|      | INTRODUCTION TO  | ALGO  | RITHMS AND PROGRAMMING  |  |  |  |  |  |  |
|------|--|---|---|--|--|--|--|--|--|
| 1    | Course Title:  | INTROD  | UCTION TO ALGORITHMS AND PROGRAMMING  |  |  |  |  |  |  |
| 2    | Course Code:   | IYZ1202   |   |  |  |  |  |  |  |
| 3    | Type of Course:  | Compuls   | ory   |  |  |  |  |  |  |
| 4    | Level of Course:   | First Cyc                                       |   |  |  |  |  |  |  |
| 5    | Year of Study:   | 1   |   |  |  |  |  |  |  |
| 6    | Semester:  | 2   |   |  |  |  |  |  |  |
| 7    | ECTS Credits Allocated:                                    | 5.00  |   |  |  |  |  |  |  |
| 8    | Theoretical (hour/week):                                   | 2.00  |   |  |  |  |  |  |  |
| 9    | Practice (hour/week):                                      | 2.00  |   |  |  |  |  |  |  |
| 10   | Laboratory (hour/week):                                    | 0   |   |  |  |  |  |  |  |
| 11   | Prerequisites:   |   |   |  |  |  |  |  |  |
| 12   | Language:  | Turkish   |   |  |  |  |  |  |  |
| 13   | Mode of Delivery:  | Face to f                                       | ace   |  |  |  |  |  |  |
| 14   | Course Coordinator:  | Dr. Ögr.  | Üyesi MELİH ENGİN   |  |  |  |  |  |  |
| 15   | Course Lecturers:  |   |   |  |  |  |  |  |  |
| 16   | Contact information of the Course<br>Coordinator:          | Yrd. Doç  | . Dr. Melih ENGİN   |  |  |  |  |  |  |
| 17   | Website:   |   |   |  |  |  |  |  |  |
| 18   | Objective of the Course:                                   | Introduct<br>algorithm<br>The strue<br>Software | ion to Algorithms, flowcharts, basic search and ranking<br>ns, the basic concepts of programming, software language.<br>cture of a computer language, control statements, loops,<br>e Applications. |  |  |  |  |  |  |
| 19   | Contribution of the Course to<br>Professional Development: |   |   |  |  |  |  |  |  |
| 20   | Learning Outcomes:   |   |   |  |  |  |  |  |  |
|      |  | 1   | Know the general concepts of Basic programming  |  |  |  |  |  |  |
|      |  | 2   | The algorithm logic, algorithms and understand how to<br>create structured programming issues   |  |  |  |  |  |  |
|      |  | 3   | Structural features and use the main features of the C programming language with strong possibilities in relation to the concept of algorithm   |  |  |  |  |  |  |
|      |  | 4   | For the solution of problems with algorithms and flow diagrams, easy, understandable and effective program design   |  |  |  |  |  |  |
|      |  | 5   | Problem finds and corrects errors in the solutions and programs   |  |  |  |  |  |  |
|      |  | 6   | Defines the data hierarchy  |  |  |  |  |  |  |
|      |  | 7   | Defines and uses structured programming unit  |  |  |  |  |  |  |
|      |  | 8   |   |  |  |  |  |  |  |
|      |  | 9   |   |  |  |  |  |  |  |
|      |  | 10  |   |  |  |  |  |  |  |
| 21   | Course Content:  |   |   |  |  |  |  |  |  |
|      |  | Co  | ourse Content:  |  |  |  |  |  |  |
| Week | Theoretical  |   | Practice  |  |  |  |  |  |  |
| 1    | The concept and design of algorithm                        | IS  |   |  |  |  |  |  |  |
| 2    | Flow diagrams and design                                   |   |   |  |  |  |  |  |  |

| 3   | Prograr<br>structur   | nming,<br>ed pro   | progra<br>gramm   | ammir<br>ning co   | ng lang<br>oncept   | luage                                     | and  |  |  |                               |  |  |                        |                       |  |                   |  |
|---|---|--|---|--|---|---|--|--|--|-------------------------------|--|--|------------------------|-----------------------|--|-------------------|--|
| 4   | The bas<br>languag  | of the   | C prog  | Jramm  | ning  |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 5   | Decisio   | onditio  | n) stru   | cture  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 6   | Repeat  | ures   |   |  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 7   | Array (v  | pt   |   |  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 8   | Array (v<br>algorith  | ector i<br>ns  | n) seai   | rch ar   | nd rank   | ing                                       |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 9   | Multi-di  | nensio   | nal arı   | rays (ı  | matrice   | es)                                       |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 10  | Mathem<br>arrays  | ions c   | on multi  | i-dime   | ension  | al  |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 11  | The cor<br>progran  | orogra<br>les  | im and  | sub-   |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 12  | The cor<br>subrout  | icept o<br>ine exa   | f recur<br>amples   | sion a   | and rec   | ursive                                    | 9  |  |  |                               |  |  |                        |                       |  |                   |  |
| 13  |   |  |   |  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 14  |   |  |   |  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 22  | Textboo<br>Materia  | oks, Re<br>s:  | ferenc  | es an  | d/or O  | ther                                      |  |  |  |                               |  |  |                        |                       |  |                   |  |
| 23  | Assesm  | ent  |   |  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| TERM L  | EARNIN  | G ACTI   | VITIES  | \$   |   | N   | UMBE   | E WE   | EIGHT  |                               |  |  |                        |                       |  |                   |  |
| R   |   |  |   |  |   |   | 4  |  |  |                               |  |  |                        |                       |  |                   |  |
| Activites   |   |  |   |  |   |   |  |  | NUMD   | er                            |  | Dura   | Duration (hour)        |                       |  | Load (hour)       |  |
|   |   |  |   |  |   |   |  |  |  |                               |  |  |                        |                       |  |                   |  |
| Theore  | tical   | ,  |   |  |   | 1   |  | 60   | 14   |                               |  | 2.00   |                        |                       | 28.00  |                   |  |
| Theore<br>Final Ex<br>Practica  | tical<br>xam<br>als/Labs  |  |   |  |   | 1   |  | 60   | 1 <u>4</u><br>.00<br>14  |                               |  | 2.00<br>2.00   |                        |                       | 28.00<br>28.00   |                   |  |
| Theore<br>Final Ex<br>Practica  | tical<br>xam<br>als/Labs  | Pepera   | tion.)  | l earn   | ing Act   | 1<br>tivities                             | to   | 60   | 1 <u>4</u><br>.00<br>14  |                               |  | 2.00<br>2.00<br>0.00   |                        |                       | 28.00<br>28.00<br>0.00   |                   |  |
| Theore<br>Final Ex<br>Practica<br>Self stu<br>Contrib<br>Homew  | tical<br>xam<br>als/Labs<br>idv and i<br>ution of<br>vorks  | reper<br>Termi (   | tion<br>Year) I   | Learn  | ing Act   | 1<br>tivities                             | to   | 60<br>   | 14<br>.00<br>14<br>.00<br>0  |                               |  | 2.00<br>2.00<br>0.00<br>0.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00   |                   |  |
| Final E<br>Practica<br>Self Stu<br>Homew<br>Conients  | tical<br>xam<br>als/Labs<br>idy and<br>ution of<br>vorks<br>Stion of  | Term (   | Year) I   | Learn  | ing Act   | 1<br>tivities                             | to   | 60<br>40<br>60   | 14<br>.00<br>14<br>.00<br>0<br>.00<br>0  |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00   |                   |  |
| Theore<br>Final E:<br>Practica<br>Contrib<br>Homew<br>Borients<br>Field St  | tical<br>xam<br>als/Labs<br>Idy and<br>Vorks<br>Vorks<br>Stion of<br>tudies   | Final E  | Year) I<br>xam to   | Learn  | ing Act   | 1<br>tivities<br>rade                     | to   | 60<br>40<br>60   | 14<br>14<br>00<br>00<br>0<br>0<br>0<br>0   |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>0.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00   |                   |  |
| Final E:<br>Practica<br>Self stu<br>Contrib<br>Homew<br>Ptorients<br>Field St<br>Midtern  | tical<br>xam<br>als/Labs<br>idy and<br>uton of<br>vorks<br>vorks<br>vorks<br>tudies   | Final E  | tion<br>Year) I<br>xam to                                   | Learn<br>o Succ  | ing Act<br>cess G   | 1<br>tivities<br>rade                     | to   | 60<br>40<br>60   | 14<br>.00<br>14<br>0.00<br>0<br>0<br>0<br>0<br>1   |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00  |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00  |                   |  |
| Theore<br>Final Ex<br>Practica<br>Self stu<br>Control<br>Homew<br>Field St<br>Michem<br>Others  | tical<br>xam<br>als/Labs<br>idy and<br>uton of<br>vorks<br>stion of<br>tudies<br>n exams<br>rement a  | Final E  | ation<br>Year) I<br>xam to<br>aluation                      | Learn<br>o Suco<br>n Tec                                 | ing Act<br>cess G<br>hnique   | 1<br>tivities<br>rade<br>s.Use            | to<br>d in th                                      |  | 14<br>.00<br>14<br>.00<br>.00<br>0<br>.00<br>.00<br>.00<br>.00<br>.00<br>.00   |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00  |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00  |                   |  |
| Final E:<br>Practica<br>Self stu<br>Contrib<br>Homew<br>Field St<br>Midtern<br>Others<br>Fi <b>24</b> E   | tical<br>Xam<br>als/Labs<br>Vorks<br>Setion of<br>tudies<br>rement  | Final E<br>nd Eva  | Xion) I<br>xam to<br>aluation                               | Learn<br>o Suco<br>n Tec<br>OAD                          | ing Act<br>cess G<br>hnique   | tivities<br>rade<br>s Use                 | to<br>d in th                                      |  | 14<br>.00<br>14<br>0<br>0<br>0<br>0<br>0<br>0<br>1<br>0<br>1   |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00   |                   |  |
| Final E<br>Practica<br>Contrib<br>Homew<br>Field Si<br>Midtern<br>Measur<br>Others<br>Fi <b>24</b> E<br>Total W   | tical<br>Xam<br>als/Labs<br>Idv and<br>Vorks<br>Setion of<br>tudies<br>rement<br>Ement<br>A<br>ECTS   | Final E<br>nd Eva<br><b>/ WO</b>   | Xion)<br>xam to<br>aluation<br>RK L                         | De Suco<br>n Tec<br>OAD                                  | ing Act<br>cess G<br>hniaue   | tivities<br>rade<br>s.Use                 | d in th  |  | 14<br>.00<br>14<br>0<br>0<br>200<br>0<br>1<br>0<br>1   |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00   |                   |  |
| Theore<br>Final E:<br>Practica<br>Contrib<br>Homew<br>Bonew<br>Field St<br>Midtern<br>Measur<br>Others<br>Fi24 E<br>Total W<br>Total w  | tical<br>Xam<br>als/Labs<br>Idv and<br>Vorks<br>Setion of<br>tudies<br>tudies<br>rement<br>ECGTS<br>/ork Loa                                  | Final E<br>nd Eva<br><b>/ WO</b><br>d  | xam to<br>aluation  | b Suco<br>n Tecl   | ing Act<br>cess G<br>hnique   | tivities<br>rade<br>s Use                 | d in th  |  | 14<br>.00<br>14<br>.00<br>0<br>0<br>.00<br>0<br>1<br>0<br>1  |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00<br>4.87   |                   |  |
| Theore<br>Final E:<br>Practica<br>Contrib<br>Homew<br><b>Contrib</b><br>Homew<br>Field Si<br>Midtern<br>Others<br>Field Si<br>Others<br>Field Si<br>Others<br>Field Si<br>Others<br>Field Si  | tical<br>xam<br>als/Labs<br>vorks<br>&tion of<br>tudies<br>rement<br><b>E6ES</b><br>/ork Load<br>Credit of                                    | Final E<br>nd Eva<br>/ WO<br>d<br>/ 30 hr<br>the Co  | xam to<br>aluation<br>RK L                                  | Learn<br>o Suco<br>n Tec<br>OAD                          | ing Act<br>cess G<br>hnique   | tivities<br>rade<br>s Use                 | to<br>d in th                                      |  | 14<br>.00<br>14<br>.00<br>0<br>0<br>0<br>0<br>1<br>1   |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00   |                        |                       | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00<br>4.87<br>5.00   |                   |  |
| Final E<br>Practica<br>Contrib<br>Homew<br>Peorients<br>Field St<br>Midtern<br>Measur<br>Others<br>Fi224 E<br>Total W<br>Total w<br>ECTS 0<br>25  | tical<br>Xam<br>als/Labs<br>dy and<br>vorks<br>vorks<br>vorks<br>vorks<br>vorks<br>vork coa<br>vork load<br>Credit of                         | Final E<br>nd Eva<br>/ WO<br>d<br>/ 30 hr<br>the Cc  | xam to<br>aluation<br>RK L<br>ourse<br>CON                  | D Suco<br>n Tech<br>OAD                                  | ing Act<br>cess G<br>hnique<br><b>TAB</b><br>SUTIO                                | ivities<br>rade<br>s.Use                  | d in th  |  | 14<br>.00<br>14<br>.00<br>0<br>.00<br>0<br>0<br>1<br>0<br>1<br>1<br>IING (<br>LIFIC  |                               |  | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>55.00                                      | PROC                   | GRAM                  | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00<br>4.87<br>5.00<br><b>ME</b>                      |                   |  |
| Final E:<br>Practica<br>Self Stu<br>Homew<br>Field Si<br>Midtern<br>Others<br>Fi24 E<br>Total W<br>ECTS C<br>25   | tical<br>Xam<br>als/Labs<br>Vorks<br>Setion of<br>tudies<br>rement<br>ZECTS<br>Vork Loa<br>Ork load<br>Credit of                              | Final E<br>nd Eva<br>/ WO<br>d<br>/ 30 hr<br>the Cc  | Vieah)<br>xam to<br>aluation<br>RK L<br>ourse<br>CON        | D Suco<br>n Tec:<br>OAD<br>TRIE                          | ing Act<br>cess G<br>hnique<br>TAB<br>BUTIO                                       | rade<br>s Use                             | d in th  |  | 14<br>00<br>14<br>00<br>00<br>00<br>1<br>00<br>1<br>00<br>1<br>00<br>1<br>0<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | OUTC<br>ATIO<br>PQ1           | COME:<br>NS<br>PQ11                              | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>55.00<br>55.00<br>S TO I                                    | PQ1<br>3               | GRAM                  | 28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00<br>4.87<br>5.00<br><b>ME</b>                              | PQ16              |  |
| Final E<br>Practica<br>Self Stu<br>Contrib<br>Homew<br>Field St<br>Midtern<br>Measur<br>Others<br>Fi24 E<br>Total W<br>ECTS C<br>25   | tical<br>Xam<br>als/Labs<br>orks<br>Setion of<br>tudies<br>rement<br>AECETS<br>/ork Loa<br>ork load<br>Credit of<br>PQ:<br>0                  | Final E<br>Final E<br>nd Eva<br>/ WO<br>d<br>/ 30 hr<br>the Cc   | xam to<br>aluation<br>RK L<br>ourse<br>CON<br>PQ3           | Learn<br>o Suco<br>n Tec<br>OAD<br>TRIE                  | ing Act<br>cess G<br>hnique<br><b>TAB</b><br>SUTIO                                | I<br>tivities<br>rade<br>s.Use<br>LE      | to<br>d in th<br>F LEA<br>C<br>PQ7                 | 60<br>40<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60<br>60 | 14<br>.00<br>14<br>.00<br>.00<br>.00<br>.00<br>.00<br>.00<br>.00<br>.0   | OUTC<br>ATIO<br>PQ1<br>0      | COME:<br>NS<br>PQ11<br>0                         | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>55.00<br>55.00<br><b>S TO I</b>                             | PQ1<br>3<br>0          | <b>PQ14</b><br>0      | 28.00<br>28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00<br>4.87<br>5.00<br><b>ME</b><br><b>PQ15</b><br>0 | <b>PQ16</b><br>0  |  |
| Final E:         Practica         Contrib         Homew         Contrib         Homew         Contrib         Field Str         Midtern         Midtern         Others         Field Str         Others         Str         Others         Str         OK1         ÖK1 | tical<br>Xam<br>als/Labs<br>Idv and<br>Vorks<br>Setion of<br>tudies<br>rement<br>Eace S<br>Vork Loa<br>rork load<br>Credit of<br>PQ<br>0<br>0 | Final E<br>Final E<br>nd Eva<br>/ WO<br>d<br>/ 30 hr<br>the Cc   | xam to<br>aluation<br>RK L<br>ourse<br>CON<br>PQ3<br>0      | Learn<br>o Suco<br>n Tec<br>OAD<br>TRIE<br>PQ4<br>1      | ing Act<br>cess G<br>hniaue<br><b>TAB</b><br><b>SUTIC</b><br><b>PQ5</b><br>0      | I<br>ivities<br>rade<br>s.Use<br>LE<br>NO | to<br>d in th<br>F LE/<br>(<br>PQ7<br>1<br>1       |  | 14<br>.00<br>14<br>.00<br>0<br>.00<br>0<br>1<br>.00<br>0<br>1<br>.00<br>0<br>1<br>.00<br>0<br>.00<br>.0                                      | OUTC<br>ATIO<br>PQ1<br>0<br>0 | COME:<br>NS<br>PQ11<br>0                         | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>55.00<br>55.00<br>S TO I                                    | PQ1<br>3<br>0          | <b>BRAM</b> 0 0       | 28.00<br>28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>0.00<br>55.00<br>146.00<br>4.87<br>5.00<br>ME<br>PQ15<br>0<br>0                   | <b>PQ16</b><br>0  |  |
| Final E:         Practica         Self Stu-         Homew         Coneway         Field Sti         Midtern         Measur         Others         Field Sti         Measur         Others         Field Sti         Measur         Others         Field Sti         Total W         ECTS C         25         ÖK1         ÖK2         ÖK3   | tical<br>Xam<br>als/Labs<br>Vorks<br>Setion of<br>tudies<br>rement<br>AECSTS<br>Vork Loa<br>Ork load<br>Credit of<br>PQ<br>0<br>0<br>0        | Final E<br>Final E<br>rd Evz<br>/ WO<br>d<br>/ 0<br>0<br>0<br>0 | xam to<br>aluation<br>RK L<br>ourse<br>CON<br>PQ3<br>0<br>0 | Learn<br>o Suco<br>n Tec<br>OAD<br>TRIE<br>PQ4<br>1<br>2 | ing Act<br>cess G<br>hnique<br><b>TAB</b><br><b>BUTIO</b><br><b>PQ5</b><br>0<br>0 | I<br>rade<br>s.Use<br>LE<br>NO            | to<br>d in th<br>F LE/<br>(0<br>PQ7<br>1<br>1<br>1 |  | 14<br>00<br>14<br>00<br>0<br>0<br>0<br>1<br>0<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1                               | OUTC<br>ATIO<br>PQ1<br>0<br>0 | <b>OME</b><br><b>NS</b><br><b>PQ11</b><br>0<br>0 | 2.00<br>2.00<br>0.00<br>0.00<br>0.00<br>35.00<br>55.00<br>55.00<br>55.00<br><b>0</b><br><b>0</b><br><b>0</b> | PROC<br>PROC<br>0<br>0 | <b>PQ14</b><br>0<br>0 | 28.00<br>28.00<br>28.00<br>0.00<br>0.00<br>0.00<br>35.00<br>0.00<br>55.00<br>146.00<br>4.87<br>5.00<br>ME<br>PQ15<br>0<br>0<br>0     | <b>PQ16</b> 0 0 0 |  |

| ÖK5  | 0                              | 0 | 0 | 3     | 0 | 2        | 1 | 0      | 0 | 0 | 0           | 0 | 0 | 0 | 0 | 0 |
|--|--------------------------------|---|---|-------|---|----------|---|--------|---|---|-------------|---|---|---|---|---|
| ÖK6  | 0                              | 0 | 0 | 3     | 0 | 2        | 1 | 0      | 0 | 0 | 0           | 0 | 0 | 0 | 0 | 0 |
| ÖK7  | 0                              | 0 | 0 | 3     | 0 | 2        | 1 | 0      | 0 | 0 | 0           | 0 | 0 | 0 | 0 | 0 |
| LO: Learning Objectives PQ: Program Qualifications |                                |   |   |       |   |          |   |        |   |   |             |   |   |   |   |   |
| Contrib<br>ution<br>Level:                         | ntrib 1 very low<br>on<br>vel: |   |   | 2 low |   | 3 Medium |   | 4 High |   |   | 5 Very High |   |   |   |   |   |