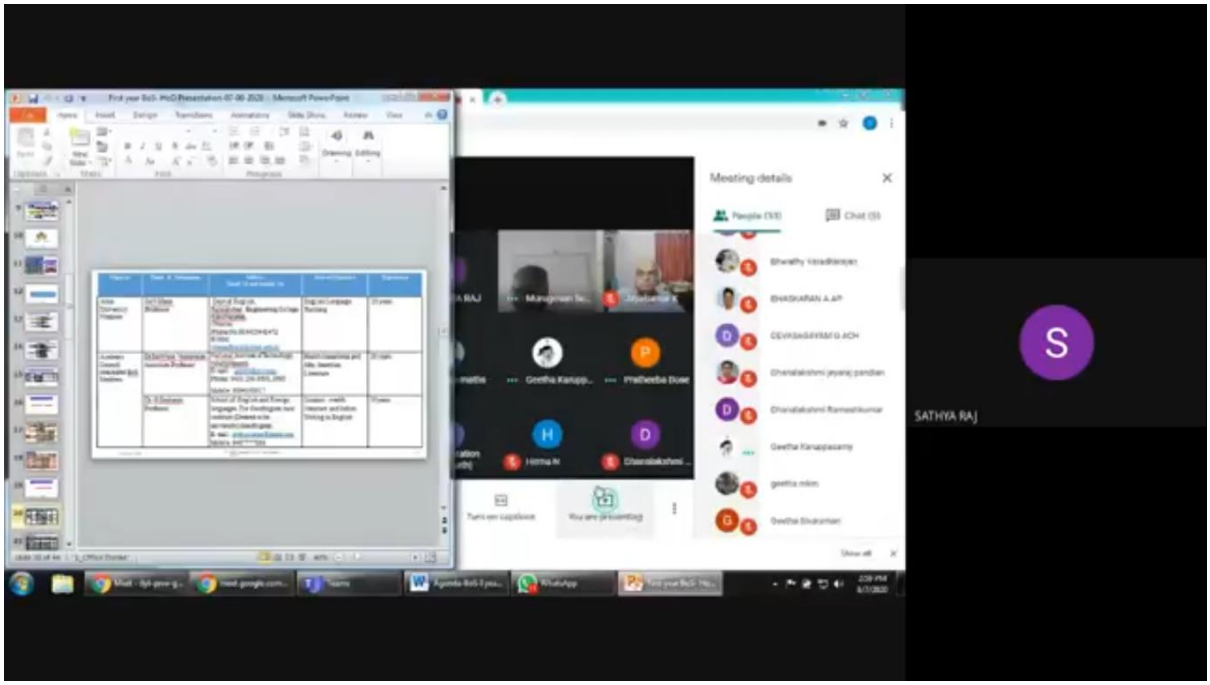
KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C.Nagar, K.Vellakulam - 625 701, (Near Virudhunagar), Madurai District.

ANNEXURE XIV

DEPARTMENT OF PHYSICS



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DEPARTMENT OF PHYSICS
Minutes of Meeting –BoS–7th August, 2020

MINUTES OF THE 1st ONLINE MEETING

BOARD OF STUDIES OF PHYSICS

DATE: 7th August, 2020, Friday **Time:** 2.30 PM –6.10 PM

PLATFORM : GOOGLE MEET

Meeting Link: https://meet.google.com/dyt-prva-gdu

IN ATTENDANCE:

S.No	Name of the Expert	Designation	Capacity
1	Dr. A. Bhaskaran	Professor and Head, Department of Applied Physics, Head - Campus Safety and Security, Sri Venkateswara College of Engineering, Sriperumbudur - 602117	Overall Coordinator of First year Board
2	Dr.M.Mahendran	Department of Physics Thiagarajar College of Engineering, Madurai Email: manickam-mahendran@tce.edu Phone: 04522482240	Anna University Nominee
3	Dr.J.Hemalatha	National institute of Technology, Tiruchirappalli hemalatha@nitt.edu 0431-2503800 / 2503803	Academic Council nominated BoS Members
4	Dr.K.Jayakumar	Professor, Department of Physics, Gandhigram Rural Institute (Deemed to be University), Gandhigram, Dindigul	

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		Kjkumar_gri@rediffmail.com 04512452371	

FACULTY OF PHYSICS	**MEMBERS**

S.No	**Name of the Faculty**	**Designation**
1	Dr.K.Geetha	First Year Co-ordinator
2	Dr. A.Yelilarasi	Chairman / HoD-Physics
3	Dr. M.Hema	Associate Professor / Physics
4	Dr.K.Sakthiraj	Assistant Professor / Physics
5	Dr.M.Shanthi	Assistant Professor / Physics
6	Dr.G.Bharathy	Assistant Professor / Physics
7	Mr.K.M.Manikandan	Assistant Professor / Physics

THE MINUTES:

The meeting was called for considering the Undergraduate curriculum & syllabi.

DISCUSSIONS:

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Dr.A.Yelilarasi presented the syllabus for first semester theory Engineering Physics & Basic sciences laboratory (common to all programmes).

1. **ENGINEERING PHYSICS**

a) Dr.M. Mahendran suggested to remove the following topics in **UNIT – I -ULTRASONICS**: Magnetostriction effect, piezoelectric effect, drilling, welding, soldering and cleaning, pulse echo system through transmission and reflection modes. He suggested to include: Magnetic particle testing. Dr.K.Jayakumar enquired Dr.M.Mahendran about the reason to remove those concepts.He insisted that first year students need to study the basic concepts and an elaborate syllabus is better for them. Dr.A.Bhaskaran suggested that the faculty would explain the basic terminology in their lesson plan.

b) Dr.M. Mahendran suggested to remove some topics in Unit –II - WAVES AND FIBER OPTICS: waves oscillations-free, forced and damped oscillations (qualitative) - population of energy levels, Derivation part of Einstein coefficient, population of energy levels, resonant cavity, optical amplification, losses associated with optical fibers.

c) Dr.K.Jayakumar suggested the following reference books for Engineering Physics;

- John Wilson, J. F. B. Hawkes, Optoelectronics: An Introduction, Prentice Hall of India, 1998.
- P.M. Mathews and Venkatesan, A Text book of Quantum Mechanics, Tata McGraw hill, 2010.
- Elementary Solid state physics by Ali omar.

d) Dr.A.Yelilarasi presented the syllabus for Basic Sciences laboratory Course (Physics Laboratory). The members suggested that no modifications were required and it could be taken as per the availability of the instruments.

e) Dr.A.Yelilarasi presented the syllabus proposed for second semester Program specific Physics theory courses.

2. **PHYSICS FOR INFORMATION SCIENCE**

a) Dr.A.Yelilarasi requested the expert members for their suggestion to replace the Unit-V, Nano-electronic devices with Sensors and Transducers in **Physics for Information science (c**ommon for CSE, IT, AI) because it had been suggested by IT BOS members

b) In this syllabus certain modifications were suggested by experts. In Unit-I-

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Conducting & Super conducting Material Dr.M.Mahendran suggested to remove Introduction - Classical free electron theory of metals - Expression for electrical conductivity & thermal conductivity of metals using classical free electron theory - Wiedemann-Franz law – Success and failures of classical theory. These are the basic things studied by the students in their higher secondary level. He suggested to include free electron theory, super conducting electrode single flux quantum technology used in super computers. He insisted that it was essential for CSE, IT, AI students.

c) In Unit-II-Semiconducting materials, Dr.M.Mahendran suggested to include Carrier generation and recombination processes. He opined that the basic aspect of Semiconductor was not needed. He suggested to include continuity equation and rectification equation in syllabus. Dr.K.Jayakumar also suggested the same.

d) In Unit-III – Magnetic Properties of Materials Dr.M.Mahendran suggested that the concepts were basic. In this unit he also suggested to add Langevin equation, Nonisotropy, Neel temperature. Dr.K.Jayakumar suggested to replace the content Magnetic hard disk with GMR sensor. He also suggested that studying Density of states would be heavy for a first year student.

e) Experts suggested that Unit-V content was at a higher level, i.e research level. They felt that some minor corrections were needed. The syllabus must be on-par with the Anna university level not more than that.

f) Dr.K.Jayakumar recommended the following books: 1. Physics of Semiconductor Devices – S.M.Sze , and 2. Electronic transport in Mesoscopic Systems – Suprio Dutta

3. PHYSICS FOR BIOTECHNOLOGY

a) Dr.A.Yelilarasi presented the syllabus **Physics for Biotechnology (BT)**. Dr.M.Mahendran suggested to remove the Nucleation-homogeneous and heterogeneous nucleation from Unit-I. He also suggested that the given text book would not be sufficient to cover the entire syllabus. He suggested the book “Material Science” by Dr.A.Marikani and Dr.Rajagopal. He also suggested to remove the topics like electron density in bulk material, Quantum structure and quantum wire in Unit-II. He also suggested remove the topic-Types of Optical microscopy in Unit-III.

b) Dr.K.Jayakumar suggested to change the title of Unit-IV as Optical Instruments. Also he suggested to add more references.

c) Dr.M.Mahendran suggested to remove the following topics in Unit-V: Types and

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applications of ceramics, classification of composites, role of matrix and reinforcement, processing of fiber reinforced plastics, silicone and chemical sensors. He suggested to add advanced materials like Nanocomposites, multifunctional material and Drug delivery materials.

d) Dr.K.Jayakumar suggested a reference book NANO: The essentials By T.Pradeep and Quantum Well,Quantum Well Wire, Quantum Dot – Paul.

4. MATERIAL SCIENCE

a) Dr.A.Yelilarasi presented the syllabus **Material Science (common to MECH, MTR & PT students)**. Dr.K.Jayakumar enquired why the syllabus was specific for Iron in Unit-I. Dr.A.Bhaskaran explained the importance of iron-carbon diagram for mechanical students . Dr.K.Jayakumar was satisfied with his answer.

b) Experts suggested that the syllabus was quite good and looked heavy for the first year students. Dr.M.Mahendran noted that Unit-III Mechanical Properties looked too heavy. He suggested to reduce the content of the syllabus otherwise it would be difficult for question paper setting.

c) Experts enquired about the Question paper setting & evaluation process. Dean Examination Dr.S.Kalyani, HoD/EEE explained the process and Dr.M.Vasanthi, Dean Academic and Vice Principal ,assured that it would be documented in the minutes and it would be represented in syllabus approval meeting. Draft of the syllabus would be sent to the experts before academic council meeting for final approval of the syllabus.

d) Dr.K.Jayakumar suggested a reference book NANO: The essentials By T.Pradeep.

5. PHYSICS FOR CIVIL ENGINEERING

a) Dr.A.Yelilarasi presented the syllabus **Physics for Civil Engineering (for CIVIL students)**. Dr.M.Mahendran suggested to add the topic “Thermal Material” in Unit-IV New Engineering materials.

b) Dr.M.Mahendran and Dr.K.Jayakumar suggested to include Basic concept of Colour Temperature of lamps /lights the book Engineering Physics by Dr.Arumugam as a reference book.

6. PHYSICS FOR ELECTRONICS ENGINEERING

a) Dr.A.Yelilarasi presented the syllabus **Physics for Electronics Engineering (for ECE, EEE & EIE)**.

b) Dr.M.Mahendran suggested the following modifications: **Unit-I**: Expression for electrical conductivity-Thermal conductivity, Wiedemann Franz law, Success and

Failures, Quantum free electron theory may be removed. He suggested that instead of SQUID, MRI and CT scans should be included. He suggested to include electrical switching devices like cyclotron.

c) **Unit-II**: Intrinsic semiconductors Energy band diagram, carrier concentration in intrinsic semiconductors, extrinsic semiconductors,carrier concentration in N-type & p-Type semiconductors, Application of Hall effect, Zener and avalanche breakdown in p-n junctions. He suggested to include Diffusion current & drift current in Unit-II Physics of semiconducting devices.

d) **Unit- III**: BOS members suggested to remove Dia, para and ferromagnetic materials, Hysteresis curve, soft and hard magnetic materials, Applications of dielectrics. They suggested to include the applications of ferromagnetic materials, theories of ferromagnetism, Exchange interaction between atoms and Coulomb adiabatic demagnetization.

e) **Unit-IV**: Suggested to include Color centers

f) **Unit-V**: BOS members suggested to remove Quantum interference effects, conductivity of metallic nanowires, quantum resistance and conductance and suggested to include new simple devices. He insisted to add reference book written by S.O.Pillai.

g) Dr.K.Jayakumar suggested the following reference books:
1. Physics of Semiconductor Devices – S.M.Sze
2. Electronic transport in Mesoscopic Systems – Suprio Dutta
3. Solid State Electronic Devices - Ben G .Streetsman

h) In general the experts asked to reduce the content of the syllabus to avoid the auditing
problem during question setting.

7. Dr.J.Hemalatha suggested the following reference books for all subjects.

a) Laser Fundamentals, William T. Silfvast, 2nd edn, Cambridge University press, New York (2004)
b) Fundamentals of Physics, 6th Edition, D. Halliday, R. Resnick and J. Walker, John Wiley and Sons, New York (2001).
c) Fundamentals of Physics, R. Shankar, Yale University Press, New Haven and London (2014).
d) Introduction to solid state physics,7th Edn, CharlsKittel, Wiley, Delhi (2007)
e) Charles Kittel, Introduction to Solid State Physics, Wiley Eastern, 8thedition, (2012)

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f) S. Blakemore, Solid State Physics, 2ndedition, Cambridge University Press (1974
g) L. H. Van Vlack, Elements of Materials Science and Engineering, 6thedition, Addison Wesley (1989).
h) J. Dekker, Solid State Physics, MacMillan India (1995).
i) Concepts of Modern Physics. Arthur Beiser, Tata McGraw-Hill, New Delhi (2010).
j) A Textbook of Engineering Physics, M N Avadhanulu, S. Chand Publishing, 1992
k) Semiconductor Physics and Devices: Basic principle, Donald A. Neamen 4th ed,, McGraw-Hill, New York (2012).
l) L.I. Schiff, Quantum Mechanics, McGraw-Hill (1968).
m) D.J. Griffiths, Introduction to Quantum Mechanics, Pearson Education (2005)
n) Introduction to Nanotechnology, C.P. Poole and F.J. Owens, Wiley, New Delhi (2007)
o) N.John Dinardo and Weinheim Cambridge, Nanoscale Characterization of Surfaces & Interfaces, 2ndedition, Wiley-VCH (2000).

8. Date of next meeting: The expert members suggested the first year coordinator to fix the next meeting as per her team's convenience and intimate the same to them.

9. Dr.N.Pratheepa, HoD/English proposed the vote of thanks to all the external and internal experts and the meeting was adjourned.