



SRI VASAVI INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, ECE, & ME)

Approved by AICTE, New Delhi & Affiliated to JNTUK, Kakinada

Nandamuru-521369, Pedana Mandal, Krishna District, Andhra Pradesh, India

Minutes of the BOS Meeting –R23

Physics-BOS Consisting of Dr.A.V.Raghuram (Chairman), Dr.P.Pardhasarathi (Internal Member), Dr.V.RaviKumar (Internal Member) and Dr.P.Dakshina Murthy (External Member) for R-23 for Sri Vasavi Institute of Engineering & Technology, Nandamuru an Autonomous Institution met on 13th September 2023 to design the course content of the following:

1. Engineering Physics (Theory) for (I B.Tech, I Sem) , CSM,ECE,MECH & CIVIL Branches
2. Engineering Physics Lab for (I B.Tech,I Sem) CSM, ECE,Mech,CIVIL Branches
3. Engineering Physics (Theory) for (I B.Tech, II Sem) , CSE Branch
4. Engineering Physics Lab for (I B.Tech,II Sem) CSE Branch


Dr. A.V.Raghuram
Head of the Department
Department of Science & Humanities
SRI VASAVI INSTITUTE OF
ENGINEERING & TECHNOLOGY
Nandamuru - 521 369
Pedana Mandal, Krishna District

Dr.V.Ravikumar
(Internal Member Online)

Dr.P.Pardhasaradhi
(Internal Member Online)


Dr.P.Dakshina Murthy
(External Member)

Board of Studies meeting held on 13th September, 2023 in the department of physics discussed the following items of R-23 Regulations of B.Tech

A) Detailed discussion on the following has been done :

- i) Course Structure
- ii) Discussion on syllabus for new regulations(R-23)
- iii) Innovative teaching techniques

B) The following items were also discussed and approved:

- i) Course structure for I year B.Tech course of R-23 regulations
- ii) Detailed syllabus of I B.Tech I/II Semesters along with outcomes of each course
- iii) Physics theory & Laboratory courses.

C) The following are the courses approved for I B.Tech I & II Semesters

- I Semester - Engineering Physics
- I Semester - Engineering Physics Lab
- II Semester - Engineering Physics
- II Semester - Engineering Physics Lab

1) Signature of the External Members with Names:

Name:

Signatures:

1. Dr.D.Dakshinamurthy
Professor
Department of Physics
JNTUK, Kakinada



2. Dr. P.Pardha Saradhi
Professor
Department of Physics
K.L.E.F
Greenfields
Vaddeswaram-Guntur
P.Pardhasaradhi

3. Dr.V.Ravikumar
Professor
Department of Physics
Acharya Nagarjuna University
Guntur

2) Signature of the internal Members with Names:

Name:

1. Mr. P. Rambabu

2. Mrs. P. Purnima

Signatures:

P. Rambabu

P. Purnima

Signature of BOS Chairman with Name:

Dr. A. V. Raghuram


Head of the Department
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SYLLABUS FOR I.B.TECH I SEMESTER

L	T	P	C
3	0	0	3

ENGINEERING PHYSICS
(for CSE(AI&ML),ECE,CIVIL & MECHANICAL ENGINEERING)

Course Objectives:

To bridge the gap between the Physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc, enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

- CO1: Analyze the intensity variation of light due to polarization, interference and diffraction.
- CO2: Familiarize with the basics of crystals and their structures.
- CO3: Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.
- CO4: Summarize various types of polarization of dielectrics and classify the magnetic materials.
- CO5: Explain the basic concepts of Quantum Mechanics and the band theory of solids.
- CO6: Identify the type of semiconductor using Hall effect.

UNIT I Wave Optics

Interference: Introduction - Principle of superposition -Interference of light - Interference in thin films (Reflection Geometry) & applications - Colours in thin films- Newton's Rings, Determination of wavelength and refractive index.

Diffraction: Introduction - Fresnel and Fraunhofer diffractions - Fraunhofer diffraction due to single slit, double slit & N-slits (Qualitative) – Diffraction Grating - Dispersive power and resolving power of Grating (Qualitative). Polarization: Introduction -Types of polarization - Polarization by reflection, refraction and Double refraction - Nicol's Prism -Half wave and Quarter wave plates.

UNIT II Crystallography and X-ray diffraction

Crystallography: Space lattice, Basis, Unit Cell and lattice parameters – Bravais Lattices – crystal systems (3D) – coordination number - packing fraction of SC, BCC & FCC - Miller indices – separation between successive (hkl) planes.

X-ray diffraction: Bragg's law - X-ray Diffractometer – crystal structure determination by Laue's and powder methods

UNIT III Dielectric and Magnetic Materials

Dielectric Materials: Introduction - Dielectric polarization - Dielectric polarizability, Susceptibility, Dielectric constant and Displacement Vector - Relation between the electric vectors - Types of polarizations- Electronic (Quantitative), Ionic (Quantitative) and Orientation polarizations (Qualitative) - Lorentz internal field - Clausius- Mossotti equation - complex dielectric constant - Frequency dependence of polarization - dielectric loss

Magnetic Materials: Introduction - Magnetic dipole moment - Magnetization-Magnetic susceptibility and permeability - Atomic origin of magnetism - Classification of magnetic materials: Dia, para, Ferro, anti-ferro & Ferri magnetic materials - Domain concept for Ferromagnetism & Domain walls (Qualitative) - Hysteresis - soft and hard magnetic materials and its Applications.

UNIT IV Quantum Mechanics and Free electron Theory

Quantum Mechanics: Dual nature of matter - Heisenberg's Uncertainty Principle - Significance and properties of wave function - Schrodinger's time independent and dependent wave equations- Particle in a one-dimensional infinite potential well.

Free Electron Theory: Classical free electron theory (Qualitative with discussion of merits and demerits) - Fermi-Dirac distribution - Density of states - Fermi energy-Quantum free electron theory - electrical conductivity based on quantum free electron theory.

UNIT V Semiconductors

Semiconductors: Formation of energy bands - classification of crystalline solids - Intrinsic semiconductors: Density of charge carriers - Electrical conductivity - Fermi level - Extrinsic semiconductors: density of charge carriers - dependence of Fermi energy on carrier concentration and temperature - Drift and diffusion currents - Einstein's equation - Hall effect and its applications.

Textbooks:

1. A Text book of Engineering Physics, M. N. Avadhanulu, P.G.Kshirsagar & TVS Arun Murthy, S. Chand Publications, 11th Edition 2019.
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018
3. Engineering Physics - P.K.Palani Samy

Reference Books:

1. Engineering Physics - B.K. Pandey and S. Chaturvedi, Cengage Learning 2021.
2. Engineering Physics - Sanjay.D. Jain, D. Sahasrabudhe and Girish, University Press. 2010
3. Engineering Physics - M.R. Srinivasan, New Age international publishers (2009).

Web Resources: <https://www.loc.gov/rr/scitech/selected-internet/physics.html>

P. Dakshina Murthy
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L	T	P	C
0	0	2	1

ENGINEERING PHYSICS LAB

(for CSE(AI&ML),ECE,CIVIL & MECHANICAL ENGINEERING)

Course Objectives:

To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes: The students will be able to

- CO1: Operate optical instruments like travelling microscope and spectrometer. CO2: Estimate the wavelengths of different colours using diffraction grating. CO3: Plot the intensity of the magnetic field of circular coil carrying current with distance. CO4: Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively. CO5: Calculate the band gap of a given semiconductor. CO6: Identify the type of semiconductor using Hall effect.

List of Experiments:

1. Determination of radius of curvature of a given Plano-convex lens by Newton's rings.
2. Determination of wavelengths of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Verification of Brewster's law
4. Determination of dielectric constant using charging and discharging method.
5. Study the variation of B versus H by magnetizing the magnetic material (B-H curve).
6. Determination of wavelength of Laser light using diffraction grating.
7. Estimation of Planck's constant using photoelectric effect.
8. Determination of the resistivity of semiconductors by four probe methods.
9. Determination of energy gap of a semiconductor using p-n junction diode.

10. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.
11. Determination of Hall voltage and Hall coefficient of a given semiconductor using Hall effect.
12. Determination of temperature coefficients of a thermistor.
13. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.
14. Determination of magnetic susceptibility by Kundt's tube method.
15. Determination of rigidity modulus of the material of the given wire using Torsional pendulum.
16. Sonometer: Verification of laws of stretched string.
17. Determination of young's modulus for the given material of wooden scale by non-uniform bending (or double cantilever) method.
18. Determination of Frequency of electrically maintained tuning fork by Melde's experiment.

Note: Any TEN of the listed experiments are to be conducted. Out of which any TWO experiments may be conducted in virtual mode.

References:

- A Textbook of Practical Physics - S. Balasubramanian, M.N. Srinivasan, S. Chand Publishers, 2017.

Web Resources

- www.vlab.co.in
- <https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype>


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P. Dakshina Murthy
(P. DAKSHINA MURTHY)



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SYLLABUS FOR I.B.TECH II SEMESTER

L	T	P	C
3	0	0	3

ENGINEERING PHYSICS
(Computer science & Engineering)

Course Objectives:

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L	T	P	C
0	0	2	1

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12. Determination of temperature coefficients of a thermistor.
13. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.
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Web Resources

- www.vlab.co.in

<https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype>


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Minutes of the BOS Meeting –R23

The Board of studies meeting was held on 15th September, 2023 in the Department of Physical Education department to discuss the following points for R-23 regulations of I B.Tech I & II Semesters.

Detailed discussion on the following has been done

- The courses to be implemented under R-23 Regulations
- Discussion on syllabus for new regulations(R-23)

A) The following items were discussed and approved.

- Course structure for I B.tech I & II Semesters of R-23 Regulations
- Discussion on syllabus for new regulations(R-23)
Health and wellness, Yoga and sports & NSS

The following are the courses approved for I / I & I / II semesters of I B.Tech

I- semester: Health and wellness, Yoga and sports for CSE

II –Semester: Health and wellness, Yoga and sports for AIML, CIVIL, ECE & MECH

NSS:

I Semester: NSS for AIML, CIVIL, ECE & MECH

II –Semester: NSS for CSE

Signature of Internal members with names:

Name:

1. Dr.C.Salmon Sudheer
Assistant Professor
Department of Physical Education
Sri Vasavi Institute of Engineering & Technology,
Nandamuru
Mob: 8121946754
E-mail: Salmon0072@gmail.com

Signature

BOS Chairman

2. Mr.S.Ramakrishna Paramahansa
Assistant Professor
Department of Physical Education
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4. N.Anil Kumar
Associate Professor
Program coordinator,NSS
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E-mail: nss.sviet.@sviet.edu.in
5. Mr.P.Rambabu
Assistant professor
Coordinator NSS
Department of Science & Humanities
Sri Vasavi Institute of Engineering & Technology,
Nandamuru
Mob: 8974714888
E-mail: rambabu.posimsetti@gmail.com

P. Rambabu

Signature of Internal members with names:

Subject coordinator:

Dr. C.Salmon Sudheer



Members:

Mr.S.Ramakrishna Paramahamsa



Mr T.Ramesh



Mr.P.Rambabu



Chairman:

Dr.C.Salmon Sudheer





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SYLLABUS FOR I.B.TECH I SEMESTER

L	T	P	C
0	0	1	0.5

HEALTH AND WELLNESS, YOGA AND SPORTS

(Computer science & Engineering)

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental and physical wellness by balancing emotions in their life. It mainly enhances the essential traits required for the development of the personality.

Course Outcomes: After completion of the course the student will be able to

CO1: Understand the importance of yoga and sports for Physical fitness and sound health.

CO2: Demonstrate an understanding of health-related fitness components.

CO3: Compare and contrast various activities that help enhance their health.

CO4: Assess current personal fitness levels.

CO5: Develop Positive Personality

UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of immunity
Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index (BMI) of all age groups.

Activities:

- Organizing health awareness programmes in community
- Preparation of health profile
- Preparation of chart for balance diet for all age groups

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices – Asana, Kriya, Mudra, Bandha, Dhyana, Surya Namaskar

UNIT III

Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and

Modern Olympics, Asian games and Commonwealth games.

Activities:

- i) Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.
Practicing general and specific warm up, aerobics
- ii) Practicing cardiorespiratory fitness, treadmill, run test, 9 min walk, skipping and running.

Reference Books:

1. Gordon Edlin, Eric Golanty. Health and Wellness, 14th Edn. Jones & Bartlett Learning, 2022
2. T.K.V.Desikachar. The Heart of Yoga: Developing a Personal Practice
3. Archie J.Bahm. Yoga Sutras of Patanjali, Jain Publishing Company, 1993
4. Wiseman, John Lofty, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. -- 3rd ed. Human Kinetics, Inc.2014

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities of Health/Sports/Yoga.
2. Institutes must provide field/facility and offer the minimum of five choices of as many as Games/Sports.
3. Institutes are required to provide sports instructor / yoga teacher to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.

Sakun
BOS Chairman



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SYLLABUS FOR I.B.TECH II SEMESTER

L	T	P	C
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HEALTH AND WELLNESS, YOGA AND SPORTS
(for CSE(AI&ML),ECE,CIVIL & MECHANICAL ENGINEERING)

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental and physical wellness by balancing emotions in their life. It mainly enhances the essential traits required for the development of the personality.

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UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of immunity
Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index (BMI) of all age groups.

Activities:

- i) Organizing health awareness programmes in community
- ii) Preparation of health profile
- iii) Preparation of chart for balance diet for all age groups

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices – Asana, Kriya, Mudra, Bandha, Dhyana, Surya Namaskar

UNIT III

Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and Modern Olympics, Asian games and Commonwealth games.

Activities:

- i) Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.
Practicing general and specific warm up, aerobics
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4. Wiseman, John Loft, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. -- 3rd ed. Human Kinetics, Inc.2014

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SYLLABUS FOR I.B.TECH I SEMESTER

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NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE
(for CSE(AI&ML),ECE,CIVIL & MECHANICAL ENGINEERING)

Course Objectives:

The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the students will be able to

- CO1: Understand the importance of discipline, character and service motto.
- CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques.
- CO3: Explore human relationships by analyzing social problems.
- CO4: Determine to extend their help for the fellow beings and downtrodden people.
- CO5: Develop leadership skills and civic responsibilities.

UNIT I Orientation

General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

- i) Conducting –ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) Conducting orientations programs for the students –future plans-activities-releasing road map etc.
- iii) Displaying success stories-motivational biopics- award winning movies on societal issues etc.
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.

UNIT II Nature & Care

Activities:

- i) Best out of waste competition.
- ii) Poster and signs making competition to spread environmental awareness.
- iii) Recycling and environmental pollution article writing competition.
- iv) Organising Zero-waste day.
- v) Digital Environmental awareness activity via various social media platforms.
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living.
- vii) Write a summary on any book related to environmental issues.

UNIT III Community Service

Activities:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village. identification of problems- helping them to solve via media- authorities-experts-etc.
- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS,
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.
- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.

Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, *A Text Book of National Service Scheme* Vol;I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. *Red Book - National Cadet Corps* – Standing Instructions Vol I & II, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., “Introduction to Environmental Engineering”, McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. “Introduction to Environmental Engineering and Science”, Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. *Social Problems in India*, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.

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P. Ramulu



SRI VASAVI INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, ECE, & ME)

Approved by AICTE, New Delhi & Affiliated to JNTUK, Kakinada
Nandamuru-521369, Pedana Mandal, Krishna District, Andhra Pradesh, India

SYLLABUS FOR I.B.TECH II SEMESTER

L	T	P	C
0	0	1	0.5

NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Computer science & Engineering)

Course Objectives:

The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the students will be able to

CO1: Understand the importance of discipline, character and service motto.

CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques.

CO3: Explore human relationships by analyzing social problems.

CO4: Determine to extend their help for the fellow beings and downtrodden people.

CO5: Develop leadership skills and civic responsibilities.

UNIT I Orientation

General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

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- Conducting orientations programs for the students –future plans-activities-releasing road map etc.
- Displaying success stories-motivational biopics- award winning movies on societal issues etc.
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Activities:

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P. Ram Lal