

**AcSIR**

**Integrated Dual-Degree PhD (IDDP) Programme**  
**in**  
**Advanced Electronics Engineering**  
**with Focus Area in**  
**Cyber Physical Systems / Smart Sensors / Microwave Devices**  
**at**  
**CSIR-CEERI, Pilani**  
 (Admission Session: August, 2018)

**Semester-wise Courses**

**Semester – I (Credits: 16)**

<b>Subject Code</b>	<b>Subject: Core</b>	<b>L-T-P-C</b>
ENG-CEERI-2-1511	Advanced Engineering Mathematics	3-0-0-3
ENG-CEERI-2-1512	Signal processing and Machine Learning	3-0-0-3
ENG-CEERI-2-1522	Lab: Signal processing and Machine Learning	0-0-2-1
ENG-CEERI-2-1502	Seminar (Non-Credit Compulsory)	0-1-1-0

**Elective-I (any 2 out of 3)**

<b>Subject Code</b>	<b>Subject</b>	<b>L-T-P-C</b>
ENG-CEERI-2-1513	Foundation of Cyber Physical Systems	3-0-0-3
ENG-CEERI-2-1514	Smart Sensors and Interface Electronics	3-0-0-3
ENG-CEERI-2-1515	Microwaves: Devices and System Engineering	3-0-0-3

**Elective-II (any 1 out of 11)**

<b>Subject Code</b>	<b>Subject</b>	<b>L-T-P-C</b>
ENG-CEERI-3-1511	Image Processing and Computer Vision	3-0-0-3
ENG-CEERI-3-1512	Cognitive Systems	3-0-0-3
ENG-CEERI-3-1513	Embedded Intelligence	3-0-0-3
ENG-CEERI-3-1514	Photonic and Optoelectronic Devices and Technologies	3-0-0-3
ENG-CEERI-3-1515	Flexible and Non-Silicon Materials, Devices and Technologies	3-0-0-3
ENG-CEERI-3-1516	Advanced Microwave Materials and Their Applications	3-0-0-3
ENG-CEERI-3-1517	Plasma Physics and Applications	3-0-0-3
ENG-CEERI-3-1518	Terahertz Devices and Systems	3-0-0-3
ENG-CEERI-3-1519	Advanced Communication Systems	3-0-0-3
ENG-CEERI-3-1520	Cyber Physical System Security	3-0-0-3
ENG-CEERI-3-1521	Mixed-Signal Circuit Design	3-0-0-3

**Semester – II (Credits: 16 + 2)**

<b>Subject Code</b>	<b>Subject: Core</b>	<b>L-T-P-C</b>
ENG-CEERI-2-1516	Measurement and Characterization Techniques	2-0-0-2
ENG-CEERI-2-1526	Lab: Measurement and Characterization Techniques (as per Focus Area)	0-1-3-2
ENG-CEERI-2-1517	Modelling and Simulation	2-0-0-2

## Engineering Sciences Coursework: Integrated Dual-Degree PhD (IDDP)

ENG-CEERI-2-1527	Lab: Modelling and Simulation (as per Focus Area)	0-1-3-2
ENG-CEERI-4-1502	Research Methodology	1-1-0-2

### Elective-III (any 2 along with associated Lab, as per Focus Area)

Subject Code	Subject: Focus Area: Cyber Physical Systems (CPS)	L-T-P-C
ENG-CEERI-3-1531	VLSI System Design	2-0-0-2
ENG-CEERI-3-1551	Lab: VLSI System Design	0-1-3-2
ENG-CEERI-3-1532	Advanced Machine Learning and Applications	2-0-0-2
ENG-CEERI-3-1552	Lab: Advanced Machine Learning and Applications	0-1-3-2
ENG-CEERI-3-1533	Real-time Autonomous Systems	2-0-0-2
ENG-CEERI-3-1553	Lab: Real-time Autonomous Systems	0-1-3-2
ENG-CEERI-3-1534	Smart Grid and Electrical Mobility Systems	2-0-0-2
ENG-CEERI-3-1554	Lab: Smart Grid and Electrical Mobility Systems	0-1-3-2

Subject Code	Subject: Focus Area: Smart Sensors (SS)	L-T-P-C
ENG-CEERI-3-1535	Micro-sensors and Actuators: Design and Fabrication	2-0-0-2
ENG-CEERI-3-1555	Lab: Micro-sensors and Actuators: Design and Fabrication	0-1-3-2
ENG-CEERI-3-1536	Micro- and Nano-Technologies and Applications	2-0-0-2
ENG-CEERI-3-1556	Lab: Micro- and Nano-Technologies and Applications	0-1-3-2
ENG-CEERI-3-1537	RF-MEMS and Applications	2-0-0-2
ENG-CEERI-3-1557	Lab: RF-MEMS and Applications	0-1-3-2
ENG-CEERI-3-1538	Advanced Packaging Technologies	2-0-0-2
ENG-CEERI-3-1558	Lab: Advanced Packaging Technologies	0-1-3-2

Subject Code	Subject: Focus Area: Microwave Devices (MWD)	L-T-P-C
ENG-CEERI-3-1539	Computational Electromagnetics	2-0-0-2
ENG-CEERI-3-1559	Lab: Computational Electromagnetics	0-1-3-2
ENG-CEERI-3-1540	High-Power Microwave Devices and Fabrication	2-0-0-2
ENG-CEERI-3-1560	Lab: High-Power Microwave Devices and Fabrication	0-1-3-2
ENG-CEERI-3-1541	Vacuum Micro-electronics and Terahertz Devices	2-0-0-2
ENG-CEERI-3-1561	Lab: Vacuum Micro-electronics and Terahertz Devices	0-1-3-2
ENG-CEERI-3-1542	Antenna Engineering	2-0-0-2
ENG-CEERI-3-1562	Lab: Antenna Engineering	0-1-3-2

### Semester – III & IV (Credits: 20 +2)

#### Semester: III

Subject Code	Subject	L-T-P-C
ENG-CEERI-3-0096	Research Proposal: Part-I	Evaluation & Continuation *
ENG-CEERI-4-0002	Review Article	0-0-4-2

\* Evaluation only. Grading to be done in Semester: IV.

#### Semester – IV

Subject Code	Subject	L-T-P-C
ENG-CEERI-3-0097	Research Proposal: Part-II	0-4-36-20 §

§ Across Semester: III & IV.

Engineering Sciences Coursework: Integrated Dual-Degree PhD (IDDP)

**Mandatory Courses for PhD (Credits: 10)**

<b>Subject Code</b>	<b>Subject</b>	<b>L-T-P-C</b>
ENG-CEERI-4-1502	Research Methodology #1	1-1-0-2
ENG-CEERI-4-0001	Project Proposal	0-0-4-2
ENG-CEERI-4-0002	Review Article #2	0-0-4-2
ENG-CEERI-4-0003	Societal Program	0-0-8-4

#1: Expected to complete in Semester – II

#2: Expected to complete in Semester – III.