ÇANKAYA UNIVERSITY
Faculty of Engineering
Course Definition Form

This form should be used for either an elective or a compulsory course being proposed and curricula development processes for an undergraduate curriculum at Çankaya University, Faculty of Engineering. Please fill in the form completely and submit the printed copy containing the approval of the Department Chair to the Dean's Office, and mail its electronic copy to dozgor@cankaya.edu.tr. Upon the receipt of *both copies*, the printed copy will be forwarded to the Faculty Academic Board for approval. Incomplete forms will be returned to the Department. The approved form is finally sent to the President's office for approval by the Senate.

Part I. Basic Course Information

Department Name	INDUSTRIAL ENGINEERING					**Dept. Numeric Code**	12
Course Code	IE302	**Number of Weekly Lecture Hours**	3	**Number of Weekly Lab/Tutorial Hours**	2	**Number of Credit Hours**	4
Course Web Site	http://ie302.cankaya.edu.tr					**ECTS Credit**	06

Course Name *This information will appear in the printed catalogs and on the web online catalog.*	
English Name	FACILITIES DESIGN AND LOCATION
Turkish Name	TESİS TASARIMI VE YER SEÇİMİ

Course Description
Provide a brief overview of what is covered during the semester. This information will appear in the printed catalogs and on the web online catalog. Maximum 60 words.

Introduction to facilities planning; Definition of the facility location problem; Basic discrete and continuous location models and known solution techniques; Advanced location models and location-allocation models; Introduction to facilities design; Market analysis, forecasting and capacity determination; Defining requirements based on product, process and schedule design; Flow, space and relationship planning: departmentalization; Personnel requirements; Introduction to materials handling system design and warehousing operations; Introduction to plant layout; Layout optimization techniques; Comparison of computerized layout techniques; Facilities systems; Facilities design project: preparing, presenting, implementing and maintaining.

	1st	2nd	3rd	4th
Prerequisites (if any) *Give course codes and check all that are applicable.*	IE202			
	☐ Consent of the Instructor	☐ Senior Standing	☐ Give others, if any.	
Co-requisites (if any)				

Course Type *Check all that are applicable*

☒ Must course for dept. ☐ Must course for other dept.(s) ☐ Elective course for dept. ☐ Elective course for other dept.(s)

Course Classification
Give the appropriate percentages for each category.

Category	Mathematics & Natural Sciences	Engineering Sciences	Engineering Design	General Education	Other
Percentage	20	30	50		

Part II. Detailed Course Information

Course Objectives
Explain the aims of the course. Maximum 100 words.

The main aim of this course is:

- To introduce the concept of facility location, design, planning, and layout,
- To synthesize all related previous course work,
- To prepare the students work effectively in project groups, write a technical report on the results,
- To understand the complexity of real-life problems,
- To model real-life situations, develop and discuss the alternative solutions.

Learning Outcomes
Explain the learning outcomes of the course. Maximum 10 items.

On successful completion of this course, all students will have developed:

1. Knowledge and understanding of facilities planning, design, layout and location,
2. Skill in using quantitative methods to model, analyze, and optimize complex problems related to location and layout problems,
3. Skill in formulating mathematical programming models (especially mixed integer linear programming models) for solving a variety of location and layout problems,
4. Skill in surveying, data collection and analysis for planning and design facilities,
5. Practice in use of computer software packages (LINGO, GAMS, CPLEX, MATLAB, Spreadsheet VB/Macro programming, AUTOCAD, SketchUp …),
6. Skill in report writing.

On successful completion of this course, all students will be:

7. Involved in team work,
8. Aware of ethical and professional issues.

Textbook(s)
List the textbook(s), if any, and other related main course materials.

Author(s)	Title	Publisher	Publication Year	ISBN
James A. Tompkins, John A. White, Yavuz A. Bozer, J. M .A. Tanchoco	Facilities Planning, 4th Edition	Wiley	2010	978-0470444047

Reference Books
List the reference books as supplementary materials, if any.

Author(s)	Title	Publisher	Publication Year	ISBN
A. Garcia-Diaz and J.M. Smith	Facilities Planning and Design	Prentice Hall	2007	978-0131481916
Dileep R. Sule	Manufacturing Facilities: Location, Planning, and Design, 3rd edition	CRC Press	2008	978-1420044225
R. G. Askin and C. R. Standridge	Modeling and Analysis of Manufacturing Systems	John Wiley & Sons, Inc.	1993	978-0471514183
Mikell P. Groover	Automation, Production Systems, and Computer-Integrated Manufacturing, 4th edition	Prentice Hall	2014	978-0133499612
R.L. Francis, F. McGinnis, J.A. White	Faclity Layout and Location: An Analytical Approach, 2nd edition	Prentice Hall	1998	978-0132991490
Sunderesh S. Heragu	Facilities Design, 3rd edition	PWS Pub. Co.	2008	978-1420066265

Teaching Policy
Explain how you will organize the course (lectures, laboratories, tutorials, studio work, seminars, etc.)

Teaching will be based on enabling the students to understand the concepts and procedures in each topic section and to be able to apply them. To do this the course will be organized into three modules:

Regular course work is 3 hours of lecturing, 1 hour of recitation and 1 hour of lab per week. Sometimes five hours of class in a week will be used for lectures and/or tutorials/laboratories according to the perceived need for increasing lecturing efficiency.

Laboratory/Studio Work
Give the number of laboratory/studio hours required per week, if any, to do supervised laboratory/studio work, and list the names of the laboratories/studios in which these sessions will be conducted.

Throughout the semester, there will be twelve laboratory sessions, which will be conducted by the assistant(s), to do various computer exercises in order to give computational skills to the students.

Computer Usage
Briefly describe the computer usage and the hardware/software requirements in the course.

MS-Office Tools (*Word*, *Excel* and Power Point), optimization programs such as LINGO, GAMS, CPLEX and a number of computer programs such as MATLAB, AUTOCAD, SKETCHUP, CRAFT and BLOCKPLAN can be used.

Course Outline
List the topics covered within each week.

Week	Topic(s)
1	Introduction to facilities planning
2	Definition of the facility location problem
3	Basic discrete and continuous location models and known solution techniques
4	Advanced location models and location-allocation models
5	Advanced location models and location-allocation models
6	Introduction to facilities design, market analysis, forecasting and capacity determination
7	Defining requirements based on product, process and schedule design
8	Defining requirements based on product, process and schedule design
9	Flow and space planning, departmentalization
10	Personal requirements
11	Introduction to materials handling system design and warehousing operations
12	Introduction to plant layout and layout optimization techniques
13	Layout optimization techniques and comparison of computerized layout techniques
14	Facilities systems, facilities design project (preparing, presenting, implementing and maintaining)

Grading Policy
List the assessment tools and their percentages that may give an idea about their relative importance to the end-of-semester grade.

Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage
Homework	2	15	Case Study			Attendance		
Quiz			Lab Work	5	10	Field Study		
Midterm Exam	1	25	Class Participation			Project	1	15
Term Paper			Oral Presentation			Final Exam	1	35

ECTS Workload
List all the activities considered under the ECTS.

Activity	Quantity	Duration (hours)	Total Workload (hours)
Attending Lectures (*weekly basis*)	14	3	42
Attending Labs/Recitations (*weekly basis*)	12	2	24
Preparation beforehand and finalizing of notes (*weekly basis*)			0
Collection and selection of relevant material (*once*)			0
Self study of relevant material (*weekly basis*)	14	1	14
Homework assignments	2	10	20
Preparation for Quizzes			0
Preparation for Midterm Exams (*including the duration of the exams*)	1	15	15
Preparation of Term Paper/Case Study Report (*including oral presentation*)			0
Preparation of Term Project/Field Study Report (*including oral presentation*)	1	15	15
Preparation for Final Exam (*including the duration of the exam*)	1	20	20
TOTAL WORKLOAD / 25			6,
ECTS Credit			**6**

Total Workloads are calculated automatically by formulas. To update all the formulas in the document first press CTRL+A and then press F9.

Program Qualifications vs. Learning Outcomes
Consider the below program qualifications determined in terms of learning outcomes of all the courses in the curriculum and capabilities. Look at the learning outcomes of this course given above. Relate these two using the Likert Scale by marking with X in one of the five choices at the right.

No	Program Qualifications	Contribution				
		0	1	2	3	4
1	Adequate knowledge in mathematics, science, engineering and social sciences subjects pertaining to Industrial Engineering; ability to use theoretical and applied information in these areas in complex Industrial Engineering problems.					X
2	Ability to identify, define, formulate and solve complex Industrial Engineering problems involving human, material, machinery, money, information, time and energy elements; ability to select and apply proper analysis tools, operations research methods and modeling techniques for formulating and solving such problems.					X
3	Ability to analyze a complex system and/or a subsystem or a process involving human, material, machinery, money, information, time and energy elements and ability to design it under realistic constraints and conditions, in such a way as to meet the desired improvement; ability to apply modern systems design methods for this purpose.					X
4	Ability to devise, select, and use modern techniques and computing tools needed for analyzing and solving complex problems encountered in Industrial Engineering practice; ability to use information technologies effectively with the knowledge of state-of-the art hardware, and especially software capabilities related to Industrial Engineering.				X	
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex Industrial Engineering problems or Industrial Engineering research questions.			X		
6	Ability to work efficiently in intra-disciplinary and multidisciplinary teams by collaborating effectively; ability to work individually.			X		
7	Ability to communicate effectively in Turkish and in English, both orally and in writing; ability to use visual tools such as technical drawing and flow diagram; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.				X	
8	Awareness of the need for lifelong learning; ability to access information (ability to search resources, to use databases and other information sources to access information), to follow developments in science and technology, and to keep continuous self-improvement.	X				
9	Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.			X		
10	Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.	X				
11	Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.	X				

Contribution Scale to a Qualification: **0**-None, **1**-Little, **2**-Medium, **3**-Considerable, **4**-Largest

Part III New Course Proposal Information
State only if it is a new course

Is the new course **replacing** a former course in the curriculum**?**	Yes ☐	No ☐	Former Course's Code	Former Course's Name
Is there any similar course which has content **overlap** with other courses offered by the university**?**	Yes ☐	No ☐	Most Similar Course's Code	Most Similar Course's Name
Frequency of Offerings *Check all semesters that the course is planned to be offered.*	☐ Fall ☐ Spring ☐ Summer			
First Offering	Academic Year		Semester ☐ Fall ☐ Spring	
Maximum **Class Size** Proposed		Student **Quota** for Other Departments		Approximate **Number of Students** Expected to Take the Course
Justification for the proposal *Maximum 80 words*				

Part IV Approval

	Faculty Member *Give the Academic Title first.*	Signature	Date
Proposed by	Asst. Prof. Dr. Nureddin KIRKAVAK		05.02.2017
	Asst. Prof. Dr. Gonca YILDIRIM		05.02.2017

Departmental Board Meeting Date		Meeting Number		Decision Number	
Department Chair	Assoc. Prof. Dr. Ferda Can ÇETİNKAYA	Signature		Date	

Faculty Academic Board Meeting Date		Meeting Number		Decision Number	
Dean	Prof. Dr. H. Selçuk GEÇİM	Signature		Date	

Senate Meeting Date		Meeting Number		Decision Number	