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| https://i0.wp.com/www.webiusdigital.com/wp-content/uploads/2018/03/Antalya-Bilim-%C3%9Cniversitesi-Logo.jpg?fit=300%2C300&ssl=1 | **ECTS Course Description Form** |
| **PART I ( Senate Approval)** |
| **Offering School**  | **College of Engineering** |
| **Offering Department** | **Industrial Engineering** |
| **Program(s) Offered to** | **Industrial Engineering** |  |
| **Other Engineering Departments** | **Elective** |
|  |  |
| **Course Code**  | **IE 401** |
| **Course Name** | **Topics in Industry 4.0** |
| **Language of Instruction** | **English** |
| **Type of Course** | **Departmental Area Elective** |
| **Level of Course** | **Undergraduate** |
| **Hours per Week** | **Lecture: 3** | **Laboratory:** | **Recitation:**  | **Practical:**  | **Studio:** | **Other:** |
| **ECTS Credit** | **6** |
| **Grading Mode** | **Letter grade** |
| **Pre-requisites** | **-** |
| **Co-requisites** | **-** |
| **Registration Restriction** | ***-*** |
| **Course Description** | **Industry 4.0 aims to support cyber-physical systems and processes physically, to support human beings physically, to create virtual factory environments, to communicate objects to each other and to people, and to make decentralized mobility decisions on this issue. This course aims to equip students with the competence of the Industrial 4.0 components in the following areas: Internet of things, Intelligent and Collaborative Robots, Big Data and Analysis, Virtual Reality, Contemporary Production Systems and Technologies, Artificial Intelligence, Cyber Security, Cloud System, Modeling and Simulation.** |
|  |  |
| **Learning Outcomes**  | **LO1** | 1. **The student will understand components and enablers of Industry 4.0**
2. **The student will able to outline the various systems used in a manufacturing plant and their role in an Industry 4.0 world**
3. **The students will analyze company processes and understand the role of organizations.**
4. **Explore the current and future ramifications of Industry 4.0.**
5. **Students will understand the opportunities, challenges brought about by Industry 4.0 and how organisations and individuals should prepare to reap the benefits**
 |
| **LO2** |
| **LO3** |
| **LO4** |
| **LO5** |
|  |
|  |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)****Faculty Specific Outcomes** | **PO1** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** |
| **PO2** | **Ability** to communicate effectively and write and present a report in Turkish and English.  | 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸 🗸  |
| **PO3** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. |
| **PO4** | **Recognition** of the need for life-long learning and **ability** to access information , follow developments in science and technology, and continually reinvent oneself. |
| **PO5** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. |
| **PO6** | **Awareness** of sectors and **ability** to prepare a business plan. |
| **PO7** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. |
| **Faculty Specific Outcomes****Discipline Specific Outcomes (program)** | **PO8** |  |
| **PO9** |  |
| **PO10** |  |
| **PO11** |  |
| **PO12** |  |
| **PO13** |  |
| **Discipline Specific Outcomes (program)** | **PO14** |  |
| **PO15** |  |
| **PO16** |  |
| **PO17** |  |
| **PO18** |  |
|  |  |
| **PART III ( Department Board Approval)** |
| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects****Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **S1** | **Week** |  | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** |  |
| **S2** | **1** | **Introducing course: Defining Industry 4.0**  | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S3** | **2** | [**Distinctiveness**](http://tureng.com/tr/turkce-ingilizce/distinctiveness)**of Industry 4.0**  | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S4** | **3** | **Industry 4.0 Components: Cyber Physical Systems** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S5** | **4** | **Industry 4.0 Components: Internet of Things** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S6** | **5** | **Industry 4.0 Components: Big Data, Data Mining** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S7** | **6** | **Industry 4.0 Components: Cloud Systems** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S8** | **7** | **Industry 4.0 Maturity Models** | ***A1-A2-A3*** | ***A1-A2-A3***  | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S9** | **8** | **Impacts of Industry 4.0 on Industries, Economy** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S10** | **9** | **Impacts of Industry 4.0 on International, Society, People** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S11** | **10** | **Applications and Case studies** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S12** | **11** | **Applications and Case studies** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S13** | **12** | **Industry Speaker, Q&A** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **S14** | **13** | **Industry Speaker, Q&A** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **No.** | **14** | **Final Presentation of Projects** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** | ***A1-A2-A3*** |  |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules** **Evidence of Achievement of Learning Outcomes** |  | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Homework** | ***10%*** | ***Homework are given by announcing deadline. Homework that are submitted after the deadline are not accepted.*** | **There is no compensation for the Homework.** |
| **A2** | **Project** | ***50%*** | ***Will be done as a group*** | **There is no compensation for the Project** |
| **A3** | **Report** | ***20%*** | ***The report on the group projects will be delivered electronically*** | **There is no compensation for the Report** |
| **A4** | **Presentation** | ***20%*** | ***Will be done as a group*** | **There is no compensation for the Presentation** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **TOTAL** | **Other** |  |  |  |
|  | **100%** |
| **Method for Determining Letter Grade** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activities** | **Homework** | **Project** | **Report** | **Presentation**  |
| **Quantity** | **2** | **1** | **1** | **1** |
| **Effects on Grading, %)** | **10** | **50** | **20** | **20** |

 |
| **Teaching Methods, Student Work Load** | **No** | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** | **Lecturing and utilizing chalkboard/whiteboard. Sample questions and answers to strengthen learning. In class exams.** | **3x14** |
| **2** | **Interactive Lecture** | **Industry Speaker, Q&A** | **6** |
| **3** | **Recitation** |  | **-** |
| **4** | **Laboratory** |  | **-** |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** | **The project is prepared at home.** | ***28*** |
| **8** | **Homework** | **The homework is prepared at home.** | **5** |
| **9** | **Pre-class Learning of Course Material**  | **New subjects are learned by watching videos or reading course notes before class.** | **28** |
| **10** | **Review of Course Material** |  |  |
| **11** | **Studio** |  | **-** |
| **12** | **Office Hour** | **Two work hour in a week** | **26** |
| **TOTAL** |  ***190*** |
| **IV. PART** |
| **Instructor****Course Materials** | **Name** | **Ali Cem Başarır** |
| **E-mail** | **alicem.basarir@antalya.edu.tr** |
| **Phone Number** | **0532 308 06 88** |
| **Office Number** | **TTO Office** |
| **Office Hours** |  |
| **Mandatory** | **It will be determined during the semester.** |
| **Course Materials****Other** | **Recommended** | **‘‘Industry 4.0: Managing The Digital Transformation’ Alp Üstündağ, Emre Çevikcan**  |
| **Scholastic Honesty** |  |
| **Other** | **Students with Disabilities** | **Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Any for of scholastic dishonesty is a serious academic violation and will result in a disciplinary action.** |
| **Safety Issues**  | **Reasonable accommodations will be made for students with verifiable disabilities.** |
| **Flexibility** | **The course does not require any special safety precautions.** |
|  |  |