



CERTIFICATE COURSE ON

MICROPROCESSOR AND MICROCONTROLLER

CONDUCTED BY DEPARTMENT OF PHYSICS

This course will start with a discussion on a simple microprocessor, 8085. Understanding this architecture is the basis to follow any other complex CPU architecture. It will be followed by a complete overview of a range of microcontrollers covering 8051, 8086, I/O interfacing and microcontrollers.

Starts on 05/09/2020

Ends on 05/01/2020

Available Seats: 25

**Admission starts c
16/08/2020.**

For more Information, contact SRIJITH S (coordinator)

Ph. No: 9633500425

*Dept of Physics
Sree Narayana
Kullam*

MICROPROCESSOR AND MICROCONTROLLER

COURSE OVERVIEW

Microprocessors are used extensively in the design of any computing facility. It contains units to carry out arithmetic and logic calculations, fast storage in terms of registers and associated control logic to get instructions from memory and execute them. A number of devices can be interfaced with them to develop a complete system application. On the other hand, microcontrollers are single chip computers, integrating processor, memory and other peripheral modules into a single System-On-Chip (SoC). Apart from input-output ports, the peripherals often include timers, data converters, communication modules, and so on. The single chip solution makes the footprint of the computational element small in the overall system package, eliminating the necessity of additional chips on board. However, there exists a large range of such products. While the simpler microcontrollers are cheap, their capabilities (in terms of program size and analog and digital peripherals) are also limited. Such processors may be suitable for small applications. Microcontrollers like 8051, belong to this category. On the other hand, advanced microcontrollers are often much more powerful, comparable to the very advanced microprocessors.

This course will start with a discussion on a simple microprocessor, 8085. Understanding this architecture is the basis to follow any other complex CPU architecture. It will be followed by a complete overview of a range of microcontrollers covering 8051, 8086, I/O interfacing and microcontrollers. The hardware intricacies of these processors and their programming will be covered.

Course Outcome

1. Develop an ALP in 8085 microprocessor using the internal organization for the given Specification.
2. Describe the architecture and functional block of 8051 microcontroller
3. Develop an embedded C and ALP in 8051 microcontroller using the internal functional blocks for the given specification

SYLLABUS(Theory: 32 Hrs and Practicals: 8 Hrs)

UNIT I THE 8086 MICROPROCESSOR (08 Hrs)

Introduction to 8086 – Microprocessor architecture – Addressing modes – Instruction set and assembler directives – Assembly language programming – Modular Programming – Linking and Relocation – Stacks – Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

UNIT II 8086 SYSTEM BUS STRUCTURE (08 Hrs)

8086 signals – Basic configurations – System bus timing – System design using 8086 – I/O programming – Introduction to Multiprogramming – System Bus Structure – Multiprocessor configurations – Coprocessor, Introduction to advanced processors.

UNIT III I/O INTERFACING (08 Hrs)

Memory Interfacing and I/O interfacing – Parallel communication interface – Serial communication interface – D/A and A/D Interface – Timer – LED display and LCD display.

UNIT IV MICROCONTROLLER (08 Hrs)

Architecture of 8051 – Special Function Registers(SFRs) – I/O Pins Ports and Circuits – Instruction set – Addressing modes – Assembly language programming.

Practical Exercises (08 Hrs)

1. Develop assembly language program for subtraction of two numbers using μ P 8085 kit.
2. Develop assembly language program for multiplication of two numbers using μ P 8085 kit.
3. Interface seven segment LED display with 8051 kit.
4. Interface LCD display with 8051 kit.
5. Control speed of stepper motor using 8051 kit.

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Books for Study

1. Microprocessor Architecture, Programming and Applications with 8085: Gaonkar, Ramesh S. Penram International Publishing (India) Pvt. Ltd. New Delhi (5th Edition)
2. Fundamentals of Microprocessors and Microcontrollers: Ram, B. Dhanpat Rai Publications, New Delhi
3. Microprocessors and Interfacing Programming and Hardware: Hall, Douglass V. TMH publication, New Delhi, (latest Edition)
4. The 8051 Microcontroller Architecture, Programming and Applications: Ayala, Kenneth J. Penram International Publishing (I) Pvt. Ltd. New Delhi
5. The 8051 Microcontroller and Embedded Systems using Assembly and C: Ali, Muhamad Mazidi, Janice Mazidi Gillispie, Rolin D. McKinley, PHI Learning, New Delhi, (latest Edition)

List of Software/Learning Websites

1. www.keil.com/
2. www.allaboutcircuits.com
3. www.nmbtc.com
4. http://nptel.ac.in/courses/Webcoursecontents/IITKANPUR/microcontrollers/micro/ui/Course_home1_1.htm

Dept. of Physics
Sree Narayana College
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Surthathirayal
Principal
Sree Narayana College
Kollam



SREE NARAYANA COLLEGE, KOLLAM

DEPARTMENT OF PHYSICS

Certificate Courses

Members of the Board Studies

The following faculties are selected as Members of Board of studies for Certificate courses (Microprocessor and Microcontrollers, Python Programming) Conducted by Department of Physics, Sree Narayana College, Kollam in the academic year 2020-21.

	Name	Designation
1	Dr. R. Sunilkumar	Principal, Associate Professor, Department of Malayalam, Sree Narayana College, Kollam.
2	Dr.G.Sajeevkumar	Associate Professor, Department of Physics, Sree Narayana College, Kollam.
3	Sri. Srijith S	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
4	Smt. Asitha L.R	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
5	Sri. Baiju V	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
6	Dr. Dedhila Devadathan	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
7	Dr. Sankar S	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
8	Dr. Roxy M S	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
9	Dr. Vidya S	Assistant Professor, Department of Physics, Sree Narayana College, Kollam

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10	Smt. Rehna R	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
11	Smt. Saranya Babu	Assistant Professor, Department of Physics, Sree Narayana College, Kollam
14	Dr. Mohammad Salim	Assistant Professor, Department of Physics, TKMCAS
15	Sri. Safir T	Assistant Professor, Department of Physics, TKMCAS
16	Smt. Aparna L R	Assistant Professor, Department of Physics, Sree Narayana College, Kollam TKMCAS
17	Dr. P. K. Manoj	Assistant Professor, Department of Physics, Sree Narayana College, Kollam TKMCAS

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Kollam



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DEPARTMENT OF PHYSICS

Minutes of the Meeting

The minutes of the meeting of the BoS of Certificate courses was held on 01th September, 2020 in the Department of Physics, Sree Narayana College, Kollam at 10.00 a.m. through online (Google meet). The following members were present for the meeting.

1	Dr. Sajeev Kumar G	9	Smt. Rehna R
2	Dr. Sankar S	10	Smt. SaranyaBabu
3	Smt. Asitha L R	11	Sri. Vipin Kumar C
4	Sri. Srijith S	12	Smt. Aparna L.R
5	Sri. Baiju V	13.	Dr. Muhammed Salim
6	Dr. Roxy M S	14	Dr.P. K. Manoj
7	Dr. Dedhila Devadathan	15.	Sri. Saffir T K
8	Dr. Vidya S		

The following points were discussed in the meeting.

- The BoS has decided to initiate the following courses in the academic year 2020-21.
- 3. **MICROPROCESSOR AND MICROCONTROLLER (MM)**
- 4. **PYTHON PROGRAMMING (PY)**
- There will be no change in the syllabus for the above courses.
- It was decided to conduct the above courses for more than 30 hours through online platform Google meet.
- The committee has framed the time- table apart from the academic hours.
- The Committee decided to charge minimum fees for the courses.
- The committee suggested to strictly follow the Covid protocol during practical classes.
- The committee has suggested to consider the suggestions of the stake holders about the timing of the class.
- The committee has suggested to appoint the trainers for the above courses.
- The board has decided to initiate the certificate courses and approval of I.Q.A.C.

Sri. Baiju V proposed vote of thanks and the meeting was ended.

Sri. Baiju V
Principal
Sree Narayana College
Kollam



Sri. Baiju V

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DEPARTMENT OF PHYSICS

The following faculties are selected as trainers for Certificate courses (Microprocessor and Microcontrollers, Python Programming) Conducted by Department of Physics, Sree Narayana College, Kollam in the academic year 2020-21.

List of Teachers - Microprocessor and Microcontrollers				
	Name	College	Mobile no:	mail id
1	Dr.G.Sajeevkumar	SNCK	9447064602	sajeevkumarg@gmail.com
2	Sri. Srijith S	SNCK	9633500425	srijithkeanu@gmail.com
3	Smt.Asitha L.R	SNCK	9995213881	asitha85@gmail.com
4	Sri. Baiju V	SNCK	8281856366	baijuvkollam@gmail.com
5	Sri Safir T	TKMCAS	9946635799	stkphy@gmail.com

List of Teachers - Python Programming				
	Name	College	Mobile no:	mail id
1	Dr.Dedhila Devadathan	SNCK	9446454083	dedhila@gmail.com
2	Dr Roxy M S	SNCK	9495243029	roxyms@gmail.com
3	Dr Vidya S	SNCK	9745464525	vidyaasnair@gmail.com
4	Smt Rehna R	SNCK	8281328303	rehnaraju@gmail.com
5	Sri Safir T	TKMCAS	9946635799	stkphy@gmail.com



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SREE NARAYANA COLLEGE, KOLLAM
DEPARTMENT OF PHYSICS
CERTIFICATE COURSE TIME TABLE

Name: Microprocessor and Microcontroller (MM)

Duration: 30 Hrs

Start Date: SEP 05 2020

End Date: JAN 05 2021

Day /03:30 Pm to 04:30 Pm	Handled by
Monday	Srijith S
Tuesday	Dr. Muhammed Salim / Aparna L R
Wednesday	Asitha L.R
Thursday	Rehna R
Friday	Practical Hours (Rehna R and Dedhila)



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SREE NARAYANA COLLEGE, KOLLAM

DEPARTMENT OF PHYSICS

CERTIFICATE COURSE

Name :	Microprocessor and Microcontroller (MM)
Duration :	30 Hrs
Start Date:	Sept 05 2020
End Date:	Jan 5 2021

LIST OF STUDENTS

Sl No	Name of Student	Gender	email Id	Class	Mobile No:	Year of Admission
1	AISWARYA ANIL	F	aiswaryaani1689@gmail.com	MSc Physics	9072266687	2020
2	ANANDA MOHAN	M	anandamohan9999@gmail.com	MSc Physics	8592004568	2020
3	ANANTHU A	M	ananthuanil1998@gmail.com	MSc Physics	8893453548	2020
4	ANJU COLIN	F	anjucolins@gmail.com	MSc Physics	9539351295	2020
5	ANU S MURALI	F	anusmurali6@gmail.com	MSc Physics	8606309408	2020
6	ARYA RAJU	F	raju6522arya@gmail.com	MSc Physics	9446452804	2020
7	ARYA RATHEESH	F	arvarekharatheesh@gmail.com	MSc Physics	8113088195	2020
8	ATHULYA SEKHAR	F	athulyaskr025@gmail.com	MSc Physics	7025746861	2020
9	CHINDU SURESH	M	csp2459@gmail.com	MSc Physics	8943186908	2020
10	GAYATHRI RAJAN	F	gayathrimalu987@gmail.com	MSc Physics	8136984374	2020
11	GOURI T S	F	gourithulasi1999@gmail.com	MSc Physics	6238170710	2020
12	GOVIND C S	M	govindbalu141@gmail.com	MSc Physics	8086858707	2020
13	HAIRA J	F	hairajahangeer@gmail.com	MSc Physics	8157059580	2020
14	K A AZHAD	M	kaazhad15@gmail.com	MSc Physics	8848893060	2020
15	LEKSHMI G	F	lekshmikadagil@gmail.com	MSc Physics	7025157525	2020
16	MUHAMMAD SAIF S	M	satifasalim@gmail.com	MSc Physics	9496982956	2020
17	NANDANA P	F	nandanapavananan464@gmail.com	MSc Physics	8078802726	2020
18	NAVEEN B R	M	naveenbr98@gmail.com	MSc Physics	8086308788	2020
19	NEETHU A R	F	neethuaiy236@gmail.com	MSc Physics	7594027692	2020
20	RAJI R	F	rajiattuvasseri@gmail.com	MSc Physics	8594059924	2020
21	RINCY UBAID	F	shamnadshamnushy@gmail.com	MSc Physics	8129395968	2020

22	SARAN RAJ R G	M	saranrajrg99@gmail.com	MSc Physics	7306647048	2020
23	SARATH S DHARAN	M	sarath0235@gmail.com	MSc Physics	8848893739	2020
24	SWATHY KRISHNA V J	F	swathykrishnavj@gmail.com	MSc Physics	6282500775	2020
25	VISMAYA M S	F	vismayaanju99@gmail.com	MSc Physics	9567739002	2020

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CERTIFICATE COURSE			
Name :	Microprocessor and Microcontroller (MM)		
Duration :	30 Hrs		
Start Date:	Sept 05 2020	End Date:	JAN 05 2021
ATTENDENCE STATEMENT			
Sl No	Name of Student	Register No:	% of Attendance
1	AISWARYA ANIL	MM20001	88
2	ANANDA MOHAN	MM20002	80
3	ANANTHU A	MM20003	87
4	ANJU COLIN	MM20004	86
5	ANU S MURALI	MM20005	89
6	ARYA RAJU	MM20006	90
7	ARYA RATHEESH	MM20007	90
8	ATHULYA SEKHAR	MM20008	96
9	CHINDU SURESH	MM20009	88
10	GAYATHRI RAJAN	MM20010	85
11	GOURI T S	MM20011	84
12	GOVIND C S	MM20012	82
13	HAIRA J	MM20013	80
14	K A AZHAD	MM20014	91
15	LEKSHMI G	MM20015	82
16	MUHAMMAD SAIF S	MM20016	84
17	NANDANA P	MM20017	88
18	NAVEEN B R	MM20018	80
19	NEETHU A R	MM20019	91
20	RAJI R	MM20020	85
21	RINCY UBAID	MM20021	86
22	SARAN RAJ R G	MM20022	80
23	SARATH S DHARAN	MM20023	88
24	SWATHY KRISHNA V J	MM20024	85
25	VISMAYA M S	MM20025	88

Aiswarya Anil
 ANANDA
 Ananthu
 Anju Colin
 Anu S Murali
 Arjun
 ARYA
 Athulya
 Chindu
 Gayathri Suresh
 Gouri
 Govind
 Haira
 K. A. Azhad
 Lekshmi
 Muhammed Saif
 Nandana
 Naveen
 Neethu
 Raji
 Rincy
 Saran Raj
 Sarath
 Swathy
 Vismaya

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SREE NARAYANA COLLEGE ,KOLLAM

DEPARTMENT OF PHYSICS

CERTIFICATE COURSE

Name : Microprocessor and Microcontroller (MM)

Duration : 30 Hrs

Start Date: Sept 05 2020 **End Date:** Jan 5 2021

MARK LIST

Sl. No.	Name of the student	Marks Obtained			
		Theory (50)	Practical (40)	Assignment (10)	Total (100)
1	AIWARYA ANIL	43	36	10	89
2	ANANDA MOHAN	42	36	10	88
3	ANANTHU A	45	38	10	93
4	ANJU COLIN	44	36	10	90
5	ANU S MURALI	45	36	10	91
6	ARYA RAJU	41	36	10	87
7	ARYA RATHEESH	43	35	10	88
8	ATHULYA SEKHAR	41	35	10	86
9	CHINDU SURESH	40	33	10	83
10	GAYATHRI RAJAN	45	38	10	93
11	GOURI T S	43	36	10	89
12	GOVIND C S	45	36	10	91
13	HAIRA J	45	37	10	92
14	K A AZHAD	46	37	10	93
15	LEKSHMI G	45	36	10	91
16	MUHAMMAD SAIF S	40	35	10	85
17	NANDANA P	41	34	10	85
18	NAVEEN B R	40	34	10	84
19	NEETHU A R	44	36	10	90
20	RAJI R	41	34	10	85
21	RINCY UBAID	42	33	10	85
22	SARAN RAJ R G	40	32	10	82
23	SARATH S DHARAN	41	34	10	85
24	SWATHY KRISHNA V J	45	36	10	91
25	VISMAYA M S	44	36	10	90

(Handwritten signatures and initials next to each student's total mark: Ananya, Ananda, Ananthu, Anju, Anu, Arya, Arya, Athulya, Chindu, Gayathri, Gouri, Govind, Haira, K A, Lekshmi, Muhammad, Nandana, Naveen, Neethu, Raji, Rincy, Saran, Sarath, Swathy, Vismaya)

(Handwritten signature of the instructor/evaluator)

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SREE NARAYANA COLLEGE, KOLLAM

DEPARTMENT OF PHYSICS

Minutes of the Meeting

The minutes of the meeting of the BoS of Certificate courses was held on 10th January, 2021 in the Department of Physics, Sree Narayana College, Kollam at 10.00 a.m. The following members were present for the meeting.

- | | | | |
|---|------------------------|-----|--------------------|
| 1 | Smt. Asitha L R | 7 | Smt. Rehna R |
| 2 | Sri. Srijith S | 8 | Smt. Aparna L.R |
| 3 | Sri. Baiju V | 9. | Dr. Muhammed Salim |
| 4 | Dr. Roxy M S | 10 | Dr.P. K. Manoj |
| 5 | Dr. Dedhila Devadathan | 11. | Sri. Saffir T K |
| | | 12. | Dr. Sankar S |

6Dr. Vidya S

The following points were discussed in the meeting.

- The committee suggested to strictly follow the Covid protocol during practical classes.
- The minimum attendance for the successful completion of the course is decided to be 75%.
- The minimum marks required for the qualification is decided to be 25 marks for Theory and 20 marks for Practicals.
- The submission of the assignment is compulsory for the successful completion of the course.

Sri. Sankar S proposed vote of thanks and the meeting was ended.



Dept. of Physics
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REPORT ON CERTIFICATE COURSE IN MICROPROCESSOR AND MICROCONTROLLER AND PYTHON PROGRAMMING

DEPARTMENT OF PHYSICS

ACADEMIC YEAR 2020-21

The BoS has decided to initiate the following courses in the academic year 2020-21.

1. MICROPROCESSOR AND MICROCONTROLLER (MM)

2. PYTHON PROGRAMMING (PY)

- It was decided to conduct the above courses for more than 30 hours through online platform Google meet.
- The committee has framed the time- table for the online classes.
- The Committee decided to charge minimum fees for the courses.
- The committee suggested to strictly follow the Covid protocol during practical classes.
- The committee has suggested to consider the suggestions of the stake holders about the timing of the class.
- The minimum attendance for the successful completion of the course is decided to be 75%.
- The minimum marks required for the qualification is decided to be 25 marks for Theory and 20 marks for Practicals.
- The submission of the assignment is compulsory for the successful completion of the course.

The Python Fundamentals for Beginners course offers a base knowledge of various Python concepts, starting from its introduction. The Course was intended to learn about variables in programming, decision-making statements, looping statements, algorithmic approaches, object-oriented programming concepts, and functions which are the essential elements that contribute to structuring any programming language. After inheritance, students completed an assignment and an exam to test their knowledge to complete the course and earned a free certificate. After completing this free, self-paced, beginner's guide to Python, you can embark on your **Software and**

IT career with a professional Post Graduate certificate and learn various concepts with millions of aspirants across the globe.

Duration: 08 hrs Practical and 32 hrs theory

The students have completed 30 sessions including theory and practical during the period January 2021- May 2021.

Total Students Successfully Completed: 32

Microprocessor and Microcontroller course will start with a discussion on a simple microprocessor, 8085. Understanding this architecture is the basis to follow any other complex CPU architecture. It will be followed by a complete overview of a range of microcontrollers covering 8051,8086, I/O interfacing and microcontrollers. The hardware intricacies of these processors and their programming will be covered. Students developed an in-depth understanding of the structure and operations of Microprocessors & Microcontrollers, and interfacing techniques and basic understanding of hardware and software interaction and integration.

Duration: 08 hrs Practical and 32 hrs theory

The students have completed 30 sessions including theory and practical during the period September 2020- January 2021.

Total Students Successfully Completed: 25



Dept of Physics
Sree Narayana College
Kollam-691 001

Amal Harayil
Principal
Sree Narayana College
Kollam





Sree Narayana College, Kollam

Re-Accredited by NAAC with "A" Grade

Affiliated to the University of Kerala

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Dr. Sunilkumar R.

M.A, M.Phil., Ph.D

Principal

Mob No.: 9387500997

Email : sunilanena@gmail.com

Ref: PL/ 8029 / 2022

Date.....
05.01.2022

Certificate

Certified that **Safir T.K, Assistant Professor, Department of Physics, TKM College of Arts and Science, Kollam,** is a member of the Board of studies for framing the syllabus and curriculum for the certificate courses offered by the Department of Physics of this college during the academic year 2020-2021

PRINCIPAL