



T-104  
2022

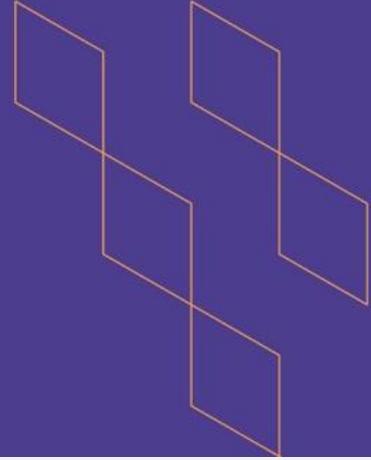
# Course Specification





T-104  
2022

## Course Specification



Course Title: Selected Topics
Course Code: <b>257 CIS-3</b>
Program: <b>Technical support</b>
Department: <b>Computer Department</b>
College: <b>Applied College</b>
Institution: Najran University
Version: <b>T -104 2022</b>
Last Revision Date: <b>28-8-2023</b>



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## A. General information about the course:

Course Identification	
1. Credit hours:	<b>3 hours</b>
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Track <input type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	level4 - <b>Second year</b>
4. Course general Description An embedded system is a combination of hardware and software provided that both should be synchronized with each other. Some examples are as follows: industrial machines, automobiles, medical equipment, cameras, household appliances, airplanes, vending machines etc. The Arduino is an open-source computer hardware/software platform for building digital devices and interactive objects that can sense and control the physical world around them. In this course you will learn how the Arduino platform works in terms of the physical board and libraries and the IDE (Integrated Development Environment). The course will also cover programming the Arduino using C code and accessing the pins on the board via the software to control external devices. With this module student will get firm career growth in Electronics domain.	
5. Pre-requirements for this course (if any): No	
6. Co- requirements for this course (if any): No	
7. Course Main Objective(s) After the completion of the course, the students will be specialized in Embedded System Design using Arduino.	

### 1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	3 hours per week	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4.	Distance learning		





## 2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	<b>Total</b>	<b>60</b>

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Learn about Arduino and how to program it	K1	<ul style="list-style-type: none"> <li>Lecture Individual and group discussions</li> </ul>	<ul style="list-style-type: none"> <li>Exams</li> <li>•Assignments</li> </ul>
1.2	How to build smart systems and how to deal with electronic parts.	K2	<ul style="list-style-type: none"> <li>Lecture Individual and group discussions</li> </ul>	<ul style="list-style-type: none"> <li>Exams</li> <li>•Assignments</li> </ul>
...				
2.0	Skills			
2.1	Learn about Arduino and how to program it	S1	<ul style="list-style-type: none"> <li>Lecture</li> <li>Brainstorming</li> <li>Small Group Work</li> <li>Lab Demonstration</li> <li>Project</li> </ul>	<ul style="list-style-type: none"> <li>Exam</li> <li>Group Reports</li> <li>Lab Reports</li> </ul>
2.2	How to build smart systems and how to deal with electronic parts.	S2	<ul style="list-style-type: none"> <li>Lecture</li> <li>Brainstorming</li> <li>Small Group Work</li> <li>Lab Demonstration</li> <li>Project</li> </ul>	<ul style="list-style-type: none"> <li>Exam</li> <li>Group Reports</li> <li>Lab Reports</li> </ul>
...				



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate projects and assignments in the work team to design and develop areas of technical support	V2	<ul style="list-style-type: none"> <li>Lecture</li> <li>Brainstorming</li> <li>Small Group Work</li> <li>Lab Demonstration</li> <li>Project</li> </ul>	<ul style="list-style-type: none"> <li>Exam</li> <li>Group Reports</li> <li>Lab Reports</li> </ul>
3.2				
...				

## C. Course Content

No	List of Topics	Contact Hours
1.	What is Arduino?	6
2.	Arduino components and peripherals.	6
3	Explanation and download of Arduino IDE.	10
4	Start learning Arduino programming to control the LED lamp.	10
5	Recognizing conditional sentences and controlling the lamp by pressing the button.	10
6	Installing an LCD screen and an LCD Liquid Crystal display and writing on it.	6
7	Installing an LDR photoresistor with Arduino	6
8	Installing a temperature sensor using Arduino Uno	6
Total		60

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First Monthly Exam	8	20%
2.	Assignments	10	10%
3.	Practical exam	15	20%
4.	Final exam	17	50%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)





## E. Learning Resources and Facilities

### 1. References and Learning Resources

Essential References	- Getting Started with Arduino, Massimo Banzi and Michael Shiloh, THIRD EDITION. - Arduino Made Simple by Ashwin Pajankar
Supportive References	Arduino-Based Embedded Systems : By Rajesh Singh, Anita Gehlot, Bhupendra Singh, and Sushabhan Choudhury
Electronic Materials	<a href="https://www.montadalikhtiraa.com/2022/02/pdf-arduino-programming.html">https://www.montadalikhtiraa.com/2022/02/pdf-arduino-programming.html</a> <a href="https://www.arduino.cc/en/Tutorial/HomePage">https://www.arduino.cc/en/Tutorial/HomePage</a>
Other Learning Materials	

### 2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture rooms should be large enough to accommodate the number of registered students
Technology equipment (projector, smart board, software)	Black Board/Data Show
Other equipment (depending on the nature of the specialty)	

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	<b>Student</b>	<b>Questioners</b>
Effectiveness of students assessment	Staff committee	Cross checking
Quality of learning resources	Faculty Administration	Review and check the results
The extent to which CLOs have been achieved	Quality management in the department	A review of the measurement of learning outcomes
Other		

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)





## G. Specification Approval Data

COUNCIL  
/COMMITTEE

REFERENCE NO.

DATE

