

M.Sc. (Tech) Engineering Physics - Structure
Department of Physics, NIT Warangal

EFFECTIVE FROM THE ACADEMIC YEAR 2016 – 2017

I Year – I Semester

(Common to Electronics, Photonics and Instrumentation Specializations)

S. No	Course Code	Course Title	L	T	P	Credits
1	MA5012	Complex Variables and Integral Transforms	4	0	0	4
2	PH5101	Quantum Mechanics	4	0	0	4
3	PH5102	Solid State Physics	4	0	0	4
4	PH5103	Optical Physics	4	0	0	4
5	PH5104	Network Analysis	4	0	0	4
6	PH5105	Optics Laboratory	0	0	3	2
7	PH5106	Solid State Physics Lab	0	0	3	2
8	PH5107	Networks Lab	0	0	3	2
Total			20	0	9	26

I Year - II Semester

(Common to Electronics, Photonics and Instrumentation Specializations)

S. No	Course Code	Course Title	L	T	P	Credits
1	PH5151	Electromagnetic Theory	4	0	0	4
2	PH5152	Atomic and Molecular Physics	4	0	0	4
3	PH5153	Electronic Devices and Circuits	4	0	0	4
4	PH5154	Signals and Systems	4	0	0	4
5	PH5155	Problem Solving and Computer Programming	4	0	0	4
6	PH5156	Electronic Devices and Circuits Lab	0	0	3	2
7	PH5157	Computer Programming Lab	0	0	3	2
8	PH5158	Signals and Systems Lab	0	0	3	2
9	PH5191	Seminar	0	0	2	1
Total			20	0	11	27

II Year - I Semester

(Common to Electronics, Photonics and Instrumentation Specializations)

S. No	Course Code	Course Title	L	T	P	Credits
1	PH6101	Switching Theory and Logic Design	4	0	0	4
2	PH6102	Materials Science	4	0	0	4
3	PH6103	Opto-Electronics	4	0	0	4
4	PH6104	Linear Integrated Circuit Applications	4	0	0	4
5	PH6105	Measurement Techniques and Error Analysis	4	0	0	4
6	PH6106	Linear Integrated Circuits Lab	0	0	3	2
7	PH6107	Switching Theory and Logic Design Lab	0	0	3	2
8	PH6108	Measurement Techniques Lab	0	0	3	2
Total			20	0	9	26

**II Year - II semester
(Electronics Specialization)**

S. No	Course Code	Course Title	L	T	P	Credits
1	PH6151	Structured Digital System Design	4	0	0	4
2	PH6152	Microprocessors and Interfacing	4	0	0	4
3	PH6153	Communication Systems	4	0	0	4
4		Elective - I	3	0	0	3
5		Elective - II	3	0	0	3
6	PH6154	Digital System Design Lab	0	0	3	2
7	PH6155	Microprocessors and Interfacing Lab	0	0	3	2
8	PH6156	Communication Lab	0	0	3	2
9	PH6191	Seminar	0	0	2	1
Total			18	0	11	25

Elective – I and II (for Electronics Specialization)

1. PH6171 Data Acquisition Systems
2. PH6172 Data Converters and Data Loggers
3. PH6173 High Speed Data Converters
4. PH6174 Pulse Circuits
5. PH6176 Lasers and Applications
6. PH6181 Signal Conditioning Circuits

**III Year - I Semester
(Electronics Specialization)**

S. No	Course Code	Course Title	L	T	P	Credits
1	PH7101	Digital Signal Processing	4	0	0	4
2	PH7102	Microcontrollers and Embedded Systems	4	0	0	4
3		Elective - III	3	0	0	3
4		Elective - IV	3	0	0	3
5		Elective - V	3	0	0	3
6		Elective - VI	3	0	0	3
7	PH7103	Digital Signal Processing Lab	0	0	3	2
8	PH7104	Microcontrollers Lab	0	0	3	2
9	PH7142	Comprehensive Viva	-	-	-	2
Total			20	0	6	26

Electives III, IV, V and VI (for Electronics Specialization)

1. PH7116 Digital Communication
2. PH7117 Electronic Instrumentation
3. PH7118 Fiber Optic Communication
4. PH7119 Medical Instrumentation
5. PH7120 Solar Energy Systems
6. PH7121 Display Technologies
7. PH7122 Telemetry and Telecommand
8. PH7123 Designing with FPGA/CPLDs
9. PH7124 VLSI Design
10. PH7125 Data Communication
11. PH7126 Satellite Communication
12. PH7127 Silicon Photonics

**II Year - II semester
(Photonics Specialization)**

S. No	Course Code	Course Title	L	T	P	Credits
1	PH6157	Optical System Design	4	0	0	4
2	PH6158	Optical Instruments	4	0	0	4
3	PH6153	Communication Systems	4	0	0	4
4		Elective - I	3	0	0	3
5		Elective - II	3	0	0	3
6	PH6159	Optical System Design Lab	0	0	3	2
7	PH6160	Optical Instruments Lab	0	0	3	2
8	PH6161	Opto Electronics Lab	0	0	3	2
9	PH6191	Seminar	0	0	2	1
Total			18	0	11	25

Elective I and II (for Photonics Specialization)

1. PH6175 Non Linear Optics
2. PH6176 Lasers and Applications
3. PH6177 Adaptive Optics
4. PH6178 Polarization Optics
5. PH6171 Data Acquisition Systems
6. PH6172 Data Converters and Data Loggers

**III Year - I semester
(Photonics Specialization)**

S. No	Course Code	Course Title	L	T	P	Credits
1	PH7105	Opto Electronic Sensing and MOEMS	4	0	0	4
2	PH7106	Fourier Optics & Holography	4	0	0	4
3		Elective - III	3	0	0	3
4		Elective - IV	3	0	0	3
5		Elective - V	3	0	0	3
6		Elective - VI	3	0	0	3
7	PH7107	Opto Electronic Sensing Laboratory	0	0	3	2
8	PH7108	Fourier Optics & Networking Lab	0	0	3	2
9	PH7142	Comprehensive Viva	-	-	-	2
Total			20	0	6	26

Elective III, IV, V and VI (for Photonics Specialization)

1. PH7118 Fiber Optic Communication
2. PH7128 Optical Element Production & Testing
3. PH7129 Biophotonics
4. PH7130 IR Optics & Thin Films
5. PH7131 Nano Photonics
6. PH7132 Integrated Optics
7. PH7120 Solar Energy Systems
8. PH7121 Display Technologies
9. PH7119 Medical Instrumentation
10. PH7127 Silicon Photonics
11. PH7134 New Lasing Materials
12. PH7137 Image Processing

II Year - II semester
(Instrumentation Specialization)

S. No	Course Code	Course Title	L	T	P	Credits
1	PH6162	Process Instrumentation	4	0	0	4
2	PH6163	Transducer Technology	4	0	0	4
3	PH6164	Microcontrollers	4	0	0	4
4		Elective I	3	0	0	3
5		Elective II	3	0	0	3
6	PH6165	Micro Controllers Lab	0	0	3	2
7	PH6166	Transducer and Signal Conditioning Lab	0	0	3	2
8	PH6167	Process Control Lab	0	0	3	2
9	PH6191	Seminar	0	0	2	1
Total			18	0	11	25

Elective I and II (for Instrumentation Specialization)

1. PH6179 Industrial Instrumentation
2. PH6180 Process Dynamics and Control
3. PH6181 Signal Conditioning Circuits
4. PH6171 Data Acquisition Systems
5. PH6173 High Speed Data Converters
6. PH6174 Pulse Circuits

III Year - I Semester
(Instrumentation Specialization)

S. No	Course Code	Course Title	L	T	P	Credits
1	PH7109	Analytical Instrumentation	4	0	0	4
2	PH7110	Nuclear Instrumentation	4	0	0	4
3		Elective III	3	0	0	3
4		Elective IV	3	0	0	3
5		Elective V	3	0	0	3
6		Elective VI	3	0	0	3
7	PH7111	Analytical and Process Instrumentation Lab	0	0	2	2
8	PH7112	Nuclear Instrumentation Lab	0	0	2	2
9	PH7142	Comprehensive Viva	-	-	-	2
Total			20	0	4	26

Electives III, IV, V and VI (for Instrumentation Specialization)

1. PH7133 Electronic Instrumentation
2. PH7135 Non-Destructive Testing
3. PH7136 Controller Design using FPGA
4. PH7119 Medical Instrumentation
5. PH7120 Solar Energy Systems
6. PH7121 Display Technologies
7. PH7122 Telemetry and Telecommand
8. PH7137 Image Processing
9. PH7138 Control Systems
10. PH7139 PC Based Instrumentation
11. PH7140 Digital and Distributed Control Systems
12. PH7141 Signal Processing

III Year - II Semester

(Common to Electronics, Photonics, Instrumentation)

S. No	Course Code	Course Title	L	T	P	Credits
1	PH7199	Project Work (26 Weeks)	0	0	0	12
Total			0	0	0	12