



Central University of Himachal Pradesh

(ESTABLISHED UNDER CENTRAL UNIVERSITIES ACT 2009)

Dharamshala, Himachal Pradesh-176215



NAAC Criterion-I

Key Indicator –1.2.2

Approved Minutes of relevant BOS meeting highlighting the list of programs in which CBCS was implemented and structure of the programs (B.Sc. Physics Hons and M.Sc. Physics)

1.2.2Evidences



**Department of Physics and Astronomical Science
Central University of Himachal Pradesh, Dharamshala,
Kangra**



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Department of Physics and Astronomical Science

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2.	Approved Minutes of the 8 th BOS meeting highlighting the Structure of the B.Sc. Physics Hons program under CBCS dt 09/10/2018	PAS-BOS8 /8.1	6
3.	Approved Minutes of the 7 th BOS meeting highlighting the implementation of the courses under CBCS (M.Sc. Physics) dt 07/11/2017	PAS-BOS7 /7.1	10-13
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Central University of Himachal Pradesh
Department of Physics and Astronomical Science
School of Physical and Material Sciences

Agenda of 8th Board of Studies Meeting

Date and Time: 8th October 2018 and 11:00 AM

Venue: Temporary Academic Block, Dharamshala (CUHP)

Item PAS-BOS-8.1: The adoption of the UGC- Guidelines 2015 for the implementation of B.Sc. (Honours) in Physics with minimum 140 Credits, as under :

1. **UGC-CBCS** all Core papers and others as per the template given in UGC Website for B.Sc. Physics Major (Physics Honours).
2. Per Semester the maximum number of Credits that the student may earn shall not exceed 24 Credits.
3. Template structure for all running and forth-coming batches: 2016-19, 2017-20, 2018 to onwards are appended. (Annexure -1)
4. BOS suggests the changes may be incorporated in the University Ordinance for UG Honours Program, accordingly.

Item PAS-BOS-8.2: To cancel the admission of RD Student Mr. Rakesh Rathore(CUHP14RDPHY05) as Annexure -2.

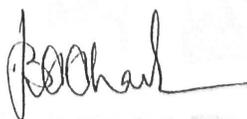
Item PAS-BOS-8.3: Change of Supervisors/Co-Supervisors of Aditi Sharma, Tapender and Shiwani Kalia as Annexure -3.

Item PAS-BOS-8.4: Approval of the list of Examiners and Experts for End Term Exams and Practical /Project evaluation for UG and PG Courses as Annexure -4.

Item PAS-BOS-8.5: To approve the list of NPTEL courses for B. Sc. Physics (Hon's) Programmes as Annexure -5.

Item PAS-BOS-8.6: To approve the Course PAS 426 / PAS 426 A for RD Students.

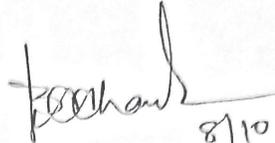
Item PAS-BOS-8.7: Any other agenda point with the permission of the Chair.



The meeting ended with the thanks to the Chair.

Signatures:

1. **Prof. B. C. Chauhan**
Chairman and Convener, BOS
Dean and Head
Department of Physics and Astronomical Science, CUHP


8/10/2018

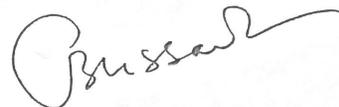
2. **Prof. Raja Ram Yadav**
External Member
Vice Chancellor
Veer Bahadur Singh Purvanchal University, Jaunpur

N.A.

3. **Prof. Nagesh Thakur**
Expert Member
Department of Physics
H. P. University, Shimla


8/10/18

4. **Prof. O. S. K. S. Sastri**
Member
Department of Physics and Astronomical Science, CUHP



5. **Prof. Roshan Lal Sharma**
Dean
School of Humanities and Languages, CUHP

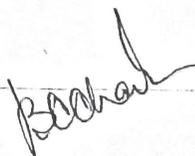

8/10/18

6. **Dr. Bhagwan Singh**
Head
Department of Marketing and Supply Chain Management, CUHP

N.A.

7. **Dr. Surender Verma**
Member
Department of Physics and Astronomical Science, CUHP


8.10.2018



3. Recommended for 2018 to onwards:

Semester	Course Opted	Course Code	Course Name	Credits	Credits per semeste
I	Skill Development-1/IIM-1		Eng/MIL - (2) Env - (2)	4	22
	Core Course - I	PAS 101	Mathematical Physics-I	4	
	Core Course-I Lab	PAS 101L	Mathematical Physics-I Lab	2	
	Core Course-II	PAS 102	Mechanics	4	
	Core Course-II Lab	PAS 102L	Mechanics Lab	2	
	Generic Elective-1	CCS 101	Chemistry-1	4	
	Generic Elective-1 Lab	CCS 101L	Chemistry-1 Lab	2	
II	Skill Development-2/IIM-2		Eng/MIL - (2) Env - (2)	4	22
	Core Course - III	PAS 103	Electricity and Magnetism	4	
	Core Course-III Lab	PAS 103L	Electricity and Magnetism Lab	2	
	Core Course-IV	PAS 104	Waves and Optics	4	
	Core Course-IV Lab	PAS 104 L	Waves and Optics Lab	2	
	Generic Elective-2	CCS 102	Chemistry-2	4	
	Generic Elective-2 Lab	CCS 102L	Chemistry-2 Lab	2	
III	Core Course - V	PAS 201	Mathematical Physics- II	4	24
	Core Course - V Lab	PAS 201L	Mathematical Physics- II Lab	2	
	Core Course - VI	PAS 202	Thermal Physics	4	
	Core Course - VI Lab	PAS 202L	Thermal Physics Lab	2	
	Core Course - VII	PAS 203	Digital Systems and Applications	4	
	Core Course - VII Lab	PAS 203L	Digital Systems and Applications Lab	2	
	Generic Elective-3	MTH 101	Mathematics-1	4	
Generic Elective-3 Tutorial	MTH 101 T	Mathematics-1 Tutorial	2		
IV	Core Course - VIII	PAS 212	Mathematical Physics-III	4	24
	Core Course - VIII Lab	PAS 212L	Mathematical Physics-III Lab	2	
	Core Course - IX	PAS 205	Elements of Modern Physics	4	
	Core Course - IX Lab	PAS 205L	Elements of Modern Physics Lab	2	
	Core Course - X	PAS 206	Analog System and Applications	4	
	Core Course - X Lab	PAS 206L	Analog System and Applications Lab	2	
	Generic Elective-4	MTH 102	Mathematics-2	4	
Generic Elective-4 Tutorial	MTH 102 T	Mathematics-2 Tutorial	2		
V	Core Course - XI	PAS 355	Quantum Mechanics & Applications	4	24
	Core Course - XI Lab	PAS 355 L	Quantum Mechanics & Applications Lab	2	
	Core Course - XII	PAS 302	Solid State Physics	4	
	Core Course - XII Lab	PAS 302L	Solid State Physics Lab	2	
	Elective Specialization - 1*	PAS 318	Nuclear and Particle Physics	4	
	Elective specialization - 1 Lab/Tutorial	PAS 318L	Nuclear and Particle Physics Lab/Tutorial	2	
	Elective Specialization - 2*	PAS 319	Astronomy and Astrophysics	4	
Elective specialization - 2 Lab/Tutorial	PAS 319L	Astronomy and Astrophysics Lab/Tutorial	2		
VI	Core Course - XIII	PAS 303	Electro-magnetic Theory	4	24
	Core Course - XIII Lab/Tutorial	PAS 303L	Electro-magnetic Theory Lab	2	
	Core Course - XIV	PAS 304	Statistical Physics	4	
	Core Course - XIV Lab	PAS 304L	Statistical Physics Lab	2	
	Elective Specialization - 3*	PAS 31	Classical Dynamics	4	
	Elective specialization - 3 Lab/Tutorial	PAS 316L	Classical Dynamics Lab/Tutorial	2	
	Elective Specialization - 4*	PAS 356 / PAS 357	Nano Materials and Applications /Project	4/6	
Elective specialization - 4 Lab/Tutorial	PAS 356 L	Nano Materials and Applications Lab/-	2/0		
				Total Credits	140

*These courses have been proposed keeping in mind the availability of the resources and expertise of the faculty members, however, the department may choose from the basket of elective specialization/discipline specific elective courses given in the UGC-CBCS 2015 template. Condition of maximum no. of 24 credits applies to this batch 2018 to onwards.

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4. Semester-wise credit distribution consistent with UGC-CBCS 2015 guidelines(2018 onwards):

Semester	Core	Elective		Foundation		Total credits
		Specialization	Open	SD	HM	
I	12	----	6	2	2	22
II	12	----	6	2	2	22
III	18	----	6	----	----	24
IV	18	----	6	----	----	24
V	12	12	----	----	----	24
VI	12	12	----	----	----	24
Total	84	24	24	4	4	140
		48		8		

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Agenda of 7th Board of Studies Meeting

Date and Time: 7th November, 2017, 2:00 PM.
Venue: TAB-II campus, CUHP, Dharamshala

- **PAS-BOS-7.1:** To approve the list of courses for M. Sc. Programmes **(Annexure-I)**.
- **PAS-BOS-7.2:** To approve the course code of "Functional and Communication Skill in English" course as EEL 111 offered to B. Sc. 1st year which was inadvertently written and passed as EEL 110 in the previous meeting.
- **PAS-BOS-7.3:** To approve new external paper setters/external examiners for End-Term examination **(Annexure-II)**.
- **PAS-BOS-7.4:** To approve the revised Research Degree (RD) programme course structure and Guidelines in concurrence with updated university ordinance no. 42 **(Annexure-III)**.
- **PAS-BOS-7.5:** To approve Ph. D. supervisors for the new RD students as (Batch admitted in 2017):

S. No.	Roll No.	Name	Supervisor
1.	To be allotted	Aditi Sharma	Dr. P. Rai
2.		Anil Khachi	Dr. Dalip Singh Verma
3.		Ankush	Dr. B.C. Chauhan
4.		Himani Thakur	Dr. R.K.Singh
5.		Jithin Bhagavathi	Dr. O.S.K.S. Sastri
6.		Monal Keshav	Dr. Surender Verma
7.		Neha Katoch	Dr. Dr. Jagdish Kumar
8.		Parul Kumar Sharma	Dr. Dr. R.K.Singh
9.		Rishu Verma	Dr. B.C. Chauhan
10.		Virender Thakur	Dr. B.C. Chauhan

- **PAS-BOS-7.6:** To approve
 - (i) Dr. Bhupender Singh, Deptt. of Ceramic Engineering, IIT(BHU), Varanasi as Co-supervisor of RD student Miss Nitika Devi, CUHP15RDPHY01 as per provisions in university ordinance no. 42.
 - (ii) Dr. Surender Soni, Department of Physics, Government College Nagrota Bagwan, Distt. Kangra (H. P.) as Co-supervisor of RD student Miss Swapna as per provisions in university ordinance no. 42.
- **PAS-BOS-7.7:** To approve the Synopsis of the following RD students:

S. No.	Roll No.	Name	Supervisor	Title
1.	CUHP15RDPHY01	Nitika Devi	Dr. Rajesh Kumar Singh	Synthesis of Graphene Oxide-Metal/Metal Oxide Composites and their Applications.
2.	CUHP15RDPHY03	Shiwani Kalia	Dr. Padmnabh Rai	Light Detection by Graphene and Carbon Nanotube Field Effect Transistors.
3.	CUHP15RDPHY05	Swapna	Dr. O. S.K. S. Sastri	Activity based pedagogy incorporating guided

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Central University of Himachal Pradesh
Department of Physics and Astronomical Science
School of Physical and Material Sciences

Minutes of the 7th meeting of the Board of Studies of Department of Physics and
Astronomical Science

Date and Time: 7th November 2017 at 2:00 PM

Venue: TAB-II campus, CUHP, Dharamshala

The meeting of the 7th Board of Studies (BOS) of Department of Physics and Astronomical Science (DPAS) held on 7th November 2017 at 2:00 PM at TAB-II campus, CUHP, Dharamshala. Following members attended the meeting:

- 1. Dr. B. C. Chauhan**
Chairman and Convener, BOS
Dean and Head
Department of Physics and Astronomical Science, CUHP
- 2. Prof. Raja Ram Yadav**
External Member
Vice Chancellor
Veer Bahadur Singh Purvanchal University, Jaunpur
- 3. Dr. O. S. K. S. Sastri**
Member
Department of Physics and Astronomical Science, CUHP
- 4. Dr. Roshan Lal Sharma**
Dean
School of Humanities and Languages, CUHP
- 5. Dr. Bhagwan Singh**
Head
Department of Marketing and Supply Chain Management, CUHP
- 6. Dr. Surender Verma**
Member
Department of Physics and Astronomical Science, CUHP

The Chairman, Dr. B. C. Chauhan, welcomed and thanked the BOS members for sparing their valuable time for the meeting. He briefed the members about the activities and progress made by the department since last meeting and outlined the plan of the meeting. Thereafter, agenda items were taken up, sequentially, to place before the members. The BOS members held comprehensive deliberations on all the agenda items and following decisions were unanimously taken:

Item PAS-BOS-7.1:

The BOS approve, the list of courses for M. Sc. Programme (Annexure-I).

Item PAS-BOS-7.2:

The BOS approve, the course code of 'Functional and Communication Skill in English' as EEL. 111 and 'Sanskrit Bhashanaipunyama' as SKT 202 to be offered to B. Sc. 1st year.

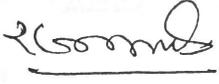
Item PAS-BOS-7.3:

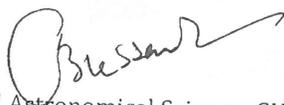
The BOS approve the list of new external paper setters/external examiners for End-Term examination (Annexure-II).

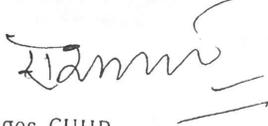
The meeting ended with vote thanks to all the board members by the Chairman.

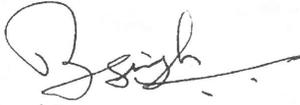
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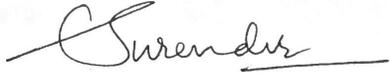
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5. **Dr. Bhagwan Singh** 
Head
Department of Marketing and Supply Chain Management, CUHP

6. **Dr. Surender Verma** 
Member
Department of Physics and Astronomical Science, CUHP

Annexure- I**Complete List of Courses offered by the department****Core Compulsory (CC)**

Course Code	Name of Course	Credits
PAS 401	Classical Mechanics	2
PAS 401A ✓	Classical Mechanics	4
PAS 402	Mathematical Physics	2
PAS 402A	Mathematical Physics	4
PAS 403	Classical Electrodynamics	2
PAS 403A ✓	Classical Electrodynamics	4
PAS 404	Quantum Mechanics	2
PAS 404A ✓	Quantum Mechanics	4
PAS 406	Statistical Mechanics	2
PAS 406A ✓	Statistical Mechanics	4
PAS 407	Advanced Quantum Mechanics	2
PAS 407A ✓	Advanced Quantum Mechanics	4
PAS 408	Elements of Condensed Matter Physics	2
PAS 408A ✓	Condensed Matter Physics	4
PAS 409	Nuclear and Particle Physics	2
PAS 409A ✓	Nuclear and Particle Physics	4
PAS 411	Atomic and Laser Physics	2
PAS 411A ✓	Atomic, Molecular and Laser Physics	4
PAS 413 ✓	General Physics Laboratory	2
PAS 423 ✓	Modern Physics Lab	2
PAS 427	Computational Physics Laboratory	2
PAS 428A ✓	Computational Physics	4
PAS 503	Advanced Condensed Matter Physics	2
PAS 505	Advanced Nuclear Physics	2
PAS 521	Atomic & Molecular Physics	2
PAS 554	Advanced Modern Physics Laboratory	2

Core Open (CO)

Course Code	Name of Course	Credits
PAS 402 ✓	Mathematical Physics	2
PAS 405 ✓	Electronic Circuits	2
PAS 405A	Analog and Digital Electronics	2
PAS 412 ✓	Semiconductor Devices	4
PAS 414 ✓	Computer Simulations in Physics	2

PAS 415 ✓	Electronics Lab	2
PAS 421	Advanced Classical Mechanics	2
PAS 422	Classical Field Theory	2
PAS 424	Advanced Classical Electrodynamics	2
PAS 425	Quantum Electrodynamics	2
PAS 426	Quantum Field Theory	4
PAS 426A	Quantum Field Theory	2
PAS 427 ✓	Computational Physics Laboratory	2
PAS 428	Computational Physics	4
PAS 428A	Computational Physics	2
PAS 506 ✓	General Theory of Relativity	4
PAS 506A	Theory of General Relativity	2
PAS 507	Advanced Mathematical Physics	2
PAS 508	Advanced Laser Physics	2
PAS 510	Advanced Semiconductor Material and Devices	2
PAS 511	Semiconductor Microelectronic Technology	2
PAS 512	Solid State Devices and Circuits	2
PAS 528 ✓	Accelerator and Reactor Physics	2
PAS 529 ✓	Group Theoretical Physics	2
PAS 533	Advanced Computational Physics Lab	2

Foundation Human Making (FHM)

Course Code	Name of Course	Credits
PAS 416	History of Physics	2
PAS 417	Philosophy of Physics	2
PAS 417A ✓	History and Philosophy of Science	2
PAS 418	Physics for Everyone	2
PAS 420	Environmental Physics	2
PAS 429	Vedic Physics	2
PAS 430	Indigenous Studies in Physics	2
PAS 555	Philosophy of Quantum Physics	2
PAS 556 ✓	Science of Yoga	2

Foundation Skill (FS)

Course Code	Name of Course	Credits
PAS 418	Physics for Everyone	2
PAS 419	Science and Technology of Alternative and Renewable Sources of Energy	2
PAS 427A ✓	Scientific Writing and Presentation	2
PAS 428B ✓	Elements of Scientific Programming	2
PAS 432	Ionizing Radiation & Safety Aspects	4
PAS 434	Science, Technology and Society	4
PAS 501	Simulation and Computer Applications	2
PAS 536	Informatics	2

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PAS 556 ✓	Science of Yoga ✓	2
PAS 523	Biomedical Physics	2
PAS 435	Ultrasonics: Ultrasound and Applications	2

Elective Open (EO)

Course code	Name of Course	Credits
PAS 406	Statistical Mechanics	2
PAS 410	Physics of Earth Atmosphere	2
PAS 410A	Physics of Earth & Atmosphere	4
PAS 416	History of Physics	2
PAS 417	Philosophy of Physics	2
PAS 418	Physics for Everyone	2
PAS 420	Environmental Physics	4
PAS 429A	Vedic Physics	4
PAS 430	Indian Traditional Physics	4
PAS 431	Musical Acoustics	2
PAS 433	Geo-Physics	2
PAS 502	Advanced Atmospheric Physics	2
PAS 504	Engineering Physics	2
PAS 516	Nanoscience and Technology	2
PAS 516A	Nanoscience and Technology	4
PAS 518 ✓	Opto-electronics	2
PAS 522	Microprocessors and Micro-controllers	2
PAS 523	Biomedical Physics	2
PAS 528	Accelerators and Reactor Physics	2
PAS 537	Space Physics and Communication	2
PAS 539 ✓	Cosmology	2
PAS 540	Elements of Astronomy	2
PAS 545 ✓	Unitary Symmetry in Quantum Physics	2
PAS 435	Ultrasonics: Ultrasound and Applications	2
PAS 436	Fundamentals of Electronic Materials & Devices	2

Elective Specialization (ES)

Course code	Name of Course	Credits
PAS 426A ✓	Quantum Field Theory	4
PAS 506A ✓	Theory of General Relativity	4
PAS 509	Advanced Quantum Field Theory	4
PAS 513	Magnetic Materials	2
PAS 514	Superconducting Materials	2
PAS 515	Polymers, Ceramics and Composites	2
PAS 517	Characterization of Materials	2
PAS 518	Opto-electronics	2
PAS 519	Ferroelectric Materials and Devices	2
PAS 520	Seminar	2
PAS 524	Advanced Statistical Mechanics	4
PAS 525	Non-linear Physics	2
PAS 526	Fourier Optics	2

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PAS 527 ✓	Theoretical Nuclear Physics	4
PAS 528A ✓	Particle Accelerators, Detectors and Reactors	4
PAS 530	Soft Condensed Matter Physics	2
PAS 531	Mesoscopic Physics	2
PAS 532	Quantum theory of Many Body Physics	4
PAS 533	Advanced Computational Physics Laboratory	2
PAS 534	Quantum Computing	2
PAS 535	Quantum Electronics	4
PAS 538	Celestial Mechanics	2
PAS 539A	Cosmology	4
PAS 541	Perspectives of Astrophysics	2
PAS 542	High Energy Physics	2
PAS 543	Quantum Chromo-Dynamics	2
PAS 544	Quantum Flavor Dynamics	2
PAS 545	Unitary Symmetry in Quantum Physics	2
PAS 546	Neutrino Physics	2
PAS 546A ✓	Neutrino Physics	4
PAS 547	Plasma Physics	2
PAS 548	Project work	4
PAS 549 ✓	Elementary Particles & Interactions	4
PAS 551	Advanced Computational Physics	4
PAS 552 ✓	Molecular Simulations in Material Science	4
PAS 553	Standard Model, Higgs Physics & Beyond	4

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Course Structure

Semester	Core Courses		Elective Courses		Foundation Courses		Total Credits
	Compulsory	Open	Specialization	Open	Skill Development	Human Making	
I	CC-I (4) CC-II (4) CC-III (4) CC-X (2)	CO-I (2)	--	--	SD-I (2)	HM-I (2)	20
II	CC-IV (4) CC-V (4)	CO-II (2) CO-III (2) CO-IV (2) CO-V (2)	--	--	SD-II (2)	HM-II (2)	20
III	CC-VI (4) CC-VII (4) CC-VIII (4) CC-XI (2)	--	ES-I (4)	EO-I (2)	--	--	20
IV	CC-IX (4)	CO-VI (2)	ES-II (4) ES-III (4) ES-IV/Project (4)	EO-II (2)	--	--	20
Total	40	12	16	4	4	4	80

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