

| Department of Computer Technologies / Department of Computer Technologies / |  |          |          |            |         |      |
|---|--|----------|----------|------------|---------|------|
| Course Code   | Course Name  | Teorical | Practice | Laboratory | Credits | ECTS |
| BİL221  | ROBOTIC CODING   | 2.00     | 0.00     | 0.00       | 2.00    | 3.00 |
| Course Detail   |  |          |          |            |         |      |
| Course Language   | : Turkish  |          |          |            |         |      |
| Qualification Degree  | : PreBachelor  |          |          |            |         |      |
| Course Type   | : Optional   |          |          |            |         |      |
| Preconditions   | : Not  |          |          |            |         |      |
| Objectives of the Course  | : The aim of this course is to gain basic robotics coding logic through different programs and sensors.  |          |          |            |         |      |
| Course Contents   | : Concepts of robotic programming and robotic programming platforms, basic principles of robotic programming with Arduino. Working with basic input and output components such as LEDs, sensors, and displays  |          |          |            |         |      |
| Recommended or Required Reading   | : Compiter, books, Arduino uno,, mBot, oBot<br>1 Projeler Eşliğinde Arduino ile Robotik Programlama(2018).Mehmet Akif Arvas.Seçkin-Bilgisayar Yayınevi. 2 Arvas, M.A. (2008) Projeler Eşliğinde Arduino ile Robotik Programlama. Seçkin-Bilgisayar Yayınevi. 3 <a href="https://www.researchgate.net/profile/Murat-Altun/publication/352120457_Arduino_ile_Robotik_Kodlama_Temel_Seviye/links/60b9e99b92851cb13d74d487/Arduino-ile-Robotik-Kodlama-Temel-Seviye.pdf">https://www.researchgate.net/profile/Murat-Altun/publication/352120457_Arduino_ile_Robotik_Kodlama_Temel_Seviye/links/60b9e99b92851cb13d74d487/Arduino-ile-Robotik-Kodlama-Temel-Seviye.pdf</a> 4 <a href="https://yayinlar.tubitak.gov.tr/themes/classic/assets/img/dummies/pdf/24_ileri_robotik_lise16022024.pdf">https://yayinlar.tubitak.gov.tr/themes/classic/assets/img/dummies/pdf/24_ileri_robotik_lise16022024.pdf</a> 5 <a href="https://yayinlar.tubitak.gov.tr/themes/classic/assets/img/dummies/pdf/4_Robotik_ve_Kodlama_Lise_2025_01_14_Kitap.pdf">https://yayinlar.tubitak.gov.tr/themes/classic/assets/img/dummies/pdf/4_Robotik_ve_Kodlama_Lise_2025_01_14_Kitap.pdf</a> 6 <a href="https://yayinlar.tubitak.gov.tr/themes/classic/assets/img/dummies/pdf/20_Robotik_ve_Kodlama_micropython_Lise_2025_01_15.pdf">https://yayinlar.tubitak.gov.tr/themes/classic/assets/img/dummies/pdf/20_Robotik_ve_Kodlama_micropython_Lise_2025_01_15.pdf</a> 7 <a href="https://www.btkakademi.gov.tr/portal/course/tinkercad-ile-arduino-20535">https://www.btkakademi.gov.tr/portal/course/tinkercad-ile-arduino-20535</a> 8 <a href="https://www.btkakademi.gov.tr/portal/course/arduino-lise-temelden-ileri-seviyeye-10855">https://www.btkakademi.gov.tr/portal/course/arduino-lise-temelden-ileri-seviyeye-10855</a> 9 <a href="https://www.btkakademi.gov.tr/portal/course/projelerle-arduino-programlama-19045">https://www.btkakademi.gov.tr/portal/course/projelerle-arduino-programlama-19045</a> |          |          |            |         |      |
| Planned Learning Activities and Teaching Methods                            | : Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method   |          |          |            |         |      |
| Recommended Optional Programme Components                                   | : Students should review the topics they learned each week with different examples before the previous week.   |          |          |            |         |      |
| Course Instructors  | : Öğr. Gör. Fethullah Mustafa Akalp  |          |          |            |         |      |
| Presentation Of Course  | : Face to face   |          |          |            |         |      |
| Update Date   | : 9/3/2025 6:17:43 PM  |          |          |            |         |      |
| Dosya İndirilme Tarihi  | : 9/12/2025  |          |          |            |         |      |

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| Course Outcomes  |
| Upon the completion of this course a student :   |
| 1 can list the functions of basic electronic components such as LEDs, resistors, buzzers, and sensors. |
| 2 can define the pins of the Arduino board as input and output.  |
| 3 can list the basic structure of Arduino programming  |
| 4 can design simple robotic circuits using an Arduino board  |
| 5 Can design automated circuits with Tinkercad   |

| Preconditions |             |  |          |          |            |         |      |
|---------------|-------------|--|----------|----------|------------|---------|------|
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| Weekly Contents |  |  |  |  |  |                          |
|-----------------|--|--|--|--|--|--------------------------|
|                 | Teorical   | Practice   | Laboratory   | Preparation Info   | Teaching Methods   | Course Learning Outcomes |
| 1.Week          | *Introduction to Robotic Programming and recognition Different Robotic Programming Platforms | *Introduction to Robotic Programming and recognition Different Robotic Programming Platforms | *Introduction to Robotic Programming and recognition Different Robotic Programming Platforms | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> Page:1-2 | *Introduction to Robotic Programming and recognition Different Robotic Programming Platforms<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |



|        | Teorical   | Practice                              | Laboratory   | Preparation Info  | Teaching Methods  | Course Learning Outcomes |
|--------|--|---------------------------------------|--|---|---|--------------------------|
| 5.Week | *Void()<br>Setup()<br>Structure                    | *Void()<br>Setup()<br>Structure       | *Void()<br>Setup()<br>Structure                    | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> page:10 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 6.Week | *Working with Pinmode()<br>Digitalwrite() commands | *Pinmode()<br>Digitalwrite() commands | *Working with Pinmode()<br>Digitalwrite() commands | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> page:43 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 7.Week | *Simple Programming with LEDs                      | *Simple Programming with LEDs         | *Simple Programming with LEDs                      | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> page:14 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 8.Week | *Midtern Exem                                      |                                       |  |   |   |                          |

|         | Teorical  | Practice  | Laboratory  | Preparation Info   | Teaching Methods  | Course Learning Outcomes |
|---------|---|---|---|--|---|--------------------------|
| 9.Week  | *Working with a buzzer  | *Working with a buzzer  | *Working with a buzzer  | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> page:68-69 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 10.Week | *Using a Potentiometer, Using a Button                        | *Using a Potentiometer, Using a Button                        | *Using a Potentiometer, Using a Button                        | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> page:47-48 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 11.Week | *Reading Values from the Serial Monitor, Using a Light Sensor | *Reading Values from the Serial Monitor, Using a Light Sensor | *Reading Values from the Serial Monitor, Using a Light Sensor | * <a href="https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf">https://www.siirt.edu.tr/dosya/personel/arduino_programlama_kitabi-siirt-2020228162113585.pdf</a> page:58-62 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |

|         | Teorical                        | Practice                        | Laboratory                      | Preparation Info   | Teaching Methods  | Course Learning Outcomes |
|---------|---------------------------------|---------------------------------|---------------------------------|--|---|--------------------------|
| 12.Week | *Using a Distance Sensor        | *Using a Distance Sensor        | *Using a Distance Sensor        | * <a href="https://robotik.atauni.edu.tr/ataunidigi/2020/07/Modul-10-PARK-SENSORU-UYGULAMASI.pdf">https://robotik.atauni.edu.tr/ataunidigi/2020/07/Modul-10-PARK-SENSORU-UYGULAMASI.pdf</a> page:1-6               | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 13.Week | *Using an LCD Screen and Keypad | *Using an LCD Screen and Keypad | *Using an LCD Screen and Keypad | * <a href="https://robotik.atauni.edu.tr/ataunidigi/2020/07/Modul-3-LCD-EKRAN-KULLANIMI.pdf">https://robotik.atauni.edu.tr/ataunidigi/2020/07/Modul-3-LCD-EKRAN-KULLANIMI.pdf</a> page :1-14                       | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |
| 14.Week | *Using a Servo Motor            | *Using a Servo Motor            | *Using a Servo Motor            | * <a href="https://robotik.atauni.edu.tr/ataunidigi/2020/07/Modul-6-Servo-motor-kontrolu-uygulamasi.pdf">https://robotik.atauni.edu.tr/ataunidigi/2020/07/Modul-6-Servo-motor-kontrolu-uygulamasi.pdf</a> page:1-8 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |

|         | Teorical                      | Practice                      | Laboratory                    | Preparation Info  | Teaching Methods  | Course Learning Outcomes |
|---------|-------------------------------|-------------------------------|-------------------------------|---|---|--------------------------|
| 15.Week | *Using a Motor Driver Circuit | *Using a Motor Driver Circuit | *Using a Motor Driver Circuit | *https://www.ibrahimcayiroglu.com/Dokumanlar/MekatronikProjeUygulamasi/4-Makale-Step_Motor_Kontrolu-Burak_EKİM.pdf page:1-6 | *Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method<br>*Method of Narration, Discussion Method, Question Answer, Problem Solving Method, Self Study Method |                          |

|                     |
|---------------------|
| Assesment Methods % |
| 2 Final : 60.000    |
| 3 Vize : 40.000     |

| ECTS Workload                     |       |            |                 |
|-----------------------------------|-------|------------|-----------------|
| Activities                        | Count | Time(Hour) | Sum of Workload |
| Vize                              | 1     | 1.00       | 1.00            |
| Final                             | 1     | 1.00       | 1.00            |
| Uygulama / Pratik                 | 14    | 1.00       | 14.00           |
| Teorik Ders Anlatım               | 14    | 2.00       | 28.00           |
| Laboratuvar                       | 14    | 2.00       | 28.00           |
| Gösterim                          | 14    | 1.00       | 14.00           |
| Final Sınavı Hazırlık             | 2     | 1.00       | 2.00            |
| Ara Sınav Hazırlık                | 2     | 1.00       | 2.00            |
| Total :                           |       |            | 90.00           |
| Sum of Workload / 30 ( Hour ) : 3 |       |            |                 |
| ECTS : 3.00                       |       |            |                 |

| Program And OutcomeRelation |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|
|                             | P.O. 1 | P.O. 2 | P.O. 3 | P.O. 4 | P.O. 5 | P.O. 6 | P.O. 7 | P.O. 8 | P.O. 9 | P.O. 10 | P.O. 11 | P.O. 12 | P.O. 13 | P.O. 14 | P.O. 15 |
| L.O. 1                      | 5      | 0      | 0      | 5      | 5      | 0      | 0      | 0      | 0      | 0       | 5       | 0       | 0       | 0       | 0       |
| L.O. 2                      | 5      | 0      | 0      | 5      | 5      | 0      | 0      | 0      | 0      | 0       | 5       | 0       | 0       | 0       | 0       |
| L.O. 3                      | 5      | 0      | 0      | 5      | 5      | 0      | 0      | 0      | 0      | 0       | 5       | 0       | 0       | 0       | 0       |
| L.O. 4                      | 5      | 0      | 0      | 5      | 5      | 0      | 0      | 0      | 0      | 0       | 5       | 0       | 0       | 0       | 0       |
| L.O. 5                      | 5      | 0      | 0      | 5      | 5      | 0      | 0      | 0      | 0      | 0       | 5       | 0       | 0       | 0       | 0       |
| Avarage                     | 5.00   | 0      | 0      | 5.00   | 5.00   | 0      | 0      | 0      | 0      | 0       | 5.00    | 0       | 0       | 0       | 0       |

BEWARE OF PLAGIARISM Please pay attention to proper academic citation rules and avoid plagiarism, an unethical and academically fraudulent behavior, when completing reports, assignments, or other academic works, and it is treated with the same disciplinary action as cheating in a classroom setting. It is imperative to refrain from presenting another person s ideas, language, expressions, or any other form of intellectual property as your own. Regardless of quality, your assignments/projects/research should reflect your original work. Perfection is not a requirement, and in case of any uncertainties regarding academic writing guidelines, you may seek clarification from your course instructor.

Engel Durumu/Uyarlama Talebi : Engel durumuna ilişkin herhangi bir uyarlama talebinde bulunmak isteyen öğrenciler, dersin öğretim elemanı ya da Nevşehir Engelli Öğrenci Birimi ile en kısa sürede iletişime geçmelidir.