

Add-On Course
Computer Interfaced Physics Experiments

Offered by Department of Physics, Sacred Heart College, Chalakudy

Year: 2018-19

Summary Report

With an aim for the students to get familiar with the advancement in the technical versions of conventional practical experiments an add on course on **Computer Interfaced Physics Experiments** was conducted by the Department of Physics. The time duration for this course was 30 hours. 21 B.Sc Physics students enrolled and successfully completed the course. Dr. Nijo Varghese and Ms. Fancy K F handled the classes and practical sessions.

The add-on course used ExpEYES(expEriments for Young Engineers & Scientists) kit. ExpEYES is a tool for learning science by exploring and experimenting. It is designed to support a wide range of experiments from school to Postgraduate level. Students were highly benefited from this, as this helped them to clear many of the subject concepts as it was based on “learn by doing” approach. To assess them, a practical examination was conducted. All the students enrolled successfully completed the course and were issued certificates.

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Computer Interfaced Physics Experiments

Offered by Department of Physics, Sacred Heart College, Chalakudy

Year: 2018-19

Date of commencement: 23-07-2018

Course instructors: Dr. Nijo Varghese, Ms. Fancy K F

List of Enrolled Students

Sl No	Name	Class
1	AMALA MATHEW	III B.Sc Physics
2	ATHIRA ARAVINDAKSHAN	III B.Sc Physics
3	RESMIYA AMEER ALI N A	III B.Sc Physics
4	ANJALY SREEDHARAN	III B.Sc Physics
5	MARIA PAUL	III B.Sc Physics
6	SOWPARNIKA B MANAKKATTIL	III B.Sc Physics
7	ANEEJA ANTO	III B.Sc Physics
8	GOPIKA C T	III B.Sc Physics
9	ASWATHY T D	III B.Sc Physics
10	JOMOL JOY	III B.Sc Physics
11	FARHANA THESNI M P	III B.Sc Physics
12	BINITTA THOMAS	III B.Sc Physics
13	REKHA T M	III B.Sc Physics
14	RIYA RAPPAL	III B.Sc Physics
15	ATHIRA RAJ	III B.Sc Physics
16	ANEETA CHACKO	III B.Sc Physics
17	APARNA SHAJU	III B.Sc Physics
18	ALEENA ZACHARIA	III B.Sc Physics
19	DHRISYA PREMAN	III B.Sc Physics
20	GISMARIA	III B.Sc Physics
21	JICKY JIM	III B.Sc Physics

Add-On Course
Computer Interfaced Physics Experiments

Offered by Department of Physics
Sacred Heart College, Chalakudy

Total course hours: 30

Syllabus

Module I : Introduction to ExpEYES (6 hours)

Explain about the general design. The concept of measuring and generating analog voltage signals as a function of time using a computer. The Input and Output terminals and their usage. Functioning as a collection of test equipment like oscilloscope, function generator, frequency counter, capacitance meter, voltmeter, DC power supply etc.

Module 2 : Basic Activities using ExpEYES (6 hours)

Using ExpEYES as, Voltmeter, Oscilloscope, Capacitance meter, Waveform generator, Frequency counter, DC power supply, Half wave rectifier Simple AC generator Transformer

Module 3 : Mechanics using ExpEYES (6 hours)

Acceleration due to gravity using Light barrier and rod pendulum, pendulum attached to a DC motor as velocity sensor. Generating single frequency sound using mobile app ExpEYES and Buzzer, Capturing and analysing sound, Measuring the velocity of sound, Interference of sound

Module 4 : Study of Electronic Circuits (6 hours)

Diode IV Characteristic curve, Transistor Characteristics, Half wave rectifier, Opamps, Clipping clamping circuits

Module 5 : Study of Electrical and Electronic Circuits (6 hours)

AC steady state response of RC circuits, RL circuits and LCR circuit and the series resonance phenomenon. Transient Response of RC circuits, RL circuits, LCR circuits

References:

1. Experiments for Young Engineers and Scientists, Ajith Kumar B.P. <http://expeyes.in>
2. Python for Education, Ajith Kumar B.P <https://www.iuac.res.in/phoenix/python4schools/Python-for-Education.pdf>

Add-on Course : "Computer Interfaced Physics Experiments"
Register of Attendance and Fees for the Month of

[illegible]

Department of physics
Sacred Heart College,
Chennai



2018-19

Standard

[illegible]

SACRED HEART COLLEGE, CHALAKUDY

Thrissur, Kerala - 680307, India.

Re-accredited by NAAC with A+ grade in 2017 (3rd cycle)



CERTIFICATE

*This is to certify that Ms.AMALA MATHEW..... has successfully completed the **Add-On Course on Computer Interfaced Physics Experiments** offered by the Department of Physics, Sacred Heart College, Chalakudy, in the academic year 2018-19.*

Dr. Nijo Varghese
Head of the Department
& Course Coordinator



Principal

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*This is to certify that Ms.ATHIRA ARAVINDAKSHAN..... has successfully completed the **Add-On Course on Computer Interfaced Physics Experiments** offered by the Department of Physics, Sacred Heart College, Chalakudy, in the academic year 2018-19.*

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SACRED HEART COLLEGE, CHALAKUDY
ADD ON COURSE EXAMINATION- MARCH 2019
Computer Interfaced Physics Experiments

Time: 3 Hours

Max Marks: 50

Attempt question marked “X”

1. Draw the IV characteristics of the given diodes and find the ideality factor. (Use three different diodes)
2. Draw the IV characteristics of diodes at different temperatures.
3. Construct a full wave rectifier and measure the ripple factor with and without filter.
4. Plot the output characteristic curve of the given transistor.
5. Calculate the velocity of sound by measuring the pressure variation with distance.
6. Record the signal from a source and get the Fourier Transform of a signal- Time and Frequency domain representations
7. Plot the transient response of RC circuits and find the value of the given capacitor.
8. Plot the transient response of LC circuits and find the value of the given inductance.
9. Study the transient response of LCR circuits and calculate the value of resonant frequency.
10. Measure the period of oscillations of a rod pendulum using a light barrier and calculate the value of acceleration due to gravity.