

## COURSE PROSPECTUS

**Name of the Division:** *Smart Technology & Education Division (STED)*

**Name of the Course:** *PG Diploma in Embedded System Design & IoT*

**Course Code:** *ES 500*

**Mode of Conduction:** *Online*

**Starting Date:** *09.09.2021*

**Duration:** *754 Hours /25 Credits*

**Course Fee:** *Rs. 28,000/- + All Taxes*

**Course Coordinator:** *Shoukath Cherukat, +91 9447423306*

### **Preamble:**

In today's world, Embedded Systems and IoT are all over homes, offices, cars, factories, hospitals, and Industries. The inherent value of these technologies lies in their pervasiveness. They are literally embedded in all electronic products, from consumer electronics to office automation, automotive, medical devices, and communications. They make the products smart, connected and are responsible for differentiating the products in the market.

Developing tomorrow's industrial infrastructure is a significant challenge. This course goes beyond the hype of consumer IoT to emphasize a much greater space for potential embedded system applications and growth. The primary objective of this specialization is to closely examine emerging markets, technology trends, applications, and skills required by engineering students or working engineers, exploring career opportunities in the Embedded System design and IoT space. This course conducted in collaboration with ARM and the syllabus has been updated based on the ARM University Program Contents.

This Embedded System Design and IoT course focuses on the Architecture and Programming of Embedded Processors, Development of Embedded and IoT applications using Embedded/Real-Time Operating Systems. Internet of Things (IoT), Industrial IoT and Embedded Product Design are discussed in detail. As part of project work, a proof-of-concept prototype design of an Embedded / IoT system has to be undertaken by participants to be industry ready.

### **Objective of the Course:**

PG Diploma in Embedded System Design & IoT Course is intended to impart skills essential for the design and implementation of Embedded and IoT systems using appropriate hardware and software tools. This course offers a range of topics of

immediate relevance to industry and makes the participants exactly suitable for Embedded and IoT Industry.

### Outcome of the Course:

- *Provide the participants in-depth knowledge and skills required by Embedded System and IoT Companies around the globe by imparting comprehensive understanding about the fundamental principles, methodologies and industry practices.*
- *Makes the successful participants readily employable in multiple roles available in Embedded and IoT Industry*
- *Enhances the skillsets and confidence for Embedded Startups*

### Expected Job Roles:

- *Embedded Design Engineer*
- *Embedded Software Engineer*
- *Embedded Firmware Engineer*
- *Embedded Hardware Engineer*
- *Embedded System Programmer*
- *Embedded Trainee Engineer*
- *IoT Developer*
- *IoT Solution Architect*
- *IoT Hardware Design engineer*
- *IoT Network Engineer*

**Course Structure:** The ES 500 course has seven modules including project work. The Participants are required to do a project work in any one of the modular areas, to be eligible for issue of PG Diploma in Embedded System Design & IoT.

The modules are as follows:

*Module Code	Module Name	Duration (Hrs)			Credits
		Total	Theory	Lab	
ES 501	Embedded C and ARM Cortex Microcontrollers	143	39	104	5 (3+2)
ES 502	Internet of Things	91	39	52	4 (3+1)
ES 503	Embedded Linux	78	26	52	3 (2+1)
ES 504	Embedded RTOS	78	26	52	3 (2+1)
ES 505	Industrial IoT	78	26	52	3 (2+1)
ES 506	Industrial Product Design	78	26	52	3 (2+1)
ES 507	Project Work	208	0	208	4 (0+4)
	<b>Total</b>	<b>754</b>	<b>182</b>	<b>572</b>	<b>25</b>

*\*These modules are conducted as workshops. Modular admission is available and prerequisites for the modular admission are applicable, only to the B.Tech ongoing students. Those who are completing all the modules are eligible for PG Diploma in Embedded System Design and IoT on Submission of Original/ Provisional Certificate of Qualifying Degree.*

## Other Contents

I. **Course Fees:** Course fee is Rs 28,000/-+ All taxes as applicable

### A. Modular wise Course Fee:

Module Code	Module Name	Duration in hours	** Fee for B.E/B.Tech Ongoing Students(*Inclusive of Taxes)	Fee for others (*Inclusive of Taxes)
ES 501	Embedded C and ARM Cortex Microcontrollers	143	3940	8732
ES 502	Internet of Things	91	2507	5546
ES 503	Embedded Linux	78	2150	4720
ES 504	Embedded RTOS	78	2150	4720
ES 505	Industrial IoT	78	2150	4720
ES 506	Industrial Product Design	78	2150	4720
ES 507	Project Work	208	-	-
	<b>Total</b>	<b>754</b>		

\* Taxes Included (Currently GST @18%), and revisions, if any by Government shall be applicable at the time of payment.

\*\* B.E/B.Tech Ongoing Students should submit a bonafide certificate from HoD of the respective college of study and should meet prerequisite as mentioned in the syllabus.

II. **Registration Fee:** An amount of Rs.1000/- (including all taxes as applicable) (nonrefundable) should be paid at the time of registering for the course.

This fee shall be considered as part of course fee, if the student joins the course. If a student register and pay for more than one course and join for any one course, all such amount will be adjusted against the course fee payable. If the candidate does not join or fails to complete the course the amount will be forfeited.

However above the registration fee shall be refunded on few special cases as given below.

- Course postponed and new date is not convenient for the student
- Course cancelled in advance, well before the admission date

### III. Course Fee Installment Structure:

Students can pay the full fees of (Rs 28,000/-+ all taxes as applicable) in advance or as installments as given below.

Fees	*Amount	# Due Date (on or before)
Registration Fee	Rs 1000/-	During Registration
1 <sup>st</sup> Installment	Rs 20,000/-	<b>07.09.2021</b>
2 <sup>nd</sup> Installment	Rs 12,040/-	<b>30.11.2021</b>
Total Fee	Rs 33,040/-	<b>30.11.2021</b>

\*Taxes Included (Currently GST @18% ) and revisions, if any by Government shall be applicable at the time of payment.

# Fine will be applicable to late fee payment as given below

Sl. No.	Description	Fine
1.	Late fee payment within two weeks after due date	18% (annually) of the outstanding dues
2.	After second week of due date the candidate has to pay readmission fees along with the fine	Readmission fee Rs. 250/- plus fine of 18% (annually) of the outstanding dues
3.	The candidate has to discontinue the course after third week from the due date	

IV. **Eligibility:** B.E /B.Tech completed students of the following branches: Electronics/ Electronics & Communication/ Electrical/ Electrical and Electronics/Instrumentation/ Biomedical /Computer Science/Information Technology.

B.E /B.Tech ongoing students of the above branches are eligible to enroll for the modular workshop subject to meeting the pre-requisite for each module as mentioned in syllabus.

For more details about the policy refer:

<http://nielit.gov.in/sites/default/files/course/NIELITCalicutPoliciesShortTermCourses.pdf>

V. **Number of Seats :40**

VI. **Selection of candidates:** Selection is based on the marks in the Qualifying Degree.

- VII. **Test/Interview:** *Not Applicable*
- VIII. **Counseling/Admission :** *8<sup>th</sup> September 2021*
- IX. **Important Dates:**

<i>Last date for receiving online application for the course with payment of Rs 1000/- for registration. Candidates applying after this date will be considered in spot admission against vacancy.</i>	<b>26.09.2021</b>
<i>Publication of <b>First selection list</b> in our Website.</i>	<b>02.09.2021</b>
<i>Last date for Payment of the <b>first installment fee of Rs 20,000/-</b>.</i>	<b>27.09.2021</b>
<i>Counseling and Admission</i>	<b>27.09.2021</b>
<i>Commencement of Classes</i>	<b>27.09.2021</b>

- X. **Course Timings:** *The course is planned to be conducted with flexible timing by including recorded sessions of lectures and demonstrations through LMS. The candidates will be given prior notice about live lectures scheduled between 9.00 am to 5.30 pm. The hands-on session using Remote Hardware Lab shall be provided with pre-intimated schedule.*

*Participants should have the following setup to attend this course*

- *Computer system (Desktop/Laptop with Camera) and stable broadband internet connection.*
- *Computer System Configuration - Linux OS/ Dual boot, i3/i5, 64bit processor, Minimum 4GB RAM*
- *Hardware to be used for the course shall be procured by the participants if interested. We shall provide the details of the kits and suppliers on request.*

- XI. **Placement :** <http://nielit.gov.in/content/placement-3>
- XII. **Lab Facilities :** <http://nielit.gov.in/calicut/content/embedded-system-group>
- XIII. **Course Contents :** [Course Syllabus](#)

[Click here for General Terms and Conditions – Applicable to all courses](#)