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The Autonomous & Heritage Institution

KANYA MAHA VIDYALAYA, Jalandhar

College with Potential for Excellence

Re-accredited 'A' by UGC-NAAC

Star Status by DBT

FIST (Phase II) Supported College

CURIE Grant Awarded by DST

PG Department of Physics

Agenda & Proceeding

KANYA MAHA VIDYALAYA, JALANDHAR
(UGC Autonomous College)

Agenda of the Eighth Meeting of Board of Studies
P.G. Department of Physics

The agenda of eighth meeting of the board of studies of Department of Physics is being sent by e-mail. The meeting for the same has been fixed on 25th April 2022 at 02:30 pm in online mode via Zoom.

Members of BOS:

1.	Mrs. Parminder Kaur, Head, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Chairperson
2.	Dr. Atul Khanna, Professor, Dept. of Physics, Guru Nanak Dev University, Amritsar **(University Nominee)**	Member
3.	Dr. Rohit Mehra, Associate Professor, Dept. of Physics, NIT, Jalandhar **(Outside Parent University Nominee)**	Member
4.	Dr. Hitesh, Dept. of Physics, IKGPTU, Kapurthalla **(Outside Parent University Nominee)**	Member
5.	Dr. Sachin Tyagi, Scientist, Analytical Technique Division, CSIR-CSIO, Chandigarh **(Industry Expert)**	Member
6.	Dr. Kulwinder Kaur, Assistant Professor, Punjab Engineering College (deemed to be University) **(Alumni)**	Member
7.	Dr. Neetu Chopra, Associate Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member
8.	Dr. Sonik Bhatia, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member
9.	Dr. Sangeeta Prasher, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member
10.	Dr. Manmohan Singh, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member
11.	Dr. Gopi Shrama, Associate Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member
12.	Dr. Harleen Singh, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member
13.	Dr. Surbhi Sharma, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Member

Agenda

Item: Phy 8: 2022: 1 To confirm the Proceedings of seventh Board of Studies meeting held on 10th April 2021 **(Annexure A)**

Item: Phy 8: 2022: 2 To discuss Action Taken Report of seventh Board of Studies meeting held on 10th April 2021

Sr.No.	Agenda Item	Decision taken in Meeting	Action Taken
Item: Phy 7: 2021: 3	To discuss the syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2021-22.	The proposed syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2021-22 was discussed by Board members and they approved the Syllabus with following changes: (i) In sem V paper BSNM/BCSM-5395(I) is Condensed Matter Physics and Second paper and Paper BSNM/BCSM-5395(II) is Electronics. (ii) Topics of Basic concepts of Boolean algebra, AND, OR, NOT and NAND Gates using diodes are added in unit I of Electronics paper. (iii) In sem VI, paper BSNM/BCSM-6395(I) is Nuclear Physics and BSNM/ BCSM-6395(II) is Radiation and Particle Physics (iv) In Practical paper experiments of Vth and VIth sems have been reshuffled as per theory papers.	The approved syllabus along with changes is implemented

Item: Phy 7: 2021: 4	To discuss the syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 1 to 4th under continuous evaluation system for the session 2021-22.	The Board of Study members discussed the syllabus and course outcomes of Physics **B.Sc. (Hons.) Physics**, Semester 1st to 4th under continuous evaluation system for the session 2021-22 and they approved it during Zoom meeting. The board suggested adding the 'Introduction to **Origin software'** in the IInd Unit of paper BOPL -4175 **'Statistical Methods' which is offered as interdisciplinary course** in the **4th semester** and which will add to its value.	The approved syllabus along with suggested changes is implemented
Item: Phy 7: 2021: 5	To discuss the syllabus and course outcomes of **M.Sc. Physics,** Semester 1st to 4th under continuous evaluation system for the session 2021-22.	For paper 3 and 4 options OPT-I was 'Physics of Materials' , which the Board members found to be similar to Material Science paper. So Dr. Sachin Tyagi suggested to give a paper of 'Optics and Photonics' as OPT-I. **Some other changes suggested are** (i) In sem III now third paper MPHL-3393 is Condensed Matter Physics – II (ii) In sem IV the seond paper MPHL- 4392 is Statistical Mechanics (iii) for papers 3 and 4 options are OPT-I Photonics OPT-II Radiation Physics	The approved syllabus along with suggested changes is implemented

		OPT-III Reactor Physics OPT-IV Nano Technology OPT-V Material Science OPT-VI Space Science (iv) In Analog and Digital Electronics paper MPHL-1391, From Unit II, the word **'amplifiers'** has been omitted.	
Item: Phy 7: 2021: 6	To discuss the syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4under continuous evaluation system for the session 2021-22.	The syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4 under continuous evaluation system for the session 2021-22, was discussed by the members and they approved it without any change.	The approved syllabus is implemented
Item: Phy 7:2021:7	To discuss the syllabus and course outcomes of **B.Sc. (Hons.) Maths**, Semester 1 **and 2** under continuous evaluation system for the session 2021-22.	The syllabus and course outcomes of B.Sc. (Hons.) Maths, Semester 1 and 2 under continuous evaluation system for the session 2021-22, was discussed by the members and they approved it with following change. In Section C of Modem Physics paper of sem II the modified topics are "Principle, construction and application of gas-filled detectors Ionization detector, proportional counter, Geiger Muller detector, Cloud chamber, Scintillation counter and photographic emulsions as	The approved syllabus is implemented

		detectors." , instead of "Nuclear detection, Ionization detector, proportional counter, Geiger Muller detector, Cloud chamber, Scintillation counter and photographic emulsions as detectors."	
Item: Phy 7: 2021:8	To approve the Examiners and Evaluators for Physics papers in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
Item: Phy 7: 2021:9	To approve the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Physics**, Semester 1st & 4th	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
Item: Phy 7: 2021: 10	To approve the Examiners and Evaluators for Physics papers in **M.Sc. Physics,** Semester 1st to 4th	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
Item: Phy 7:2021:11	To approve the Examiners and Evaluators for Physics papers in **B.Sc. Home Science** Semester 3 and 4.	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
Item: Phy 7:2021:12	To approve the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Maths**, Semester 1 **and 2**	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
Item: Phy 7: 2021: 13	To discuss the inputs to upgrade the teaching methodologies during session 2021-22.	The teaching methodologies adopted in department were approved by the house. Dr. Rohit Mehra suggested that **1 day workshop or** a virtual trip to NIT laboratories can be organized for KMV students. Similarly virtual lab visit can be arranged for Physics Dept facilities at GNDU. Dr. Mehra	The teaching methodologies adopted are attached herewith as **annexure B.**

		offered to organise **seminars** for students to create awareness about their carrier opportunity after B.Sc. and M.Sc. in India as well as in abroad. Dr. Neetu requested to hold summer internship programs at NIT, CSIO and other Institutions for a few KMV students. Dr. Rohit Mehra told that students can work on summer project in the field of Nuclear Radiations. Dr. Atul Khanna suggested to hold workshop on XRD, DSC and Raman spectroscopy for students. He also ensured for sample characterization in his lab.	
Item: Phy 7: 2021: 14	To discuss research inputs and plans of department for session 2021-22.	The research inputs and plans were appreciated by the house. Research activities of department were presented by Dr. Gopi Sharma. She described all the research projects undertaken by the faculty of department and asked for suggestions regarding research activities for next session. She told that department teachers are sending proposal for a research projects to BRNS DST. Dr. Sachin Tyagi suggested that for faculty to get project from BRNS, DST, the best	Progress report comprising research made by staff and students is attached herewith **annexure C.**

		current field is Water and Air monitoring system. Students can also visit industry where they can identify the problem which industry is facing and write a project. Dr. Rohit Mehra suggested to work on leather Industry of Jalandhar. He also suggested teachers to become co supervisors for Ph.D. students by collaborating with NIT, University of Jammu.	

Item: Phy 8: 2022: 3 To discuss the syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2022-23. **(Annexure D)**

Item: Phy 8: 2022: 4 To discuss the syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 1 to 4th under continuous evaluation system for the session 2022-23. **(Annexure E)**

Item: Phy 8: 2022:5 To discuss the syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 5th and 6th sem under continuous evaluation system for the session 2022-23. **(Annexure F)**

Item: Phy 8: 2022:6 To discuss the syllabus and course outcomes of **M.Sc. Physics,** Semester 3rd and 4th under continuous evaluation system for the session 2022-23. **(Annexure G)**

Item: Phy 8: 2022:7 To discuss the syllabus and course outcomes of **M.Sc. Physics,** Semester 1st to 4th under credit based, continuous evaluation grading system for the session 2022-24. **(Annexure H)**

Item: Phy 8: 2022:8 To discuss the syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4 under continuous evaluation system for the session 2022-23. **(Annexure I)**

Item: Phy 8: 2022:9 To discuss the syllabus and course outcomes of **B.Sc. (Hons.) Maths,** Semester 1 **and 2** under continuous evaluation system for the session 2022-23. **(Annexure J)**

Item: Phy 8: 2022:10 To approve the Examiners and Evaluators for Physics papers in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th. **(Annexure K)**

Item: Phy 8: 2022:11 To approve the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Physics**, Semester 1 **to 6. (Annexure L)**

Item: Phy 8: 2022:12 To approve the Examiners and Evaluators for Physics papers in **M.Sc. Physics**, Semester 1st to 4th **(Annexure M)**

Item: Phy 8: 2022:13 To approve the Examiners and Evaluators for Physics papers in **B.Sc. Home Science** Semester 3 and 4. **(Annexure N)**

Item: Phy 8: 2022:14 To approve the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Maths**, Semester 1 **and 2 (Annexure O)**

Item: Phy 8: 2022: 15 To discuss the inputs to upgrade the teaching methodologies during session 2022-23. **(Annexure B)**

Item: Phy 8: 2022: 16 To discuss research inputs and plans of department for session 2022-23. **(Annexure C)**

(Chairperson)
Mrs. Parminder Cheema
Head
Department of Physics

Kanya Maha Vidyalaya, Jalandhar City
(An Autonomous College)

Minutes of 8th Meeting of Board of Studies
PG Department of Physics

Date: 25-04-2022
Time: 2:30 PM
Via Zoom video conferencing

KanyaMahaVidyalaya, Jalandhar
PG Department of Physics
Proceedings of the Meeting of Board of Studies held on 25 -04-2022

KANYA MAHA VIDYALAYA, JALANDHAR

(UGC Autonomous College)
P.G. Department of Physics

Proceedings of the Eighth Meeting of Board of Studies held on 25 -04-2022

The eighth meeting of the board of studies was held in online mode via zoom on 25th April 2022 at 2.30 pm.

Date: Monday, 25-04-2022
Time: 2:30 pm
Venue: Online meeting via Zoom

The following members have attended meeting and detailed minutes are listed below:

1.	Mrs. Parminder Kaur, Head, Department of Physics, Kanya Maha Vidyalaya, Jalandhar **(Chairperson)**	Present
2.	Dr. Atul Khanna, Professor, Dept. of Physics, Guru Nanak Dev University, Amritsar **(University Nominee)**	Present
3.	Dr. Rohit Mehra, Associate Professor, Dept. of Physics, NIT, Jalandhar **(Outside Parent University Nominee)**	Present
4.	Dr. Hitesh, Dept. of Physics, IKGPTU, Kapurthalla **(Outside Parent University Nominee)**	present
5.	Dr. Sachin Tyagi, Scientist, Analytical Technique Division, CSIR-CSIO, Chandigarh **(Industry Expert)**	Present
6.	Dr. Kulwinder Kaur, Assistant Professor, Punjab Engineering College (deemed to be University)**(Alumni)**	Present
7.	Dr. Neetu Chopra, Associate Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present
8.	Dr. Sonik Bhatia, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present
9.	Dr. Sangeeta Prasher, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present
10.	Dr. Manmohan Singh, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present
11.	Dr. Gopi Shrama, Associate Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present
12.	Dr. Harleen Singh, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present

13.	Dr. Surbhi Sharma, Assistant Professor, Department of Physics, Kanya Maha Vidyalaya, Jalandhar	Present

The Chairperson Mrs. Parminder Kaur welcomed the members of Board of Studies. She apprised the members about the events organised by the department to enhance teaching -learning activities. The students were given exposure to distant labs like COE College USA through virtual visits. They were motivated to participate in activities of IIC Innovation Cell and they have also participated in INNOVESTA -2021. Different mentoring workshops and quiz competitions were also organised. She also apprised the house about the research activities of department and members appreciated the achievement of CURIE grant and research project from DST.

After brief overview, she took up the agenda items for deliberation one by one with the permission of committee members.

Item: Phy 8: 2022: 1 To confirm the Proceedings of seventh Board of Studies meeting held on 10th April 2021 **(Annexure A)**

The chairperson sent the proceedings of the previous Board of Studies meeting held on 10th April 2021 through email to all the members and proceedings were approved by all the members. The Chairperson however again put up the summary of the proceedings for approval of the house and they approved it through Zoom meeting. **(attached herewith as Annexure A)**

The house approved the Item: Phy 8: 2022: 1

Item: Phy 8 : 2022: 2 To discuss Action Taken Report of seventh Board of Studies meeting held on 10th April 2021

Sr.No.	Agenda Item	Decision taken in Meeting	Action Taken
Item: Phy 7: 2021: 3	To discuss the syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2021-22.	The proposed syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2021-22 was discussed by Board members and they approved the Syllabus with following changes: (i) In sem V paper BSNM/BCSM-5395(I) is Condensed Matter Physics and Second paper	The approved syllabus along with changes is implemented

		and Paper BSNM/BCSM-5395(II) is Electronics. (ii) Topics of Basic concepts of Boolean algebra, AND, OR, NOT and NAND Gates using diodes are added in unit I of Electronics paper. (iii) In sem VI, paper BSNM/BCSM-6395(I) is Nuclear Physics and BSNM/ BCSM-6395(II) is Radiation and Particle Physics (iv) In Practical paper experiments of Vth and VIth sems have been reshuffled as per theory papers.	
Item: Phy 7: 2021: 4	To discuss the syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 1 to 4th under continuous evaluation system for the session 2021-22.	The Board of Study members discussed the syllabus and course outcomes of Physics **B.Sc. (Hons.) Physics**, Semester 1st to 4th under continuous evaluation system for the session 2021-22 and they approved it during Zoom meeting. The board suggested adding the 'Introduction to **Origin software'** in the IInd Unit of paper BOPL -4175 **'Statistical Methods' which is offered as interdisciplinary course** in the **4th semester** and which will add to its value.	The approved syllabus along with suggested changes is implemented
Item: Phy 7: 2021: 5	To discuss the syllabus and course outcomes of **M.Sc. Physics,** Semester 1st to 4th under continuous	For paper 3 and 4 options OPT-I was 'Physics of Materials' , which the Board members found to be similar to Material	The approved syllabus along with suggested changes is implemented

	evaluation system for the session 2021-22.	Science paper. So Dr. Sachin Tyagi suggested to give a paper of 'Optics and Photonics' as OPT-I. **Some other changes suggested are** (i) In sem III now third paper MPHL-3393 is Condensed Matter Physics – II (ii) In sem IV the seond paper MPHL- 4392 is Statistical Mechanics (iii) for papers 3 and 4 options are OPT-I Photonics OPT-II Radiation Physics OPT-III Reactor Physics OPT-IV Nano Technology OPT-V Material Science OPT-VI Space Science (iv) In Analog and Digital Electronics paper MPHL-1391, From Unit II, the word **'amplifiers'** has been omitted.	
Item: Phy 7: 2021: 6	To discuss the syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4under continuous evaluation system for the session 2021-22.	The syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4 under continuous evaluation system for the session 2021-22, was discussed by the members and they approved it without any change.	The approved syllabus is implemented

Item: Phy 7:2021:7	To discuss the syllabus and course outcomes of **B.Sc. (Hons.) Maths**, Semester 1 **and 2** under continuous evaluation system for the session 2021-22.	The syllabus and course outcomes of B.Sc. (Hons.) Maths, Semester 1 and 2 under continuous evaluation system for the session 2021-22, was discussed by the members and they approved it with following change. In Section C of Modern Physics paper of sem II the modified topics are "Principle, construction and application of gas-filled detectors Ionization detector, proportional counter, Geiger Muller detector, Cloud chamber, Scintillation counter and photographic emulsions as detectors." , instead of "Nuclear detection, Ionization detector, proportional counter, Geiger Muller detector, Cloud chamber, Scintillation counter and photographic emulsions as detectors."	The approved syllabus is implemented
Item: Phy 7: 2021:8	To approve the Examiners and Evaluators for Physics papers in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
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Item: Phy 7:2021:11	To approve the Examiners and Evaluators for Physics papers in **B.Sc. Home Science** Semester 3 and 4.	List of approved Examiners was prepared.	List of Examiners was sent to COE Office.
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Item: Phy 7: 2021: 13	To discuss the inputs to upgrade the teaching methodologies during session 2021-22.	The teaching methodologies adopted in department were approved by the house. Dr. Rohit Mehra suggested that **1 day workshop or** a virtual trip to NIT laboratories can be organized for KMV students. Similarly virtual lab visit can be arranged for Physics Dept facilities at GNDU. Dr. Mehra offered to organise **seminars** for students to create awareness about their carrier opportunity after B.Sc. and M.Sc. in India as well as in abroad. Dr. Neetu requested to hold summer internship programs at NIT, CSIO and other Institutions for a few KMV students. Dr. Rohit Mehra told that students can work on summer project in the field of Nuclear Radiations. Dr. Atul Khanna suggested to hold workshop on XRD, DSC and Raman spectroscopy for students. He also ensured for sample characterization in his lab.	The teaching methodologies adopted are attached herewith as **annexure B.**

Item: Phy 7: 2021: 14	To discuss research inputs and plans of department for session 2021-22.	The research inputs and plans were appreciated by the house. Research activities of department were presented by Dr. Gopi Sharma. She described all the research projects undertaken by the faculty of department and asked for suggestions regarding research activities for next session. She told that department teachers are sending proposal for a research projects to BRNS DST. Dr. Sachin Tyagi suggested that for faculty to get project from BRNS, DST, the best current field is Water and Air monitoring system. Students can also visit industry where they can identify the problem which industry is facing and write a project. Dr. Rohit Mehra suggested to work on leather Industry of Jalandhar. He also suggested teachers to become co supervisors for Ph.D. students by collaborating with NIT, University of Jammu.	Progress report comprising research made by staff and students is attached herewith **annexure C.**

The house approved the Item: Phy 8: 2022:2

Item: Phy 8: 2022: 3 To discuss the syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2022-23. **(Annexure D)**

The proposed syllabus and course outcomes of Physics in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th under continuous evaluation system for the session 2022-23 was discussed by Board members and they approved the Syllabus with following changes:

Sem	Name of the course and course Code	Unit	2021-22	2022-23
II	Relativity And Electromagnetism (Theory) Course code: BSNM-2395 (I) for B.Sc. (Non Medical) BCSM-2395 (I) for B.Sc. (Computer Science)	IV	**Deleted** Oblique Incident	
III	**Physics (Optics and Lasers)** **Course Code:** BSNM-3395 (I) for B.Sc. (Non Medical) BCSM-3395 (I) for B.Sc. (Computer Science)	Change in name of Paper	**OPTICS**	**OPTICS and LASERS**
		UNIT I	**Merged** Distribution of intensity in Young's double slit experiment **with** Young's double slit experiment. **Merged** Temporal and spatial coherence, Mathematical analysis of temporal coherence **with** Coherent sources of light,	UNIT I and Unit II of previous year are merged to UNIT I **Added in Unit I(Topics from UNIT II)** Change of phase on reflection. Interference in thin films due to reflected and transmitted light. non reflecting films. Newton's Rings. Michelson Interferometer.
			Deleted Fresnel double mirror, Llyod's single mirror, Achromatic fringes.	
		UNIT II	**Shifted to UNIT I**	**Added**

			Change of phase on reflection, Interference in thin films due to reflected and transmitted light, non-reflecting films, Newton's Rings. Michelson Interferometer, **Deleted** Interference in parallel and wedge shaped films, Colour of thin films.Need for extended source for interference by division of amplitude, Fabry Perot interferometer and etalon. Distribution of intensity in Fabry Perot fringes.	Huygen's fresnel theory, half-period zones, Zone plate, Distinction between fresnel and fraunhoffer diffraction. Fraunhoffer diffraction due to single slit, rectangular and circular apertures, Effect of diffraction in optical imaging, Resolving power of telescope in diffraction grating, its use as a spectroscopic element and its resolving power, Resolving power of telescope and of diffraction grating.
		UNIT III	**Shifted to UNIT II** Huygens'sfresnel theory, half-period zones, Zone plate, Distinction between Fresnel and Fraunhoffer diffraction. Fraunhoffer diffraction due to single slit, rectangular and circular aperture, double slits and plane transmission grating, Effect of diffraction in optical imaging, its use as a spectroscopic element and its resolving power, Resolving power of telescope, of diffraction grating, of microscope and of Fabry-Perot interferometer.	**Added** Plane Polarized light, Elliptically polarized light, wire grid polarizer, Sheet polarizer, Mauls' Law, Brewester Law, Polarization by reflection and scattering, Double reflection, Nicol prism, Retardation plates, Production and Analysis of polarized light, Quarter and half wave plates.

		UNIT IV	**Shifted to UNIT III** Plane Polarized light, Elliptically polarized light, wire grid polarizer, Sheet polarizer, Mauls' Law, Brewester Law, Polarization by reflection and scattering, Double reflection, Nicol prism, Retardation plates, Production and Analysis of polarized light, Quarter and half wave plates.	**Added** **Laser Fundamentals:** Derivation of Einstein relations. Concept of stimulated emission and population inversion. broadening of spectral lines. three level and four level laser schemes. Threshold and Schawlow Tonnes condition. Components of laser devices. types of lasers. Ruby and Nd:YAG lasers. He-Ne and CO2 lasers construction. mode of creating population inversion and output characteristics. application of lasers –a general outline.
IV	**Physics (Quantum Mechanics)** **Course Code:** BSNM-4395 (I) for B.Sc. (Non Medical) BCSM-4395 (I) for B.Sc. (Computer Science)	**Unit III**	**Deleted** Schrodinger equation for spherically symmetric potential for hydrogen atom. Spherical harmonics and their solution. Physical significance of quantum number, Degeneracy	**Elaborated** one dimensional potential step **With** One dimensional step potential for E>V0 , one dimensional step potential for 0<E<V0 **Added** Quantum mechanical tunnelling effect
		UNIT IV	**Deleted** Production of X Rays and its properties, X-ray spectra, Moseley law, Absorption of X Rays, Auger effect, Molecular bonding of hydrogen	**Added** Free particle in three dimensional rectangular box. Eigen wave function. Eigen values of momentum, energy and degeneracy. three dimensional harmonic oscillator (Cartesian

			molecule ion and hydrogen molecule, Molecular spectra, selection rules, Raman Effect.	coordinates) wave function, energy levels, degeneracy, Schrodinger's wave equation in spherical polar co-ordinates, Schrodinger wave equation for spherically symmetric potential for hydrogen atom, wave function of H atom, (Φ, θ(Θ)solution of R(r), equations.
IV	**Physics (Atomic and Molecular Spectra)Course Code:** BSNM-4395 (II) for B.Sc. (Non Medical) BCSM-4395 (II) for B.Sc. (Computer Science)	Change in name of Paper	**Atomic Spectra and Laser**	**Atomic and Molecular Spectra**
		Unit I	**MERGED** Brief review of Bohr and Rutherford model of atom. **With** Bohr theory **Shifted to Unit II** spin orbit coupling, total angular momentum, fine and Hyperfine structure of hydrogen atom, Normal Zeeman effect, anomalous Zeeman effect.	**Added** Observation of spectra, Types of spectra, Spectral analysis, Units in spectroscopy, Bohr's correspondence Principle, quantum numbers, The Spinning electron and the vector model, Stern Gerlach Experiment, Total Quantum number, Term values, Magnetic moment(Orbital, Spin and Total)
		UNIT II	**Shifted to UNIT III**	**Added** Electron Spin orbit interaction, Fine and Hyperfine structure of Hydrogen atom, Energy level and different series of alkali spectra, Doublet structure in alkali Spectra (Fine Structure), Selection

				rules for doublets. Zeeman Effect and its experimental setup. Classical theory of Normal Zeeman effect. Quantum theory of Normal and anomalous Zeeman effect
		UNIT III	**Deleted** **Laser Fundamentals:** Derivation of Einstein relations, Concept of stimulated emission and population inversion, Fauchber Ledenberg formula, Threshold and Schawlow Tonnes condition, Components of laser devices and its types, three level and fourlevel laser schemes, elementary theory of optical cavity.	**Added** **Many Electron System Spectra:** Exchange symmetry of wave function, Pauli's Exclusion principle, Electronic configuration and atomic states. shells, subshells in atoms. Two valence electron atoms: LS and JJ coupling schemes and resulting spectral terms. optical spectra for one and many electron system(Helium). spectra of alkaline earth atoms.
		UNIT IV	**Deleted** **Laser Systems:** Construction, mode of creating population inversion and output characteristics of Ruby laser, He-Ne laser, CO_2laser and Nd: YAG laser, applications of lasers–a general outline, Q-switching, Basics of holography	**Added** **X Ray and Molecular Spectra:** X-ray spectra, Mosley law, Absorption spectra, Auger effect, Molecular bonding. Molecular spectra, selection rules, symmetric structure. Rotational Vibrational. electronic level and spectra of molecules, Raman spectra. Introduction to Raman spectra.

V	**Physics (Condensed Matter Physics)** **(Theory)** **Course Code:** BSNM-5395 (I) for B.Sc. (Non Medical) BCSM-5395 (I) for B.Sc. (Computer Science)	III	**Replaced** (Lattice vibrations, Concepts of phonons, scattering of photons by phonons, Vibration and monoatomic, linear chains, Density of modes, Einstein and Debye models of specific heat.) **Shifted to IVth Unit** Free electron model of metals, Free electron, Fermi gas and Fermi energy.	**Replaced with** Lattice vibrations, One Dimensional Monoatomic Lattice, Dispersion relation, phonons, phonon momentum during elastic and inelastic scattering, Inelastic scattering of photons by phonons, Specific heat of solids, Classical Model of specific heat of solids (Dulong and Petit's Law), Einstein and Debye Models of Specific Heat of Solids. T^3 law.
		IV	-	**Shifted from Unit III** Free electron model of metals, Free electron, Fermi gas and Fermi energy.

The correction in spelling suggested by Dr. Khanna was applied and **Approved syllabus attached herewith as Annexure D.**

The house approved the Item: Phy 8: 2022:3

Item: Phy 8: 2022: 4 To discuss the syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 1 to 4th under continuous evaluation system for the session 2022-23. **(Annexure E)**

The proposed syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 1 to 4th under continuous evaluation system for the session 2022-23 was discussed by Board members and they approved the Syllabus with following changes:

Semester	Name of the course and course Code	Unit	2021-22	2022-23
I	Mechanics I Course Code: BOPL-1393	I	**Deleted** Relationship of conservation laws and symmetries of space and time	**Added** Introduction to cylindrical coordinate System, Conservative and non-conservative forces, Relation between conservative force and potential energy, Work done by conservative forces.

		II		**Added** Conservation Laws, variable mass systems, motion of a rocket,
		III	**Topics Merged** Conservation of angular momentum and examples-shape of the galaxy, angular momentum of solar system. Torques due to internal forces, angular momentum about center of mass.	**Added** Torque due to central forces and conservation of angular momentum for central force and it's consequences
		IV		**Added** Angular Momentum of a particle and system of particles. Torques due to internal forces. Conservation of angular momentum
	Electricity and Magnetism-I Course No. BOPL-1394	I	**Deleted** Introduction to gradient, divergence & curl; their physical significance. Rules for vector derivatives, useful relations involving gradient, divergence &curl. Fundamental theorem for gradients, Gauss's and Stoke's theorems.	**Added** Basic ideas of Vector Calculus Gradient, Divergence, curl and their physical significance. Laplacian in rectangular, cylindrical and spherical coordinates. Coulomb's Law for point charges and continuous distribution of charges. Electric field due to dipole, line charge and sheet of charge. Electric flux. Gauss's Law and its applications. Gauss's divergence theorem and differential form of Gauss's Law. Green's theorem
		II	**Deleted** Electric charge and its properties	**Added** Work and potential difference. Relation between potential and electric field. Potential difference as line integral of electric field
		III	**Deleted** Conductors in the electrostatic field, Capacitors, Measurement of charge in motion, Transformation of electric and magnetic	**Added** Measurement of electrical images for plane conductors and sphere, Multipole expansion . Solution of boundary volume problems.

			fields in different frames of references, Electric field due to moving charges, electric force in two inertial frames, Interaction between moving charges.	
		IV		**Added** Introduction to Tensors, Polarizability tensors
II	Course Code: BOPL-2393 Electricity and Magnetism-II	I	**Deleted** Hall Effect	
		III	**Deleted** Inductive coupling of electrical circuits	**Added** Coefficient of coupling and rearranged articles
		IV	**Deleted** Oblique Incidence	
	Course Code: BOPL-2394 Vibrations and Waves	IV		Addition of 'longitudinal waves in solids – wave equation, and its solution'.
IV	Mechanics II Course Code: BOPL-4393	I	**Deleted** Michelson Morley Experiment, Explanation of the Null Result, Postulates of Special Theory of Relativity, Lorentz transformation equations, Length contraction, Time dilation, Experimental evidence in support of time dilation, Twin paradox, Relativity of simultaneity, Relativistic formula for the composition of velocities, The velocity addition theorem	**Shifted** Fictitious forces in non-inertial frames due to translation and rotation **(Elaborated)**, Effect of rotation of earth on 'g', Effects of centrifugal and Coriolis forces produced as a result of earth's rotation. Foucault's pendulum and its equation of motion.
		II	**Deleted** Variation of mass with velocity: Relativity of mass, mass energy equivalence, Relation	**Added** Concept of ether,

			between momentum and energy, Transformation equations for momentum and energy,	**SHIFTED** Michelson Morley Experiment. Explanation of the Null Result Postulates of Special Theory of Relativity, Lorentz transformation equations, Length contraction, Time dilation, Experimental evidence in support of time dilation, Twin paradox, Relativity of simultaneity, Relativistic formula for the composition of velocities
		III	**Deleted** Concept of Minkowski space, geometrical interpretation of Lorentz transformations of space & time; simultaneity; contraction and dilation. Space-like, time like and light-like intervals, four vectors, concept of world lines.	**Added** Increase in mass of a body in an inelastic collision, Kinetic energy at low speeds Particles with zero mass. Force in relativistic mechanics, Lorentz transformations for force **Shifted** Variation of mass with velocity: Relativity of mass, Increase in mass of a body in an inelastic collision, mass energy equivalence, Relation between momentum and energy. Transformation equations for momentum and energy
		IV	**Deleted** Fictitious forces, Effect of rotation of earth on 'g', Effects of centrifugal and Coriolis forces produced as a result of earth's rotation. Foucault's pendulum and its equation of motion. Four Vector	**Added** Geometrical representation of simultaneity, length contraction, and time dilation, **Shifted and rearranged** Concept of Minkowski space: world line and world point, spacetime intervals: Time like interval, Spacelike interval, Lightlike interval, Geometrical Interpretation of Lorentz Transformations
	Atomic Spectroscopy Course Code: BOPL-4392	I	**Deleted** Light sources, Spectral analysis, Representation of spectral lines by terms, Evidences in favour of Bohr's Theory, Experimental	**Added** quantum numbers. The Spinning electron and the vector model. Stern Gerlach Experiment. Total Quantum number, Term values, Magnetic moment(Orbital, Spin and Total)

			confirmation of Bohr's Theory	
		II	**Deleted** Term values. The effective quantum number and the quantum defect, Spin orbit interaction for Non-penetrating orbits	**Added** Fine structure of Hydogen atom, Zeeman Effect and its experimental setup, Classical theory of Normal Zeeman effect, Quantum theory of Normal and anomalous Zeeman effect, Selection and Intensity rules of Zeeman effect
		II		**Added** Merged the topics 1. Electron Spin orbit interaction and spin orbit interaction of non penetrating orbits 2. Energy level diagram of Sodium atom and Different series in alkali spectra
		III	**Deleted** Early discoveries and developments, The vector model of one electron system in weak magnetic field. The magnetic moment of a bound electron, Magnetic interaction energy, The Paschen-Back effect, The Paschen-Back effect of a Principal-series doublet, Selection rules for the Paschen-Back effect, the Zeeman and Paschen-Back effect of hydrogen.	**Added** Exchange symmetry of wave function, Pauli's Exclusion principle, Electronic configuration and atomic states, shells, sub shells in atoms, Two valence electron atoms: LS and JJ coupling schemes and resulting spectral terms, optical spectra for two electron system(Helium), spectra of alkaline earth atoms.
				Added Book name Atomic and Molecular Spectra: Laser by Raj Kumar

IV	Change of Paper and Course Code		Statistical methods Course Code: BOPL-4175	Numerical Methods and Error Analysis Course Code: BOPL-4395
III	**Course Code: BOPP-3396 Physics Lab-III**		**Deleted** To study the absorption spectra of iodine.	**Added** 1. Verify laws of probability distribution by throwing of similar coins. 2. To determine the heating efficiency of an electric kettle with varying voltage. 3. To find the coefficient of Thermal Conductivity of a bad conductor by Lee's method.
IV	**Course Code: BOPP-4396 Physics Lab-IV**		**Deleted** 1. Verify laws of probability distribution by throwing of similar coins. 2.To determine the heating efficiency of an electric kettle with varying voltage. 3. To find the coefficient of Thermal Conductivity of a bad conductor by Lee's method	**Added** 1. To determine charge to mass ratio (e/m) of an electron by short solenoid method. 2. To determine the value of e/m for the electron by long solenoid method. 3. To find ionization potential of mercury 4. To study the absorption spectrum of iodine vapours and hence to calculate the value of vibrational energies and force constant for its excited states. 5. To determine the discharge spectrum of hydrogen gas using hydrogen gas discharge tube and determine the value of Rydberg's constant with the help of grating spectrometer. 6. To study characteristics of solar cell.

(Approved syllabus attached herewith as Annexure E)

The house approved the Item: Phy 8: 2022:4

Item: Phy 8: 2022:5 To discuss the syllabus and course outcomes of Physics in **B.Sc. (Hons.) Physics**, Semester 5th and 6th sem under continuous evaluation system for the session 2022-23. **(Annexure F)**

The Board of Study members discussed the syllabus and course outcomes of Physics **B.Sc. (Hons.) Physics**, Semester 5th and 6th sem under continuous evaluation system for the session 2022-23 and they approved it during Zoom meeting.

(Approved syllabus attached herewith as Annexure F)

The house approved the Item: Phy 8: 2022:5

Item: Phy 8: 2022:6 To discuss the syllabus and course outcomes of **M.Sc. Physics,** Semester 3rd and 4th under continuous evaluation system for the session 2022-23. **(Annexure G)**

The syllabus and course outcomes of **M.Sc. Physics,** Semester 3rd and 4th under continuous evaluation system for the session 2022-23, was discussed by the members and they approved it without any change.
(Approved syllabus attached herewith as Annexure G)

The house approved the Item: Phy 8: 2022:6

Item: Phy 8: 2022:7 To discuss the syllabus and course outcomes of **M.Sc. Physics,** Semester 1st to 4th under credit based continuous evaluation grading system (CBCEGS) for the session 2022-24. **(Annexure H)**

Chairperson Mrs. Parminder Kaur discussed in details the introduction of credit based continuous evaluation grading system (CBCEGS) for M.Sc. Physics for the session 2022-24. The following points were highlighted and discussed and approved.

1. Overall M.Sc physics for session 2022-24 will have **104 credits with 96 mandatory and 8 Inter Disciplinary.**
But the credits of Inter disciplinary courses will not be added in calculation of SGPA/CGPA. These will be qualifying courses only grades will be assigned.

2. The course scheme for credits is as follows:

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF TWO-YEAR DEGREE PROGRAMME

Master of Science (Physics)

Session (2023-24)

SEMESTER-III

Course Code	Course Name	Course Type	Hours Per Week	Credits L-T-P	Total Credits	Marks				Examination time (in Hours)
						Total	Ext.		CA	
							L	P		
MPHL-3391	Quantum Mechanics-II	C	5	4-1-0	5	100	80	-	20	3
MPHL-3392	Electrodynamics-II	C	4	4-0-0	4	100	80	-	20	3
MPHL-3393	Condensed Matter Physics-II	C	4	4-0-0	4	100	80	-	20	3
MPHL-3394	Nuclear Physics	C	4	4-1-0	5	100	80	-	20	3
MPHP-3395	Condensed Matter Physics Lab-II	C	6	0-0-3	3	100	-	80	20	3
MPHP-3396	Nuclear Physics Lab	C	6	0-0-3	3	100	-	80	20	3
Student can opt any one of the following Interdisciplinary compulsory courses		IDE			4	100	80		20	3
Total				**24**		**600**				

IDEC-3101	Effective Communication Skills
IDEM-3362	Basics of Music (Vocal)
IDEH-3313	Human Rights and Constitutional Duties
IDEI-3124	Basics of Computer Applications
IDEW-3275	Indian Heritage: Contribution to the world

(Credits of these courses will not be added to SGPA)

SEMESTER-IV

Course Code	Course Name	Course Type	Hours Per Week	Credits L-T-P	Total Credits	Total	Ext.		CA	Examination time (in Hours)
							L	P		
MPHL-4391	Particle Physics	C	5	4-1-0	5	100	80	-	20	3
MPHL-4392	Statistical Mechanics	C	5	4-1-0	5	100	80	-	20	3
MPHL-4393 (OPT-_)	Student may choose any two subjects from	C	4	4	4	100	80	-	20	3

MPHL-4394(OPT-_)	the following list of options	C	4	4	4	100	80	-	20	3
MPHD-4395	Assignment/ Project	C		0-0-6	6	100		80	20	3
Total				24	24	500				

OPT-I Photonics
OPT-II Radiation Physics
OPT-III Reactor Physics
OPT-IV Nano Technology
OPT-V Material Science
OPT-VI Space Science

(Approved syllabus attached herewith as Annexure H)

3. Examination and Evaluation Policy passed in the Second Meeting of Academic Council Dated 24-08-2018 under Agenda Item (AC 2: 2018: 4 (Annexure C)) for UG and PG Vocational Programmes under Credit Based Continuous Evaluation Grading System (CBCEGS), with modifications approved in the Fourth Meeting of Academic Council dated 23.11.2019 under Agenda Item (AC 4: 2019: 4(v)) will be extended and implemented to all PG Diploma and Degree Programmes.

The detailed syllabus for M.Sc Physics under Credit Based Continuous Evaluation Grading System (CBCEGS) for session 2022-24 as discussed and passed in BOS meeting is attached herewith as an **Annexure H.**

The house approved the Item: Phy 8: 2022:7

Item: Phy 8: 2022:8 To discuss the syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4 under continuous evaluation system for the session 2022-23. **(Annexure I)**

The syllabus and course outcomes of **B.Sc. Home Science** Semester 3 and 4 under continuous evaluation system for the session 2022-23, was discussed by the members and they approved it without any change. **(Approved syllabus attached herewith as Annexure I)**

The house approved the Item: Phy 8: 2022:8

Item: Phy 8: 2022:9 To discuss the syllabus and course outcomes of **B.Sc. (Hons.) Maths**, Semester 1 **and 2** under continuous evaluation system for the session 2022-23. **(Annexure J)**

The syllabus and course outcomes of **B.Sc. (Hons.) Maths**, Semester 1 **and 2** under continuous evaluation system for the session 2022-23, was discussed by the members and they approved it without any change. **(Approved syllabus attached herewith as Annexure J)**

The house approved the Item: Phy 8: 2022:9

Item: Phy 8: 2022:10 To approve the Examiners and Evaluators for Physics papers in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th. **(Annexure K)**

The chairperson discussed the Examiners and Evaluators for Physics papers in **B.Sc. Non-Medical and Computer Science**, Semester 1st to 6th with the members and they approved it. **(Lists attached herewith as Annexure K)**

The house approved the Item: Phy 8: 2022:10

Item: Phy 8: 2022:11 To approve the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Physics**, Semester 1 **to 6th . (Annexure L)**
The chairperson discussed the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Physics**, Semester 1st to 6th with the members and they approved it. **(Lists attached herewith as Annexure L)**

The house approved the Item: Phy 8: 2022:11

Item: Phy 8: 2022:12 To approve the Examiners and Evaluators for Physics papers in **M.Sc. Physics**, Semester 1st to 4th **(Annexure M)**
The chairperson discussed the Examiners and Evaluators for Physics papers in **M.Sc. Physics,** Semester 1st to 4th with the members and they approved it. **(Lists attached herewith as Annexure M)**

The house approved the Item: Phy 8: 2022:12

Item: Phy 8: 2022:13 To approve the Examiners and Evaluators for Physics papers in **B.Sc. Home Science** Semester 3 and 4. **(Annexure N)**

The chairperson discussed the Examiners and Evaluators for Physics papers in **B.Sc. Home Science**, Semester 3rd and 4th with the members and they approved it. **(Lists attached herewith as Annexure N)**
The house approved the Item: Phy 8: 2022:13

Item: Phy 8: 2022:14 To approve the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Maths**, Semester 1 **and 2 (Annexure O)**

The chairperson discussed the Examiners and Evaluators for Physics papers in **B.Sc. (Hons.) Maths**, Semester 1st **and 2nd** with the members and they approved it. **(Lists attached herewith as Annexure O)**

The house approved the Item: Phy 8: 2022:14

Item: Phy 8: 2022: 15 To discuss the inputs to upgrade the teaching methodologies during session 2022-23.

The house appreciated the activities held and approved the (Item: Phy 8: 2022: 15) teaching methodologies and various activities held in the department to enhance teaching learning process. **(Attached as Annexure B)**

Item: Phy 8: 2022: 16 To discuss research inputs and plans of department for session 2022-23.

The house highly appreciated the research work of the department including CURIE grant and major research project procured by the department from Department of Science and Technology (DST) Govt. of India. **(Attached as Annexure C)**

The house approved the Item: Phy 8: 2022:16

(Chairperson)

Mrs. Parminder Cheema
Head
Department of Physics