17th June 2021

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Minutes of the Meeting

27th MEETING OF THE ACADEMIC COUNCIL

HOMI BHABHA NATIONAL INSTITUTE

(A Deemed to be University u/s 3 of UGC Act, MHRD & an Aided Institution of the DAE, Govt. of India)

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MINUTES OF 27th MEETING of the Academic Council

The following members were present during the meeting held on 17th June 2021.

Prof. P.R. Vasudeva Rao, Vice Chancellor, **Chairman**
Prof. P.D. Naik, Dean, HBNI
Prof. A.K. Mohanty, Director, BARC
Prof. A. K. Bhaduri, Director, IGCAR
Shri Debashis Das, Director, RRCAT
Dr. Sumit Som, Director, VECC
Prof. Gautam Bhattacharyya, Director, SINP
Sh. Shashank Chaturvedi, Director, IPR
Prof. S.M. Yusuf, Director, IoP, Convenor, BoS (Phy. Sci.), & Dean Student Affairs, BARC
Prof. V. Arvind, Director, IMSc
Prof. Pinaki Majumdar, Director HRI
Dr. R.A. Badwe, Director, TMC
Prof. Sudhakar Panda, Director, NISER
Prof. E.D. Jemmis, IISc, Bangalore
Prof. Indranil Manna, IITKharagpur
Prof. J.B. Udgaonkar, IISER, Pune
Prof. B. Venkatraman, IGCAR
Prof. V. Kain, OS, MP&CD, & Dean Academic, Engg. Science Stream-I, BARC
Prof. S. Kannan, Convenor, BoS (Chemical Sciences)
Prof. A.P. Tiwari, Convenor, BoS (Engineering Sciences)
Prof. R.B. Grover, Convenor, BoS (Applied Systems Analysis)
Prof. S.D. Banavali, Convenor, BoS Medical & Health Sciences, & Dean, TMC
Prof. (Mrs.) Prasanna Venkatraman, Convenor, BoS (Life Sciences)
Prof. Meena Mahajan, Convenor, BoS (Mathematical Sciences)
Prof. Bedangadas Mohanty, Convenor, BoS Integrated Masters Programme
Prof. B.K. Dutta, Institute Chair Professor, HBNI
Prof. B.S. Tomar, Institute Chair Professor, HBNI
Prof. D.K. Maity, Assoc. Dean, HBNI
Prof. A.K. Dureja, Assoc. Dean, HBNI
Prof. Saibal Basu, Assoc. Dean, HBNI
Prof. A.K. Bhattacharjee, Dean Academic, Engg. Sciences Stream-II, BARC
Prof. Tapan Kumar Ghanty, Dean Academic, Chemical Sciences, BARC
Prof. (Ms.) Hema Rajaram, Dean Academic, Life Sci., BARC
Prof. R. Rajaraman, Dean Academic, Physical Sciences, IGCAR
Prof. Anish Kumar, Dean Academic, Engineering Sciences, IGCAR
Prof. Vidhya Sunderajan, Dean, Student Affairs, IGCAR
Prof. CVS Brahmananda Rao, Dean Academic, Chemical Sciences, IGCAR
Prof. Arup Banerjee, Dean Academic, RRCAT
Prof. C.P. Paul, Dean Student Affairs, RRCAT
Prof. Parnika Das, Dean Academic, Physical Sciences, VECC
Prof. Sarabjit Pal, Dean Academic, Engineering Sciences, VECC
Prof. Tilak Ghosh, Dean Student Affairs, VECC
Prof. Partha Saha, Dean Academic, Chemical/ Life Sciences, SINP
Prof. Pranay Swain, Dean Academic, NISER
Prof. Renjit Mathew, Dean Student Affairs, NISER

Resolution: The council recorded the research publications, placement of outgoing PhD students and bottleneck in increasing Student to Faculty ratio.

M6.A6.0 Online Submission of Synopsis

Prof. P.D.Naik briefed about the Website developed for the online submission of synopsis and informed that the same will be implemented for various BoS in phased manner. The updated version of the same will be placed in the next academic council meeting for its approval.

Resolution: The council approved online submission of Synopsis module .

M7.A7.0 Briefing by the Conveners of Board of Studies (BoS)

I. Physical Sciences

Prof. Yousuf presented the activities of BoS Physical Sciences. The Council was informed about the faculty recognised and students having submitted thesis as per the plan of academics.

The BoS approved the following new courses/programs/revision of syllabus of programs/courses.

1. Introduction of New Course: Computational Methods in Physics-I at IMSc
2. Introduction of the following Elective Courses at HRI, Prayagraj, for MSc and PhD programs

(A) Under Condensed Matter Physics/Materials

(i) Mesoscopic Physics
(ii) Topological Quantum Matter
(iii) Correlated Electron Systems
(iv) Disorder in Condensed Matter
(v) Matter out of Equilibrium
(vi) Computational Many Body Theory I
(vii) Computational Many Body Theory II
(viii) Computational Materials Science

(B) Under High Energy Physics

(i) Particle Physics-2
(ii) Collider Physics
(iii) Neutrino Physics
(iv) Flavour Physics and CP Violation
(v) Dark Matter and Particle Astrophysics
(vi) Grand Unified Theories

(C) Under Astrophysics

(i) Astrophysical Fluid Dynamics
(ii) Radiative Transfer Phenomena in Astrophysics
(iii) Accretion Process in Astrophysics
(iv) Relativistic Astrophysics
(v) Astronomical Data Analysis
(vi) Computational Astrophysics

(D) Under String Theory

(i) String Theory 1
(ii) String Theory 2
(iii) Supersymmetry
(iv) Advanced Topics in General Relativity
(v) Advanced Topics in Quantum Field Theory

(3) **Introduction of new Courses for PhD programme at VECC**

(i) Advance Course in Nuclear Physics (Credit 4)

(ii) Advanced Condensed Matter Physics (Credit 4)

(iii) Advanced Course on Relativistic heavy-ion collision experiments & quark-gluon plasma (Credit 4)

(iv) Advanced Course on Quantum Chromodynamics (QCD) and Relativistic Heavy Ion Physics (Credit 4)

(4) **Revision of Courses of PhD programme at VECC**

(i) Mathematical Physics (Credit: 3)
(ii) Classical Mechanics (3 credit)
(iii) Classical Electrodynamics (Credit 3)
(iv) Quantum Mechanics (3 Credits)
(v) Statistical Mechanics (3 credits)
(vi) Computational Methods and Programming : 4 Credits
(vii) Experimental techniques and methods (Credit 5)
(viii) Basic Field Theory (Credit 3)
(ix) Basic Condensed Matter Physics (Credit 3)
(x) Basic Nuclear Physics (Credit 3)
(xi) Basic Accelerator physics (Credit 3)
(xii) Laboratory Experiments: (Credit 6)
(xiii) Advanced Accelerator Physics-I: (Credit :4)

(xiv) Advanced Accelerator Physics-II: (Credit :4)
(xv) Advance Materials Science (Credit 4)

II. Engineering Sciences

Prof. A.P. Tiwari presented activities of the BoS Engineering Sciences. The BoS recommended 6 faculty and 11 MTech guides. The academic extension of PhD/ DDFS students were recommended for 3 candidates. From the period of Dec. 2020 to June 2021 the BoS has reviewed 27 synopsis and it was informed that shortlisting of examiners was completed for the 21 shortlisted synopses.

The Board has introduced five value added courses at BARC and eleven courses for PhD/MSc(engg) at VECC.

(a) Introduction of Value added courses at BARC

S. No.	Course Title	Lecture Hours	Credits
1.	Advanced Mass Transfer	45	6
2.	Advanced Chemical Reaction Engineering	45	6
3.	Membrane Technology	45	6
4.	Theory of Plasticity	45	6
5.	Advanced Concepts in Finite Element Methods	45	6

(b) Introduction of courses at VECC for PhD/MSc(engg) programs

S. No.	Course Title	Lecture Hours	Credits
1.	Artificial Intelligence & Machine Learning	48	6
2.	Computer Architecture	42	5
3.	Advanced RF System	42	5
4.	Advanced Power Electronics	48	6
5.	Cryogenic Engineering	48	6

प्रो. जी. रवी कुमार
सह डीन
Prof. G. Ravi Kumar
Associate Dean

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HBNI/GRK/2021/788

June 21, 2021

Subject: New Elective Courses in Physics in HRI.

Dear Sir,

This is to inform that the Board of Studies (Physical Sciences), HBNI has approved the following elective courses proposed by HRI for Physics.

1. Mesoscopic Physics
2. Topological Quantum Matter
3. Correlated Electron Systems
4. Disorder in Condensed Matter
5. Matter out of Equilibrium
6. Computational Many Body Theory -I
7. Computational Many Body Theory -II
8. Computational Materials Science
9. Astrophysical Fluid Dynamics
10. Radiactive Transfer Phenomenon in Astrophysics
11. Accretion Process in Astrophysics
12. Relativistic Astrophysics
13. Astronomical Data Analysis
14. Computational Astrophysics
15. Particle Physics – 2
16. Collider Physics
17. Neutrino Physics
18. Flavour Physics and CP Violation
19. Dark Matter and Particle Astrophysics
20. Grand Unified Theories
21. String Theory -I
22. String Theory -II
23. Supersymmetry
24. Advanced Topics in General Relativity

25. Advanced Topics in Quantum Field Theory

21/6/2021.

G Ravi Kumar

Prof. Prasenjit Sen,
Dean Academic, HRI, Prayagraj.

CC: 1) Dean, HBNI.
2) Director, HRI.