SARVAJANIK UNIVERSITY
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SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Bachelor of Technology

B. Tech. Year II Semester – 4

Subject Name: Arduino Controller for Everyone **Subject Code: BTIC18214**

Type of course: Trans-disciplinary subject
Prerequisite (if any): High Schooling with science subjects, basic C programming know-how

List of Courses where this course will be prerequisite:

Now a days , the appliance at home can be controlled using your mobile. Do you want to know and learn how can you make your own engineering project very easily without being an engineer? This course will provide the students (i) platform to learn to learn hard and soft skills to make their ideas a reality. (ii) to know the techniques of automation in real world. (iii) to extend their knowledge of engineering in a practical way.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
2	0	0	0	60	25	15			100

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests CA2: Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

BSC: basic science course /ESC: Engineering Science Course /HSM: Humanities and management /PCC: Professional Core course /PEC: professional Elective course /OEC: Open Elective course/ MD: mandatory noncredit course

Content:

Sr. No.	Content	Total Hrs	Module weightage
1	Concept of Basic Circuits, Electronic components and connections: Breadboard, Battery, Resistor, Capacitor, diode, LED, Transistor, Relay etc.	**3**	**10%**
2	Introduction to Arduino Controller,Arduino components and IDE , installation of IDE on computer	**2**	**7%**
3	First Arduino programming with 'Hello World' ,Programming of Arduino with blinking LED , Turning on LED when interface key triggering	**3**	**10%**
4	Programming with conditions ,variables , delay, pinMode, void setup and loop in C language	**2**	**7%**
5	Knowledge of digital and analog signals ,Knowledge of basic sensors (1) temperature sensor, pressure sensor, turbidity sensor, accelerometer etc. , Analog to Digital Converter introduction,	**4**	**13%**
6	Connecting the LCD and seven segment LED with Arduino for checking the results	**2**	**7%**
7	Build your own projects using Arduino in laboratory 1.Feeder for Aquarium at home 2.Automatic Irrigation in Home Garden 3.Automated Washroom Light Using IR Sensors 4.Earthquake Sensor 5.Heart Rate Monitoring	**14**	**46%**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20%	**30%**	**50%**			

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Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Programming Arduino: Getting Started With Sketches	Simon Monk	McGrow Hills ISBN: 978-1259641633	2016	2nd
2	Arduino for beginners	Simon Knight	Independently Published ISBN: 1719973121	2018	1st

Course Outcomes: After learning this course, students will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	know the electronics frequently used in real world for making hobby projects	10%
CO-2	write, debug and analyze the code in C language	20%
CO-3	show the technical know-how about interfacing with different devices and develop and implement for experimentation.	15%

CO-4	work as an individual and as a team-member to design, formulate and implement automation project using Arduino controller and implement small scale of automation.	15%
CO-5	program and build various application in different field.	40%

List of Open learning website:

https://onlinecourses.swayam2.ac.in/aic20_sp04/preview

Introduction to Arduino Uno by IIT Kharagpur

https://www.youtube.com/watch?v=NkZdosZH6Wo

List of Open Source Software:

Arduino IDE software

FOR LAB SESSIONS:

List of Experiments:

Major Equipment Needed: Arduino Uno kits, Bread board trainer, Power Supply, Wires, Electronic components, Computer or laptop etc.