

## BSMS-Physics

Semester - IV						
S. No	Course Code	Course Name	L	T	P	C
1	CE 301	<u>Environmental studies</u>	2	1	0	6
	EE 229	<u>Electronic Devices (Post Mid Sem)</u>	3	0	0	3
2	PH 204	<u>Mathematical Physics-I</u>	2	1	0	6
3		<u>Program Elective-I</u>	2	1	0	6
4		<u>HSS Elective-I</u>	3	0	0	6
5	PH 212	<u>General Physics Laboratory</u>	0	0	3	3
		<u>ALO</u>				
		Total Credits				30

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1	<b>Title of the course</b> (L-T-P-C)	<b>Environmental studies</b> <b>(2-1-0-6)</b>
2	<b>Pre-requisite courses(s)</b>	Nil
3	<b>Course content</b>	<p><b>Module A:</b> Natural Resources, Ecosystems, Biodiversity and its conservation: Natural resources and ecosystems, Forest, grassland, desert and aquatic ecosystems, biodiversity at global, national and local levels, conservation of biodiversity</p> <p><b>Module B:</b> Air Pollution Introduction to understanding air quality management, fundamental processes of meteorology, Air Pollutants – Gaseous and particulate, Criteria for pollutants, ambient and source standards, Aerosols: Characterisation of aerosols, size distributions, measurement methods; Transport behaviour: diffusion, sedimentation, inertia; Visibility; principles of particulate control systems.</p> <p><b>Module C:</b> Water Treatment Discussion of water quality constituents and introduction to the design and operation of water and wastewater treatment processes.</p> <p><b>Module D:</b> Solid Waste Management and Climate Change Different aspects of solid and hazardous waste management. Climate change and greenhouse gas emissions, technologies would reduce the greenhouse gas emissions. Climate change and its possible causes.</p> <p><b>Module E:</b> Sociology/Environmentalism Description: Environmentalism in sociological tradition, Sustainability, North-South divide, Political economy approaches in environmental studies, Debates over environmental issues</p> <p><b>Module F:</b> Economics Energy economics and financial markets, Market dynamics, Energy derivatives, Energy Efficiency; Sustainable Development: Concept, Measurement &amp; Strategies, Interaction between Economic Development and the Environment</p> <p><b>Module G:</b> Philosophy Environmental ethics, Deep ecology, Practical ecology, Religion and attitude towards environmental ethics, Ecofeminism and its evolution.</p> <p><b>Module H:</b> Field work and project: visit to a local area to document environmental assets, case studies of a simple ecosystem and group discussions on current environmental issues.</p>
4	<b>Texts/References</b>	<ol style="list-style-type: none"> <li>1. Cunningham W.P. and Cunningham M.A. (2002), Principles of Environmental Science, Tata McGraw-Hill Publishing Company, New Delhi.</li> <li>2. Dasgupta, P. and Maler, G. (eds.), (1997), The Environment and Emerging Development Issues, Vol. I, Oxford University Press, New Delhi.</li> <li>3. Jackson, A.R.W. and Jackson, J.M. (1996), Environmental Sciences: The Environment and Human Impact, Longman Publishers.</li> <li>4. Nathanson, J.A., (2002), Basic Environmental Technology, Prentice Hall of India, New Delhi.</li> <li>5. Redclift, M. and Woodgate, G. (eds.), (1997), International Handbook of Environmental Sociology.</li> <li>6. Srivastava, K.P. (2002), An Introduction to Environmental Study, Kalyani Publishers,</li> <li>7. Ludhiana.Review articles from literature</li> </ol>

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1	<b>Title of the course</b> (L-T-P-C)	<b>Electronic Devices</b> <b>(3-0-0-3)</b>
2	<b>Pre-requisite courses(s)</b>	EE 102
3	<b>Course content</b>	<ul style="list-style-type: none"> <li>● Introduction of Semiconductor Equations: Fermi- Dirac Distribution, Boltzmann's approximation</li> <li>● Semiconductor Diodes: Barrier formation in metal- semiconductor junctions, PN homo- and hetero- junctions; CV characteristics and dopant profiling; IV characteristics; Small signal models of diodes; Some Applications of diodes.</li> <li>● Field Effect Devices: JFET/HFET, MIS structures and MOSFET operation; JFET characteristics and small signal models; MOS capacitor CV and concept of accumulation, depletion and inversion; MOSFET characteristics and small signal models.</li> <li>● Bipolar transistors: IV characteristics and Ebers-Moll model; small signal models; Charge storage and transient response</li> </ul>
4	<b>Texts/References</b>	<ol style="list-style-type: none"> <li>1. D. A. Neamen, Semiconductor Physics and Devices, 4e Edition, McGrawHill, 13th reprint, 2016.</li> <li>2. E.S. Yang, Microelectronic Devices, McGraw Hill, Singapore, 1988.</li> <li>3. B.G. Streetman, Solid State Electronic Devices, 7<sup>th</sup> Edition, Pearson, 2016.</li> <li>4. J. Millman and A. Grabel, Microelectronics, II edition 34th reprint McGraw Hill, International, 2017.</li> <li>5. A.S. Sedra and K.C. Smith, Microelectronic Circuits, Saunder's College Publishing, 1991.</li> <li>6. R.T. Howe and C.G. Sodini, Microelectronics : An integrated Approach, Prentice Hall International, 1997.</li> </ol>