the unit of administration takes steps to implement. Examples of such committees include Space Planning and Allocation Committee (IMSc) headed by the Director himself to decide policies and take overall decisions on Infrastructural, Office space availability for Faculty members, Research Scholars and others. The support infrastructure (eg. hostels, sports complexes including swimming pools, cricket grounds, courts for tennis and other games) are also maintained by separate committees. In larger DAE units such as BARC and IGCAR, a separate organization (DCSEM, GSO) under DAE looks after maintenance of the infrastructure and its periodic upgradation. To address maintenance issues, several of the CIs have online registration of complaints (eg. BARC, IGCAR, IPR).

For utilization of the sports facilities, most of the CIs/OCC have evolved on-line booking system. User Committees are set up to regulate the usage of the facilities. Similarly, use of library from one's own desktop is very common in the CIs/OCC, with a large number of e-resources available on-line. In fact, physical visit to library is usually required only for consulting / drawing / returning books and hard copy reports. Many libraries have been provided funds to digitize reports to make them available on desktops for effective utilization. Laboratory equipment are maintained through service contracts with the suppliers. Periodic upgradation of the lab facilities including scientific instruments, crucial for carrying out R & D in frontline areas, is carried out through capital projects funded by DAE. Thus, the expenditure for maintenance as well as upgradation of the academic and physical infrastructure are met by DAE and therefore, the CIs and OCC of HBNI have state-of the art systems functional in their units for the utilization by faculty as well as students.

File Description	Documents
Upload relevant supporting document	View File

STUDENT SUPPORT AND PROGRESSION

5.1 - Student Support

5.1.1 - Total number of students benefited by scholarships and free ships provided by the institution, Government and non-government agencies (NGOs) during the year (other than the students receiving scholarships under the government schemes for reserved categories)	
3357	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
5.1.2 - Total number of students benefited by career counselling and guidance for competitive examinations offered by the Institution during the year	
0	
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
5.1.3 - Following Capacity development and skills enhancement initiatives are taken by the institution Soft skills Language and communication skills Life skills (Yoga, physical fitness, health and hygiene) Awareness of trends in technology	A. All of the above
File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File
5.1.4 - The Institution adopts the following for redressal of student grievances including sexual harassment and ragging cases Implementation of guidelines of statutory/regulatory bodies Organisation wide awareness and undertakings on policies with zero tolerance Mechanisms for submission of online/offline students' grievances Timely redressal of the grievances through appropriate committees	• All of the above
File Description	Documents
Upload relevant supporting document	View File
5.2 - Student Progression	
5.2.1 - Number of students qualifying in state/ national/ international level examinations during the year (eg:NET/SLET/GATE/GMAT/CAT/ GRE/TOEFL/Civil Services/State government examinations)	
5.2.1.1 - Number of students who qualified in state/ national/ international examinations (e.g.: IIT-JAM/NET/SET/JRF/ GATE /GMAT /CAT/ GRE/ TOEFL/Civil Services/State government examinations) during the year	

42

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

5.2.2 - Total number of placement of outgoing students during the year

242

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

5.2.3 - Number of recently graduated students who have progressed to higher education (previous graduating batch) during the year

94

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

5.3 - Student Participation and Activities**5.3.1 - Number of awards/medals won by students for outstanding performance in sports/cultural activities at inter -university/state/national/international events (award for a team event should be counted as one) during the year**

0

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

5.3.2 - Presence of Student Council and its activities for institutional development and student welfare

HBNI believes that participative decision making can be a significant factor in Institute's success. By motivating the students in active participation in decision making, the Institute runs more efficiently and is more effective at achieving its objectives and goals. Accordingly, as part of good practices followed by HBNI, students are involved in various decision making processes of the CIs and OCC of HBNI and find representation in various committees set up the CIs/OCC.

The unique aspect of HBNI is that students of HBNI are spread over ten different Constituent Institutions and one Off-campus Centre. Also, a significant fraction of HBNI students (approx. one third) are Ph.D students, who receive individual attention through the Doctoral Committees. Therefore, involvement of students in various activities varies

from CI to CI depending upon the profile of the students and the academic programs run in the respective CI/OCC.

In IGCAR, the Complaints Committee constituted by Director to look into issues of sexual harassment has two representatives from students. A dedicated committee with students' representatives has been set up to deal with matters related to students belonging to SC&ST. The anti-ragging committee also has representative from students as a member.

Similarly, at other CIs, Internal Complaints Committee (Gender Bias Redressal), the Advisory Committees for Guest house / hostel, Library Committee, Official Language Implementation Committee, Sports / Gym Committee, Canteen Menu Committee, Cultural Committee etc. have representation from students. In several CIs, for example RRCAT, some of the facilities associated with students are managed exclusively by the students themselves, eg. the mess facility, library facility provided in the hostel, gymnasium, sports facilities, etc. are managed by the respective committees comprising of students.

In some of the CIs, student participation is also encouraged in the teaching activities. IMSc operates a Pilot Programme on "Teaching Assistantship" with active participation of the Post- Doctoral Fellows and Students of the Institute in teaching activities in order to provide them opportunity to improve their Teaching skills. The students also participate in organizing special events along with their mentors. For example, the prestigious Annual Outreach Event of the Institute "Science at Sabha" featuring talks on science for the general public, in which over a thousand participants take part, sees the active participation of the students in the organizational aspects. Research scholars similarly participate in organising conferences in the CIs/OCC. In other CIs (eg.IGCAR, SINP), research scholars are also encouraged to exhibit their talents by bringing out Research Scholar's magazine. Research scholars are also encouraged to organise exclusive meet of Research Scholars on particular themes. For example, at IGCAR and ACTREC/TMC, research scholars take the complete responsibility for planning and organisation of scientific meeting of research scholars. Research scholars in SINP also organize annual programmes like blood donation camps and tree plantation. At NISER, student representatives are present in several bodies including Academic Council.

File Description	Documents
Upload relevant supporting document	View File

5.3.3 - Number of sports and cultural events / competitions organised by the institution during the year

7

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

5.4 - Alumni Engagement

5.4.1 - The Alumni Association/Chapters (registered and functional)contributes significantly to the development of the institution through financial and other support services during the year

HBNI is a research university and a predominant fraction of its students are research scholars. Alumni of HBNI have occupied several key positions, particularly in academics. In the DAE units, a significant number of the students are employees. The contributions of alumni of HBNI, therefore needs to be seen from the perspective of nuclear energy

development also. Several alumni are leading R&D programs in DAE units and mission oriented activities such as nuclear reactor design, development of fuel cycle, mining of nuclear materials, etc.. The alumni of HBNI have also provided leadership to professional bodies.

Many of the CIs/OCC of HBNI maintain an active alumni program, regularly interact with them through email networks, track their progress and invite them to programs organised in the institution so that the current students can be inspired by the interactions. The DAE units under HBNI being central government funded national laboratories, do not have any provision for accepting the financial and non-financial contribution from alumni towards the development of the institute. However, some of the CIs/OCC, which are Grant-in-aid institutes of DAE, do obtain financial support from the Alumni for various programs in the respective institutions.

SINP Alumni Association, formed in 2007, is a registered society which organizes seminars and lectures on popular and contemporary topics on a regular basis.

The alumni association of ACTREC/TMC is registered under the Society Registration Act 1860 as well as Mumbai Public Trust Act 1950. The alumni association, launched in 2006, regularly organises meetings of alumni.

TMC has an active Alumni association, though it is not a registered Society. The members usually gather for the Foundation Day celebrations around the last week of February/ 1st week of March, annually. This is the time when an Evidence-Based Management Conference on some aspects of Oncology/ Disease Site is held at the Tata Memorial Hospital. It is attended by several past students as well as by other oncologists across the country. In addition, there are certain meetings that are held every year by different departments in the Hospital which are also well attended by faculty. The Alumni, in addition to being registered participants, sometimes act as faculty in these meetings, depending on their expertise and the theme of the meeting. Additionally, when Alumni visit the Institute, they are invited to share their experiences and academic work through talks organised at the TMH. In addition, non-academic gatherings are also organised during such visits. The purpose is to hear and learn from their experiences, both curricular and extra-curricular and also to create an opportunity for present students and residents to interact with the Alumni regarding opportunities available for career advancement and the way to apply for fellowships and similar opportunities abroad in Institutes of repute.

File Description	Documents
Upload relevant supporting document	View File

5.4.2 - Alumni contribution during the year (INR in Lakhs)	E. <1Lakhs
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File Description	Documents
Upload relevant supporting document	View File

GOVERNANCE, LEADERSHIP AND MANAGEMENT

6.1 - Institutional Vision and Leadership

6.1.1 - The institution has a clearly stated vision and mission which are reflected in its academic and administrative governance

HBNI was established with the mission of contributing to the development of indigenous nuclear technological capability through the pursuit of excellence in academic programs in sciences (including engineering sciences) and mathematics.

The vision of HBNI is:

- To provide an academic framework for integrating basic research with technology development.
- To encourage inter-disciplinary research.
- To nurture an environment for attracting high quality manpower in the sciences including engineering sciences to take up a career in nuclear science and technology and related areas.

In line with the mission and vision, HBNI has pursued a path of excellence that has provided very valuable, large body of research work, and created human resources of high caliber, that have greatly aided in the development of nuclear science and technology in the country. This has been made possible by the unique Governance structure of HBNI.

To deal with the diversity of academic programs and R&D goals of the CIs and OCC, HBNI has set up a unique distributed academic governance mechanism, that has ensured that the institutions are able to meet their individual objectives and at the same time, adhere to a common set of academic standards and processes. The Academic Council of HBNI has as its members the Directors of all the CIs/OCC, as well as Conveners of the Boards of Studies. Every institute under HBNI has Deans to deal with the academic aspects of their programs. In addition, a Standing Committee of Deans, comprising of Deans (Academic) from all the institutions, ensured harmony in the processes. The Boards of Studies also have representatives from every CI and OCC, besides experts from other reputed institutes . The Doctoral Committee for every student has preferably, a member from another CI. These features have helped in integrating the basic research focus in the grant-in-aid institutions with the mission-oriented approach in the R & D units.

The administrative structure of HBNI is also unique. The CIs/OCC have their own administrative structure, and take care of matters relating to admission of students, organizing examination, infrastructure for students and financial support for the academic programs. These have reduced the administrative requirement at the Central office, which focuses more on continuous improvement in academic programs, schemes for student mobility across CIs and maintenance of uniformly high academic standards. The present Chancellor of HBNI is former Secretary of the DAE. The Chairman of the Council of Management is the current Secretary of DAE. The leadership of the University by the highest authority in the Department has provided the necessary thrust to the University to introduce courses that would be of value to the mission programs of the Department, and create an impact on the society, which are two important objectives of the University.

Such structure has led to the success of HBNI in terms of high value contributions to the Department and to the Society at large, the twin objectives with which it was set up.

File Description	Documents
Upload relevant supporting document	View File

6.1.2 - The effective leadership is reflected in various institutional practices such as decentralization and participative management

HBNI is a unique research University, integrating the academic strengths of ten CIs and one Off-campus Centre, each having its own mission and areas of research specialization. To achieve success in its programs, HBNI has to account for the diversity and at the same time to synergize the strengths of its CIs/OCC. To meet this requirement, the organizational structure of HBNI is indeed truly decentralized. The responsibilities for activities such as selection and admission of students, payment of fellowships, guidance and monitoring of progress of students, redressal of grievances

of students, organization of exams and providing hostel accommodation are under the purview of the CI/OCC. The Director of the CI/OCC provides overall guidance to the academic programs at the CI and sets up necessary organizational structures for the conduct of the academic programs with rigor. Discipline specific Standing Academic Committees are set up at each CI which evaluate research proposal, allocate guide, prescribe the course work for the students and also forms the Doctoral Committee. Every CI/OCC has one or more Deans (Academic), depending on the disciplines handled by the CI/OCC, and one Dean (Student Affairs) and a Nodal Officer who handle all the academic Governance and students' welfare activities. The Central Office provides overall governance for the academic programs and ensures harmony in processes adopted in the CIs/OCC, adherence to guidelines of statutory bodies and uniform, high standards in every process.

The success of the academic integration referred to above has been greatly facilitated by the participatory management approach. The Academic Council of HBNI has Directors of all the CIs/OCC as well as conveners of Boards of Studies as its members. All major decisions on academic programs and processes are made in the Academic Council with participation of all the important functionaries of HBNI. This has ensured that the institutions are able to meet their individual objectives and at the same time, adhere to a common set of academic standards and processes. Similarly, the Standing Committee of Deans (SCD) of HBNI, chaired by Vice Chancellor, has as its members Deans (Academic) and Deans (Student Affairs) of all CIs and OCC. The finer aspects of academic governance are discussed in detail in the meetings of SCD.

The procedure adopted for the revision of Academic Ordinances of HBNI in the year 2017-18 is an example that clearly illustrates the philosophy of participative management. Considering the comprehensive changes required, the revised ordinances were first drafted through several detailed deliberations within the Central Office. These were then discussed in meetings of the Standing Committee of Deans, where Deans (Academic) from all CIs and OCC participated and shared their views. The ordinances were then discussed in the Academic Council, where the Directors of CIs/OCC as well as academic experts from outside HBNI provided a number of important inputs. The revised ordinances were finally placed in the Council of Management which also made many important suggestions. The revised ordinances issued in Dec. 2018 had the inputs from all the academic functionaries.

File Description	Documents
Upload relevant supporting document	View File

6.2 - Strategy Development and Deployment

6.2.1 - The institutional Strategic plan is effectively deployed

One of the elements of the strategic plan of HBNI is to introduce additional academic programs focused on skill and professional development. HBNI endeavors to create and organize courses and programs that meet growing requirements of nuclear science and engineering and their applications for benefit of the country. These programs benefit not only employees of DAE units, but also the practicing professionals in industries and other institutions. Along these lines, HBNI has initiated important professional and skill-based programs and strengthened on-going professional courses. Some examples are given below:

- Professional courses in health sciences: Two professional courses, namely MD in Nuclear Medicine and DM in Onco-Pathology have been introduced. Nuclear medicine is a branch of medicine that uses a small quantity of radioactive material (radiopharmaceutical) to diagnose, evaluate, or treat a variety of diseases in a safe, painless, and cost-effective way. Two CIs of HBNI, namely BARC and TMC, have initiated this academic program with the approval of Academic Council. Presently, TMC and BARC together offer 12 MD (Nuclear Medicine) seats per year with the permission of MCI. In addition to this, TMC has also introduced an important DM program in Onco-Pathology with three seats per

year. This branch of science deals with the study of malignant and non-malignant tumours, metastasis, tumorigenesis, and carcinogenesis.

- TMC has significantly increased the number of seats in many on-going DM, MCh and MD professional programs during the last few years, towards meeting the demand for such professionals in the country. Some of these are:

M.Ch. (Surgical Oncology) - by eight seats

M.Ch. (Plastic & Reconstructive Surgery), D.M. (Medical Oncology) and M.D. (Palliative Medicine) - by two seats each

D.M. (Interventional Radiology), D.M. (Paediatric Oncology), D.M. (Critical Care Medicine) - by one seat each.

- **Diploma in Analytical Chemistry:** With analytical techniques and instrumentation becoming ever more sophisticated, there is an increasing demand for qualified analytical chemists in the industry. However, due to the high capital cost as well as maintenance cost, such sophisticated instruments are not affordable by most of educational institutes. Therefore, chemistry graduates coming from the educational institutes lack the skill or knowledge base to handle such techniques or instruments. With a high level of expertise in analytical chemistry and world class analytical equipment available in its CIs, HBNI is uniquely placed to offer courses to upgrade the skills of chemists. Accordingly, a diploma course in analytical chemistry has been introduced in BARC.
- **Introduction of MSc (Radiopharmacy) course:** This is another skill-based program introduced in TMC with the approval of Academic Council. This course provides opportunities to the students to develop knowledge, understanding and skills in principles and practice of radiopharmaceutical science and equips them to work as a radiopharmaceutical scientist.

The above mentioned courses are unique courses of high value, available only in a few Universities in the country. HBNI will continue its endeavour to identify and offer more such skill-based and professional courses for the benefit of the society and country.

File Description	Documents
Upload relevant supporting document	View File

6.2.2 - The functioning of the institutional bodies is effective and efficient as visible from policies, administrative setup, appointment and service rules, procedures, etc.

HBNI is a Grant-in-aid Institute (GIA) of the DAE. HBNI integrates and regulates the academic activities carried out under 4 DAE units and seven GIAs. Each of these institutions is an organisation of high repute, and most of these have been established well before the formation of HBNI. To provide a high level of autonomy to these institutions to pursue their mandates, and at the same time to ensure adherence to common academic policies, a unique organisational structure has been devised by DAE.

The apex body that oversees the functions of HBNI and provides overall guidance and directions, particularly in the domain of administration and finance is the Council of Management, headed by Secretary, DAE. This body ensures that the intent of formation of HBNI, and its adherence to Government guidelines and procedures, are ensured. To aid the Council of Management in the finance matters, a Finance Committee has been constituted, which is responsible for the budget of the institute and preparation of annual accounts, for submission to the Council of Management and thereafter to the Government.

The Academic Council, chaired by the Vice Chancellor, is the principal academic body of the Institute and is responsible for the maintenance of standards of teaching, research and training, approval of syllabus, according recognition to faculty, co-ordination of research activities, examinations and tests within the Institute. The Directors of all the Constituent Institutions and Off-campus Centre are members of this body, which ensures that the academic programs of HBNI have uniform and high standards.

The Planning & Monitoring Board is the main planning body of the Institute and is responsible for the monitoring of the development programmes of the Institute.

Board of Studies have been constituted for each major discipline to oversee various processes in the design and conduct of the academic programs. The BoS have members drawn from all CIs/OCC to ensure uniform implementation of academic policies.

The Vice Chancellor, Dean and Registrar are recruited as per recruitment rules specifically approved by Government. The other officers of HBNI are on the rolls of BARC and are given suitable designations to carry out HBNI functions. The service rules of the Government apply to these officers.

In general, the Rules/Regulations of the Government and clarifications issued by Government under these Rules from time to time are applicable to all the employees serving HBNI. These include tenure of service, promotion policies, Pay and allowances, pension rules, accommodation, leave rules, etc. The CCS (Conduct) Rules and CCS (CCA) Rules and the Govt. of India Orders/OMs/Clarifications issued under these Rules will be applicable to the employees of HBNI.

For addressing and redressal of grievance of students, a Grievance Redressal Committee exists in each of the CIs/OCC and also at the Institute level. A womens' cell has also been constituted at the CI level as well as Institute level.

The unique administrative and academic structure of HBNI has aided in its smooth functioning and promoted excellence in every sphere of its activities.

File Description	Documents
Upload relevant supporting document	View File
6.2.3 - Institution Implements e-governance in its areas of operations	
6.2.3.1 - e-governance is implemented covering following areas of operation 1. Administration 2. Finance and Accounts 3. Student Admission and Support 4. Examination	A. All of the above

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

6.3 - Faculty Empowerment Strategies

6.3.1 - The institution has a performance appraisal system, promotional avenues and effective welfare measures for teaching and non-teaching staff

The CIs and OCC of HBNI are either DAE units or Grant-in-aid institutions of DAE. All the CIs/OCC follow a robust and transparent mechanism of appraisal of performance of the staff, as per DAE guidelines. The faculty as well as non-teaching staff provide an Annual Performance Appraisal Report (APAR) to the Department, as a part of the Annual Performance Appraisal System. The report is designed differently for Officers and Technical employees. The APAR is evaluated based on several attributes covering personal qualities, work output and functional competency, with weightage factors depending on the role played by staff member. The assessment by the immediate superior is reviewed by a reviewing officer and finally by the Head of the Group or the Head of the Unit. The APAR grading is conveyed to the officer reported upon and opportunity is given to make any representation with respect to the grading. The representation of the individual is dealt as per the procedure. A unique Performance Related Incentive Scheme (PRIS) is operated by DAE, which provides incentive to all the employees based on their individual performance and collective performance with respect to specific targets. There is a DAE Awards Scheme having awards in different categories. In addition, HBNI also has its own awards scheme for outstanding students and faculty members.

The DAE units operate a unique promotion scheme based only on merit, in the case of teaching as well as non-teaching scientific and technical staff. As per this scheme, the staff are promoted to the next higher grade after meeting performance requirements, without linkage to availability of a vacancy.

All the administrative and accounts personnel are governed by a set of common rules approved by DAE. Promotional avenues are available for all the categories of employees to climb the ladder in their career, subject to availability of vacancies in the respective cadre. In addition, after completion of a minimum residency period in a cadre, the employee is eligible to be empanelled for a higher post after passing a qualifying examination and an interview. Key managerial posts such as Chief Administrative Officer and Internal Finance Officer are filled by transfer, promotion or through fresh recruitment by advertisement for the vacant post.

The teaching as well as non-teaching staff in the CIs/OCC enjoy all the welfare measures offered by the Government to its employees. These include residential accommodation where available (or house rent allowance), transport facility, Leave Travel Concession (LTC) benefit, House Building Advance at concessional interest rates for construction of houses, update allowance, Welfare Scheme covering Insurance and Savings called "Group Insurance Schemes", Children Education Allowance, etc. DAE offers hospital facilities at many of its sites, and also operates a unique Contributory Health Service Scheme that provides immense medical benefits to its employees. All the employees are governed by Pension or Contributory Provident Fund based upon their option. Special benefits are available to female employees such as Maternity Leave and Child Care Leave as per Government rules.

File Description	Documents
Upload relevant supporting document	View File

6.3.2 - Total number of teachers provided with financial support to attend conferences / workshops and towards membership fee of professional bodies during the year

15

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

6.3.3 - Number of professional development / administrative training Programmes organized by the institution for teaching and non-teaching staff during the year

30

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

6.3.4 - Total number of teachers undergoing online/ face-to-face Faculty Development Programmes (FDP)during the year(Professional Development Programmes, Orientation / Induction Programmes Refresher Course, Short Term Course)

73

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

6.4 - Financial Management and Resource Mobilization

6.4.1 - Institutional strategies for mobilisation of funds and the optimal utilisation of resources

HBNI is a grant-in-aid institution (GIA) of DAE, Government of India, and is fully funded by DAE. The CIs / OCC of HBNI are either units of DAE, or grant-in-aid institutes of DAE. Thus, HBNI and its CIs/OCC receive grants from DAE as per Government procedures and there is usually no need to look for additional financial resources.

Funds for BARC, IGCAR, RRCAT and VECC, which are DAE units, are received from Central Government for Capital as well as Revenue Sectors through budget allocation provided by Ministry of Finance. For this, Budget proposals are submitted to DAE for consolidation and eventual submission to Ministry of Finance. Based on the gross allocations made by Ministry of Finance, DAE makes object head-wise allocations to its constituent Units based on which the expenditure is incurred by the DAE units. Commitments and Expenditure are monitored on a regular basis through Project Coordinators and Accounts Division. Any additional funds found to be required through such monitoring are sought for from DAE or excess fund is surrendered through re-appropriation at Final Requirement stage which is prepared in January each year. Thus, a robust system is in place for mobilization of funds and its optimal utilization.

All the expenditure for the operation and maintenance of the seven GIA, which are CIs/OCC of HBNI, including the salaries and fellowships to be paid to the faculty / non-teaching staff and research scholars are met from the budgetary grant each year. For this purpose, comprehensive annual budgetary requirements along with monthly expenditure projection of the current and next financial years are presented to the Department for its consolidation and approval. Similarly, the grants for the creation of Capital Assets including infrastructure and experimental facilities are released by the Department on quarterly basis on consideration of the particulars submitted by the GIAs. The un-utilised portion of grants are adjusted by the Department against the future grants under consideration for release.

In addition to the above-mentioned grants, some of the CIs/OCC also receive funding from other Government departments such as DST, DRDO, CSIR for specific projects. Some GIAs such as TMC also receive grants/endowments from beneficiaries/ well-wishers for special schemes such as providing benevolent support to the underprivileged in cancer treatment. In the recent past, HBNI central office has also received endowment funds for instituting schemes for promoting excellence among students.

The utilization of the grants is closely monitored by a dedicated finance unit at all the CIs/OCC, and depending upon the item of expenditure and the quantum of funds required, various statutory committees scrutinize the proposal before approval by the Apex body. The expenditure at Central office is closely monitored by Finance committee for optimum utilization of funds. Wherever major expenditure is to be incurred, the approval process involves various stages of scrutiny, and approval is accorded by the Apex body, the Council of Management. In all cases, Government guidelines / norms are always adhered to.

File Description	Documents
Upload relevant supporting document	View File

6.4.2 - Funds / Grants received from government bodies during the year for development and maintenance of infrastructure (not covered under Criteria III and V) (INR in Lakhs)

297.4

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

6.4.3 - Funds / Grants received from non-government bodies, individuals, philanthropists during the year for development and maintenance of infrastructure (not covered under Criteria III and V)(INR in Lakhs)

10367.17

File Description	Documents
Upload the data template	View File
Upload relevant supporting document	View File

6.4.4 - Institution conducts internal and external financial audits regularly

Homi Bhabha National Institute (HBNI) is a Grant-in-Aid Institution (GIA) of Department of Atomic Energy (DAE), Government of India, and is fully funded by DAE. The CIs / OCC of HBNI are either units of DAE, or grant-in-aid institutes of DAE. Thus, HBNI and its CIs/OCC receive grants from DAE as per Government procedures. The expenditures are incurred in the most optimum manner by following the guide lines issued by Ministry of Finance, Department of Atomic Energy and following all Financial rules and Regulations of Government of India.

In accordance with HBNI Financial Rules, 2014 Rule 2, the Institute adopts the General Financial Rules (GFR), Civil Account Manual for accounting the Grants-in-Aid received from DAE. Utilisation Certificates are being furnished to DAE at the end of each financial year. Also, as per Rule 4 (a) of HBNI Financial Rules, 2014, HBNI is registered as a Charitable Institution under the Bombay (Mumbai) Public Trust Act, 1950 (Charity commission, Mumbai) and therefore, audited financial statements are being filed every year also with Charity Commission.

As per Rule 4 (e) of HBNI Financial Rules, 2014, yearly auditing of accounts of the Institute is done by a Chartered Accountant (Statutory Auditor) appointed by the Institute with the approval of Council of Management. The Statutory auditor certifies the financial statement of the institute on a yearly basis. The certified Financial statement duly approved by the Council of Management and signed by the Reporting Trustee is filed with the office of the Charity Commissioner, Mumbai every year. The certified financial statement is also included as part of the annual report of HBNI, which is approved by Council of Management of HBNI, and forwarded to DAE for tabling in the Parliament.

The Institute Finance Committee, chaired by Vice Chancellor, and having two joint secretaries in DAE as well as the Finance Officer as its members, discusses and approves the finance statement, each year, and also discusses comments / audit paras, if any. HBNI has not so far received any objections from audit regarding the finance statements.

HBNI being a Grant-in-Aid Institution (GIA) of DAE, all finance records are liable to be audited on yearly basis by Internal Inspection Wing of the DAE and external audit by the Director General of Audit (Scientific Departments), Indian Audit & Accounts Department, Mumbai Branch under Comptroller and Auditor General (C & AG).

The CIs/OCC of HBNI are either DAE units or Grant-in-aid institutes fully funded by DAE. Thus all CIs and OCC of HBNI follow a similar, DAE approved practice with regard to internal and external auditing of accounts. The Department of Purchase and Stores, which handles the procurement activities of the DAE units, has an internal audit wing, which pre-audits all major purchase orders before they are approved for placement.

File Description	Documents
Upload relevant supporting document	View File

6.5 - Internal Quality Assurance System

6.5.1 - Internal Quality Assurance Cell (IQAC) has contributed significantly for institutionalizing the quality assurance strategies and processes by constantly reviewing the teaching learning process, structures & methodologies of operations and learning outcomes at periodic intervals

Internal Quality Assurance Cell (IQAC) is a body of high importance in the University system. It serves as a sounding board for the management in its quest for excellence and helps to bring out quality improvements in several domains. The IQAC debates on a variety of subjects including teaching and learning processes, academic and physical infrastructure, student progression, faculty empowerment etc., and provides recommendation to the University to take appropriate steps.

The academic and administrative structure of HBNI is unique. The CIs and OCC are administratively independent; they are

also solely responsible for several academic functions such as selection and admission of students, infrastructure development and student support as first responders, proposal / revision of courses to support their mission programs, etc., at the same time following uniform, overarching guidelines arrived at the University level. The CIs and OCC accordingly have their own bodies / forums that look at quality improvements with regard to academics as well as administration. In addition, HBNI Central Office also drives the quality movement, designing and implementing new processes / procedures across the CIs/OCC, to enhance the delivery of quality measures.

At HBNI, IQAC was first set up in 2014 and its functioning has been strengthened in the recent years.

1. Timeline for Ph.D. programs: it was noted that the total time taken for award of Ph.D. degree after submission of thesis needed to be reduced to enable students to move on in their career. The procedural steps after submission of synopsis by the student were reviewed and it was concluded that the review of thesis can be speeded up by forwarding the thesis to three reviewers simultaneously instead of two. This was deliberated in several meetings of SCD and has now been implemented in the Academic Ordinances issued in 2018.
2. Feedback from stakeholders: the feedback from the students indicated that a broader choice of courses would be of great benefit to the students. The ordinances have accordingly been modified to permit students to acquire course to the extent of 20 % by self-study of courses offered by NPTEL or other MOOC platforms or credit seminars. This has been now codified in the Academic Ordinances issued in 2018, and has proved to be a welcome measure, as it has provided a lot of flexibility to the students.

In the current academic year, IQAC at HBNI has made the following contributions:

1. Developed a methodology to assess parameters such as Program Outcome (PO), Program Specific Outcome (PSO) and Course Outcome (CO).
2. A systematic student feedback analysis was carried out. Actions were taken to improve the evaluation and examination systems with emphasis on stress management without declining the quality of assessments.
3. Publication of HBNI newsletter illustrating scientific events and achievements of the institute.
4. Conducted the faculty induction programme for the newly added faculties.
5. Presentation on Research, Innovation and Extension.

File Description	Documents
Upload relevant supporting document	View File
6.5.2 - Institution has adopted the following for Quality assurance Academic Administrative Audit (AAA) and follow up action taken Conferences, Seminars, Workshops on quality conducted Collaborative quality initiatives with other institution(s) Orientation programme on quality issues for teachers and students Participation in NIRF Any other quality audit recognized by state, national or international agencies (ISO Certification, NBA)	B. Any 4 of the above
File Description	Documents

Upload the data template	View File
Upload relevant supporting document	View File

6.5.3 - Incremental improvements made for the preceding during the year with regard to quality (in case of first cycle) Post accreditation quality initiatives(second and subsequent cycles)

1. The academic ordinances have been refined, with the objective of enhancing the clarity of academic processes (eg. Credit assignment), to cover all new programs introduced.
2. New value added /skill development courses have been introduced for the benefit of students and number of seats in many Diploma / Degree/ Fellowship courses have been increased.
3. Feedback from students, faculty, parents and alumni is sought which gives valuable inputs about the strengths and weaknesses of HBNI and areas for improvement.
4. Guidelines have been issued for authorship of papers for faculty and students, and all theses are checked for plagiarism
5. A senior faculty member in each CI/OCC has been designated as Dean (Student Affairs) to coordinate the student affairs and provide them guidance with regard to administrative issues.
6. A formal program of induction of faculty has been introduced.
7. The security features in the degree certificates were enhanced by incorporating QR code and the photograph of the student.
8. The declaration of results and issue of provisional degree certificate (PDC) has been made faster with Ph.D students getting their degree certificate within a few months after the completion of the Ph.D viva.

File Description	Documents
Upload relevant supporting document	View File

INSTITUTIONAL VALUES AND BEST PRACTICES

7.1 - Institutional Values and Social Responsibilities

7.1.1 - Measures initiated by the Institution for the promotion of gender equity during the year

HBNI places high emphasis on gender equity and the CIs/OCC of HBNI has been taking several measures towards gender equity. The emphasis on gender equity is exemplified by the fact that the advertisement for BARC training School incorporates a specific statement that 'DAE strives to have a workforce who reflects gender balance and women candidates are encouraged to apply.' Further, in every sphere of academic activity, such as recognition of faculty, promotions, allocation of research students, etc., HBNI processes do not discriminate between male and female. It is pertinent to record that nearly 20 % of the faculty of HBNI are women.

The campuses of the CIs/OCC are all guarded by CISF or Departmental security or private security force. Adequate number

of female security personnel and female doctors are employed to attend to women employees and students. Every CI and OCC has a Women's cell set up as per Government guidelines, and they not only address concerns of women with regard to their safety or security, but also organize regular programs to provide exposure to women students and faculty to their rights and privileges, as well as health, safety, stress and security related issues. Female researchers are permitted to avail maternity leave as per Government guidelines, with corresponding extension to the academic tenure, so that the leave does not have any impact on their academic program. The campuses of BARC, IGCAR and RRCAT also have day care centre for young children in the townships. HBNI women faculty members are deputed to women centric conferences organized by Government bodies, particularly those with themes related to women empowerment.

File Description	Documents
Upload relevant supporting document	View File
Annual gender sensitization action plan(s)	http://www.hbni.ac.in/aqar/2021/C7/m7_1_1/Annual_gender_sensitization_action_plans.pdf
Specific facilities provided for women in terms of: a. Safety and security b. Counseling c. Common rooms d. Daycare Centre e. Any other relevant information	http://www.hbni.ac.in/aqar/2021/C7/m7_1_1/

7.1.2 - The Institution has facilities for alternate sources of energy and energy conservation Solar energy Biogas plant Wheeling to the Grid Sensor-based energy conservation Use of LED bulbs/ power-efficient equipment

A. Any 4 or All of the above

File Description	Documents
Upload relevant supporting document	View File

7.1.3 - Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste (within 200 words) Solid waste management Liquid waste management Biomedical waste management E-waste management Waste recycling system Hazardous chemicals and radioactive waste management

HBNI and all its CIs/OCC rigorously follow the effective waste management strategy i.e., reduce, reuse and recycle.

Municipal solid waste generated from all the buildings, road and open areas in the campuses is segregated, collected and disposed off suitably to the concerned local body. Biogas plants have been set up in some of the CIs (BARC, RRCAT) to manage bioorganic waste the bio-gas so produced is used in the hostel kitchen as fuel. IGCAR has set up a biological waste water treatment technology plant and a Nisargruna Biogas plant at its township.

Sewage water treatment plants have been set up in the campuses of CIs/OCC, and the waste water, after treatment, is used for watering gardens. Chemical waste, in liquid form, is collected and disposed after suitable treatment and dilution as necessary.

At TMC, the Bio-medical Waste is treated in-house using a Hydroclave before sending it for disposal.

E-waste management: Computers to be disposed are sold/auctioned to a Certified E-Waste Recycler.

Hazardous waste: At BARC, solid as well as liquid chemical wastes with hazard potential are incinerated in a chemical incinerator. Radioactive liquid waste generated during experiments is collected and disposed by following stringent regulations of safety committees/AERB.

File Description	Documents
Upload relevant supporting document	View File
7.1.4 - Water conservation facilities available in the Institution: Rain water harvesting Bore well /Open well recharge Construction of tanks and bunds Waste water recycling Maintenance of water bodies and distribution system in the campus	A. Any 4 or all of the above
File Description	Documents
Upload relevant supporting document	View File
7.1.5 - Green campus initiatives include	
7.1.5.1 - The institutional initiatives for greening the campus are as follows:	A. Any 4 or All of the above
<ol style="list-style-type: none"> 1. Restricted entry of automobiles 2. Use of bicycles/ Battery-powered vehicles 3. Pedestrian-friendly pathways 4. Ban on use of plastic 5. Landscaping 	
File Description	Documents
Upload relevant supporting document	View File
7.1.6 - Quality audits on environment and energy are regularly undertaken by the institution	
7.1.6.1 - The institution's initiatives to preserve and improve the environment and harness energy are confirmed through the following:	D. Any 1 of the above
<ol style="list-style-type: none"> 1. Green audit 2. Energy audit 3. Environment audit 4. Clean and green campus recognitions/awards 5. Beyond the campus environmental promotional activities 	
File Description	Documents
Upload relevant supporting document	View File

7.1.7 - The Institution has a disabled-friendly and barrier-free environment Ramps/lifts for easy access to classrooms and centres. Disabled-friendly washrooms Signage including tactile path lights, display boards and signposts Assistive technology and facilities for persons with disabilities: accessible website, screen-reading software,mechanized equipment, etc. Provision for enquiry and information: Human assistance, reader, scribe, soft copies of reading materials, screen reading, etc.

A. Any 4 or all of the above

File Description	Documents
Upload relevant supporting document	View File

7.1.8 - Describe the Institutional efforts/initiatives in providing an inclusive environment i.e. tolerance and harmony towards cultural, regional, linguistic, communal, socio-economic and other diversities (within a maximum of 200 words)

HBNI as well as its CIs/OCC are under the umbrella of DAE and pursue all directives of the Government, including providing opportunity to all sections of the society. As an institute open to all, HBNI has only merit as its sole criterion in every process, and does not discriminate in any manner between students or faculty based on any factors such as region, community or language. The CIs/OCC of HBNI regularly organize cultural/outreach /extension programmes where students from diverse regions participate in a harmonious manner. Festivals of all regions are enthusiastically celebrated by all students and faculty. The pledge administered on the occasion of Sadhbhavana Diwas to all students and faculty clearly emphasises the commitment for emotional oneness and harmony. There are Hindi essay and poem competitions in which a large number of non-Hindi speaking members not only participate but win the top prizes also. Same is true for Marathi and other regional languages related events. BARC Staff club and other similar clubs in the CIs/OCC conduct several events which contribute significantly towards harmony among the diversity.

File Description	Documents
Upload relevant supporting document	View File

7.1.9 - Sensitization of students and employees of the institution to constitutional obligations: values, rights, duties and responsibilities of citizens:

The CIs and OCC of HBNI are either DAE units or Grant-in-aid institutions funded by DAE. Since all the CIs/OCC are under the umbrella of a Government organization, they fully abide by the mandates of the Government. Thus, HBNI not only develops outstanding scientists / engineers /medical & health specialists, but also focuses on inculcating the values required to groom the students as responsible citizens. The service rules of the employees at Central Office as well as the CIs/OCC are in line with Government rules, and therefore, the faculty, non-teaching staff and students are trained to follow due procedures with particular emphasis on probity and accountability.

1.The employees as well as students participate in special commemorative events organized by the CIs/OCC throughout the year. For example, Constitution Day is celebrated on 26th of November every year as part of birth anniversary celebrations of Dr. B.R. Ambedkar. As part of celebrations, the preamble to constitution is read out in Hindi and English, and one of the senior colleagues (usually the Head of the institution) also briefs the participants about the importance and special features of Indian constitution. Debate programs or lecture on constitution are also organized on this day.

2.The employees and students take pledges- to promote National Integration and Communal Harmony among people of all

religions, languages and regions on the occasion of SadbhavanaDiwas; to preserve the unity, integrity and security of the nation on the occasion of RashtriyaEkta Divas; Anti-terrorism pledge on the occasion of the death anniversary of former PM Sri Rajiv Gandhi; to bring about integrity and transparency as a part of the Vigilance awareness week programs.

3.Hindi being the official language of India, students and employees are exhorted to use Hindi in their communications. The Hindi Day is celebrated in an appropriate manner, with the participation of staff and students. The Central office also organizes Hindi diwas celebration in which a technical lecture is delivered in Hindi, and a competition organized among office staff to assess their knowledge of Hindi. Some of the CIs also host the All India Official Language meet of the Department of Atomic Energy.

4.In recent years, with the emphasis on Swacch Bharat Mission, all the CIs and OCC have been conducting special cleanliness drives with the involvement of students and faculty. HBNI employees are constantly advised to extend appropriate courtesy and help to the underprivileged, especially the physically handicapped; the doctoral committees are also advised to extend the tenure of female students without any additional fee, if they have to avail maternity leave.

7.1.10 - The Institution has a prescribed code of conduct for students, teachers, administrators and other staff and conducts periodic programmes in this regard. The Code of Conduct is displayed on the website There is a committee to monitor adherence to the Code of Conduct Institution organizes professional ethics programmes for students, teachers, administrators and other staff Annual awareness programmes on Code of Conduct are organized

Any 3 of the above

File Description

Documents

Upload relevant supporting document

[View File](#)

7.1.11 - Institution celebrates / organizes national and international commemorative days, events and festivals

HBNI and its CIs/OCC regularly celebrate national and international commemorative days, events and take great pride in celebrating the Republic Day and Independence Day. VC, HBNI at the central Office and Directors of CIs/OCC lead these celebrations unfurling the National Flag and addressing their staff. Anniversaries of great Indian personalities viz., National Science Day (28 February), National Technology Day (11 May), Teachers' Day (September 5) and Engineers' Day (Sep. 15th) are observed at Central Office and across all CIs/OCC of HBNI by organizing special talks by eminent scientific personalities, screening of documentaries, visit of school students to research facilities etc. BARC, A CI of HBNI organizes special program each year to mark the birthday of Dr. Homi Bhabha. International Women's Day and International Yoga Day are also observed across all CIs/OCC of the HBNI with great fervor. On Gandhi Jayanthi (2nd October), the CIs/OCC organize a cleaning drive to clean the surroundings of the campus every year.

HBNI also organized programmes to commemorate 125 years of discovery of radioactivity and 101st Birth Anniversary of Dr. Vikram Sarabhai during the year.

Due to the existing COVID-19 pandemic most of the events were either held with skeletal staff or in virtual mode.

File Description

Documents

Upload relevant supporting document	View File
7.2 - Best Practices	
7.2.1 - Describe one best practice successfully implemented by the Institution as per NAAC format provided in the Manual	
BEST PRACTICE	
Title of the Practice	
To make available the extensive and unique experimental facilities available with DAE Institutions for advanced research by HBNI students and faculty and also other Research Institutions/Universities	
Objectives of the Practice	
The CIs/OCC of HBNI have unique, state-of-the art research facilities, such as nuclear reactors, accelerators, etc. HBNI aims to advance indigenous nuclear technological capability by making available these research facilities to the young research students. The experimental facilities are also extended to students of other Universities, with the twin objectives of enhancing the utilization of the national facilities and aiding the development of human resources for the country.	
The Context	
DAE is pursuing indigenous development of materials, equipment, processes, systems and mega science facilities relevant to nuclear science and technology. Such a program involves challenging experiments such as measurement of properties of radioactive fuel, degradation of structural materials subjected to irradiation, production of radiopharmaceuticals, enrichment of nuclear fuel materials, radiation applications, etc. DAE has set up a wide variety of unique experimental facilities to address these R & D requirements, which are of high value, not only with regard to research on topics related to nuclear sciences, but also several other domains of science and technology.	
The Practice	
HBNI encourages faculty and students to take up research programs that make use of the immense experimental facilities available within DAE units. Apart from state of the art High Performance computing facilities, DAE has laboratories to cater to major experimental research activities in various disciplines. Some of the unique experimental facilities available are research reactors, accelerators, tokamaks, synchrotron, neutron spectrometers, large telescopes, laboratories for experiments with ultrapure / reactive/ radioactive materials, high temperature sodium test facilities, shake table for seismic simulations, facilities to study materials under extreme conditions, etc. Other advanced experimental facilities available in the CIs/OCC include crystal growth facilities, spectroscopic facilities, ultrafast chemistry, thin film deposition, plasma processing, laboratories for stress analysis, robotics and remote handling, electromagnetic forming/welding equipment, etc. The students of HBNI from various CIs/OCC have access to such unique and complex experimental facilities and thus develop unique expertise in challenging experimentation. DAE also participates in international collaborative ventures, viz. LHC, ITER, FAIR, Project X of Fermi Lab, LIGO, etc. Several HBNI students have the privilege of working with international teams on experiments, computations and instrumentation development related to these projects.	
DAE units also make available the large experimental facilities to students from other organizations / universities,	

through a UGC-DAE consortium. The beamlines available at Indus synchrotron facilities at RRCAT are routinely used by researchers from other Universities. At BARC, university scientists and students are provided access to the National Facility for Neutron Beam Research (NFNBR) at Dhruva reactor. The Kolkata Center of the Consortium coordinates accelerator based experimental work, both in-beam and offline at the VECC and the 3 MV Pelletron at IoP. The Kalpakkam node provides access to the sophisticated scientific equipment of IGCAR for the university researchers. HBNI faculty are deeply involved in the collaboration programs pursued in these facilities.

Evidence of Success

The research problems selected by HBNI students have direct bearing on the ongoing programs of the department. The result of this is that the students get opportunities to work on sophisticated experimental facilities and their work gets published in high impact journals. At the same time, DAE gets valuable research inputs for the projects which are a part of its mission. It has been observed that more than 40% of the PhD dissertations involve experimental work using DAE facilities. The utilization of the Indus synchrotron and other facilities by researchers across the country has continued to increase over time, producing excellent results in several domains of science. These are all evidences of success of such best practice.

Problems Encountered and Resources Required

The experimental facilities available in DAE units are under high level of security as they are considered as strategic installations. Use of some facilities involve handling of radioactive elements. Access to such facilities by students needs formal permissions and special training. Similarly, facilities are shared by many researchers at a time and students need to wait for getting access. These factors may lead to time pressure on completion of the academic program, in comparison to conventional universities. No difficulty has however, been encountered in terms of availability of funds to carry out research and payment of fellowships to the students, since such funds are provided by DAE as a part of their regular annual budget.

7.3 - Institutional Distinctiveness

7.3.1 - Highlight the performance of the institution in an area distinct to its priority and thrust (within a maximum of 200 words)

Title: Advancement in Nuclear Science and Technology through Academic Programs

HBNI is a unique university and was established with the mission of encouraging pursuit of excellence in sciences that has major significance for the progress of indigenous nuclear technological capability. HBNI academic programmes not only provide human resource base for developing technologies relevant to nuclear power generation, but also address strategic sector and other national mission programs including health care and other societal sectors. The doctoral students have access to wide range of facilities ranging from tabletop set upto mega science facilities. The knowledge and skills acquired in HBNI academic programs by students empowers them to take up hi-tech projects including design, construction, quality assurance as well as operation of nuclear facilities. This approach has given India confidence to construct nuclear reactors, as well as entire range of fuel cycle facilities based on indigenous technology.

The CIs/OCC of HBNI also pursue research in several frontline areas and applications of radiation and radioisotopes in different fields such as healthcare, industry, agriculture and food technology. Application of nuclear radiation technologies in health sciences is a success story, especially in the area of diagnosis and treatment of cancer.

7.3.2 - Plan of action for the next academic year

HBNI has significantly contributed to the indigenous development of nuclear science and technology by adding to the substantial knowledge in this unique domain, generating valuable human resources, and providing useful inputs to the mission programs. The academic programs in the area of medical and health sciences have led to a significant addition to the Nation's strengths in medical oncology. The University has a great potential to ramp up its contributions, expand its scope and coverage of programs and provide required human resources for a nuclear energy program, comprehensive cancer care, mega-science research, research in the frontier areas of science and technology and research and development in key areas that can provide benefits to the society. The plans of actions for the next academic year include 1. Introduction of new academic programs, for example, PhD (Earth & Planetary Sciences), PhD (Humanities & Social Sciences), PhD (Computer Science) and MSc (Medical & Radiological Physics), 2. Introduction of additional skill based courses, for example MSc (Public Health and Epidemiology), MD-PhD program and MSc (Patient Navigation). 3. Online courses on Research Methodology. 4. Webinars on various important topics and introduction of various new value-added courses for the benefits of its research scholars.