VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
(Sponsored by Vasavi Academy of Education)
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13.05.2025

MINUTES OF MEETING OF BOARD OF STUDIES (BoS) IN PHYSICS held on 13.05.2025 (Tuesday) at 2.30 PM

The following members were present for the meeting of Board of Studies (in Physics) held on 13.05.2025 at 2.30 PM in the college campus.

S.No	Name	Designation	Category
1.	Dr. A. S. Sai Prasad	Professor and HOD Department of Physics Vasavi College of Engineering Hyderabad	Chairman, BOS, Physics
2.	Dr. D. Karuna Sagar	Sr. Professor, Dean of Sciences, Department of Physics, Osmania University, Hyderabad	Osmania University nominee
3.	Dr. S. Srinath	Professor, School of Physics University of Hyderabad	Member (Subject expert)
4.	Dr. J. Suryanarayana	Professor, Department of Physics IIT-Hyderabad	Member (Subject expert)
5	Dr. M. Prasad	Professor, Head and Chairman BoS in Physics, Department of Physics, Osmania University, Hyderabad	Member (Subject expert)
6	Dr. Haranath	Professor, Department of Physics NIT- Warangal, Warangal	Member (Subject expert)
7.	Dr P Venkateswara Rao	Assoc. Prof. Department of Physics, VCE, Hyderabad	Member
8.	Dr. G. Ramadevudu	Sr. Asst. Prof. Department of Physics, VCE, Hyderabad	Member
9.	Dr. R. Nagaraju	Asst. Prof. Department of Physics, VCE, Hyderabad	Member
10.	Dr. Vanita Thakur	Asst. Prof. Department of Physics, VCE, Hyderabad	Member

The following member could not attend the meeting:

1.	Dr. M. Sree Ramana	Scientist-F, RCI, Hyderabad	Member (Subject expert)

Prof. A. S. Sai Prasad, Head and BoS Chairman, in Physics welcomed the members. He briefly explained to the proposed revision in the scheme of examination, evaluation, credit hours etc., with effect from the Academic Year 2025-26. Prof. A.S. Sai Prasad also explained the need for revision in the curriculum offered by the Department of Physics in B.E first year I and II semesters with effect from the Academic Year 2025-2026.

Then, the following agenda items were taken up for consideration:

1. **Confirmation of Minutes of the meeting of BoS in Physics, held on 17th May 2024**

   The minutes of the meeting of BOS meeting held on 17.05.2024 have been circulated to the members for their comments. The members after due deliberations approved the minutes of the BoS meeting held on 17.05.2024.

2. Action taken report on the resolutions of BoS meeting in Physics, held on 17th May 2024

Action Taken Report:

Item No	Members Suggestions	Action Taken report
3	Discuss and approval of theory syllabi of courses offered in I and II semesters of B.E program by the Department of Physics w.e.f 2024-2025 academic year.	As for the suggestions, the following revisions were incorporated: • Fermi-Dirac qualitative statistics included- in CSE, IT, ECE and EEE syllabus. • Carnot cycle added in civil syllabus • XRD- crystal size included in open elective
5	Discuss and approve open elective theory courses syllabi offered to B.E students by the Department of Physics w.e.f 2024-2025 academic year.	As per the advice of the external members, topics of ion beam sputtering were added in Unit-II of fundamentals of thin film technology and applications of OE
6	Publications and other research details etc.	Faculty members are trying collaborative research. • Dr. Vanita Thakur and Dr. G. Ramadevudu submitted a project for Rs 30 Lakhs to DRDO-SERB • Dr. R. Nagaraju received a project grant of Rs.60,000/- per year from UGC-DAE consortium, Indore

Members noted down the Action Taken Report on the resolutions taken in the BoS meeting held on 17th May 2024

1. Discussion on the revised Scheme of curriculum to be implemented w.e.f. AY 2025-26

Prof. A. Sai Prasad informed the external members that the Academic Committee at the college level after thorough discussion on various academic aspects, resolved to revise the curriculum offered at B.E level w.e.f A.Y. 2025-26. As part of that, some new courses have been proposed to introduce in the B.E first year from the A.Y 2025-26. The following are the changes suggested pertaining to the courses offered by the Department of Physics:

1. The credits to the regular theory courses offered to first year B.E in I and II semesters were revised and now instead of 3 credits, only 2 credits will be given w.e.f Academic Year 2025-26.
2. Instead of three hours Physics lab session, now the lab will be conducted in two hours duration, and four faculty members will be allotted to each batch instead of three.
3. Number of theory classes per week will be three.
4. The syllabi contain only four units since two credits are allotted to these courses.

Members are made the following suggestions:

- All the external members expressed an opinion that the laboratory session in B.E first year should be remained for three hours as most of the students had not performed any experiments in their Intermediate level. Three-hour duration is required for effective conduct of lab, measurements, calculations, and conclusions. The practical exposure in first year will benefit the students in the long run during their remaining period of study.

- If the number of credits is reduced to 2 from 3 for theory course, four units/modules in the theory syllabus are reasonable so that the teachers can handle it in the stipulated number of classes per semester.

The members of the Board Studies in Physics after thorough deliberations approved the Scheme of Instruction and curriculum to be implemented w.e.f. AY 2025-26 with the above suggestions.

2. Discussion and approval of theory syllabi of courses offered in I and II semesters of B.E program by the Department of Physics w.e.f 2025-2026 academic year.

The draft syllabi framed CSE, CSE (AIML), and IT, ECE and EEE, Civil and Mechanical Engineering branches have been placed before the members for their comments and suggestions. The titles of the proposed theory courses to be implemented w.e.f the academic year 2025-26 are given below:

S.No	Title of the Course	Year and Semester	Branch
1	Physics of Semiconductors and Quantum Mechanics (PSQM)	I B.E I Semester	CSE, CSE(AIML) and IT
2	Quantum Mechanics for Engineers (QME)	I B.E II Semester	ECE and EEE
3	Optics and Acoustics and Sensors	I B.E II Semester	Civil Engineering
4	Engineering Physics (EP)	I B.E II Semester	Mech. Engineering

The members made the following suggestions:

- The title of the course offered to CSE, CSE(AIML) and IT offered in I B.E I Semester as **Quantum Mechanics and Physics of Semiconductors (QMPS)** instead of Physics of Semiconductors and Quantum Mechanics (PSQM)

(A) For B. E. CSE, CSE (AIML) and IT Programs:

S. No.	Physics of Semiconductors and Optoelectronic Devices (PSOD) A.Y. 2024-25		Physics of Semiconductors and Quantum Mechanics (PSQM) A.Y. 2025-26	
1	Unit-1	Fundamentals of Crystallography	Removed	
2	Unit-2	Introduction to Quantum Mechanics	Unit-1	Physics of Semiconductors and Devices
3	Unit-3	Semiconductor Physics	Unit-2	Fundamentals of Quantum Mechanics
4	Unit-4	Optoelectronic Devices	Unit-3	Basics of Quantum Computing
5	Unit-5	Lasers and Optical Fibers	Unit-4	Lasers and Optical Fibers

The following changes have been proposed in the contents of the syllabus for B. E. CSE, CSE (AIML) and IT Programs:

UNITS	Deletions	Additions
Unit-I: Physics of Semiconductors and Devices	E-k diagram, energy bands in solids, Fermi energy level, extrinsic semiconductors, formation of a PN junction, diode current equation. Applications of semiconductor devices to computer architecture.	**Optoelectronic Devices:** Principle, construction and working of LED, photodiode, solar cell
Unit II: Fundamentals of Quantum Mechanics	No Change. But following topics were shifted to Unit-III: Introduction to ket and bra vector notation, representation of Qubit, applications of quantum computing	No new topics added
UNIT-III: Basics of Quantum Computing	-	Newly introduced
Unit-IV: Lasers and Optical Fibres	Construction and working of He-Ne laser and applications of lasers including computer devices such as memory, printers.	No new topics added

Members made the following suggestions:

- Re arrange the units in the following order instead of proposed:

Unit-1	Fundamentals of Quantum Mechanics
Unit-2	Physics of Semiconductors and Devices
Unit-3	Lasers and Optical Fibres
Unit-4	Basics of Quantum Computing

- Prof. S. Srinath and Sr. Prof. D. Karuna Sagar said that addition of quantum gates etc., in the Unit-IV: Quantum Computing in the draft syllabus is very new for the B.E students.

- Prof. S. Srinath and Prof. Haranath and Sr. Prof. D. Karuna Sagar opined that, in quantum computing unit, it is sufficient to introduce basics at B.E first year level. Hence the topics like Topological Qubits: Proposals, Majorana bits and advantages and Atoms and Ions: Trapped ions, Rydberg atoms, Neutral atoms can be omitted.

- Prof. J. Suryanarayana suggested to keep the quantum computing as a broad course under quantum umbrella.

(B) For B.E. ECE and EEE Programs:

S. No.	**QUANTUM MECHANICS AND MATERIALS SCIENCE (QMMS) A.Y. 2024-25**		**QUANTUM MECHANICS FOR ENGINEERS (QME) A.Y. 2025-26**	
1	Unit-1	Fundamentals of crystal structure	Removed	
2	Unit-2	Quantum mechanics	Unit-1	Physics of Semiconductors and Devices
3	Unit-3	Semiconductor physics	Unit-2	Fundamentals of Quantum Mechanics
4	Unit-4	Lasers and Optical fibres	Unit-3	Basics of Quantum Bit Theory
5	Unit-5	Materials science	Unit-4	Superconductivity

Comparative analysis of previous and proposed syllabus for A.Y 2025-26

UNIT	**Deletions**	**Additions**
Unit-I Physics of Semiconductors and Devices	• Classical free electron (Drude) theory and its limitations, • E-k diagram • Fermi-Dirac statistics (Qualitative), types of semiconductors • expression for extrinsic equilibrium carrier concentration • variation of Fermi energy level with doping concentration • formation of P-N Junction	• Optoelectronic Devices: Principle, construction and working of LED, photodiode, solar cell (Previously in unit-III shifted to this unit)
Unit-II Fundamentals of Quantum Mechanics	• Davisson and Germer's experiment • Introduction to bra and ket vector notation, representation of Qubit, applications of quantum computing. (Removed from this unit and added in Basics of Quantum Bit Theory)	No additions
UNIT-III Basics of Quantum BIT Theory	New unit introduced	New unit
UNIT-IV Superconductivity	• dielectric materials and magnetic materials have been removed	• London penetration depth • Entropy • Josephson's dc and ac effects • High temperature superconductors

Members made the following suggestions:

- Rearrange the units in the following order instead of proposed:

Unit-1	Fundamentals of Quantum Mechanics
Unit-2	Physics of Semiconductors and Devices
Unit-3	Basics of Quantum Computing
Unit-4	Lasers and Optical Fibres

- Prof. S. Srinath and Sr. Prof. D. Karuna Sagar said that quantum computing unit in the draft syllabus is very new for the B.E students.

- Prof. S. Srinath and Prof. Haranath and Sr. Prof. D. Karuna Sagar opined that, in quantum computing unit, it is sufficient to introduce basics at B.E first year level. Hence the topics like Topological Qubits: Proposals, Majorana bits and advantages and Atoms and Ions: Trapped ions, Rydberg atoms, Neutral atoms can be omitted.

(C) For B.E. Mechanical Engineering Program:

S. No.	ENGINEERING PHYSICS (EP) A.Y. 2024-25		ENGINEERING PHYSICS (EP) A.Y. 2025-26	
1	Unit-1	Acoustics	Unit-1	Acoustics
2	Unit-2	Lasers and Optical Fibres	Unit-2	Lasers and Optical Fibres
3	Unit-3	Magnetic Materials		**Removed**
4	Unit-4	Cryogenics	Unit-3	Cryogenics
5	Unit-5	Nanomaterials	Unit-4	Nanomaterials

The following changes are proposed in syllabus for A.Y 2025-26

UNIT	Deletions	Additions
UNIT-I: Acoustics	No changes	No changes
UNIT-II: Lasers and Optical fibres	No changes	No changes
UNIT-III: Cryogenics	None	• properties of materials at cryogenic temperatures • superconductivity
UNIT-IV: Nanomaterials	• X-Ray Diffraction: Determination of crystallite size, stress and strain	• quantum wires, quantum wells, and quantum dots • properties of nanomaterials • Atomic Force Microscope (AFM)

Members made the following suggestions:

- The proposed syllabus is good.
- Addition of topics like properties of materials at cryogenic temperatures and AFM will benefit the mechanical Engineering students for material characterization.

(D) For B.E. Civil Engineering Program:

S. No.	ENGINEERING PHYSICS (EP) A.Y. 2024-25		ENGINEERING PHYSICS (EP) A.Y. 2025-26	
1	Unit-1	Oscillation	Removed	
2	Unit-2	Wave Optics	Unit-1	Wave Optics
3	Unit-3	Lasers and Optical Fibres	Unit-2	Lasers and Optical Fibres
4	Unit-4	Acoustics	Unit-3	Acoustics
5	Unit-5	Sensors for Structural Health Monitoring &Thermodynamics	Unit-4	Sensors for Structural Health Monitoring &Thermodynamics

There are no additions of topics in the proposed syllabus.

UNIT		Deletions	Additions
Unit-1	Wave Optics	No changes	No changes
Unit-2	Lasers and Optical Fibres	No changes	No changes
Unit-3	Acoustics	Cavitation effect	No new topics added
Unit-4	Sensors for Structural Health Monitoring &Thermodynamics	No changes	No changes

Members made the following suggestions:

- Rename the unit-IV as Sensors for Structural Health Monitoring & Introduction to Thermodynamics

The members of the Board Studies in Physics after thorough and deep discussion approved the theory syllabus with the changes as suggested above for the academic year 2025-26 offered by the Department of Physics to B.E students of CSE, CSE(AIML) and IT branches in the first semester and ECE, EEE, Mech and Civil engineering branches in the second semester with effect from the Academic Year 2025-26.

3. Discuss and approval of the laboratory courses syllabi offered in I and II semesters of B.E program by the Department of Physics w.e.f 2025-2026 academic year.

The proposed syllabi of laboratory courses are placed before the members. The proposed list of experiments for laboratory courses of CSE, CSE (AIML), and IT, ECE and EEE, Civil and Mechanical Engineering branches are given below:

S.No	Title of the Course	Year and Semester	Branch
1	Semiconductor and Optoelectronics Lab (SOE lab)	I B.E I Semester	CSE, CSE(AIML), and IT
2	Applied Physics Lab (AP Lab)	I B.E II Semester	ECE and EEE
3	Engineering Physics Lab (E.P. Lab)	I B.E II Semester	Civil & Mech. Engineering

Members made the following suggestions:

- Keep enough number of sets to enable the students to perform the experiments individually.

The members of the Board Studies in Physics after thorough discussion approved the laboratory syllabus for the academic year 2025-26 offered by the Department of Physics to B.E students of CSE, CSE(AIML) and IT branches in the first semester and ECE, EEE, Mech and Civil engineering branches in the second semester with effect from the Academic Year 2025-26.

4. Discuss and approve open elective theory courses syllabi offered to B.E students by the Department of Physics w.e.f 2025-2026 academic year.

The following open elective courses are proposed to be offered by the Department of Physics w.e.f 2025-26:

S.No	Title of the Course	Year & Semester	Credits
1	Fundamentals of Smart Materials and applications (FSMA)	II B.E III Sem	02
2	Introduction to nanotechnology (INT)	III B.E VI Sem	03

The meeting is ended with vote of thanks.

Prof. A. S. Sai Prasad
Chairman, BoS in Physics