Experiences with an Industrial Engineering Dual Diploma Program

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International Cooperation in an Industrial Engineering Dual-diploma Program

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Abstract

This paper summarizes the experiences in designing, developing, and implementing a dual-diploma partnership between a university in the USA and a university in Turkey. The development of the program of study that would meet the graduation requirements of both institutions was a challenge as most international institutions do not have as strong general education component as U.S. institutions do. The organizational and academic calendar differences of both institutions and the remedies developed to overcome these differences are presented in the paper. The hard and soft variables that have influenced student academic performance are also discussed. The different offices such as registrar, bursar, housing, international, engineering student services and their role in successful implementation of the program are outlined. The student campus life along with observed cultural and social differences are discussed to highlight other than academic factors involved in such programs.

Introduction

In 2007, the School of Engineering at Southern Illinois University Edwardsville (SIUE) established a dual-diploma program in Industrial Engineering with Istanbul technical University (ITU) in Turkey. ITU has dual diploma programs in various disciplines with two other major universities in USA. However, the program is the first of its kind in Industrial Engineering both in Turkey and USA. ITU is one of the premier engineering schools in Turkey with very competitive admission standards. Both programs are ABET accredited and the instruction medium at both institutions is in English. The students who fail to secure the required TOEFL score of 79 are admitted to ITU's English as a Second Language (ESL) program in Turkey. The TOEFL score is used to gauge student admission to the freshman class. The dual-diploma students spend their freshman and junior years at ITU and sophomore and senior years at SIUE. Upon successful completion of the academic requirements at both institutions, students are awarded a B.Sc. degree in Industrial Engineering by both SIUE and ITU. The program admits 35 new students each year and gave its first graduates in spring 2011. Examples of comparable dual diploma programs are recently established in few other institutions [1-3]. Although our experiences show similarities to those programs, they differ in several aspects due to the characteristics of the major field of study selected for collaboration and SIUE's geographic location.

Admission to the Program

The students are admitted into the program via a nation-wide university entrance exam given in Turkey. The exam is taken by more than 1.5 million university bound students each year. Based on their quantitative, verbal, and science scores, students submit a ranked preference list indicating specific programs at specific institutions. These lists are later compared with each program at each university to match the students' choices. The advertised minimum entrance scores from previous year's exam give students a good sense of their admission chances to different programs at different universities. The dual-diploma program discussed in this paper admits students from the top 1.8% based on their quantitative scores. Primarily, three factors contribute to these high

achievers to select the dual-diploma program. First, the Industrial Engineering discipline is highly popular in Turkey as many consider it as an engineering degree providing upward mobility to management or executive positions. Second, the name of the ITU in Turkey is highly respected due to being the oldest engineering school in the country with several prominent leaders, including presidents and prime ministers, as their alumni. Third, the U.S. connection with a diploma from SIUE makes the degree more attractive in the Turkish job market as the graduates of the program have good command of English and have USA experience. Since the inception of the program in 2007, the minimum entrance score of the dual-diploma program steadily climbed up thereby admitting better-prepared students each year. It is now listed among the best Industrial Engineering programs in Turkey based on university entrance exam minimum admission score.

New Student Orientation

The SIUE dual-diploma program coordinator and International Programs Director pay a visit to ITU to meet with the newly admitted students and freshman class in October of each year. This visit allows a formal introduction of the students to SIUE and provides early engagement with the students. During the visit, all necessary student information of the freshman class is captured via filling out the international admission form by each student. After a formal presentation of the SIUE's general and department specific academics and campus life, basic information about the life in the states, living arrangements, cost of study, and immediate geographic area is shared with the students. The orientation ends with a question and answer session where a wide variety of student concerns and curiosities are addressed. The team stays few days in Turkey to meet with the ESL program director and instructors as well as the dean, Industrial Engineering department chair, and the Turkish dual-diploma coordinator faculty member at ITU. During these meetings, possible program improvements, curriculum updates and further collaboration areas are discussed in detail.

Program of Study

One of the challenges in drafting the program of study was to ensure that the dual-diploma program mutually benefits the departments. This was the main reason behind alternating the study years between the institutions. A program of study with the first two years in one institution and the last two years in the other would have caused one of the industrial engineering programs to have minimal contact with the students when they were taking their general education classes while the other institution providing all the junior and senior level industrial engineering classes. To avoid such a one-sided approach that benefits only one of the industrial engineering programs, we decided to schedule the freshman and junior years at one university and sophomore and senior year at the other. Although this schedule requires additional student travel, it helps students enhance their adaptation skills, both culturally and academically.

The following tables show the classes taken at each campus along with equivalent courses in the other campus. The courses in red and bold are SIUE courses, the courses in blue are their equivalents at ITU. It should be noted that the credit hour requirements to graduation are much higher in the Turkish university. The program of study ensures that the minimum required credit hours at each institution are met to be able to receive two separate diplomas.

INDUSTRIAL ENGINEERING DUAL-DIPLOMA PROGRAM

Freshman year: 37 Credits at ITU

Fall	CR	Spring	CR
Intro. to Industrial Eng. END 111 **(IME 106)**	3	Physics II FIZ 106 **(PHYS 152)**	3
Physics I FIZ 101 **(PHYS 151)**	3	Physics II Lab. FIZ 106L **(PHYS 152L)**	1
Physics I Lab. FIZ 101L **(PHYS 151L)**	1	Gen. Chem. I KIM 101E **(CHEM 131)**	3
Math. I (or Calc. 1) MAT 103 **(MATH 150)**	4	Gen. Chem. I Lab. KIM 101EL**(CHEM 135)**	1
Introduction to Computers and Information		Scienc. & Eng Comp BIL 108E (CS 145)	3
Systems BIL 101E **(IME 335)**	3	Math. II (or Calc. II) MAT 104 **(MATH 152)**	4
History of Turkish Rev. I ATA101 **(as ISS)**	2	History of Turkish Rev. II ATA102 **(as ISS)**	2
Turkish Language I TUR 101	2	Turkish Language II TUR 101	2
TOTAL	18		19

Sophomore year: 34 Credits at SIUE

Fall	CR	Spring	CR
Calc. III **MATH 250**	4	Linear Algebra **MATH 321** (MAT 261)	3
Statics **CE 240**	3	Dynamics **ME 262** (MEK 205)	3
English Comp. I **ENG 101**(ING 101)	3	Mechanics of Solids **CE 242** (INS XXX)	3
Engineering Graphics & CAD **CE 204**	3	English Comp. II **ENG 102** (ING 102)	3
Macro Econ. **ECON 111** (EKO 201) CAD	3	Circuits **ECE 210** (END XXX)	3
	3	Interpersonal Communication Skills or	
		Public Speaking **SPC 103** (ING 103)	3
TOTAL	16		18

Junior: 39 Credits at ITU IE

Fall	CR	Spring	CR
Probability END 252E **(STAT 107)**	3	Work Analy. & Design END 321 **(IME451)**	3
Operations Res. I END 331 **(IME 415)**	3	Oper. Research II END 332E **(IME 461)**	3
Manufacturing Processes END 220**(IME 370)**	3	Simulation END 322 **(IME 468)**	3
Employment Law HUK 201 **(as FAH)**	3	Stat. Meth. for Eng. END 311 **(IME 365)**	3
Ergonomics END 232 **(IME 458)**	3	Materials Management END 442E **(IME Elect)**	3
Engineering Economy END 312 **(IME 345)**	3	IE Elective at B END XXX **(IME Elect)**	3
		Management and Organ. END 431 **(IME 430)**	3
TOTAL	18		21

Senior: 33 Credits at SIUE IE

Fall	CR	Spring	CR
Facilities Design **IME 484** (END 432E)	3	QC and Assurance **IME 465** (END 422)	3
3-D Modeling in Product Design **IME 375**	3	IE Elective at A II **IME Elect** (END XXX)	3
IE Elective at A I **IME Elect** (END XXX)	3	IE Elective at A III **IME Elect** (END XXX)	3
Prod Plan. and Control **IME 483** (END 421)	3	Integr. Eng. Design **IME 490** (END 492)	3
Plantwide Process Control **IME 476**	3	Eng. Ethics & Prof. **PHIL323** (ITB 217E)	3
Introduction to Industrial/Organizational		Interdisciplinary Studies **IS XXX**	3
	3		
TOTAL	15		18

The number of credit hours taken at SIUE is 67 and the number of credit hours taken at ITU is 76, making the total 143. Although this number is well above the SIUE's requirements, it is the required credit hours at ITU for a B.Sc. diploma in Industrial Engineering.

SIUE's general education requirements are met using a series course equivalencies, covering following areas.

Skills Requirements:

Communication: 3 courses, including a two-course sequence in writing and one course in oral communication all taken at SIUE, 9 credit hours.

Critical Thinking:1 course, 3 credit hours. Freshmen Introduction to Industrial Engineering course taken at ITU which also meets New Freshman Seminar Requirement of SIUE.

Computer/Statistics: 2 courses on Computer Programming courses, 5 credit hours taken at ITU.

Foreign Languages: 2 Turkish Language courses, 4 credit hours taken at ITU.

Mathematics Requirements: Calculus I and II and Linear Algebra taken at ITU, Calculus III and Differential Equations taken at SIUE, 15 credit hours.

Physical and Life Sciences Requirements: Physics I and II with labs, and Chemistry with lab, 12 credit hours all taken at ITU

Humanities and Fine Arts (FAH) Requirements: 2 courses on Engineering Ethics and Introduction to Fine Arts & Humanities taken at SIUE and Employment Law taken at ITU, 9 credit hours.

Social and Behavioral Sciences Requirements: 2 courses on Macro Economy and Industrial Psychology taken at SIUE and 2 courses on History of Turkish revolution taken at ITU, 10 credit hours

TOTAL GENERAL EDUCATION: 67 credit hours

Transfer to SIUE

Upon successful completion of the freshman year at ITU, each student's academic record is transferred to SIUE for the sophomore year. As part of the SIUE's transfer policy, only the students with a cumulative GPA of 2.0 or above are eligible to transfer to SIUE. Since the beginning of the program, only seven students remained below 2.0 by the end of their freshmen year at ITU. Most of these students were able to improve their GPA by repeating the courses they failed during summer semester at ITU. The 2.0 cumulative GPA policy to transfer ensures that the students who are mostly on schedule with their program of study proceed into their sophomore year at SIUE. Since SIUE already created the entry in their student information system for each dual-diploma student by the second semester of the freshman year at ITU, the transfer process works well in terms of shared student records. The grades received at ITU are entered into SIUE system at the end of each semester via official transcript exchange between the program coordinators of each site. The admission and transfer process is summarized in the flow diagram presented in Figure 1.

The students are advised by a professional academic advisor at SIUE who is trained for the program. This advisor sends out emails to remind the freshmen at ITU the March pre-registration deadline for the upcoming fall semester and the list of the courses they need to sign up. The students pre-register for the recommended courses using web-based registration system of SIUE. Unlike ITU's system where the dual-diploma students are kept in separate sections due to different

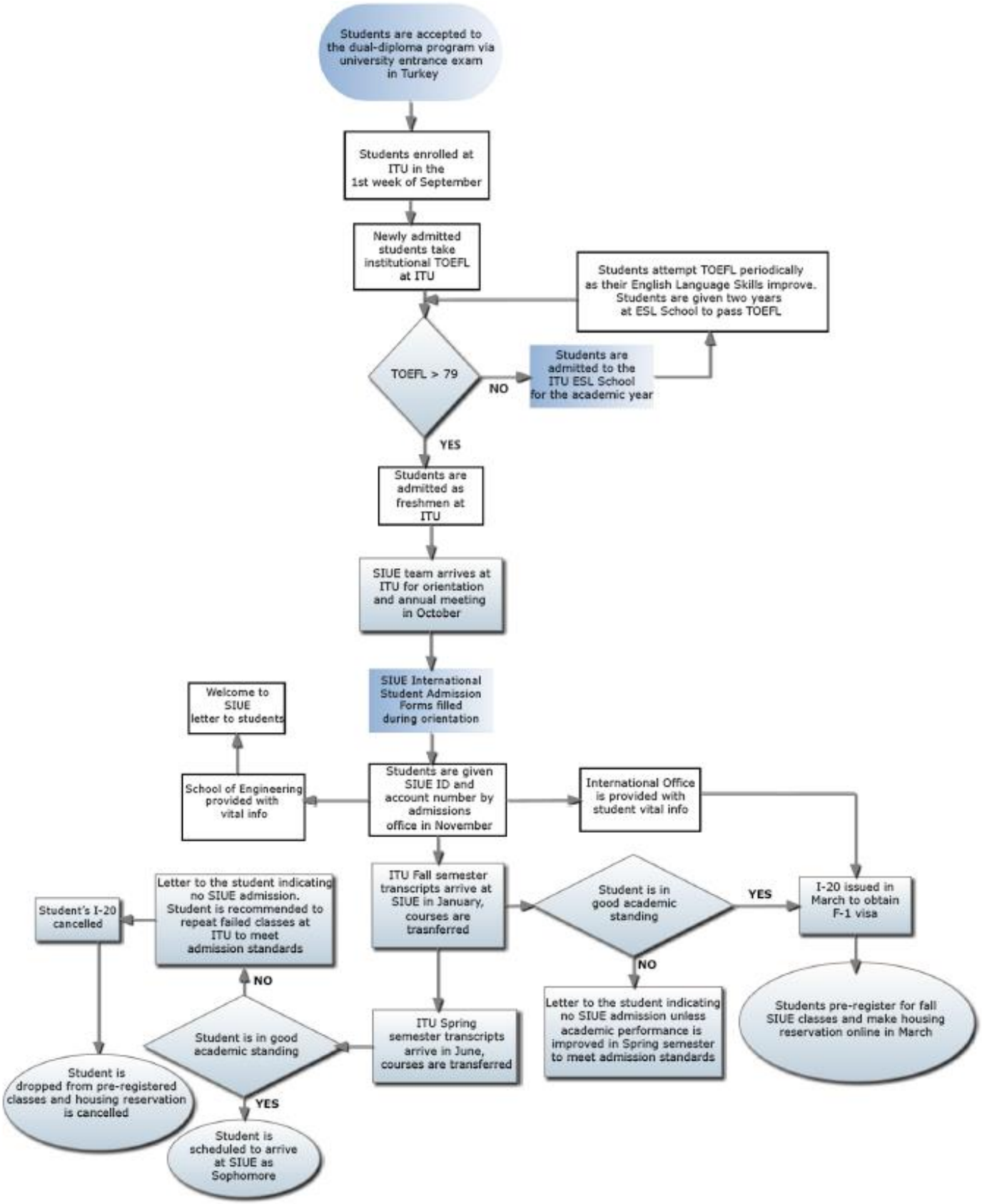

Figure 1: Dual Diploma Admission Process Flow

tuition rate and other administrative issues involved, at SIUE there are no reserved courses or sections for these students and they are allowed to register in sections with the domestic students. They are given the flexibility of customizing their schedule by signing up for the sections they

prefer. The mixing with the domestic students gives these dual-diploma students a better experience with studying at SIUE and helps them build friendships, communication skills, and social connections. So far, the pre-registration worked well with no major problems faced other than reissuing of the codes lost by students in rare occasions.

To allow certain provisions for these students, the student information systems at each institution tag these students with a special marker as special-status students to avoid activating several system-generated automatic checks and notices that are not pertinent to them. A good example of this is the bursar's office first payment notice at SIUE that results in automatic drop from the pre-registered classes unless the first installment of the tuition and fees are paid a week before the beginning of each semester. This notice is for all students. However, dual-diploma students arrive on campus during that week for their international student orientation and do not have the time to set up a bank account and make their first payments by the given deadline. As a result, the system generates a payment notice to bring the issue to student's attention but does not drop them from their classes and they are given financial clearance until the 3rd week of the semester to put their banking arrangements in order. There is always the option of making payments using credit cards, but some of these students prefer to transfer funds from Turkey and use personal checks to make their school payments.

Housing

The majority of the students in the program are residents of Istanbul and many live with their families during their first year studies at ITU. It is a common practice by Turkish college students to live with their families if they are attending school in the same city where their families live. Their sophomore year at SIUE is likely to be their first time being away from home for extended period of time and serves as their first test in self-sufficiency. Thus, most of these students fit the profile of a newly arriving freshman in terms of their ability to manage their time and deal with the chores of day-to-day living.

As their student records are created at SIUE by the end of fall semester, they are given their student eIDs that allows them to use SIUE's email and access student information system. They can use their eIDs to reserve their rooms at the residence halls or university apartments in early spring semester of their freshman year using Cougar-Net information system. The 500 university apartments are furnished and located in proximity of the campus quad where various living arrangement combinations can be requested. Many prefer to live in the university apartments over residence halls to avoid subscribing to meal plans and have more flexible move-in and -out dates. In case they secure a summer internship, it is more convenient to keep their room in the university apartments and stay at SIUE during the summer.

During the first two years of the dual-diploma program, the students were allowed to select their roommates in the university apartments. As a result, many selected other dual-diploma students as their roommates. Although this looked like an insignificant issue at first, it created several serious concerns later on. The familiarity with the roommate they already know and the hesitation to share a room or apartment with someone who might have a different life style was the main motivation in student's roommate decisions. Some students also expressed inhibition to communicate effectively with a domestic roommate in English. The roommate decisions later created social isolation and transportation issues for some of the students. When two or three dual-diploma students share the apartment, they failed to build friendships with domestic students, especially if they were introverted. Not having a domestic or other international student as roommate limited their social connections with other students only to the contacts they established in the classrooms and laboratories. This also prevented them from improving their oral communication skills. Lastly,

many of the dual-diploma students did not purchase a car due to relatively short period of study at SIUE and depended on Madison County, IL transit authority busses. The public transportation in the area where SIUE is located is a very different setting as compared to Istanbul, Turkey. The city of Istanbul has extensive public transport network that uses subways, trams, busses, ferries, and taxies that allows 24/7 access to public transportation. Therefore, the students are used to being very mobile via convenience of easy access to different means of transportation. The public transportation between SIUE campus and city of Edwardsville, St. Louis metro and other surrounding areas is much more limited as compared to Istanbul. The ITU campus is very urban and well connected with public transportation network with a subway station nearby. As a result, many students feel that their mobility is restricted while at SIUE.

To remedy the issues that resulted from the housing preference decisions, the dual-diploma coordinator worked with the SIUE housing office staff to assign the dual-diploma students as roommates with domestic or other international students in the subsequent years. Although this policy created some backlash from the students initially due to their roommate requests not being fulfilled, many agreed with the decision later on when the rationale behind it is explained to them during the orientation. The new policy alleviated the transportation and isolation complaints to certain extent as students made new friends in their apartments and gained mobility for shopping and social events via their roommates' cars. Furthermore, several expressed greater satisfaction with their studies at SIUE as they visited their domestic roommates' hometowns and families during the holidays and breaks.

Academic Issues

One of the notable differences between higher education experiences one would have between a Turkish university and U.S. university is the student responsibilities. The Turkish higher education system is based on pushing more of the learning responsibility to students as opposed to more enforcement techniques used in American institutions. As the university admission is more competitive in Turkey and only 1/3 of the students who take the university entrance exam each year are actually placed in universities, the Turkish universities place higher self-sufficiency expectations on students. The class attendance is not particularly encouraged or monitored and students typically receive two mid-term exams and a final exam in each class. The homework load is generally light or non-existing, and significant amount of learning takes place by studying beyond lectures. Some of the universities do not employ course evaluations at the end of each semester and as a result faculty members are not particularly motivated to improve their teaching skills. The lectures are delivered with a sink-or-swim perspective and marginal students are not provided with necessary support mechanisms such as tutoring, mentoring, or counseling. It is a system where students with good study and time management skills thrive, the students who lack those skills struggle. As a result of this culture, most students have a relaxed attitude towards lectures and class attendance in between mid-term exams and try to get good grades by studying hard few days before the tests. The exams are typically challenging and try to gauge students' intelligence by requiring them to apply their knowledge of the material to new or thought provoking problems. The grading is not lenient and consequently not very many get high GPAs.

In contrast, the higher education in the U.S. does not leave much room for students to assume self-learning responsibility. The class attendance is strongly encouraged; the material covered is enforced via weekly homework and/or quizzes. The exams are fairly straight forward and assesses student learning of the material delivered in the lectures. Since course evaluation is a standard practice, the instructors are motivated to improve their teaching skills. As the students are continuously engaged through homework, quizzes, and projects, and there are no surprises in the tests, the grades are typically higher.

Some of the students switching between these two significantly different teaching/learning environments struggle. During the orientation meeting conducted at SIUE School of Engineering upon arrival, the dual-diploma students are strongly warned about the fast pace of academic life in the U.S. and advised to keep up with the day-to-day homework/quiz/assignment load. Unfortunately, some students take the advice lightly and start experiencing academic difficulty by mid-semester primarily not due to lack of skills, but due to poor time-management skills. Although the engineering academic advisor for the dual-diploma students tries to get mid-point progress information from the instructors of the courses, most cases are discovered when students visit the academic advisor or the program coordinator with the problem. Recently implemented "Grades First" early intervention program at SIUE is expected to help with timely monitoring of all students, including the dual-diploma students.

Classroom Conduct

One of the issues frequently expressed by the instructors teaching dual-diploma students is the persistent talking of these students during the lectures. As their numbers consistently increased over the years, they make up a significant number of the students in certain sections of the fundamental engineering courses such as statics, dynamics, circuits, mechanics of solids, etc. When investigated, it has been discovered that there are two apparent reasons for the behavior. The classroom talking takes place when they are having problems with following the lecture and they desire to clarify the questions immediately with their adjacent Turkish classmates rather than asking a question to the instructor. The other reason expressed is the lack of interest or boredom during the lectures. The warnings given about the issue during the orientation meeting, as well as numerous emails send out as complaints received from the instructors, were observed to have temporary effect. As a result, a new policy is adopted to deal with the issue. The Associate Dean of the School of Engineering who is also the dual-diploma program coordinator at SIUE now sends an email to dual-diploma students, copied to their instructors at the beginning of each semester, asking instructors to immediately remove those students from the lectures and report the names of those who persist in disturbing behavior. The policy seems to be having an impact as the criticisms from the instructors significantly declined.

Academic Honesty Issues

There have been few incidents of academic honesty policy violations among the dual-diploma students. These students have a more relaxed attitude towards collaboration on homework/ projects and tend to share information more casually. Although the team work and student collaboration is encouraged, the fine line between individual work and group work was crossed in some occasions. The students who worked jointly on homework felt that they were entitled to submit similar copies of the work and were upset when the issue was brought to their attention by the instructor. SIUE's academic honesty policy is highlighted in multiple times before and after their arrival.

Adjusting to Life in the States

During the orientation week, the school of engineering gives an orientation of its own tailored to the Turkish dual-diploma students. The content is determined based on the cumulative experiences of the engineering faculty, staff, and coordinator with this student population. The presentation covers topics that many may consider insignificant, but are quite relevant for this population. One such example is the difference between date format used in U.S. and in Europe. The mm/dd/yyy format caused students entering dates in some documents as dd/mm/yyyy and created problems

during the processing of those documents. Another common point of confusion is about 12:00 PM and 12:00 AM. Since the military time format is used in Turkey, the students are not used the Ante Meridiem and Post Meridiem references, they commonly interpret 12:00 PM as midnight. A third example of confusion is the notation used in expressing large numbers. The "," is used in the U.S. to designate thousands whereas "." is used in Turkey. The use of certain arithmetic symbols also causes students to make mistakes in their written communication; an example is: 25% versus %25 in Turkish.

As engineering students, they use arithmetic conversions often. However, as Turkey adopted metric system long time ago and uses Celsius degree for temperature, the conversion factors affect their daily life as well. The orientation gives students examples of how to formally convert miles to kilometers, inches to centimeters, gallons to liters, Fahrenheit to Celsius as well as practical quick conversion tips for their daily life use. As they grew up with a different unit system, distance, weight, and temperature units used in the U.S. do not make much sense to them initially. Especially when it comes to dealing with area and volume measures, it is hard for the students to get a sense about the quantity unless they use a conversion to the unit they are familiar with. The daily life routines such as rules of the road, how much to tip at restaurants, how to respond to casual greeting, etc. are all new to most of these students and are among the most received questions. As most of them are coming from the city of Istanbul with over 10 million residents, they are used to densely populated spaces. They enjoy the relative tranquility of the SIUE campus at first and get excited about seeing deer, raccoon, and squirrels on campus. This excitement later on turns into boredom due to lack of vibrant social life on campus. In contract, the ITU campus is located in a lively quarter of the city with many cafes, restaurants, and shops within walking distance.

Despite several cautionary statements made by program coordinator, every year a few of these students get involved in fender bender accidents. The traffic flow is slower than they are used to and as a result they sometimes rush to merge into lanes or tailgate causing accidents.

Coordination Between Campus Offices

The operation of the dual-diploma program requires timely and accurate exchange of information between several university offices. As some of the processes and records for these students are not same as domestic or other international students, these students are given a special tag in the university information system Cougar-Net. Each university office has a designated, and an alternate, staff members who are familiar with the dual-diploma program issues. The Industrial Engineering department at SIUE is supported by International Student Services Office, Admissions, University Housing, and Registrar. The program coordinator acts as the central person who collects and relays information about various processes (routine or exceptions) between offices.

Out-of-Synch Students

Although majority of the students have followed the program of study, there have been a few students who experienced academic difficulties and fell out of synch with the rest of their cohort. Among many reasons, time management, underestimation of fast pace, and overconfidence are more pronounced. These students are closely monitored by the program coordinators at both ends, in addition to their academic advisor, to help them get back in synch with their cohort.

Dealing with the revision of the program of study for the out-of-synch students has proven to be harder than initially perceived. In certain cases, the difference in the academic calendars of ITU

and SIUE makes summer semester infeasible to catch up with the regular program of study. The spring semesters at SIUE end by the 1st or the 2nd week of May while ITU spring semesters typically end by the 1st or 2nd week of June. As a result, the summer semesters at SIUE start and end about a month earlier than ITU. Thus, it is not possible for a dual-diploma student to arrive at SIUE before the summer semester starts to make up for courses as he/she will be in the last month of ITU's spring semester during that time. This difference between the schedules makes only possible for dual-diploma students to stay for the summer semesters at SIUE immediately following their sophomore or senior years. Due to prerequisite relationships among several engineering courses and limited summer course offerings, the courses they can take during the summer are usually limited.

When a student experiences academic difficulty, the first alternative is usually to try to make up for the failed or missing courses during the first available summer. However, some of these students do not want to stay for the summer semester because of the additional cost associated with spending the summer at SIUE. Another reason for their hesitation is the summer internship required by ITU after their sophomore and junior years. Therefore, we are forced to explore alternate solutions. The unavailability of some general engineering courses or industrial engineering courses offered in English every semester at ITU further complicates the issue. Furthermore, these out-of-synch students do not meet SIUE's criteria of 3.25 or higher GPA to carry academic overload to repeat the failed courses. As a result, a combination of course swaps of equivalent courses between campuses that necessitate deviation from the prescribed program of study or summer semester at ITU or SIUE is usually prescribed to remedy the problem and to bring the student back on schedule. In some cases, graduation dates are delayed based on revised program of study. Not being on the same campus two years in a row creates a major difficulty to repeat the failed courses. The revisions of the schedules for these out-of-synch students are handled on a case by case basis and require close coordination between the two campuses to develop a feasible program of study with minimum impact on timely graduation.

Student Surveys

A survey targeting various aspects of the dual diploma program is given to the students who graduated since 2011 at SIUE. The survey asked 29 questions on dual diploma program service and academics aspects, as well as general questions about SIUE. The students are also asked to give their opinions about the importance of the issues addressed in the questions. A total of 46 responded to the survey so far. The survey results are summarized in Tables I, II, and III.

As can be seen in the Table I, the program coordinators at SIUE and ITU are perceived to be two of the key elements of the program yet received only satisfactory ratings from the students. The airport pickup and help upon first time arrival to SIUE is considered important with fairly high satisfaction level. The program webpage, the School of Engineering assistance with non-academic issues and friendliness/helpfulness of the department secretarial staff presents potential areas for improvement. In Table II, Industrial Engineering courses are perceived to be the most important aspects of the academic component with satisfactory evaluation while technical elective choices at SIUE and ITU receiving less than expected evaluation with relatively high importance. As a result, both institution are discussing ways of enhancing technical elective offerings. Industrial engineering facilities such as classrooms and computing facilities at SIUE received relatively high marks. In Table III, the students ranked campus safety as the outmost importance. As one of the top 20 safest campuses in the U.S., SIUE received very high evaluations in that respect. The University Housing and on campus transportation services are ranked high, but received only satisfactory and slightly better than satisfactory ratings, respectively. Having limited number of off campus bus services at SIUE was reflected on the survey as poor. The program coordinator at

SIUE brought the issue to the attention of student affairs office to remedy the situation. The local municipality now offers improved services, especially on Sundays.

Table I - Service component survey results

1-not important, 2-important, 3-very important, 1-not satisfied, 2-satisfied, 3-very satisfied

Rank	Aspect	Importance	Satisfaction
1	Friendliness and helpfulness of the program coordinator at ITU	2.88	1.63
2	Friendliness and helpfulness of the program coordinator at SIUE	2.81	2.25
3	Engineering airport pickup and help upon 1st time arrival	2.75	2.56
4	Dual Diploma Webpage	2.44	1.63
4	Friendliness and helpfulness of department faculty at SIUE	2.44	2.13
4	Friendliness and helpfulness of department faculty at ITU	2.44	1.81
4	Engineering orientation upon 1st time arrival	2.44	2.00
4	Engineering resume workshops, CPT/OPT training, seminars	2.44	1.75
5	Friendliness/helpfulness of Engineering faculty	2.50	2.25
6	Engineering e-mails and announcements	2.38	2.31
7	Engineering Assistance with personal (non-academic) issues	2.31	1.63
7	Friendliness/helpfulness of IE secretarial staff	2.31	1.69
8	Social events coordinated by Engineering (IE picnic, chancellor reception, graduation reception etc.)	2.25	2.13
9	Friendliness/helpfulness of SIUE non-Engineering faculty	2.06	2.19

Table II - Academics component survey results

1-not important, 2-important, 3-very important, 1-not satisfied, 2-satisfied, 3-very satisfied

Rank	Aspect	Importance	Satisfaction
1	Industrial Engineering courses at SIUE	2.94	2.19
2	Industrial Engineering courses at ITU	2.81	1.69
2	Industrial Engineering facilities at SIUE	2.81	2.56
3	Industrial Engineering technical elective choices at ITU	2.75	1.56
4	Industrial Engineering technical elective choices at SIUE	2.69	1.50
5	Industrial Engineering laboratories at SIUE	2.56	1.93
6	General Engineering courses at SIUE	2.12	2.13
7	General Education courses at SIUE	1.75	1.75

Table III - Campus component survey results

1-not important, 2-important, 3-very important, 1-not satisfied, 2-satisfied, 3-very satisfied

Rank	Aspect	Importance	Satisfaction
1	Safety on campus at SIUE	3.00	2.88
2	University Housing at SIUE	2.94	2.00
2	On campus transportation services at SIUE	2.94	2.31
3	Campus food selection at SIUE	2.88	1.44
4	Off campus transportation services at SIUE	2.75	1.06
5	Campus life (events, sports, concerts, student clubs, etc.)	2.69	2.00
6	Athletic facilities at SIUE	2.56	2.63

Conclusion

The dual diploma program outlined in this paper is a successful example of coordination of dual-diploma between SIUE and ITU. Both institutions involved benefit from the program by achieving an exemplary international collaboration and enhancing the academics on campus. The students involved in the program benefit not only in terms of high quality education they receive, but also in terms of personal and professional development. Most of the program graduates return to Istanbul and employed in local branches of reputable international companies such as Ernst & Young, Phillip Morris, Hewlett Packard, Accenture, Ford, etc. The program helps SIUE enrich campus life through the contribution of these students in the form of friendships they develop and the cultural exchanges they create via exhibitions and social events they organize. The free Turkish language classes offered to domestic students and the surrounding community is rapidly gaining popularity due to the cultural impact of these students. To encourage two-way flow of students and culture, 14 and 15 A students visited Istanbul for a month and hosted by ITU for travel study programs in 2011 and 2013, respectively. Another Istanbul summer study abroad program is at works for summer 2015 and we are hoping that it will become a regular summer offering at SIUE. Dual diploma students were proven to be an extremely valuable asset for the Istanbul study abroad program since they connect and help the visiting SIUE students in Istanbul. SIUE is in the process of establishing a similar program with Korean and Chinese Universities by using the experience gained through ITU program.

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