

# Veer Narmad South Gujarat University, Surat

## Proposed Syllabus for T. Y. B. Sc. Sem VI

### Elective Paper II

#### Astrophysics-II

**Note:** The prerequisite for this course is that a student should have taken the Elective paper: Astrophysics-I in Semester V.

<b>Unit 1</b>	<b>Structure and Evolution of Stars (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2<sup>nd</sup>ed.)</b>
	Introduction (14.1), The equation of state for stellar interior (14.3), Mechanical and thermal equilibrium in stars (14.4), Energy generation in stars (14.6), Stellar Evolution (14.7) White Dwarfs (14.8)
<b>Unit 2</b>	<b>Pulsars, Neutron Stars and Black Holes (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2<sup>nd</sup>ed.)</b>
	Discovery of Pulsars (15.1), Rotating Neutron Stars model of Pulsars (15.2), Period distribution and loss of Rotational Energy (15.3), Binary Pulsars (15.7), Black Holes (15.8)
<b>Unit 3</b>	<b>Quasars (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2<sup>nd</sup>ed.)</b>
	The Discovery (20.1), Radio Properties (20.2), Optical Properties (20.3), The Redshift of Quasars (20.4), Active Galactic Nuclei (20.5)
<b>Unit 4</b>	<b>Cosmology (An Introduction to Astrophysics by Baidyanath Basu, Tanuka Chattopadhyay and Sudhindra Nath Biswas PHI Learning Private Ltd 2<sup>nd</sup>ed.)</b>
	Introduction (21.1), Redshift and the Expansion of the Universe (21.2), Matter Density in the Universe and the Deceleration Parameter (21.3), The Cosmological Principle: The perfect Cosmological Principle (21.4), Fundamental Equations of Cosmology (21.5), The Cosmic Microwave Background Radiation (21.8)

#### Suggested books:

1. Astrophysics: Stars and Galaxies by K D Abhyankar, University Press, 2001
2. Introduction to Cosmology by Jayant Narlikar, Cambridge University Press, 2002.



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**Elective Paper III**

**Measurements and Instrumentation-II**

**Note: The prerequisite for this course is that a student should have taken the Elective paper: Measurements and Instrumentation-I in Semester V.**

<b>Unit 1</b>	<b>Primary Sensing Elements and Trasducers 1 (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai &amp; Co 19<sup>th</sup> ed.)</b>
	Resistance Thermometer(25.19), Thermistors(25.20), Integrated circuits temperature transducers(25.22), Variable inductance transducers(25.23), Linear variable differential transformer(LVDT)(25.24), Rotary variable differential transformer(RVDT)(25.25), Synchros(25.26), Resolvers(25.27)
<b>Unit 2</b>	<b>Primary Sensing Elements and Trasducers 2 (Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai &amp; Co 19<sup>th</sup> ed.)</b>
	Capacitive transducers (25.28), Piezo-electric transducers (25.29), Hall effect Transducers (25.30), Magneto-Resistors(25.31), Magneto-elastic and magneto-strictive trasducers(25.32), Optoelectronic transducers(25.33)
<b>Unit 3</b>	<b>Display Devices(Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai &amp; Co 19<sup>th</sup> ed.)</b>
	Introduction (28.1), Electrical indicating instruments(28.2), Digital Instruments(28.3), Electronic counters(28.4), Digital display methods(28.5), Digital display units(28.6), Segmental displays(28.7), DOT matrices(28.8), Rear projection display(28.9), Light emitting diode(28.11), Liquid crystal diodes(28.12), Nixie tubes(28.13), Segmental gas discharge displays(28.14), Decade counting assemblies(DCAs)(28.15), Display systems(28.16)
<b>Unit 4</b>	<b>Modern Sensors and Chemical sensors(Electrical and Electronic Measurements and Instrumentation By A.K. Sawhney, Dhanpat Rai &amp; Co 19<sup>th</sup> ed.)</b>
	Types of modern sensors(32.2), Neno-sensors(32.3), Biosensors(32.4), Introduction(34.1), Probe analysers (34.2), Differential refractometers (34.3), Spectrophotometers(34.4), Detectors(34.5), Filters(34.6),Chromatography(34.7), Electrochemical sensors(34.8),

**Suggested books:**

1. Electrical and electronic measurements and instrumentation By R.K.Rajput, S.Chand Publication
2. Electronic instrumentation by H.S.Kalsi, Mc Graw Hill (third Edition), 2017
3. Electrical and electronic measurements and instrumentation by Syed Imam and Vibhav Kumar Published by Wiley, 2020

