

**SELF-EVALUATION REPORT**  
**ISTANBUL TECHNICAL UNIVERSITY**

**European University Association**  
**Institutional Evaluation Programme**

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**Istanbul, Turkey**

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## 1. Introduction

Istanbul Technical University (ITU) has been experiencing continuous change ever since its foundation in 1773 during the Ottoman era. This change has been multifaceted: from an imperial to a republican institution at the start of the 20th century; from an international to a global outlook; and from a deterministic to a quality-based system after 1996. The process of change has been realised in two consecutive projects (ITU Project 2001 and ITU Project 2005) designed as the development plan of the university.

The driving force behind this change was the wind of globalization. The starting point of the development plan is best summarized in the mission statement of the University, established in 1996, "graduating worldwide-competing engineers, scientists, architects, and artists". The university was then completely restructured to meet the needs of global graduates. Structural and functional reforms together with assessment methods were designed and implemented.

A fundamental issue during the restructuring of ITU was the assessment of the process of change in terms of global understanding. From an educational perspective, a continuous quality improvement system, one which could be assessed by an international accreditation agency, was adopted. Ever since Turkey identified EU-integration as a top goal in the 1990's, the ITU Senate decided to apply to a European accreditation agency for the evaluation of undergraduate education. Investigations showed that no widely accepted European system existed. However, the British engineering institutional accreditation system, which was based on quality assurance, seemed to offer a viable alternative. ITU has 24 engineering departments, all of which are seeking international accreditation. This entails applying to 24 different engineering institutions (such as The Institution of Chemical Engineers, The Institution of Mechanical Engineers, etc.). This process would have been diverse and hard to control. An alternative was ABET (The Accreditation Board for Engineering and Technology) in the USA which also offers a continuous program improvement-based accreditation procedure that addresses all engineering programs. For the sake of a collective address and ease of control of all programs, ITU has chosen to certify its continuous quality improvement (CQI) system at the program level by ABET EC2000 substantial equivalency. Twelve of the engineering programs at ITU enjoyed a successful on-site evaluation on October 13-15, 2003. Eight other engineering programs have been determined ready for a campus visit, expected to take place in March 2004. Programs in the Faculty of Maritime are accredited by The International Maritime Organisation (IMO). The architecture program in the Faculty of Architecture is in the process of accreditation by The National Architectural Accreditation Board (NAAB), and the urban planning program has applied to The Planning Accreditation Board (PAB) in the USA.

The University feels it is most desirable to implement an institutional evaluation in addition to the evaluation of the undergraduate programs. Again, the preference of the ITU Senate was a European system. The institutional evaluation programme of EUA was found to be the appropriate process for ITU. ITU feels that EUA institutional evaluation will help to build a total quality-assurance system at all levels and strengthen the quality culture.

The self-evaluation steering committee consists of the co-chairs of the Senate Accreditation Committee (Prof. Dr. Ekrem Ekinci and Prof. Dr. Birgül Tanteğin-Ersolmaz), Vice Rector and Chairwoman of the Senate Education Committee (Prof. Dr. Naciye Talınlı), the General Secretary of the University (Mr. Nevzat Özkök), a representative of research assistants (Mr. Caner Güney), and a representative of students (Mr. Halil Çalışkan). The steering committee prepared a draft report and sent an electronic copy to all members of the academic staff requesting their feedback. Copies were also sent to the deans of each Faculty, the directors of each Institute, and representatives of students and research assistants for evaluation and recommendations. The deans opened discussions in their Faculties on the report, and the steering committee organised a meeting with the student and research assistant representatives. The draft was further improved based upon feedback from the Faculties, academic staff, and students. This was presented to the Rector who submitted it for final ratification to the ITU Senate. The final report was placed on the University web-site for easy access by the academic and administrative staff and students.

## **2. National and Institutional Context**

### **2.1 Turkish National Higher Education System**

The educational system in Turkey is designed for pre-school, primary, secondary, and higher education levels, all of which are free at state schools and universities. The eight-year compulsory primary education is followed by a minimum three-year general or vocational-technical secondary education.

Prior to the Constitution of 1981, Turkish universities were autonomous and governed themselves through two levels of administration: the faculty, and the university. There was no central nationwide control. Practices of benchmarking, accreditation and quality assurance did not exist.

Together with the Constitution change in 1981, other provisions were made for higher education in Turkey. Foremost among these was the establishment of the Higher Education Council (HEC) to steer important activities of higher education institutions, i.e., planning, organization, governance, instruction and research. Moreover, provision was made for universities to establish non-profit foundations. The establishment of a degree program at any level is subject to ratification by the HEC.

The Higher Education Council is a 22-member corporate public body responsible for the planning, coordination and supervision of higher education within the provisions set forth in the Higher Education Law (HEL). Seven of its members are academicians elected by the Inter-University Council; seven are appointed directly by the President of the Turkish Republic, giving priority to former rectors; seven are appointed by the government, mostly from among senior civil servants; and one is appointed by the Office of Armed Forces, each for a renewable term of four years. The president of the Council is directly appointed by the President of the Turkish Republic from among the Council members. The day-to-day functions of the Council are carried out by a nine-member executive committee, elected from among its members.

The Minister of National Education represents higher education in the Parliament and can chair the meetings of the Higher Education Council but has no voting right. Neither decisions of the Council nor those of the universities are subject to ratification by the Ministry.

There are two other main administrative bodies in the field of higher education. These are the Inter-University Council, which consists of the rectors of all universities and one member elected by the senate of each university; and the Turkish University Rectors' Committee, which is made up of all university rectors and five ex-rectors.

In 1981, the Higher Education Law (Law 2547) introduced new concepts which allowed for central planning and transparency over some issues at the expense of losing autonomy in some areas. The educational program of each discipline was accorded standards which enabled student-mobility between different universities and within the university to some degree. Academic faculty-mobility is designed for young members of faculty on the basis of compulsory services in another university for a period of time as an essential part of promotion. Promotion also incorporated international publication and other performance criteria. Compulsory service in a different university turned out to be an unsuccessful reform and was abandoned after a few years.

The Higher Education Law of 1981 has undergone a number of relatively minor changes since its enactment. The major change came in 1992, when new procedures for the nomination and appointment of rectors were implemented. According to the new procedures, six candidates from among full professors of that or any other university are elected by the assembly of faculty members, which includes all full, associate and assistant professors in that university. From among these six, the Higher Education Council elects three nominees by secret ballot, and submits their names to the President of the Republic, who appoints one of them as the rector for a period of four years, renewable only once. Deans are appointed by the Council from among three full professors nominated by the rector, while institute and school directors are directly appointed by the rector. Each department within a faculty is made up of sections. Section heads are elected by faculty members in that section, who, in turn, advise the dean regarding the appointment of the

department chair. Both academic and administrative staff members in state universities have civil servant status and, except for research assistants and assistant professors, have tenure. The numbers of academic and administrative staff posts allocated to each state university are determined by acts of the Parliament, while staff appointments at all levels are made exclusively by the universities themselves, and are not subject to ratification by any outside authority. The law sets forth only the minimum requirements for academic promotions and the procedures to be followed in making appointments.

Administrative structure in Turkish universities, apart from Boğazici University (BU) and Middle East Technical University (METU), was based mainly on the faculty unit prior to HEL in 1981. HEL changed the main administrative unit from the faculty to departments. Among some universities, including ITU, aspects of their faculty tradition were maintained while also stressing the importance of department as the administrative unit. Also prior to HEL, post-graduate studies were carried out in faculties. HEL introduced the 4+2 Bachelor's and Master's differentiation and established institutes (graduate schools) for postgraduate education outside the faculties. The departments and not the faculties were represented in the institute administration. Furthermore, to carry out joint work with industry and third parties, "research and development centres" were organised.

There were no private universities in Turkey until 1984. The Higher Education Law No. 2547 made it possible for private universities to be established by non-profit foundations. (Thus these private universities are sometimes referred to as foundation universities.) Private universities are also supervised by the Higher Education Council. With the aim of partially defraying the expenditures of private universities, the Ministry of Finance may provide state assistance upon the application of the higher education institution concerned, the endorsement of the Higher Education Council and the recommendation of the Ministry of National Education.

Higher education is defined as all post-secondary programs with duration of at least two years. The system consists of universities (53 state and 24 private) and non-university institutions of higher education (police and military academies and two- and four-year vocational schools). Anadolu University in Eskişehir offers two- and four-year degrees through open university program. This program has been greatly expanded in recent years, although entry remains competitive. Students use printed materials, listen to lectures broadcast on television, and have contact hours available to them.

There are considerable differences among universities with respect to size and quality of education and research. There were only 21 universities prior to the HEL of 1981. The number of universities has increased considerably since then mainly due to the huge demographic pressures coming from a young population that has a strong demand for higher education and political aspirations. This resulted in an erosion of the main functions of universities: teaching and research. Furthermore, increased student enrolments also impacted upon the quality of teaching and research in universities.

## **2.2 Brief Presentation of the Institution**

### **2.2.1 Brief Historical Overview**

ITU was established in 1773, during the reign of the Ottoman Sultan Mustafa III, as the Royal School of Naval Engineering (Mühendishane-i Bahr-i Hümayun). The School was originally responsible for the education of the chart-masters and ship-builders. In 1795, Sultan Selim III issued an imperial decree (Kanunname) regulating the engineering schools. This decree stands as a unique document in the history of technical education. Among several innovative approaches, it clarified that civilians of any social status could be admitted as students and that the schools could employ civilians regardless of their religious denomination. The school even introduced French as a required foreign language in addition to Arabic. In that year, the Royal School of Military Engineering (Mühendishane-i Berr-i Hümayun), was established to educate the technical staff in the army. The Royal School of Military Engineering continued its separate existence until 1847, while the Royal School of Naval Engineering was moved to Heybeli Island in the Sea of Marmara. In 1847, first courses in the field of architecture were introduced. The Engineering School

(Hendese-i Mülkiye) was formed in 1883 with the aim of teaching essential skills needed in planning and implementing the country's new infrastructure projects. The school was fully separated from the military branch in 1909, a year after the declaration of the Second Constitutional Monarchy.

After the war of independence, the Turkish Republic was declared in 1923. The republican administration was quick to realize that one of the sturdiest foundation stones inherited was the Engineering School. The government duly transformed it into the Engineering Academy (Yüksek Mühendis Mektebi) and granted it university status in 1928. The Engineering Academy continued to provide education in the fields of engineering and architecture until it was renamed as Istanbul Technical University (ITU) in 1944. Finally, in 1946, ITU became an autonomous university including the Faculties of Architecture, Civil Engineering, Mechanical Engineering, and Electrical Engineering. The engineering programs were reduced to five years from six enforced previously.

The programs were transformed in 1969 from a five-year "Diplomingeniuer" to a four-year B.Sc. degree and a two-year M.Sc. degree programs. The Higher Education Law passed in 1981 yet again revised the academic organization of the ITU as well as other universities in Turkey.

ITU is a state university and at present consists of eleven faculties, five institutes, a vocational school, a conservatory, and three service departments. With a history stretching back 230 years, providing technical education within a modern educational environment and strong academic staff, ITU is strongly identified with engineering and architectural education in Turkey. Since its inception and foundation under Ottoman rule, ITU has constantly led the way in reform movements. In the latter era of the Republic of Turkey, ITU has assumed pivotal roles in the reconstruction, modernization, and administration of the country.

ITU graduates have been major contributors in the planning and construction of Turkey's roads, bridges, dams, factories, buildings, energy plants, communication networks, villages and cities. ITU is a state university which defines and continues to update methods of engineering and architecture in Turkey. It provides students with modern educational facilities while it retains traditional values, as well as uses its strong international contacts to mould young, talented individuals who can compete in the global arena.

## 2.2.2 Geographical Position of the University

ITU has six campus areas in the borders of Istanbul Province. The main campus is Ayazağa, located in the Maslak-Ayazağa district on the European side of Istanbul, about 20 km from the city centre. The Ayazağa campus extends over an area of 247 hectares. The Maçka, Gümüşsuyu and Taşkışla campuses are also located on the European side in the heart of the city. The Florya and Tuzla campuses are located on the east and west periphery of the central city (Pera-Taksim district). There is a bus service system to reach all campuses of ITU. Commissioned bus services transport the personnel to different regions of the city in the morning and at the end of the working day. There exists a ring bus service between the campuses of ITU at limited scheduled times throughout the day.

The only Anatolian side campus is occupied by the Faculty of Maritime. The Faculty of Architecture and the Institute of Social Sciences are situated on the Taşkışla campus. The Gümüşsuyu campus houses the Faculty of Mechanical Engineering, and Maçka campus houses the Faculty of Management, School of Foreign Languages, Conservatory, and Music Advanced Research Centre. The rest of the faculties and institutes are all located in the Ayazağa Campus. The total closed-area developed in these campuses is over 500 000 m<sup>2</sup> and about 72 000 m<sup>2</sup> is under construction. This is one of the largest closed areas possessed by a university in Turkey.

Apart from the five main campuses there is the Florya campus next to the Atatürk Airport and it is planned as the main site for the second Technocity. University also possesses a historical building in Bakırköy serving for music and art performances and exhibitions.

### 2.2.3 Number of Faculties and Research Institutes

The University consists of eleven faculties, five institutes, thirteen centres of research and application, a school of foreign languages, a vocational school, a conservatory, and three service departments. The faculties are: Faculty of Civil Engineering, Faculty of Architecture, Faculty of Mechanical Engineering, Faculty of Electrical and Electronics Engineering, Faculty of Mines, Faculty of Chemical and Metallurgical Engineering, Faculty of Naval Architecture and Ocean Engineering, Faculty of Management, Faculty of Science and Letters, Faculty of Aeronautics and Astronautics, and Faculty of Maritime. The Institutes are responsible for postgraduate studies and research. The Institute of Science and Technology, Institute of Social Sciences, Institute of Energy, Eurasia Earth Sciences Institute, and Informatics Institute serve as Graduate Schools in related areas and organise multidisciplinary research teams and programs. Information on the School of Foreign Languages and the centres is presented in the Appendices.

### 2.2.4 Number and Distribution of Students across Levels and Faculties

The state universities in Turkey have been suffering from increasing student enrolment which was fostered by the conditions of the HEC and precipitated by demographic pressures. ITU has been trying to decrease the rise in undergraduate enrolment and increase its postgraduate student number in accordance with the University's vision and mission. The undergraduate student matriculation of the University over the last eight years is represented in Figure 1. It is evident that undergraduate matriculation was stabilized at about 2230 in 1998-2001, but there is a noticeable increase in the numbers of the last two years. This increase is due to the newly established departments and programs such as interior design, landscape architecture, control engineering, and the dual-degree programs offered jointly by the State University of New York (SUNY) and ITU. These programs are mostly established as a result of the demands of the stakeholders.

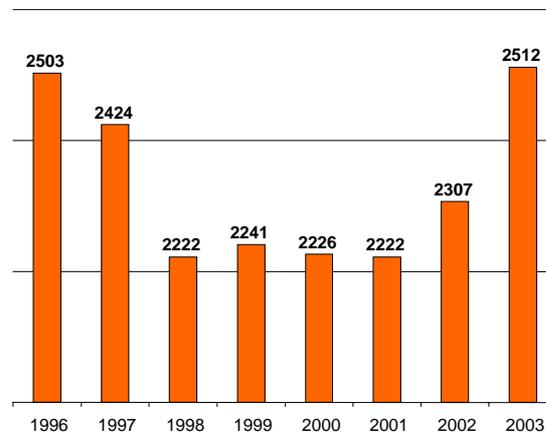


Figure 1. Undergraduate student matriculation over the last eight years.

The number and distribution of undergraduate and postgraduate students among the faculties and institutes for the last five years are presented in Appendix C. The number of undergraduate and postgraduate students enrolled in the 2003-2004 academic year is about 12850 and 6050 respectively. These figures indicate that the university has, to a great extent, achieved the target set at the start of the restructuring process in 1996, namely a total of 20000 students and a postgraduate to undergraduate student ratio of 2/3.

### 2.2.5 Finance

The annual budget of each state university is negotiated jointly by the Higher Education Council and the university concerned, with the Ministry of Finance and, in the case of the investment

budget, with the State Planning Organization. The Council transmits these budgets, together with its own budget, to the Ministry of National Education, and the Minister defends them in the Parliament. The president of the Council is also given the floor at the beginning and end of the discussion in the parliamentary commission. The result is a line-item budget with very specific earmarked budget figures.

In addition to the annual state-provided budget, each university has four more sources of income: first, income from the services provided by the university to third parties, such as contract research, research and development projects, and continuing education activities; second, student fees towards highly subsidized services; third, each university has a research fund made up of a lump sum grant from the state-provided budget plus a portion of the income from the revolving fund and from earmarked projects given by the State Planning Organization; and fourth, land and building development projects.

The above-mentioned four funds are also subject to laws, rules and regulations similar to those concerning the state-provided budget, which leave little room to manoeuvre. The major difference between these three funds and the state budget is that any money left in the former is carried over to the next fiscal year while that left unspent in the state-provided budget reverts back to the Treasury. The Scientific and Technical Research Council (TÜBİTAK) of Turkey also supports research projects after evaluating proposals submitted by faculty members. However, such grants are given directly to faculty members, and are thus not included in university income.

In addition to the general structure of funding in state universities ITU has two foundations (ITU Foundation and ITU Development Foundation) contributing to the university through alumni donations and fund raising activities. The funds from the two foundations are not subject to strict state budget rules, and they provide a measure of flexibility to the management system.

The contribution of the state budget, revolving fund and R & D income, student fees, and land and building development income constitutes 83.9%, 9.1%, 5.1%, and 1.9% of the total budget of 2003, respectively. The share for research in the total budget is about 20% in 2003. The state budget allocations for each financial managing unit for the last eight years are shown in Appendix C.

### **2.3 Strengths and Weaknesses in ITU Organisation and Resources**

A SWOT analysis is carried out in 8 different areas, namely, education, human resources, research, finance, international relations, information technologies, infrastructure, and construction investment planning. The SWOT analysis is presented in Appendix I. The process of strategic planning for the future is in progress. The documents prepared so far will be disseminated to the stakeholders through the internet and discussed and improved in formal meetings. The improved form of the plan will then be presented to the governing bodies and to the final approval of the Senate. This section will summarize some of the important strengths and weaknesses of the University.

The history of ITU is distinguished by the fact that it was founded with a hope to reform a declining empire. Turkish society has always invested high hopes in ITU, both before and after the foundation of the Turkish Republic. For many years it was the only technical higher education institute in the country. Indeed, ITU literally built Turkey from scratch in terms of roads, dams, buildings, airports, stadiums, factories, under the leadership of Kemal Atatürk. The role of ITU in the development of the country has been so vital that, of the country's total of ten presidents of the republic, two of the five civilian presidents were ITU alumni. The number of prime ministers, ministers and high civil servants are numerous.

Graduates of ITU have been successful in the establishment of internationally recognized companies. Extremely devoted, supportive and wealthy alumni were instrumental in the realisation of change and restructuring in ITU since 1996. Financial and other support from these eminent alumni became a new tradition for ITU. The University has institutionalised the alumni contributions through the two Foundations, and the Alumni Associations.

Together with Istanbul University, ITU has enjoyed contributions of distinguished scientists from Germany, France, Austria, Hungary prior to, during and post World War II. Even today a strong European influence continues among its many traditions and multiple faculty structure.

One of the most important strengths of the university is the affinity for transformation over centuries and certainly in the last ten years or so under a very dynamic leadership. The transformations have been drastically radical, such as the change in the curriculum of all programs in one year. This has been introduced along the guidelines given in Appendix F, switching to bilingual teaching and development of a continuous quality improvement system across all the programs at the undergraduate and postgraduate levels.

The quality of the academic faculty is a pronounced strength in academic, research and industrial relations. Strong, experienced, and well-educated faculty also provide teaching support to the state and foundation universities in Istanbul and surrounding provinces. The quality of the ITU academic staff is reflected in the number of awards they received from Turkish Scientific and Technical Research Council (TÜBİTAK) and the number of academic staff who are members of the Turkish Academy of Sciences (TUBA) (see Appendix C).

The high ratio of postgraduate students is expected to be a driving force in creating innovative and entrepreneurial activities, especially with contributions from the ARI Technocity. The technical capacity, land, infrastructure, academic staff, and alumni of ITU provide a strong foundation for the Technocity. The strong laboratory facilities are also a major contributor to the university's industry relationships for synergy. ITU has the strongest industrial involvement among Turkish universities.

Information technologies have been one of the priorities of ITU in the last seven years. In terms of laboratories, number of PC's available to students and staff, internet access, communication and library services, teaching and research activities, and commitment of the administration; information technologies is one of the pronounced strengths of the university.

The University owns valuable land, property and service capacity to procure immense financial resources. Although one-fifth of the land is occupied by squatters, court cases are in progress to regain this land.

The most pronounced weakness is the broad and bureaucratic Higher Education Law (HEL) which reduces the efficiency of administration and budget utilization. Rigid and bureaucratic budgetary constraints imposed upon the state universities leave no space for flexibility. There are high surcharges on the services offered to industry and industrial projects.

According to the provisions of HEL, universities may choose the academic staff but the administrative staff is appointed centrally. However, once they are appointed, it is next to impossible to terminate the employment of staff due to lack of performance. Control of the central government on the total number of positions and salaries prevents recruitment of qualified administrative personnel.

Even though ITU possesses world class laboratory facilities, it is becoming very difficult to find quality technicians due to the central government control on technician recruitment. Also, under present regulations maintenance payments are difficult and this is in direct contrast to quality management in the laboratories. Although most ITU programs have received accreditation, only a few ITU laboratories have been accredited. Lack of international laboratory accreditation may be a weakness, especially after EU-integration.

Low salary constraint on the academic staff is especially under the threat of unfair competition from the private foundation universities. The salary differential between State universities and Foundation universities is a major weakness. Moreover, the civil service status assured to academic personnel prevents adaptation of performance management.

A weakness ITU sees in its organisation is the lack of student and research assistant involvement in administration, mainly due to the restriction of the Higher Education Law. HEC, a few years ago, issued a decree enabling student participation in decision making bodies to a certain extent. ITU

has taken the necessary steps and elected representatives at department, faculty, and university levels. However, substantial improvement is needed to incorporate students in the decision making process at the desired level.

The reflection of the SWOT analysis presented in Appendix I to recommendations for improvement noteworthy to mention here are summarised below:

- Seek a special status, free of central government intervention, for efficient and effective administration, budget realisation and utilisation, to realise the future goals of the university.
- Improve e-university systems and integrate with the current automation systems in use (students, personnel, library, security etc.).
- Find new resources for ARI (Advanced Research and Innovation) Technocity to provide infrastructure and facilities for R & D companies, attract foreign R & D companies to ARI Technocity to bring foreign investment to ITU, and offer opportunities to students and staff to work in these companies.
- Increase income and donations.
- Establish an Innovation Relay Centre in order to commercialize the R & D products and increase income.
- Encourage and support students and academic staff to participate in the EU 6th Framework programme.
- Regain University land from squatters.
- Improve the quality of the constructed and natural environment in all ITU campuses.
- Develop new opportunities and benefits to attract high quality academic staff and to keep the existing ones happy such as providing more housing, upgrading living standards, publication and travel support, etc.
- Increase the number of academic staff graduated from world class universities and develop policies to control inbreeding.
- Increase the student and research assistant participation in decision-making process.
- Increase the number of students going abroad with exchange programs
- Restructure the student advisory system by training and introducing new incentives.
- Integrate education and research by involving undergraduate students in research activities.
- Increase the number of undergraduate and graduate interdisciplinary programs, encourage collaboration between research groups.

### **3. Institutional Norms and Values**

#### **3.1 What is the Institution Trying to Do?**

##### **3.1.1 Mission**

The mission of the university was set as “graduating worldwide competing engineers, scientists, architects, and artists” in 1996. The vision and mission of the university were revised by the Senate in 2002 to widen their scope:

##### Vision of ITU

As a contemporary research university, ITU strives to be a focal point of pioneering studies in research, technology, social sciences, and arts at national and international level.

##### Mission of ITU

As a higher education and research institution dedicated to the advancement of basic and applied sciences, our mission is to educate the technological leaders and entrepreneurs of the future in a rich intellectual environment sensitive to both local and global issues.

In terms of its organization, ITU is a well-established and well-structured state university having a long history and sound reputation in engineering and architecture education in Turkey. As stated in

its mission- and vision-statements ITU has been trying to transform itself from a national to an international and global institution to compete worldwide. Therefore constant progress has become the main strategy to reach this goal. ITU has developed a capacity for change and has become a member of international networks, hence achieving opportunities to realize benchmarking at different levels. ITU is forming a learning society which is learning its own abilities, comparing itself with its counterparts all over the world and trying to learn from their experiences but also creating its own future.

ITU seeks to graduate innovative professionals who are able to exploit information resources and to use them to create innovative solutions for the problems that they involve. In these processes, constraints are ethical, environmental, economic, esthetical and ecological issues.

ITU wishes to provide sound central facilities to its staff and students such as library, IT infrastructure, research centres, housing & dining & sports facilities besides its up to date e-university based management systems. ITU aims to establish an e-university project to restructure its own processes in all its sections. Therefore, not only the means but also the methods of processing information and the way of knitting information have changed and a new management culture has started to emerge in order to make the system as transparent as possible.

### 3.1.2 Balance in Terms of Local, Regional, National and International Positioning

As noted above in the brief history of the University, the status of ITU in Turkey today is unique. This is reflected in judicial practice in Turkey. Judges attach utmost importance to the expert opinion of ITU academic staff. Also a general conviction throughout the country is represented in the widely-used expression that "Engineering is studied at ITU". Being a higher education institution rooted in the Ottoman times, as well as an engine of progress during Republican times, has assigned a special responsibility to ITU. Therefore, even though it would have been rewarding to adopt English as the language of instruction in terms of attracting better students, especially in the last 25 years, ITU did not consider this option and instead worked toward the development of Turkish as a technical language. Therefore, the national interest and the mission set in 1996 of producing worldwide competing graduates required a bilingual education (30% English, 70% Turkish). Such a policy was adopted in 1997. Traditionally, universities teaching in Turkish rely heavily on the technical books published by the ITU academic staff.

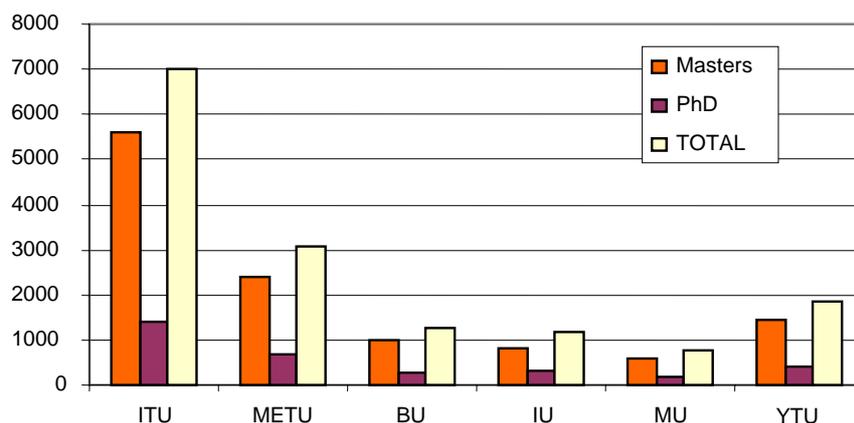


Figure 2. Distribution of postgraduate students in engineering and science to main universities in Turkey.

ITU is the leading university in postgraduate studies in Turkey. Figure 2 represents the number of Master's and PhD students in major engineering and science universities in Turkey for the academic year of 2001-2002. The number and standing of postgraduate students at ITU are a result of the policies applied after 1996. The strong postgraduate programs of ITU are reflected in

the fact that many of its graduates join the academic staff of other Turkish universities. ITU also took an active role in the establishment of Karadeniz Technical University and Sakarya University.

ITU academic staff was most active in the establishment and development of the Turkish Scientific and Technical Research Council (TÜBİTAK). The founding president of TÜBİTAK was an ITU professor, and a former ITU rector also served as later president of TÜBİTAK. There have been numerous members of the academic staff of ITU who were on the top management councils of TÜBİTAK, such as the Science Board. Currently, three of the twelve Science Board members are from ITU. The largest research centre of Turkey under TÜBİTAK umbrella is the Marmara Research Centre (MRC). The current chairman of the administrative board, director, and vice-director of MRC are from ITU. ITU has the highest number of researchers working part-time at the MRC compared to other regional universities.

ITU has always been an essential part of Istanbul's technical, intellectual, social and sporting life. Istanbul and its surroundings are the location for approximately 40% of the industrial production in Turkey. ITU has always maintained a close collaboration with Istanbul Chamber of Industry (ISO). An ITU alumnus was the former president of the executive committee of ISO and is now serving as the president of the ISO general assembly. In the Greater Metropolitan Municipality of Istanbul (GMM), an ITU alumnus served as the Mayor in 1984-89. Traditionally, ITU academic staff have given active support to the GMM of Istanbul and to the Office of the Istanbul Governor. For six years the chairman of Istanbul Water and Sewage Works was a professor from ITU Civil Engineering Faculty who is currently serving as the chairman of State Water Works in Ankara. Several members of the academic staff have been appointed as part-time and full-time consultants for the service of GMM and the Governor's office. ITU is also providing education and planning services for the disaster-management program of Istanbul municipality, in particular for preparedness for earthquakes. ITU is one of the four universities in Istanbul which prepared the Earthquake Master Plan of Istanbul. ITU has also carried out the retrofitting and mitigation projects for primary and secondary school and hospital buildings in Istanbul.

ITU staff has always served as consultants, project leaders, and supervisors in major activities at the national level. The Atatürk Mausoleum in Ankara is believed to be one of the most important monuments in Turkey. This magnificent mausoleum was designed by a former ITU rector, Prof. Dr. Emin Onat, together with a professor of ITU, Prof. Dr. Orhan Arda. Most of the town-development plans in Turkey are designed by the Faculty of Architecture. The largest project of the Turkish Republic is the Southeastern Anatolian Irrigation Project. ITU academic staff acted as consultants and project designers in this project, and nearly all of the construction was realized by companies established by ITU alumni. For decades the hydraulic experiments of the dams have been carried out at ITU laboratories. The maritime transportation master plan of Turkey and the safety plan of the Istanbul and Dardanelle straits have been prepared by ITU staff. Recently, the transportation master plan of Turkey was commissioned to a group of academic staff in the civil engineering department. The past and current directors of Turkish Airlines are ITU alumni.

ITU have eminent alumni who were highly ranked in the government. As mentioned before, two of the presidents of the Turkish Republic were ITU graduates (His Excellencies Turgut Özal and Süleyman Demirel). There have been also three prime ministers and many ministers who were and are ITU graduates.

ITU has been a pioneering university in areas other than science, engineering and architecture. The most well-known basketball school in Turkey, which has produced many stars, belongs to ITU. The only university team in the national basketball league in Turkey belongs to ITU, and it has the third highest number of national basketball league championship titles in Turkey.

The past accomplishments and potential of ITU makes it a focus of attraction in the region. Therefore, ITU has close links with Mediterranean, Balkan, and European universities. In Mediterranean circles, ITU has been an active member of the Network of the Mediterranean Engineering Schools. The Annual General Assembly of this network was organized in Istanbul in 2000. ITU actively participates in their activities and currently leads the working group on Quality in Engineering Education. ITU is also an active member of Black Sea Universities Network.

ITU is a member of European Association of Engineering Education (SEFI) and the International Engineering Education Association (IGIP). Together with IGIP, the 28<sup>th</sup> International Engineering Education Symposium was organized in Istanbul under the Chairmanship of Rector G. Sağlamer and President A. Melezinek on the theme of "Engineering Education in the Third Millennium". In September 2005, the annual meetings of both SEFI and IGIP will be held in Ankara and Istanbul respectively. ITU is involved in the organization as the Turkish representative of IGIP is a member of the ITU academic staff.

### **3.1.3 Balance between Teaching, Research and Other Services**

As noted above in the mission-statement of the University, education, research and technology development, and educating entrepreneurs are the three main domains to which the University commits itself. Traditionally, ITU is famous for its strong education in engineering, science, and architecture. Hence, the starting point of restructuring in the University along quality concepts was to change the educational system to a student-centred, more research-oriented and outcome-based understanding. ITU is also known to have close relations with industry. This involvement generally focuses on the solution of the immediate problems of industry rather than far-focused, long-term research. Although ITU is one of the leading research universities in the country, research activities are mainly financed through government projects rather than industrial projects. This is mainly due to the lack of innovation and technology development in national industry. However, this tendency has started to change as the new Technology Development Areas Law has been encouraging innovative research in the last two years. ITU now would like to balance its strong education and research programs with technological innovation in order to transform itself from a leading research university into a leading international centre of technological innovation.

### **3.1.4 Academic Priorities**

ITU aims to be a strong research university accommodating excellence in teaching and research. Teaching excellence is designed and assured under a continuous quality improvement system controlled by international accreditation. Excellence in research is strengthened by a carefully-designed set of excellence-centres and government-supported special projects in priority areas. These excellence-centres are aimed to interphase teaching, research and services.

Allowing students to design their own education through electives was one of the pivotal points of the restructuring efforts after 1996.

ITU's mission stresses worldwide competing graduates. Therefore, worldwide-accepted trends and policies are followed and priority-areas both in teaching and research are determined while taking into consideration the institutional strengths, national responsibilities and fundamentals established by the EU, i.e. European Higher Education Area.

As part of its development plan, ITU set the postgraduate/undergraduate student ratio to be 2/3 and keep the total number of students at around 20000 for quality reasons. The second target was especially difficult to achieve because of the pressure exerted by HEC to increase student enrolment. The numbers of undergraduate and postgraduate students over the years are shown in Appendix C.

ITU stresses the importance of transforming research into products improving the wealth of the nation. In this field, ITU runs the most successful "small and medium size technology development incubator"(KOSGEB) in Turkey in terms of the number of projects and budget it receives. In 2001 a new law was passed in Turkey which opens the way to Technoparks. ITU is one of the pioneering universities to establish a Technopark.

### 3.1.5 Preferred Didactic Approaches

The minimum expectations from each graduating student of a science and engineering program are: an ability to apply knowledge of mathematics, science and engineering; an ability to design and conduct experiments, as well as to analyse and interpret data; an ability to design a system, component or process to meet the desired needs; an ability to function on multi-disciplinary teams; an ability to identify, formulate and solve problems of their profession; an ability to communicate effectively; an ability to use techniques, skills, and modern tools necessary for professional practice; an understanding of professional and ethical responsibility; a broad education necessary to understand the impact of professional solutions in global-societal context; a recognition of the need for, and an ability to engage in, life-long learning; and a knowledge of contemporary issues. In addition, each department is free to add attributes dictated by their mission and constituency desires. Each department has developed different didactic approaches to meet the outcomes stated in the continuous improvement system. However, each program needs to illustrate how these outcomes are incorporated into the courses, the methodology and tools used for the measurement of performance by well-defined metrics, preferably at least by two different methods.

Case-studies are extensively used in the University. Projects, as a part of different courses and also independent-study courses, are widely practiced. A graduation project is compulsory for every student. Graduation projects provide a good medium to incorporate undergraduate students in research activities. Team-work is widely practiced both on formal and informal basis. One of the most well known strengths of ITU is the strong laboratory skills given to students. Project- and application-oriented teaching has always been a strong trend, which is one of the main reasons why ITU graduates are strong engineers in industry. Use of IT is incorporated to the system, i.e. two courses on IT are compulsory to all undergraduate students. Participation from industry is encouraged. Some of the research projects for MSc and PhD are run together with industry and TÜBİTAK. Industrial experts are used for project assignments and evaluations, entrepreneurship and interview techniques in many postgraduate and undergraduate programs.

Some of the didactic approaches are also evaluated by the central administration and introduced to the programs. One example is the seminar series repeated various times on "Effective Teaching Methods" and "Learning Styles" promoting active-learning approaches instead of traditional lecture-based education.

### 3.1.6 Degree of Centralisation and Decentralisation

ITU has a distinct administrative structure owing to its historical mainly-continental European understanding. In the mainstream, university faculties are larger clusters, whereas ITU faculties are smaller units composed of two to five departments. In conventional universities in Turkey there is one engineering faculty, whereas there are eight engineering faculties at ITU. In a way its operation is similar to the school concept used in the West. Some other technical universities (such as Yıldız Technical University and Karadeniz Technical University) also adopted the same system after ITU. This multiple-faculty system effects a decentralisation of management since each program has more say in the running of the faculty. This system may not be suitable for large and multiple-discipline universities due to increased representation at the upper-administrative level. Also the practice of running education and administration in multiple engineering faculties instead of one, may result in pocketing where departments turn into inward-looking institutions. Furthermore, dealing with student issues may result in differences in certain decisions. These types of shortfalls were realised by the University and a new curriculum was introduced in which interdepartmental and inter-faculty interaction was taken as a deterministic parameter (see Appendix F). Student registration and follow-up procedures were also centralised by purchasing an automation software program for student affairs such as registration, advising, etc.

Prior to the 1996 restructuring, students of each faculty were living an isolated faculty life similar to the education they received. After the restructuring, central dining and recreational facilities and central dormitories were built to promote the interaction of the students of different faculties. Therefore, the students are now mixing in both the educational domain, through common courses

(basic science, and humanities and social sciences courses) and electives, and in the social domain for open interaction between students of diverse disciplines.

One important requirement of the student-centred education is a strong library back up. In order to provide an acceptable quality in library services, a centralised approach was taken and electronic services were stressed.

Before 2002, the Scientific Research Projects Unit (SRPU) was a centralised research management administration. The number of projects budgeted increased steadily over the reformation years after 1996 (see Appendix E). Starting in 2002, the University adopted a new policy together with the State Planning Organization whereby small numbers of complex, multi-disciplinary projects were supported, instead of a large number of small-size projects. Due to the increased volume of processing work related to the research projects, it was also decided in 2002 that some of the peer-reviewing and follow-up responsibilities were to be passed to the faculties.

Budget realisation and utilisation is mostly centralised as a result of the legislation.

### **3.1.7 Relationship to Funding Agencies**

At present the major funding agency of ITU is the state. The salaries are paid in great proportion by the state. In fact, salaries constitute approximately 50% of the direct state budget. The other items covered by the state budget are consumables, services, travel, equipment, and construction. Budget allowances are far from meeting the demands. Therefore, ITU and other state universities had to develop fund raising ways and means. This aspect has become more important in the last ten years or so. Funds raised outside of the state budget also offered more flexibility in spending and budget transfers. The funding sources other than the state are the ITU Development Foundation, ITU Foundation, Revolving Fund, and individual donations. The income raised by the two foundations are generally in return for the services provided to third parties in the form of training, research, projects, and consultancy. Similarly, funds will be raised in the ARI Technocity when the managing company reaches the break even point in a year or two.

The Revolving Fund is strictly under state control and therefore has limitations on spending and flexibility. The surcharges on the pricing of services make it difficult to be competitive to industrialists. For this reason the main customers in this category are the central and local governments. In 1997, as part of the restructuring of the University, the ITU rectorate analysed the structure of the Revolving Fund and decreased the portion allocated to the University in order to increase the ratio of income returned to the University personnel.

The ITU Development Foundation was established in 1994. Starting in 1996, the Foundation has been instrumental for the change management and restructuring of a versatile financial institution to increase the income and to speed up purchases and services to the customers. Regulations were changed to accommodate these flexibilities. This Foundation was also used to manage the huge donations raised as a result of the fund raising campaign and projects which were introduced to the alumni and friends of ITU. This resulted in about 70 million USD fund-raising in cash and other forms, which was first of its kind in Turkey in terms of definition, project realisation, management and contributor involvement. The donations especially made for construction are managed by an office called Project Management Centre reporting to the Rectorate.

The ITU Foundation, founded in 1984, concentrates on continuing-education activities, organizational matters, and generating funds to support various activities such as scholarships in the University. Both Foundations are run by their Boards of Trustees, which are chaired by the rector.

Apart from the global state budget, the State Planning Organisation (SPO) and Treasury allocated important funds to ITU for large scale projects. ITU has been the leading university in receiving the largest sum of funds from these two sources. The recent projects granted by SPO and Treasury are listed in Appendix E.

ITU also receives funding from several international projects from well known establishments such as JICA, GTZ, FEMA, EU funds (Framework Programs), MEDA, NATO, UNESCO, UNIDO, UNDP, NIPPON Foundation, and World Bank.

It has been possible to realise a successful management restructuring via the state and foundation-based funding. However, in order to move ITU closer to a global scale, financial resources need to be developed further. For this purpose, ARI Technocity and a managing company have been established to better utilize and develop ITU's technological capacity and assets.

### **3.1.8 Relationship to Society**

ITU has been an integral part of Turkish society for centuries. At present, one of the most engaging interfaces is the continuing-education programs run in many different professions. These programs receive a lot of interest from citizens who would like to improve their knowledge and capabilities in new technologies and use education to advance their standing in professional or social life. ITU is endeavouring to meet these demands through the Continuing Education Centre. This is also designed as a tool that will help to establish industrial cooperation. Detailed information on ITU Continuing Education Centre and its programs are given in Appendix D.

The ITU Computer Centre also offers continuing-education programs for the public and students at ITU campuses, together with CISCO and Microsoft. These programs have received strong interest and ITU became the Regional Academy for CISCO housing eight local academies.

Subsequent to the 1999 Kocaeli earthquake, one of the main concerns of the Istanbul public is possible future earthquakes which, according to reports, would have disastrous consequences on Istanbul. ITU, having very strong Earth Sciences, Earthquake Engineering, Architecture and Urban Planning human resources and substructure, extended its services to Istanbul, its neighbouring provinces, and the central government. An important community service of the University is the disaster-awareness and disaster-management program run by the Centre for Disaster Management. The Centre for Disaster Management, together with Federal Emergency Management Agency (FEMA) of USA, has prepared manuals for different aspects of management issues. Education provided to public officials, schools and firms has been very important in preparation for a potential disaster. Further information on the Centre for Disaster Management is presented in Appendix E. There is a serious deficiency of human resources on disaster management in Turkey. After the successful activities and outputs of the Centre for Disaster Management, the government encouraged ITU to start a postgraduate program in disaster management. ITU also carries out specific projects in order to develop earthquake-proof constructed environments and to prepare earthquake master plans for cities and towns.

Another important demand, made by the Turkish Tourism and Travel Agencies Union in 2002, was to open a postgraduate program on Tourism Design and Management. This program aims to educate human resources who will design and implement projects to promote the tourism industry of Turkey. On similar grounds, representatives of the textile industry, which is the largest sector in Turkey, requested an undergraduate program in the area of "fashion design" to help create trademark products and introduce them to the world market. In this program ITU is collaborating with the prestigious Fashion Institute of Technology (FIT) of USA.

One of the prestigious achievements of ITU is the foundation of the Centre for Advanced Research in Music realised with strong financial support and active participation of an alumnus. This centre houses some outstanding performers. During the year, series of concerts are organised which are well-publicised and open to the public. The outstanding recording studio has also added new dimensions to Istanbul's music life. In Bakırköy, ITU and Municipality of Bakırköy opened an arts and performance centre which is open to community service.

ITU pioneered in many areas in Turkey such as the establishment of the first stereo radio and TV broadcasting. The ITU Radio started broadcasting in 1945. Turkey's first TV establishment started broadcasting from Maçka campus in 1963. The ITU Television was turned over to the state in 1971 and renamed as TRT (Turkish Radio Television Corporation). In 1999, ITU Radio transmissions

were curtailed by the Turkish Radio and Television Supreme Council on grounds that state universities, being public institutions, are not authorised to involve in radio or television broadcasting. Online broadcasting however, continues on <http://radyo.itu.edu.tr>.

ITU established a kindergarten and a primary school for the children of ITU employees and alumni, and both schools are also open to the public. These institutions have achieved high recognition and people are eager to send their children to these schools.

One of the commitments of ITU, together with the Turkish Science Foundation, is the promotion of science and technology to children and the public. In the Taşkışla Campus, there is a science and technology demonstration centre in which scientific laws, concepts and discoveries are presented at certain times of the year to mainly primary and secondary schools and the interested public. This is an important calendar event every year and the University receives thousands of collective and individual visits from all over Turkey.

The University promotes progressive developments in society, such as giving courses on computer education to the members of the Women's Association of Turkey.

As public-relations is not an area of expertise of ITU, the administration engaged professional consultancy services in order to improve communications with the society and the stakeholders. This allowed the alumni and other stakeholders to follow the changes in the University closely, resulting in a great increase in alumni involvement.

### **3.1.9 International Relations**

ITU believes that global cooperation is imperative in achieving progress in science and technology. Therefore, being part of an interconnected community of academic institutions is inevitable.

ITU places great importance on establishing collaborations and expanding academic cooperation with institutions abroad. In this light, ITU maintains over 100 active international partnership agreements which include undergraduate/postgraduate student and faculty exchange, research, joint degree programs, and joint summer programs.

ITU has also developed a new project and raised funds to strengthen its staff and has been able to send about 140 teaching staff abroad (5 to 10 months) to give them opportunities to improve their foreign language while they are also doing research in the universities abroad. The University has also allocated substantial resources to send academic staff and students abroad for scientific and network meetings in order to make them active at the global level.

ITU has also restructured its International Office and established a sound infrastructure and staffing. ITU established the "ITU-European Union Centre" in order to co-ordinate and support ITU relations with EU universities in terms of education and research before Turkey became a partner in EU 6th Framework program in 2003. In the 2003-2004 academic year, Turkey and EU countries started student exchange programs under the Erasmus pilot project. ITU is among the 15 Turkish universities that undertake such an exchange for the first time. Several students from architecture, computer engineering and management engineering departments are spending either one or two semesters at Munich Technical University during this academic year.

The ITU-European Union Centre plays a central role as a focal point for ECTS-coordinators at each of the academic departments at ITU. In addition, the European Union Commission and EUA selected one of the co-directors of the ITU-European Union Centre to be one of the 10 Turkish counselors to provide guidance to other Turkish universities regarding the ECTS process, and act as European counselors for institutions applying to ECTS/DS Label. Although ITU has formally applied on November 1, 2003 for the "Erasmus University Charter", which can be considered as a license to take part in Socrates/ Erasmus activities, it has already taken some important steps to adopt its programs to ECTS. ECTS transformations of all undergraduate programs of ITU have been completed and ECTS coordinators have already started to work on ECTS transformations of

ITU's postgraduate programs. All these activities involving the preparation of an online "ECTS information Package" are planned to be completed by the end of the academic year 2003-2004.

ITU has been a partner with fifteen universities in the U.S. and Canada; 13 universities in Europe; seven universities in Asia; three universities in Africa and the Middle East for active student and faculty exchange.

Some of the European universities with which ITU has bilateral agreements are Darmstadt University of Technology, Munich Technical University, Technical University of Cottbus in Germany, Politecnico di Milano, Firenze University in Italy, Ecole d'Architecture de Grenoble in France, Fernando Pessoa University in Portugal, Eindhoven Technical University in the Netherlands, University of Newcastle, University of Southampton in England, and Aristotle University of Thessaloniki in Greece. These agreements provide the basis for joint research as well as student and academic staff exchange between specific departments of ITU and these universities. Within the context of these bilateral agreements, ITU has seven outgoing students from the architecture and physics departments and three incoming students to the civil engineering and architecture departments.

In addition to these bilateral agreements, ITU has framework agreements with more than thirty universities in Europe, and it also participates in some multi-national Master's programs in Europe such as TIME (Top Industrial Managers for Europe); ESST (European Inter-university Association on Society, Science, Technology). ITU also initiated a dual-diploma, joint-degree program with the State University of New York (SUNY) system.

In order to further enhance its existing relations and develop new contacts, ITU is also active in the following international networks:

- European Association for International Education (EAIE)
- Black Sea University Network (BSUN)
- Conference of European Schools for Advanced Engineering Education and Research (CESAER)
- Institutional Management of Higher Education in Organization for Economic Co-operation and Development (OECD/IMHE)
- European University Association (EUA)
- International Association of Universities (IAU)
- Community of Mediterranean Universities (CMU)
- Top Industrial Managers for Europe (TIME)
- International Association of Maritime Universities (IAMU)
- Société Européenne pour la Formation des Ingénieurs (SEFI)
- Réseau Méditerranéen des Ecoles d'Ingénieurs (RMEI)
- International Association of University Presidents (IAUP)
- Balkan University Network (BUN)
- European Association of Universities in Marine Technology and Related Sciences (WEGEMT)

## **3.2 Constraints**

### **3.2.1 Evaluation of Institutional Autonomy**

#### *Selection and Appointment of Academic and Administrative Staff*

According to current HEL, universities are free to select and appoint teaching and research personnel. However, there are some basic requirements stated by the HEL with regards to promotion. ITU has high appointment standards accepted and published by the University Executive Board (UEB). The minimum requirements for appointment of assistant professor, associate professor, and professor positions at ITU as determined by the UEB are given in Appendix H.

The real constraint on the administrative staff and young academic staff appointments arises in the availability of positions which are under government control and generally distributed on general considerations rather than the needs, capacity, and performance of the institutions. As some staff members retire and are not properly replaced, service personnel, laboratory technicians and academic staff shortages may become a serious problem in a decade or so if drastic changes in regulations are not realized. The total number of administrative personnel is currently about 1500. The distribution of administrative staff over the years is presented in Appendix C.

An important constraint under which the University has to operate is the low level of salaries for academic and non-academic staff. All employees of the state universities are state employees and the government fixes their salaries as well as the yearly increases in their salaries. The salaries of all employees are low compared to foundation universities and industry. This puts a serious problem in the recruitment of academic and administrative staff. Recruiting new and young academic staff is very difficult. Also, with this level of salaries, losing experienced faculty members to recently founded private universities and/or to the private sector is a major threat. The differential between the salaries of state and foundation universities so far did not cause a personnel drain from ITU. In order to prevent risks in the future, ITU supports income-increasing activities in the University through projects, consultancy, part-time lecturing, and particularly Technocity will be most instrumental in raising staff income.

Low salaries restrict the recruitment of qualified administrative staff as well. This results in a poor administrative situation and hence the University tries to perform some of the strategically important administrative tasks by appointing some of its academic staff to these tasks. Furthermore, central administration of the salaries from state budget imposes standard salaries for all, based on the title and years of service rather than merit and performance, whereas competitive and quality management system dictates a performance-based system in which salary and job position is determined by the current performance of the staff.

Another constraint on the appointment of academic and administrative staff is the fact that they are civil servants and it is very difficult to terminate their appointment. The academic staff is assured tenure upon promotion to associate professorship, however tenure is practically assured after recruitment as an assistant professor due to the civil servant status even if the staff member is not promoted to associate professor. This job security of academic and administrative staff is an important constraint on the imposition of high academic standards.

#### *Selection of Students*

The admission of students to ITU and other Turkish Universities is administered through a central examination system organized by the "Student Selection and Placement Centre" (SSPC). Approximately 1.5 million high school graduates take the Student Selection Examination (SSE) every year. A student is placed in a higher education program according to his/her high school GPA and score on the SSE exam. This exam does not give autonomy to universities, but it is a fair system. The only drawback is that student preferences are rather rigid. ITU is generally situated within the top three universities in engineering and science programs in student preferences. Freshman quotas are set by HEC based on proposed figures of the university. As a rule, HEC tries to increase departmental quotas and the universities resist it. ITU was able to stabilize freshman enrolment arguing that postgraduate admission will be increased.

#### *Teaching and Learning*

The legal context of state universities is not under constraint in teaching and learning. Provided that the procedures are followed, the universities may open or close faculties. Indeed, in the restructuring period after 1996, ITU received HEC ratification of two new faculties (Computer Science and Engineering, and Textile Design and Technologies) and some new programs (Molecular Biology and Genetics, Telecommunication Engineering, Control Engineering, Landscape Design, and Interior Design). Also ITU multiplied the types of degrees, such as MSc via course work and via research. There have been considerable new specialty-packages or branching under study programs. Also the central administration does not impose upon the course units and didactic approaches. However, the central and bureaucratic structure of HEC makes the

process of opening new faculties a long, tedious and difficult process. ITU has been continuing to complete formalities for the formation of the two new faculties for the last two years.

The only imposition of HEC upon university teaching and learning is the compulsory Turkish and History of Turkish Revolution courses offered as separate courses in two semesters. These courses may or may not be for credit. ITU has chosen them to be credit courses due to the importance attached to them.

During the course of restructuring the education for continuous quality improvement and international accreditation, no legal obstacles were incurred. All the decisions were taken within the University and only a portion of the changes were reported to HEC.

### *Research*

The research activities in the University are managed by the rectorate. The rector appoints one of the vice-rectors to direct research activities, working with the Scientific Research Projects Unit (SRPU) of the University. SRPU is composed of the directors of the five institutes and three members elected by the University Senate. SRPU defines the priority areas and allocation of the budget to different areas, decides on the project applications, and decides on policies and planning both short- and long-term. The main constraint in the field of research is that the research budget is primarily supplied by the state. It is therefore subject to state laws and by-laws which have some drawbacks. For example, if yearly allowance is not spent, the money is returned back to the state. Indeed, this year as an extreme practice the state even confiscated the University-generated Revolving Fund budget planned to be used in the coming year.

### *Development of Entrepreneurial Activities*

Entrepreneurial activities within Turkish universities are usually limited and difficult. The only medium is the sort of incubators established by the Small and Medium Industrial Development Directorate (KOSGEB) at university campuses. The first ever KOSGEB technology-development centre (TDC) was established at ITU. The ITU TDC has been the most successful centre in terms of budget utilization, the number of projects completed and the number of companies graduated. More information on KOSGEB activities are presented in Appendix C. Another incubator in the IT area, a Software Development Centre, was established in 1998 by ITU and Turkish Technology Development Foundation (TTGV). Working as incubators, these centres involved several staff members, but this proved to be insufficient. The rigid financial rules of the state were pressurizing academicians and entrepreneurial capabilities were not flourishing at the desired level.

In 2001 the government passed the Technology Development Areas Law which gave the right to open technoparks in the vicinity of university campuses. ITU planned two technopark areas. A first set of companies commenced work in the ARI Technocity during the second half of 2003. There is a great demand, especially from IT companies, to participate in the ARI Technocity. With World Bank assistance, the planning and auctioning of a second prestigious building has been completed. In a year's time, an extra 17,800 square meters of closed-area will be ready, which will open up great opportunities for ITU. During the first stage when the ARI Technocity first started its operation in June 2003, there were seventy applications for the available twenty-three spaces. There are currently 250 applications with 50,000 square meters floor area need, waiting to be considered for the next phase. After the completion of the prestigious building at the end of 2004, an important constraint will be resolved, and ITU considers this development to be one of the most important improvements of the University. It will serve multiple purposes, such as bringing the University and industry together for collaborative research in priority fields. It will open new frontiers to academic staff to establish their own businesses and provide easy and economic access to industry to use the human and technological resources of the University. This new interface between the University and industry will be instrumental in overcoming some of the financial constraints imposed by the legal system. More information on the Technocity is presented in the Appendix J.

In order to promote entrepreneurial activities, a course on entrepreneurship has been opened in the Advanced Technologies Program, and the subject is included in the contents of appropriate courses in some programs.

## Finance

The biggest constraint ITU and other state universities are facing today is the financial structure which confounds university administrations with rigid and bureaucratic procedures. The financial resources provided by the government are under strict budgetary control. Transfer between budget allocations is restricted and is only possible after tedious procedures with the central government. Over half of the state budget is allocated to personnel salaries. ITU and other universities are requesting lump sum budget and flexibility on budget allocations.

The rigid budgetary structure and legal constraints prevent the institution from raising its own revenues. ITU has been expanding the capabilities of its two foundations in order to overcome some of the difficulties. Indeed, the contributions of the two foundations have been substantial, but a radical solution to the finance problem is needed. ITU has proposed to the government that universities which are capable of raising their own funds should be granted financial independence while still being accountable to the authorities. For this purpose, ITU has taken an active interest in the formulation of a new Higher Education Law. ITU presented its views on a Higher Education Law to involved ministers and MP's in April 2003.

### 3.2.2 Evaluation of the Current Regional and National Market Situation

ITU enjoys being at the centre of strong industry. Indeed, about 40% of all industrial production is realized in the provinces of Istanbul and Kocaeli in Turkey. Therefore, graduates of ITU find themselves in a rich job environment. ITU has played a fundamental role in the establishment of a modern Turkey in the civil, mechanical, chemical, electrical sectors, and other fields. ITU graduates enjoy a long-lasting trust and reputation across the country. However, the acute and chronic economic crises taking place in Turkey after 1990's caused a reduction in the number of job openings. This led to a tendency to seek employment outside of Turkey, resulting in a brain-drain which also reduced the number of students applying for post-graduate degrees in some areas. However, due to the historical strength and accomplishments of ITU graduates, they have relatively less problems finding employment. This characteristic is also shared by some of the high-ranking universities such as Boğazici University, Middle East Technical University, and Bilkent University. Graduates receive advice regarding employment at both the departmental level and university level through the Career Office.

### 3.2.3 Evaluation of the Constraints on the Infrastructure

The main campus (Ayazağa campus) is located in the Sarıyer district of the Bosphorous Conservation area, as defined by the Bosphorous Law No. 2960. In addition to this law, two acts of legislation apply to the development of this area: Greater Istanbul Municipality Management Law No. 3030, and Construction Law No. 3194. All the design projects and construction decisions on the Ayazağa campus are subject to these three laws. The renovation activities of historic buildings of city campuses are subject to the decisions and approval of the related Conservation Committee of Cultural and Natural Assets of the Ministry of Culture. Delays in the payment of public funds for construction on campuses unduly prolong construction periods and thus cause wear on buildings.

Squatter settlements on the Ayazağa campus of 559000 square meters put restrictions on the further land use and planning policies of the University. Although a continuous effort was made in legal terms by the administration to restrict illegal occupations of squatters on the university borderlands, there is still some district in Ayazağa campus that was occupied by the early squatter settlers.

Istanbul has faced intense urbanisation pressures during the last 30 years causing immense deterioration in the environment, especially in terms of flora and fauna. In order to contribute to nature preservation, the "Centre for Natural History Research and Education" was established in 2002.

Because the University is situated in six different campus locations, some complications result in terms of student and staff interaction, communication between the rectorate and the staff and students of city and Tuzla campuses. There is a bus service system to all campuses of ITU from all parts of the city at the beginning and the end of the day, but there is no continuous ring service from city in-between and on campus areas. New transportation facilities are needed in order to facilitate communication between the students and the academic and administrative personnel. A new underground metro connection will improve relations with the city functions. More efforts should be given to provide a metro station on the Ayazağa Campus. This would solve the problem of easy access to city campuses.

### **3.2.4 Evaluation of the Student/Staff Ratio**

ITU has a total of 1081 permanent teaching staff (384 full professors, 187 associate professors, 285 assistant professors, 73 lecturers, and 152 instructors) as of October 2003. In addition, there are 904 research assistants, 790 of which are permanent, and 97 contracted teaching staff, 24 of which are foreign nationals. The breakdown of these numbers to faculties is given in Appendix C.

There are approximately 19,000 students studying in undergraduate and postgraduate programs. The student/academic staff ratio is about 18 which is one of the best ratios in Turkey. The student/staff ratio drops to 10 if the assistants are included. Approximately 39% of the academic and teaching staff is female. University has a total of about 1,450 administrative staff and 34% of them are female. These numbers do not cause a serious constraint on the educational and research activities of the university.

### **3.2.5 Other Constraints**

ITU provides a considerable amount of laboratory services to industry and third parties. The concept of quality assurance systems is becoming an essential part of industrial activities which seek laboratory accreditation. At present, there are a limited number of accredited laboratories in ITU and, especially after EU-integration, laboratory accreditation will become a major constraint in providing services and tests to industry.

The present HEL imposes serious constraints on the maintenance of laboratories, payment of software licensing fees, and recruitment new technicians and engineers. These constraints necessitate the centralisation of some laboratories and services.

## **3.3 How is the Institution Trying to Do It?**

### **3.3.1 Academic Activities**

The starting point of restructuring the University along quality concepts was to reform the educational system into a student-centred, research-oriented, and outcome-based understanding. A Senate Education Committee (SEC) reporting to the University Senate was established with certain rights and responsibilities. The restructuring of the undergraduate framework program is described in Appendix F. The new framework program is intended to provide the basis for a continuous improvement system. However, SEC may consider proposals outside of the curriculum framework, provided that it is necessitated by the mission, educational objectives and outcomes specified by the demands of the programs.

The number of credit hours was reduced from as high as 200+ to a maximum of 153 including English courses and the compulsory courses dictated by the HEC such as Turkish, History of Turkish Revolution. Apart from stressing the share of basic sciences and mathematics, courses in humanities and social sciences were increased. In order to realise the impact of a broad-based education, a Humanities and Social Sciences Department in the Faculty of Science and Letters was established.

The isolated nature of education in faculties before 1996 prevented interdisciplinary and broad educational interaction. This of course resulted in graduates who are not prepared for global competition. Some of the expected attributes of the graduates are global-thinking, broad-education, interdisciplinary and professional approach, intensive communication skills, team-work skills, ethics and life-long learning abilities. For this purpose, the barriers between the faculties and departments have been removed. The new educational understanding stressed mobility for students by virtue of allowing them to choose courses from other faculties to strengthen their choice of specialization. As a result of the new mission, new departments and programs were established such as Mechatronics, Molecular Biology, Fashion Design, Construction Management, and Control Engineering.

The number of elective courses was increased to give flexibility to the students to focus on areas of interest to them. Transfers between ITU departments and a double-major option to qualified students created mobility within the university. To promote quality and student performance, concepts of honour and high-honour awards were introduced. A summer semester concept was introduced which allows for taking courses from other departments, study-abroad programs, and if desired, graduation in less than eight semesters and encourages double major studies.

In addition to academic work students are also encouraged for extra curricular activities at both faculty and university levels. There are various student clubs in each faculty including an introductory club for each discipline. Clubs are further organised at the university level under the central management of the Culture and Arts Union, and Sports Union. Students are allowed to run their internal sports activities under their own management. All student clubs receive funds from the Rectorate to run their activities. A list of the clubs registered to the Culture and Arts Union and the Sports Union is given in Appendix C.

Above all, "continuous quality improvement" has been the umbrella concept to monitor all of the developments and changes. International accreditation of undergraduate programs has been one of the most important outcomes of these developments. It is believed that the assurance of the new quality system may best be accomplished by going through an internationally viable periodical accreditation procedure based on continuous improvement.

After completing the undergraduate restructuring and consolidating the system with substructural backing and setting steps towards international accreditation, postgraduate education was also restructured. The driving force behind the change to a new postgraduate program has been the ongoing worldwide revolution in information technologies; the turbulent nature of interdisciplinary approaches at the interphase of different disciplines; and the mission of University as a research institution with strong postgraduate programs. For the restructuring of the postgraduate programs, the experience gained during the reform of the undergraduate system was of the utmost use. Similar to SEC, a Senate Postgraduate Education Committee (SPEC) was formed. This committee designed the program of a quality-based system with appropriate check-lists, and programs are to be established according to these guidelines. All the existing programs were closed at the start of the year 2002 and in the same year eligible and new ones were opened. With its 130 postgraduate programs offering Masters and Ph.D. degrees, ITU currently has the largest number of postgraduate programs in engineering-related disciplines among the Turkish universities.

In accordance with the mission-statement the number of total students has decreased in spite of the effective pressures from HEC for enrolment increase. The postgraduate-to-undergraduate student ratio increased progressively over the restructuring period and the target ratio of 2/3 is about to be achieved.

The HEL of 1981 separated postgraduate studies in the institutes outside of the faculty structures. Since the academic staff members are positioned in the faculties, the system lacked coordination. For this reason, all the research units in the University have been integrated and a new management structure has been developed. Also the MSc and PhD programs are organized in an independent manner from the respective departments, under the management of coordinators rather than heads of Departments.

In order to improve research and postgraduate study, the University has developed an “Advanced Technologies Graduate Program” which covers areas such as advanced materials, molecular biology, genetics, and biotechnology, telecommunication, satellite communication and remote sensing, aerospace engineering, computational science and engineering, and computer engineering. This program is supported by the State Planning Organization (SPO) and aims to provide first a solid basis for research towards product development, and second a competitive graduate program in Turkey so as to prevent brain drain. The Advanced Technologies Program promotes collaborative research with universities abroad and supports student and faculty exchange. The postgraduate students of this program are hired as research assistants whose salaries are paid through the SPO project. They are not involved in teaching activities unlike the similar positions in the departments. This program is unique in this aspect since it has a generous budget of 25 million USD for 6 years for a certain number of students; the selection of students is very competitive; and the teaching and research program is targeted to priority-areas and end-products. After the ITU experiment, the SPO also granted projects to several other universities.

As a main component of the mission-statement of the University, research activities have also been restructured. The ITU Research Fund was reformed under the direction of one of the vice-rectors in order to determine priority research areas for the University, define new and interdisciplinary research opportunities, and streamline and introduce a well-defined peer review system. In order to synchronise with pioneering and priority research in the world, a new research infrastructure has been designed and developed, including IT, library, laboratory, and other facilities.

The success of the research development program was reflected in the huge increase in research budget, and the number and quality of research projects realised between 1996 and 2003 as depicted in Appendix E. A major portion of the funds generated in the Revolving Fund and income from R & D projects are directed to research expenditure.

The University has a strong laboratory infrastructure, with laboratories distributed in all disciplines. A large number of these laboratories are located in the Faculties and Institutes related to research groups. On the other hand, Istanbul Technical University has established central laboratories especially for interdisciplinary research activities. The Advanced Ceramics and Composites Laboratory, Automotive Research Laboratory, Satellite Ground Station, Shaking Table Laboratory are examples of large-scale research laboratories. New laboratories in food engineering, environmental engineering, electronics and telecommunication, polymer science, textile engineering will be established soon in the context of the Technocity project. And since they support the research activities in the University, they will also be available for use in the research projects in the Technocity.

Research at ITU is also promoted through the centres of excellence that the university has created. Some of these centres of excellence are planned and developed in interdisciplinary areas, such as nanotechnology, molecular biology, advanced materials, computational science and engineering, mechatronics, and automotive. With a highly qualified research staff and laboratory infrastructure, the centres of excellence (listed in Appendix E) play a driving role in the research activities of the University.

### **3.3.2 Finance**

The total budget of the university including the state budget and other sources for the years 1999-2003 are given in USD in Table 1. More information on the distribution of the state budget to the financial managing units is presented in Appendix C. A solid increase in the total state budget at a period of acute economical crisis in Turkey, is a vivid demonstration of the respect accorded by the state to ITU, especially as a result of the change management, performance and convincing planning since 1996.

The state budget is totally earmarked for personnel salaries, travel, consumables, services, equipment, and construction. The earmarking is further classified under subtitles. Some portion of the budget is allocated directly to faculties, institutes, the Conservatory and the Vocational School of Maritime. The University submits a budget proposal depending on mission, program of work for

the financial year, and targets prepared from bottom up by respective administrative boards. The total University budget is prepared by the rectorate and submitted to State Planning Organization (SPO). The proposed budget is reviewed in the SPO and is confirmed by the parliament as the University budget. The distribution of the state budget over the years to each financial unit is presented in Appendix C. The rectorate urges each administrator to attend the budget discussions in Ankara every year. Together with an energetic, quality-oriented, project-based administration, the strong relations with Ankara helped ITU to increase the state budget over the years. The rectorate manages the budget centrally for construction, most of the equipment purchases, and nearly all of the services and travel expenses.

Table 1. The total budget of the University for the last five years (in thousands USD).

| Type of Budget                  | 1999  | 2000  | 2001  | 2002  | 2003  |
|---------------------------------|-------|-------|-------|-------|-------|
| State                           | 57639 | 50186 | 39125 | 54690 | 68918 |
| Student Fees                    | 5500  | 4471  | 3406  | 3998  | 4204  |
| Revolving Fund and R & D Income | 6567  | 6362  | 5220  | 6757  | 7500  |
| Land and Building Development   | 296   | 682   | 959   | 710   | 1530  |
| TOTAL                           | 70002 | 61701 | 48710 | 66155 | 82152 |
| Research Budget                 | 15803 | 5366  | 6314  | 13618 | 15851 |

\* The research budget represents the allocations from the state and other budget items.

New initiatives through the state budget can be realised only after the project is included in the budget of the current year. However the financial sources other than the state can be used with more flexibility within a year. ITU tries to balance the constraints imposed by the strict state budget by utilising the funds raised by the two foundations and the newly-formed Technocity company.

In terms of resources, ITU needed to increase not only its state funded budget and SPO research budget, but also its own incomes from R&D and continuing-education activities. The need for additional financial resources for new developments attracted the alumni's attention and ITU has been the most successful university in Turkey in fund-raising. Many student facilities have been realised by the donations of the alumni.

### 3.3.3 Management Activities

The rector, appointed by the President of Turkey, appoints three vice-rectors who each has one of the following primary responsibilities: 1) research, industrial relations, entrepreneurship and revolving fund, 2) student affairs, educational matters, cultural and artistic functions and judiciary matters, and 3) construction, infrastructure development, utilities, continuing education and sports.

The University Executive Board (UEB), composed of the rector, vice-rectors, deans and three elected members of the University, is responsible for the day-to-day running of the University. The Senate is composed of the rector, vice-rectors, deans, directors of all institutes, and one senator from each faculty elected by the Faculty Board. The Senate is the highest academic council of the University. Both the Senate and University Executive Board are constituent to the Faculty Executive Boards and Faculty Boards, respectively. The University Executive Board usually meets every week or every other week and the Senate meets every two to three weeks.

Among the committees, some are permanent (Senate Education Committee, Senate Accreditation Committee, Senate Postgraduate Education Committee) and some are temporary in order to increase the efficiency of the higher administration. A key office in the higher management is the general-secretary who is a member of both the Senate and UEB. The directors of administrative and financial affairs office, personnel office, student affairs office, library and documentation office, health, sports, and cultural affairs office, legal office, and computer centre report to the general secretary. There are two vice-general secretaries with defined responsibilities. The full list of the management structure is included in Appendix B.

Since 1996, ITU has developed a unique administrative structure in which many talented young academicians have taken on roles as advisors and project coordinators to monitor important projects stated in the development plans of Project 2001 and Project 2005. One of the main instruments employed in the coordination of this group has been the Monday Coordination Meetings in the rectorate, chaired by the rector and including the vice-rectors, advisors, project coordinators, general-secretary and other directors from the administration, such as public relations, international affairs, library, computer centre, and others.

ITU students are involved in administration, mostly at faculty level, and the university student representative may be invited by the Rector to attend UEB and Senate meetings. Students in each class of each program elect a student representative. The class representatives elect their program representative, who then represents them at the Department Administrative Board. Program representatives elect a faculty representative who may attend the Faculty Board and Faculty Executive Board meetings. The faculty representatives also elect a university student representative. The student representatives maintain continuous contact with higher administration through the vice-rector responsible for academic and student affairs. Research assistants are also represented at all levels of administration similar to student representation. Student participation in management at departmental and faculty levels show differences within the university.

## **4. Quality Management**

### **4.1 Quality Assessment and Monitoring**

Quality assurance in education at ITU is mainly based on a Continuous Quality Improvement (CQI) system. The CQI system is based on a two-loop outcome assessment and feedback procedure. Each program decides on its educational objectives together with stakeholders by taking into consideration the mission of the institution and department, stakeholder inputs, and feedback from the process. Educational objectives are the expectations of the system from graduates, a couple or more years after graduation. Therefore, an assessment of the graduates is made by means of questionnaires completed by employers and graduates at defined periods after graduation. The measurement and assessment periods are determined by each department. The results are fed into a program which constitutes one of the two loops of the system, as shown in Figure 3. Each program also defines the outcomes that are expected from ITU students at graduation. Graduates and academic staff are assessed with regard to the outcomes and the results are fed into the CQI system.

According to the CQI system, each course must define its role in satisfying the educational objectives and outcomes. Furthermore, each course must specify how these tasks will be met and the methods that will be used to evaluate the performance. It is generally preferred to measure performance by at least two different methods. Some of the metering tools used by the programs are: questionnaires, portfolio assessments, course file evaluations, rubrics, external examinations, and external national and international examiners. The Senate Education Committee also conducts a questionnaire on the web for each course every semester. This is intended to give an overall idea of the course with reference to its standing in the University. All of these activities are documented. At present, the assessment of the CQI system is being realised by means of an ABET EC2000 substantial equivalency accreditation. The self-study report prepared by one program is included in Appendix L. The documentation on this program and all other programs are available on EUA reviewers' request.

One of the quality-control parameters used to assess the performance of undergraduate students is to consider the overall grade-point average of all students of a particular year. Data on the overall student averages are shown in Appendix C. The data show a decrease in the overall averages at the three starting years of the restructuring and reformation. Starting with the fourth year, there has been a steady increase in the overall student averages. These positive changes are attributed to the curriculum change, dismissal of consistently low performing students, and the change from teacher- to student-centred education, improvement in student services (housing, food, and scholarships), increase in the library services, and other changes described in this report.

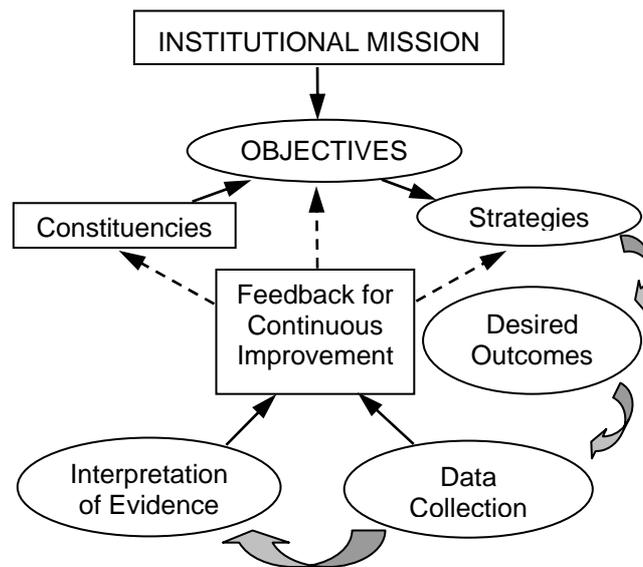


Figure 3. The CQI System Employed at ITU

Another important quality parameter is the mobility of high-quality students within the University. As shown in Appendix C, the number of internal transfer and double-major students increased from 49 to 115 and from 19 to 90 between the years 1997 and 2003 respectively. The ratio of students graduating in eight semesters, shown also in Appendix C, indicates a steady increase in the last three years which achieved over 65% in the 2002-2003 academic year.

The assessment of the English preparatory program is based on international examinations; in particular TOEFL scores (see Appendix D).

Quality monitoring of research activities are directed by SRPU and grants research funds to academic staff. All project proposals are made using standard forms which are peer-reviewed. The supported projects are monitored, and accepted or rejected according to the final report which is also peer-reviewed. One other indirect method of evaluating the general performance of the research results is the number of yearly publications in periodicals cited in Science Citation Index (SCI). The number of publications in SCI-cited journals authored by ITU staff increased progressively since 1996 as presented in Appendix E.

ITU is determined to assure the quality of its academic staff, and the UEB issued a well-defined procedure and criteria for the appointment and promotion of faculty members which has one of the highest standards in the country. In addition, the yearly performance of each academic staff member is evaluated through the yearly progress-reports submitted to the heads of departments, reporting teaching, research, and other activities. The ITU Criteria for Appointment and Promotion is presented in Appendix H.

## 4.2 Quality Management

The University administration introduced restructuring related to quality and international validation, thereby establishing the necessary structure to run a sustainable system. The three main committees which run the system are the Senate Accreditation Committee, Senate Education Committee, and Senate Postgraduate Education Committee. A Senate Assessment and Evaluation Committee is also under consideration. The Scientific Research Projects Unit is the quality-management agent for research.

The quality-management principle of ITU is maximisation of the involvement of its staff in the quality system. In order to secure sustainability of the quality system, oversight is provided by SEC, SAC at the higher administration level, the faculty accreditation committees at faculty level, and department education and accreditation committees at the program level. There are also several committees established in all departments which run different aspects of the CQI system at program levels, and also in all faculties to facilitate coordination, collaboration, and experience sharing (see Appendix K). A similar structure is also designed at the postgraduate level. Programs were re-established at the start of 2002/2003 academic year and measurement, assessment, feedback and loop-closure practices are to be implemented for the 2004-2005 academic year.

The University believes in continuing-education as a key component of quality-management and for this purpose frequently sends members of academic staff to international and national conferences, workshops, educational meetings. It also hosts major international meetings at ITU campuses. The education program run by SAC in the 2002-2003 academic year is presented in Appendix C.

In quality-management, stakeholder contribution to the process is very important. Indeed, one of the major driving forces behind the change management has been the alumni, who requested solid changes and improvements at ITU. ITU established very efficient interactive relations with alumni through the work of the two Foundations and the Alumni Associations in different locations in Turkey. Each program under the continuous quality improvement system has established an advisory board representing the major stakeholders. Apart from fulfilling the CQI functions, various focus group meetings are also organised at departmental, faculty and rectorate levels.

The main weakness of the quality-management at present stems from the state university system, which is not well-suited for performance appraisal. A major task for ITU remains the assurance of the sustainability of the CQI system within the given boundary conditions.

## **5. Strategic Management and Capacity for Change**

Even though ITU has enjoyed unequivocal successes in the past, it has always maintained a culture of change, and that is why the university motto is phrased as "Pioneer through the Ages". The winds of change brought one of the major revisions in the history of ITU in the 1960's. Previously, ITU conferred a prestigious title of a "Diplomingeniuer" (translated to our system as "High Engineer") degree upon its graduates, which was accepted as the equivalent of a Master's degree. The administrators of the University understood future trends and thus they moved to a B.Sc. and M.Sc. system. In 1988 ITU started to offer an English Supported Instruction program on a voluntary basis. This program required some courses to be instructed in English and the students who registered in this program had to fulfil a language requirement. Even though this program did not meet the initial expectations of the University, it served as a foundation for the bilingual education started in 1997.

The character of the administration under the development plans of Project 2001 and Project 2005 has been nothing short of a change management in nearly all spheres of the University. The progress of the plan is reflected to the University personnel by way of open forums arranged at least once a year by the rectorate. The contribution of the constituents is received at specific target-group meetings, search meetings, and alumni reunions.

One of the most important meetings organized for the realization of the development plan of Project 2001 was held in the historical Dolmabahçe Palace on the European shore of the Bosphorus. The meeting was hosted by the President of Turkey, Mr. Süleyman Demirel, who is an alumnus of ITU, and attended by leading industrialists, some eminent bankers, representatives of Turkish Stock Exchange, ITU Alumni, ITU Foundations, ITU Sports Union, the ITU rector and vice-rectors, deans and other constituents. The rector presented a detailed briefing on Project 2001 and on financial plans to realize different components of this project. A target of 20 million USD by 2001 was announced by the rector. In this meeting constituents stepped forward and committed themselves for solid financial support. The projects were successful, and by the target date funds twice as the target value were raised. The rector and the administrators also shared information

and views with the alumni associations located in Ankara, Bursa and Antalya. In 1997 the Ankara Alumni Association had a special meeting, which included a representative from the University, to discuss bilingual teaching at ITU and provide feed-back on this critical issue.

The ITU rectorate has organized two focus-group meetings. The first one was organized on December 19, 2000 and attended by sixty personnel from different cross-sections of the university. The focus was on the question:

*“How can we attract high quality students to ITU?”*

The meeting resolved that the following projects were of prime importance in attracting best students to ITU:

- Internal and external communication
- International accreditation
- Public relations
- English-language instruction
- Enhancement of campus life
- Broad-based education

The second search-meeting was organized with twenty-five participants from external constituents and nine from University personnel on March 29, 2001. The question for the group was:

*“What are the opportunities and threats associated with the new developments and trends in the world and in Turkey concerning attracting high quality students to ITU?”*

At the end of a day’s work, the group formulated their results in the form of six projects out of thirty-four proposed:

- Becoming global
- Identifying locomotive departments
- Instruction fully in English
- Creating education and research environment at international standards
- Joint-degree programs with international universities
- Development of strong university-industry relations

The results of the two search meetings were used as a basis for shaping the standing plans of ITU.

The change-management has been very successful in reviving the University. The alumni have started to play an active role in supporting and contributing to University policies. The State Planning Organisation and Treasury responded with support of extensive projects of ITU.

ITU believes in quality-culture and quality-management in all aspects of the University system. During the past ten years of change-management, the University has realised that physical and institutional changes are not very difficult but the most effective way of changing human resources is by quality-management systems. ITU believes in quality-assurance systems at university, national and European levels. In fact, ITU academic staff is involved in the establishment of a non-government national accreditation system for engineering programs, namely Engineering Evaluation Board. The vice-president of the Engineering Evaluation Board is a member of the ITU academic staff and will become the president next year. Several members of ITU staff are serving as program evaluators in this initiative.

## 7. Conclusion

In order to fulfil its objective of becoming a global university, ITU designed two consecutive major-development projects commencing in 1996. The concept behind the change-management is quality-assurance in the University system. The major accomplishments of the two projects in the past seven years are represented in different parts of this self-evaluation report.

The undergraduate education has been restructured with a new curriculum, understanding, substructure, and system. The total number of credit hours in each program was adjusted to the generally accepted level of approximately 150 credit hours, reduced from numbers as high as about 200. This reduction was a direct result of the student-centred educational understanding. It was inevitable to teach English to all students in order to fulfil the mission of graduating global students, therefore, a bilingual (30% English and 70% Turkish) teaching practice was accepted.

The library facilities were upgraded significantly in order to meet the demands of the mission. Book orders which were limited to hundreds before 1996, jumped to thousands every year thereafter. The library services were restructured based on an automation system. Electronic library services increased tremendously within a few years. At the time of the drafting of this report, the number of electronic journals accessible to academic staff and students reached over 7000, and many important data-bases have also been made available. Library building facilities also had to be doubled, and a new prestigious library building is presently under construction.

The IT infrastructure was extensively improved for teaching, research, and communication. Each faculty is furnished with computer laboratories for free lab use and teaching. ITU has an integrated, high bandwidth, private network spanning all of its five campuses permitting users deploy web-based and/or client-server applications across the university. A high performance computing facility was established for computing intensive research activities.

An extensive improvement in the scholarship program has been made in which the total amount of scholarships have been increased from about 100,000 USD to 2,500,000 USD in 2003. The student-housing capacity has been increased from 600 to over 3000 in five years, and the quality of the existing dormitories was also improved tremendously. The present capacity of student housing is more than the demand. The capacity of dining facilities has also been increased and standards have been improved both in the student-centre and at the faculty buildings.

A new English-preparatory program, providing at least a year of English training to entering students, has been introduced in the School of Foreign Languages. The English-preparatory program has been designed and realised in collaboration with The University of Connecticut.

Several programs to support and reward the academic staff, and to attract high-quality, young academicians to the University have been introduced. A housing program has been initiated with priority given to young staff members and administrators. Awards to members of staff for scientific publications have been started, and the amounts of the awards have reached to one of the highest in the country. Long term overseas research and educational support programs have been initiated using funds created from the alumni.

The number and quality of laboratory, classroom, recreation, sports and meeting facilities have increased. For this purpose funds from the state budget, funds from alumni donations, and funds provided by ITU Development Foundation and ITU Foundation, have been utilised. The financial and other contributions of the alumni have reached a total amount of approximately 70 million USD in the last seven years. All of the postgraduate programs were terminated, and new programs were opened on a quality-based multidisciplinary approach in 2002. Some of the changes realised as a result of the two consecutive development plans are being evaluated using performance criteria presented in Appendix C.

After seven years of a process of change towards a global university, ITU believes in the following objectives:

- Continuous Quality Improvement System in education, research, and management
- Excellence in education and research
- Further University-industry cooperation and entrepreneurial activities
- Moving toward a special-status university
- Contributing to the community in technical, social, cultural and intellectual contexts
- Further increase in international activities
- Further increase in total budget

In order to realise these objectives, ITU will:

- Continue to expand the CQI system at all levels of education, develop an organised assessment and evaluation system, plan and realise a laboratory accreditation system, increase involvement of students in the administration, base future activities on a detailed strategic plan, and altogether achieve an effective total quality-assurance system at ITU.
- Seek excellence by sustaining the CQI system, attracting the best students, improving the quality of academic and administrative staff, motivating the research activities in terms of infrastructure and providing support to successful members, attracting more research funds to the University from national and international funds, creating a teaching and research environment attractive to foreign academicians, and increasing the number of interdisciplinary programs and projects.
- Use present capabilities of ARI Technocity and develop it further with such interphases as Innovation Relay Centre, organising project-markets, encouraging new academic staff and students toward innovative and entrepreneurial activities, and establishing a special organisation for intellectual property-rights.
- Promote gaining a “Special Status” to give ITU more autonomy and responsibility to earn its own income and to run its business, work together with the stakeholders especially in Ankara in order to influence decision makers.
- Continue to support state and foundation universities in the region, to educate members of academic staff, to give support mainly to Anatolian universities, host exhibitions, congresses, and science and technology centres in the campuses, to use distance-education facilities to give continuing-education to wider audiences.
- Support European involvement especially in FP6 programme, improve the link-supports with worldwide universities, research centres, and funding agencies, and attract foreign companies to the Technocity.

Under a dynamic, productive and visionary leadership, ITU has been experiencing an intense change-management for over seven years, with active contributions from its stakeholders, i.e., academic and administrative staff, students, alumni, industry and the state. The change-management in the direction toward quality-assurance has been successful in many spheres. ITU aims to broaden the total quality-assurance system by rooting the quality-culture to all parties involved. It is of paramount interest to the University to secure the sustainability of the system. Therefore, ITU is trying to institutionalise its efforts. The EUA Institutional Evaluation Programme preparations have been a very useful and inspiring experiment in our journey toward quality.

# **APPENDICES**

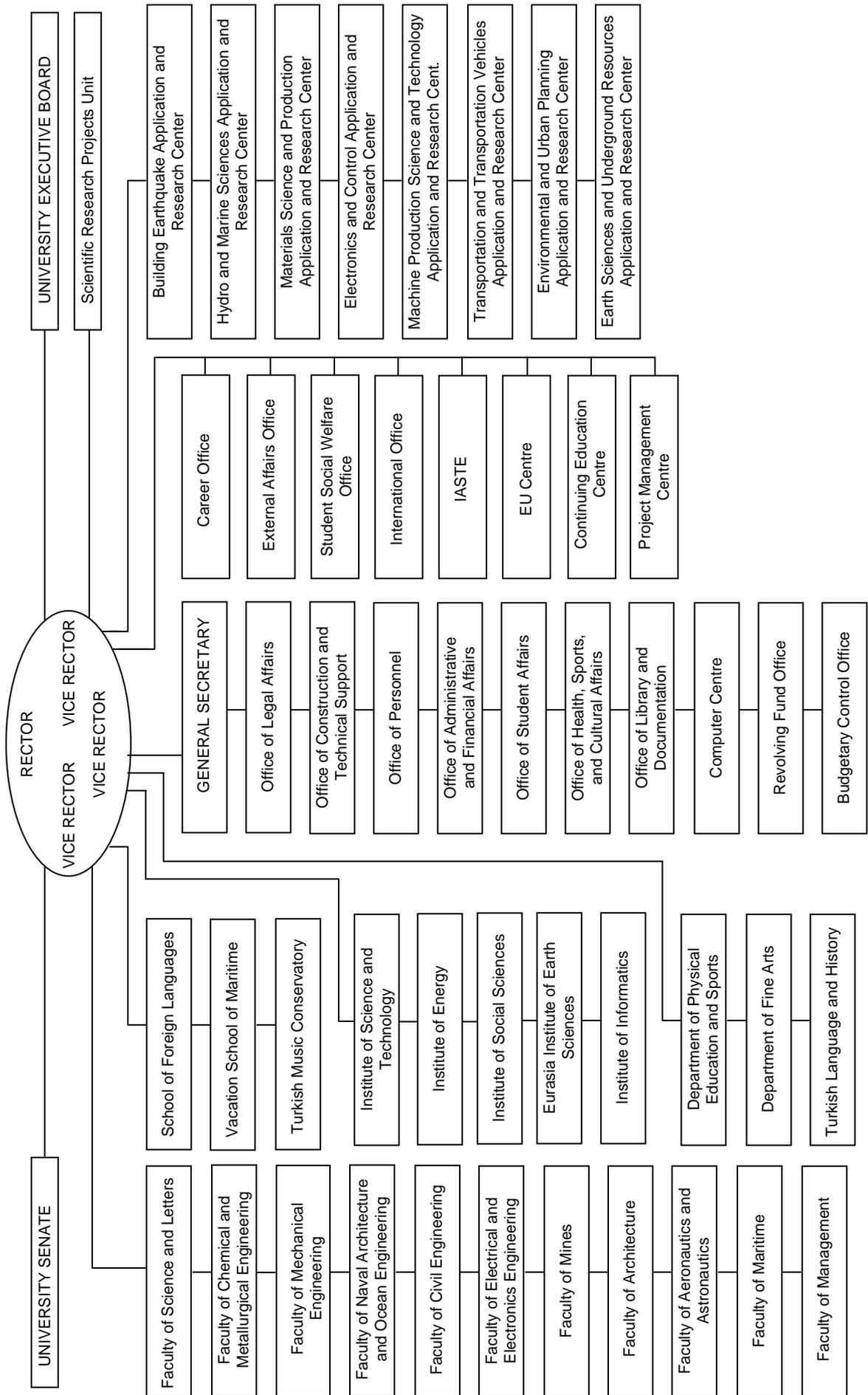
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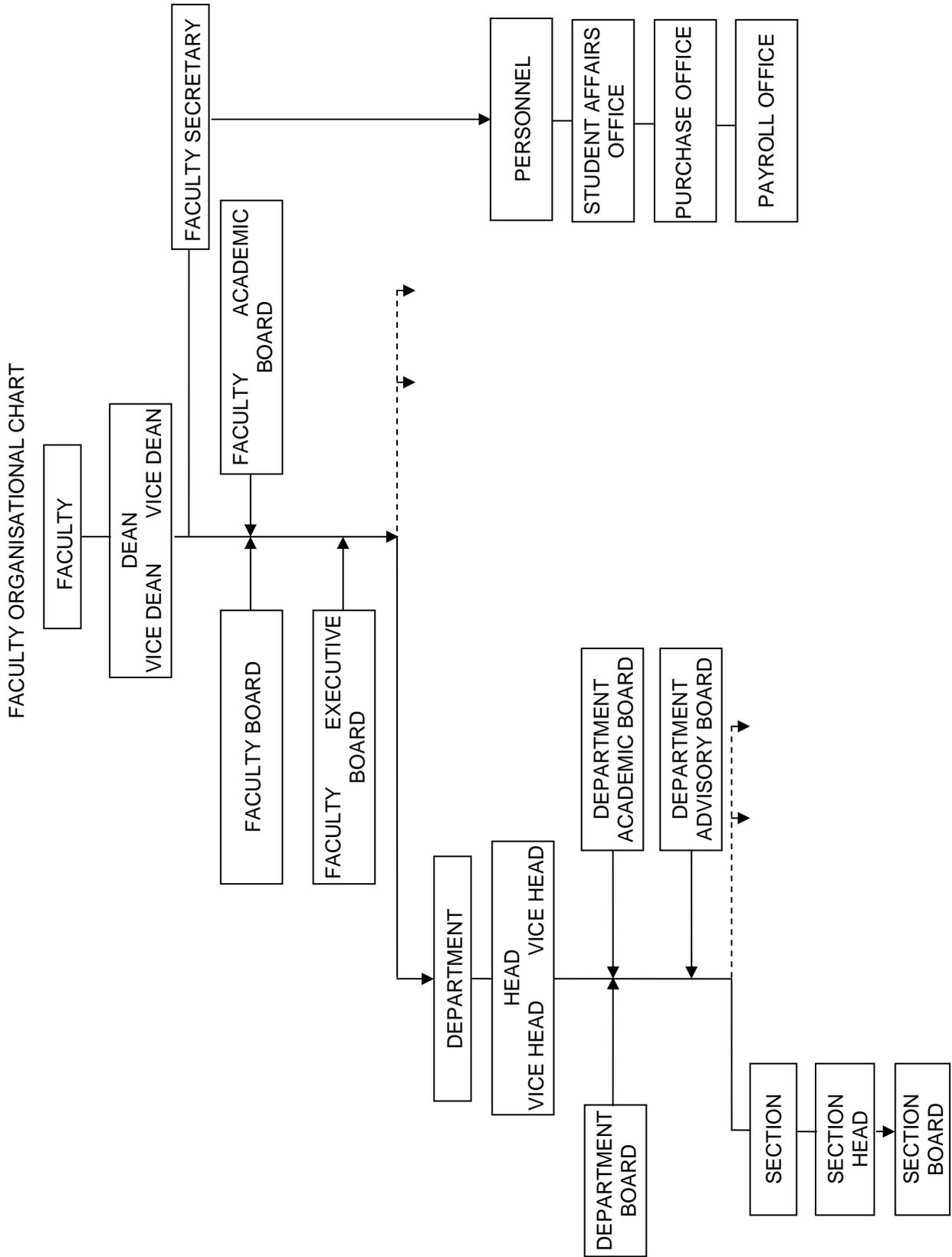
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## **APPENDIX A**

### **Organisational Charts**

ISTANBUL TECHNICAL UNIVERSITY ORGANISATIONAL CHART





## **APPENDIX B**

### **Administration, Boards, and Committees**

## Appendix B

### Administration, Boards, and Committees (as of January 2004)

|  |  |
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| <b>Rector</b>                                    | Prof. Dr. Gülsün Sağlamer  |
| <b>Vice-Rectors</b>                              | Prof. Dr. İbrahim Akduman<br>Prof. Dr. Nuran Zeren Gülersoy<br>Prof. Dr. Naciye Talınlı  |
| <b>General Secretary</b>                         | Nevzat Özkök   |
| <b>Deans of Faculties</b>                        | Prof. Dr. Ali İhsan Aldoğan (Naval Architecture & Ocean Eng.)<br>Prof. Dr. Nihat Berker (Science and Letters)<br>Prof. Dr. Mehmet Demirkol (Mechanical Engineering)<br>Prof. Dr. Muhittin Gökmen (Electrical and Electronics Eng.)<br>Prof. Dr. Hasancan Okutan (Chemical and Metallurgical Eng.)<br>Prof. Dr. Derin Orhon (Civil Engineering)<br>Prof. Dr. Osman Kamil Sağ (Maritime)<br>Prof. Dr. Yurdanur Tulunay (Aeronautics & Astronautics)<br>Prof. Dr. Füsun Ülengin (Management)<br>Prof. Dr. Mahir Vardar (Mines)<br>Prof. Dr. Ferhan Yürekli (Architecture) |
| <b>Directors of Institutes</b>                   | Prof. Dr. Nüzhet Dalfes (Institute of Informatics)<br>Prof. Dr. Mehmet Karaca (Institute of Science and Technology)<br>Prof. Dr. Ahsen Özsoy (Institute of Social Sciences)<br>Prof. Dr. Hasan Saygın (Institute of Energy)<br>Prof. Dr. Okan Tüysüz (Eurasia Institute of Earth Sciences)   |
| <b>Director of Conservatory</b>                  | Prof. Dr. Can Etili Ökten  |
| <b>Director of School of Foreign Languages</b>   | Assoc. Prof. Dr. Öner Günçavdı   |
| <b>Director of Vocational School of Maritime</b> | Dr. Mustafa Yılmaz   |
| <b>Senate</b>                                    | Rector (Chair), Vice-Rectors (3), Deans (11)<br>Directors of Institutes (5), Conservatory (1), and Schools (2),<br>Senators (11): Prof. Dr. Ahmet Bayülken, Prof. Dr. Nuh Bilgin,<br>Prof. Dr. Ali Fuat Çakır, Prof. Dr. Can Fuat Delale,<br>Prof. Dr. Murat Ereke, Prof. Dr. Ömer Gören, Prof. Dr. Sıtkı Gözlü,<br>Prof. Dr. Bülent Örencik, Prof. Dr. Mete Tapan,<br>Prof. Dr. Galip Tepehan, Prof. Dr. Nesrin Yardımcı  |
| <b>University Executive Board</b>                | Rector (Chair), Deans (11)<br>Elected members (3): Prof. Dr. Mehmet Karaca,<br>Prof. Dr. Ataç Soysal, Prof. Dr. Erdoğan Yüzer  |

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| <b>Advisors to the Rector</b>                   | <p>Prof. Dr. Sermin Onaygil (Scholarships and Housing)<br/> Prof. Dr. Ş. Birgül Tantekin-Ersolmaz (Accreditation and Quality)<br/> Prof. Dr. Mete Tapan (Real Estate)<br/> Prof. Dr. Hülya Yürekli (Architectural Design)<br/> Assoc. Prof. Dr. Atilla Dikbaş (Project Management)<br/> Assoc. Prof. Dr. Rüya Taşlı (Press and Media Relations)<br/> Assoc. Prof. Dr. Derin Ural (International Affairs)<br/> Assist. Prof. Dr. Çiğdem Göksel (Public Relations, Internal Affairs)<br/> Dr. Erdal Yıldız (Construction Management)</p> |
| <b>Rectorate Coordinators</b>                   | <p>Prof. Dr. Ayşen Önen (Research Activities)<br/> Prof. Dr. Bihrat Önöz (Prospective Students and Public Relations)<br/> Prof. Dr. Hasan Saygın (Visiting Postgraduate students)<br/> Assist. Prof. Dr. Faik İyınam (Transportation)<br/> Assoc. Prof. Dr. Özkan Sezer (Automation of Human Resources)<br/> Assist. Prof. Dr. Oktay Taş (Management of Food Services)<br/> Dr. Memduh Karakullukçu (Legal Issues)</p>   |
| <b>Senate Accreditation Committee</b>           | <p>Prof. Dr. Ekrem Ekinci (Co-Chair)<br/> Prof. Dr. Ş. Birgül Tantekin-Ersolmaz (Co-Chair)<br/> Prof. Dr. A. Hümevra Bilge, Prof. Dr. Hasan Boduroğlu,<br/> Prof. Dr. Mehmet Demirkol, Prof. Dr. Ayşe Erdem-Şenatalar,<br/> Prof. Dr. Orhan Hacıhasanoğlu, Prof. Dr. Erkin Nasuf,<br/> Prof. Dr. Yılmaz Taptık, Prof. Dr. Yurdanur Tulunay,<br/> Prof. Dr. Ömer Usta, Prof. Dr. Füsün Ülengin,<br/> Assoc. Prof. Dr. Metin Taylan</p>  |
| <b>Senate Education Committee</b>               | <p>Prof. Dr. E. Naciye Talınlı (Chair)<br/> Prof. Dr. Nur Esin Altaş, Prof. Dr. Ekrem Ekinci,<br/> Prof. Dr. Ayşe Erdem-Şenatalar, Prof. Dr. Beyhan Oğuz,<br/> Prof. Dr. Süreyya Öney, Prof. Dr. Bülent Örencik, Prof. Dr. Bedii Özdemir, Prof. Dr. Ümit Şenesen, Mehmet Yücel Türksezer</p>   |
| <b>Senate Post-Graduate Education Committee</b> | <p>Prof. Dr. E. Naciye Talınlı (Chair)<br/> Prof. Dr. Haluk Eyidoğan, Prof. Dr. Sıtkı Gözlü,<br/> Prof. Dr. Mahmut Hortaçsu, Prof. Dr. Kadir Kırkköprü,<br/> Prof. Dr. Ahmet Sağlamer, Prof. Dr. Ş. Birgül Tantekin-Ersolmaz,<br/> Prof. Dr. Mete Tapan, Assoc. Prof. Dr. Cihat Aşkın</p>  |
| <b>Heads of Administrative Offices</b>          | <p>Mutlu Dağdelen (Computer Center)<br/> Osman Demirgibi (Administrative and Financial Affairs)<br/> Hamit Dinibütün (Construction and Technical Support)<br/> İbrahim Güngör (Health, Sports, and Cultural Affairs)<br/> Pervin Erol (Legal Affairs)<br/> Ayhan Kaygusuz (Library and Documentation)<br/> Zehra Şenol (Personnel)<br/> Mehmet Yücel Türksezer (Student Affairs)</p> <p>Mustafa Akbulut (Budgetary Control) (Government Officer)<br/> Ahmet Dönmez (Revolving Fund) (Government Officer)</p>                           |
| <b>International Office</b>                     | Sevgi Ural   |
| <b>External Affairs Office</b>                  | Didem Yücel  |

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| <b>Student Social Welfare Office</b>                         | Nuran Baykal   |
| <b>Career Office</b>   | Assist. Prof. Dr. Fatma Küskü, Assist. Prof. Dr. Fatma Kuş   |
| <b>IAESTE Office</b>   | Prof. Dr. Ali Fuat Çakır   |
| <b>Scientific Research Projects Unit Executive Board</b>     | Prof. Dr. İbrahim Akduman (Chair)<br>Prof. Dr. Temel Belek, Prof. Dr. Nüzhet Dalfes,<br>Prof. Dr. Mehmet Karaca, Prof. Dr. Derin Orhon,<br>Prof. Dr. Ahsen Özsoy, Prof. Dr. Önder Pekcan,<br>Prof. Dr. Hasan Saygın, Prof. Dr. Okan Tüysüz       |
| <b>Summer School Executive Board</b>                         | Prof. Dr. Ali Güney, Assoc. Prof. Dr. Okan Sirkecioğlu,<br>Mehmet Yücel Türksezer  |
| <b>University Security Committee</b>                         | Prof. Dr. İbrahim Akduman (Chair)<br>Nevzat Özkök, Ergün Palaz, Nüvit Toysal   |
| <b>Faculty Housing Committee</b>                             | Prof. Dr. Nuran Zeren Gülersoy (Chair)<br>Prof. Dr. Mehmet Karaca, Dr. Faik İyınam   |
| <b>Information Technologies Coordination Committee</b>       | Prof. Dr. İbrahim Akduman (Chair)<br>Prof. Dr. Nüzhet Dalfes, Prof. Dr. Muhittin Gökmen,<br>Prof. Dr. Bülent Örencik, Assoc. Prof. Dr. Hasan Dağ,<br>Mutlu Dağdelen  |
| <b>ITU Journals Committee</b>                                | Prof. Dr. Ergün Toğrol, Assoc. Prof. Dr. Nebiye Musaoğlu   |
| <b>ARI Journal Committee</b>                                 | Prof. Dr. Nihat Berker, Assoc. Prof. Dr. Sondan Durukanoğlu  |
| <b>ITU Press Committee</b>                                   | Prof. Dr. Yıldız Sey (Chair)<br>Prof. Dr. Güngör Evren, Prof. Dr. Derin Orhon,<br>Prof. Dr. Ergün Toğrol   |
| <b>International Publications Support Committee</b>          | Prof. Dr. İbrahim Akduman (Chair)<br>Prof. Dr. Ali İhsan Aldoğan, Prof. Dr. Derin Orhon,<br>Prof. Dr. Yusuf Yağcı, Assoc. Prof. Emine Ubay Çokgör,<br>Assoc. Prof. Cem Güçlü, Assoc. Prof. Serdar Yaman  |
| <b>International Scientific Activities Support Committee</b> | Prof. Dr. İbrahim Akduman (Chair)<br>Prof. Dr. Süleyman Akman, Prof. Dr. Hasan Saygın,<br>Prof. Dr. Ş. Birgül Tantekin-Ersolmaz, Prof. Dr. Hülya Turgut  |
| <b>ITU-KOSGEB Incubation Center Executive Board</b>          | Prof. Dr. İbrahim Akduman (Chair)<br>Prof. Dr. Ali Göktan, Prof. Dr. Bülent Örencik,<br>Aydın Bayrambaş, Bayram Mecit, Mehmet Emin Yıldız  |
| <b>ARI Technocity Inc.</b>                                   | Dr. Memduh Karakullukçu (General Manager)<br>Nazire Peker (Marketing)  |
| <b>ARI Technocity Executive Board</b>                        | Dr. Orhan Öcalgiray, Dr. Şarık Tara, Dr. Erol Üçer,<br>Dr. Sedat Üründül, İshak Alaton, Refik Üreyen   |
| <b>ARI Technocity Selection Committee</b>                    | Prof. Dr. Gülsün Sağlamer (Chair)<br>Prof. Dr. İbrahim Akduman, Prof. Dr. Temel Belek,<br>Prof. Dr. Nuran Zeren Gülersoy, Prof. Dr. Ş. Birgül Tantekin-<br>Ersolmaz, Assoc. Prof. Dr. Atilla Dikbaş, Nevzat Özkök,<br>Nazire Peker, Refik Üreyen |

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| <b>Continuing Education Center</b>                | Assoc. Prof. Dr. Suat Küçükçiftçi (Director)  |
| <b>European Union Center</b>                      | Prof. Dr. Lerzan Özkale (Co-Director)<br>Prof. Dr. Seval Sözen (Co-Director)  |
| <b>Culture and Arts Union</b>                     | Ass. Prof. Dr. Esin Kaneti (Director)   |
| <b>Sports Union</b>                               | Prof. Dr. Emin Tacer (Director)   |
| <b>ITU Foundation Executive Board</b>             | Prof. Dr. Gülsün Sağlamer (Chair)<br>Prof. Dr. Suna Atak, Prof. Dr. Güngör Evren,<br>Prof. Dr. İrfan Saygılı, Dr. Yücel Erdem, Dr. Erol Üçer,<br>Naci Endem, Tuğrul Erkin, Güner Koçel  |
| <b>ITU Development Foundation Executive Board</b> | Prof. Dr. Gülsün Sağlamer (Chair)<br>Prof. Dr. Oğuz Müftüoğlu (General Secretary)<br>Dr. Hulusi Damgacıoğlu, Dr. Yücel Erdem, Dr. Orhan Öcalgiray<br>Dr. Erol Üçer, Kemal Erdenay, Oğuz Gürsel, Mehmet İbrahimiye,<br>Cahit İdil, Güner Koçel, Mahmut Sütçüoğlu |

## **APPENDIX C**

### **Supporting Data and Documents**

Table C.1 Number of Students Registered at ITU in 1999-2003 Period\*.

| UNIT                              | 1999       |              |             |             |              | 2000       |              |             |             |              | 2001       |              |             |             |              |
|-----------------------------------|------------|--------------|-------------|-------------|--------------|------------|--------------|-------------|-------------|--------------|------------|--------------|-------------|-------------|--------------|
|                                   | AD         | BSc          | MSc         | PhD         | Total        | AD         | BSc          | MSc         | PhD         | Total        | AD         | BSc          | MSc         | PhD         | Total        |
| <b>FACULTIES</b>                  |            |              |             |             |              |            |              |             |             |              |            |              |             |             |              |
| Maritime                          |            | 717          |             |             | 717          |            | 731          |             |             | 731          |            | 730          |             |             | 730          |
| Electrical and Electronics Eng.   |            | 2151         |             |             | 2151         |            | 1873         |             |             | 1873         |            | 2072         |             |             | 2072         |
| Science and Letters               |            | 1039         |             |             | 1039         |            | 923          |             |             | 923          |            | 928          |             |             | 928          |
| Naval Architecture and Ocean Eng. |            | 496          |             |             | 496          |            | 478          |             |             | 478          |            | 459          |             |             | 459          |
| Civil Eng.                        |            | 1909         |             |             | 1909         |            | 1729         |             |             | 1729         |            | 1692         |             |             | 1692         |
| Management                        |            | 1092         |             |             | 1092         |            | 1027         |             |             | 1027         |            | 1009         |             |             | 1009         |
| Chemical and Metallurgical Eng.   |            | 1057         |             |             | 1057         |            | 922          |             |             | 922          |            | 850          |             |             | 850          |
| Mines                             |            | 1152         |             |             | 1152         |            | 1035         |             |             | 1035         |            | 1005         |             |             | 1005         |
| Mechanical Eng.                   |            | 1496         |             |             | 1496         |            | 1361         |             |             | 1361         |            | 1291         |             |             | 1291         |
| Architecture                      |            | 1438         |             |             | 1438         |            | 1392         |             |             | 1392         |            | 1280         |             |             | 1280         |
| Aeronautics and Astronautics      |            | 618          |             |             | 618          |            | 632          |             |             | 632          |            | 618          |             |             | 618          |
| <b>INSTITUTES</b>                 |            |              |             |             |              |            |              |             |             |              |            |              |             |             |              |
| Science and Technology            |            |              | 2755        | 1217        | 3972         |            |              | 3681        | 1052        | 4733         |            |              | 4665        | 1213        | 5878         |
| Energy                            |            |              | 159         | 33          | 192          |            |              | 184         | 28          | 212          |            |              | 105         | 30          | 135          |
| Social Sciences                   |            |              | 311         | 82          | 393          |            |              | 297         | 79          | 376          |            |              | 252         | 70          | 322          |
| Eurasia Earth Sciences            |            |              |             |             |              |            |              | 12          | 4           | 16           |            |              | 33          | 9           | 42           |
| Informatics                       |            |              |             |             |              |            |              | 27          |             | 27           |            |              | 109         | 2           | 111          |
| <b>OTHERS</b>                     |            |              |             |             |              |            |              |             |             |              |            |              |             |             |              |
| Maritime Vocational School        | 287        |              |             |             |              | 303        |              |             |             | 303          | 319        |              |             |             | 319          |
| Turkish Music Conservatory        |            | 1071         |             |             |              |            | 1058         |             |             | 1058         |            | 999          |             |             | 999          |
| <b>Total</b>                      | <b>287</b> | <b>14236</b> | <b>3225</b> | <b>1332</b> | <b>19080</b> | <b>303</b> | <b>13161</b> | <b>4201</b> | <b>1163</b> | <b>18828</b> | <b>319</b> | <b>12933</b> | <b>5164</b> | <b>1324</b> | <b>19740</b> |
|                                   |            |              |             |             |              |            |              |             |             |              |            |              |             |             |              |

\* AD designates associate degree and BSc and MSc contain BA and MA.

Table C.1 Number of Students Registered at ITU in 1999-2003 Period\*(Contd.).

| UNIT                              | 2002       |              |             |             |              | 2003       |              |             |             |              |
|-----------------------------------|------------|--------------|-------------|-------------|--------------|------------|--------------|-------------|-------------|--------------|
|                                   | AD         | BSc          | MSc         | PhD         | Total        | AD         | BSc          | MSc         | PhD         | Total        |
| <b>FACULTIES</b>                  |            |              |             |             |              |            |              |             |             |              |
| Maritime                          |            | 740          |             |             | 740          |            | 779          |             |             | 779          |
| Electrical and Electronics Eng.   |            | 2016         |             |             | 2016         |            | 2038         |             |             | 2038         |
| Science and Letters               |            | 925          |             |             | 925          |            | 901          |             |             | 901          |
| Naval Architecture and Ocean Eng. |            | 472          |             |             | 472          |            | 342          |             |             | 342          |
| Civil Eng.                        |            | 1688         |             |             | 1688         |            | 1651         |             |             | 1651         |
| Management                        |            | 1056         |             |             | 1056         |            | 1041         |             |             | 1041         |
| Chemical and Metallurgical Eng.   |            | 885          |             |             | 885          |            | 851          |             |             | 851          |
| Mines                             |            | 1009         |             |             | 1009         |            | 913          |             |             | 913          |
| Mechanical Eng.                   |            | 1312         |             |             | 1312         |            | 1279         |             |             | 1279         |
| Architecture                      |            | 1280         |             |             | 1280         |            | 1354         |             |             | 1354         |
| Aeronautics and Astronautics      |            | 672          |             |             | 672          |            | 659          |             |             | 659          |
| <b>INSTITUTES</b>                 |            |              |             |             |              |            |              |             |             |              |
| Science and Technology            |            |              | 4186        | 1123        | 5309         |            |              | 4055        | 1079        | 5134         |
| Energy                            |            |              | 100         | 27          | 127          |            |              | 49          | 16          | 65           |
| Social Sciences                   |            |              | 446         | 83          | 529          |            |              | 455         | 76          | 531          |
| Eurasia Earth Sciences            |            |              | 38          | 12          | 50           |            |              | 24          | 22          | 46           |
| Informatics                       |            |              | 205         | 23          | 228          |            |              | 262         | 40          | 302          |
| <b>OTHERS</b>                     |            |              |             |             |              |            |              |             |             |              |
| Maritime Vocational School        | 328        |              |             |             |              | 275        |              |             |             | 275          |
| Turkish Music Conservatory        |            | 945          |             |             |              |            | 1058         |             |             | 761          |
| <b>Total</b>                      | <b>328</b> | <b>13000</b> | <b>4975</b> | <b>1268</b> | <b>19571</b> | <b>275</b> | <b>13161</b> | <b>4845</b> | <b>1233</b> | <b>18922</b> |
|                                   |            |              |             |             |              |            |              |             |             |              |

\* AD designates associate degree and BSc and MSc contain BA and MA.

Table C.2 Number and Distribution of Academic Staff in 1999-2003 Period\*.

| Years                             | 1999       |              |               |           |              |           |            |               |             | 2000       |              |               |           |              |           |            |               |             |
|-----------------------------------|------------|--------------|---------------|-----------|--------------|-----------|------------|---------------|-------------|------------|--------------|---------------|-----------|--------------|-----------|------------|---------------|-------------|
| Title                             | Prof.      | Assoc. Prof. | Assist. Prof. | Lect.     | Res. Assist. | Spec.     | Inst.      | Foreign Lect. | Total       | Prof.      | Assoc. Prof. | Assist. Prof. | Lect.     | Res. Assist. | Spec.     | Inst.      | Foreign Lect. | Total       |
| <b>Rectorate</b>                  |            |              |               |           |              | 56        | 147        |               | 203         |            |              |               |           |              | 51        | 144        |               | 195         |
| <b>Faculties</b>                  |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Maritime                          | 2          | 1            | 2             | 22        | 14           | 4         |            |               | 45          | 3          | 2            | 1             | 21        | 14           | 5         |            |               | 46          |
| Electric and Electronics Eng.     | 31         | 22           | 27            | 6         | 106          | 3         |            |               | 195         | 26         | 25           | 26            | 4         | 94           | 2         |            |               | 177         |
| Science and Letters               | 45         | 27           | 39            | 8         | 88           | 1         |            |               | 208         | 49         | 24           | 40            | 5         | 100          |           |            |               | 218         |
| Naval Architecture and Ocean Eng. | 9          | 9            | 12            | 3         | 24           | 1         |            |               | 58          | 10         | 11           | 10            | 3         | 23           | 1         |            |               | 58          |
| Civil Eng.                        | 72         | 34           | 33            | 4         | 97           | 1         |            |               | 241         | 69         | 33           | 34            | 4         | 105          | 1         |            |               | 246         |
| Management                        | 18         | 10           | 21            | 2         | 42           | 3         |            |               | 96          | 18         | 8            | 21            | 2         | 38           | 3         |            |               | 90          |
| Chemical and Metallurgical Eng.   | 37         | 18           | 7             | 1         | 61           | 1         |            |               | 125         | 37         | 18           | 7             | 1         | 71           | 1         |            |               | 135         |
| Mines                             | 38         | 14           | 28            | 2         | 47           | 2         |            |               | 131         | 40         | 10           | 28            | 2         | 45           | 2         |            |               | 127         |
| Mechanical Eng.                   | 47         | 19           | 26            | 6         | 78           | 3         |            |               | 179         | 48         | 15           | 32            | 4         | 75           | 3         |            |               | 177         |
| Architecture                      | 51         | 17           | 31            | 7         | 76           | 4         |            |               | 186         | 51         | 18           | 32            | 7         | 83           | 4         |            |               | 195         |
| Aeronautics and Astronautics      | 16         | 5            | 19            |           | 24           | 1         |            |               | 65          | 16         | 7            | 15            | 1         | 30           | 1         |            |               | 70          |
| <b>Institiutes</b>                |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Science and Technology            |            |              |               |           |              |           |            |               |             |            |              |               |           | 1            |           |            |               | 1           |
| Energy                            | 6          | 5            | 4             |           | 10           |           |            |               | 25          | 5          | 5            | 6             |           | 8            |           |            |               | 24          |
| Social Sciences                   |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Eurasia Earth Sciences            |            |              |               |           |              |           |            |               |             |            |              |               |           | 3            |           |            |               | 3           |
| Informatics                       |            |              |               |           | 1            |           |            |               | 1           |            |              |               |           | 9            |           |            |               | 9           |
| <b>Others</b>                     |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Maritime Vocational School        |            |              |               |           |              | 3         |            |               | 3           |            |              |               |           |              | 3         |            |               | 3           |
| Turkish Music Conservatory        |            |              | 1             | 18        | 8            | 1         |            |               | 154         | 3          | 1            | 2             | 19        | 8            | 2         |            |               | 162         |
| School of Foreign Languages       |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| <b>Total</b>                      | <b>372</b> | <b>181</b>   | <b>250</b>    | <b>79</b> | <b>676</b>   | <b>84</b> | <b>147</b> | <b>40</b>     | <b>1829</b> | <b>375</b> | <b>177</b>   | <b>254</b>    | <b>73</b> | <b>707</b>   | <b>79</b> | <b>144</b> | <b>43</b>     | <b>1852</b> |

\* Abbreviations: Prof.: Professor, Assoc. Prof.: Associate Professor, Assist. Prof. Assistant Professor, Res. Assist.: Research Assistant, Lect.: Lecturer, Spec.: Specialist, Inst.: Instructor.

Table C.2 Number and Distribution of Academic Staff in 1999-2003 Period\* (Contd.).

| Years                             | 2001       |              |               |           |              |           |            |               |             | 2002       |              |               |           |              |           |            |               |             |
|-----------------------------------|------------|--------------|---------------|-----------|--------------|-----------|------------|---------------|-------------|------------|--------------|---------------|-----------|--------------|-----------|------------|---------------|-------------|
| Title                             | Prof.      | Assoc. Prof. | Assist. Prof. | Lect.     | Res. Assist. | Spec.     | Inst.      | Foreign Lect. | Total       | Prof.      | Assoc. Prof. | Assist. Prof. | Lect.     | Res. Assist. | Spec.     | Inst.      | Foreign Lect. | Total       |
| <b>Rectorate</b>                  |            |              |               |           |              | 47        | 109        |               | 156         |            |              |               |           |              | 48        | 123        |               | 171         |
| <b>Faculties</b>                  |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Maritime                          | 3          | 2            | 4             | 20        | 12           | 3         |            |               | 44          | 3          | 2            | 4             | 19        | 15           | 3         |            |               | 46          |
| Electric and Electronics Eng.     | 26         | 24           | 29            | 3         | 82           | 2         |            |               | 166         | 25         | 28           | 29            | 2         | 80           | 1         |            |               | 165         |
| Science and Letters               | 53         | 21           | 39            | 5         | 101          |           |            |               | 219         | 52         | 26           | 38            | 5         | 92           |           |            |               | 213         |
| Naval Architecture and Ocean Eng. | 10         | 11           | 10            | 2         | 24           | 1         |            |               | 58          | 10         | 13           | 11            | 1         | 20           | 1         |            |               | 56          |
| Civil Eng.                        | 73         | 29           | 40            | 4         | 102          | 4         |            |               | 252         | 74         | 32           | 41            | 6         | 101          | 1         |            |               | 255         |
| Management                        | 17         | 10           | 22            | 2         | 41           | 3         |            |               | 95          | 17         | 11           | 22            | 2         | 39           | 2         |            |               | 93          |
| Chemical and Metallurgical Eng.   | 36         | 18           | 8             | 1         | 67           |           |            |               | 130         | 39         | 19           | 5             | 2         | 63           |           |            |               | 128         |
| Mines                             | 40         | 8            | 28            | 3         | 45           | 2         |            |               | 126         | 36         | 11           | 24            | 2         | 43           | 2         |            |               | 118         |
| Mechanical Eng.                   | 48         | 16           | 34            | 4         | 74           | 3         |            |               | 179         | 49         | 17           | 31            | 4         | 72           | 4         |            |               | 177         |
| Architecture                      | 51         | 16           | 31            | 7         | 86           | 4         |            |               | 195         | 52         | 15           | 34            | 7         | 89           | 4         |            |               | 201         |
| Aeronautics and Astronautics      | 16         | 7            | 15            | 1         | 36           | 1         |            |               | 76          | 15         | 7            | 15            | 1         | 29           | 1         |            |               | 68          |
| <b>Institiutes</b>                |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Science and Technology            |            |              |               |           | 1            |           |            |               | 1           |            |              |               |           | 24           |           |            |               | 24          |
| Energy                            | 5          | 5            | 6             |           | 10           |           |            |               | 26          | 7          | 3            | 6             |           | 9            |           |            |               | 25          |
| Social Sciences                   |            |              |               |           | 1            |           |            |               | 1           |            |              |               |           | 7            |           |            |               | 7           |
| Eurasia Earth Sciences            |            |              |               |           | 4            |           |            |               | 4           | 1          |              |               |           | 6            |           |            |               | 7           |
| Informatics                       |            |              |               | 1         | 13           |           |            |               | 14          |            |              |               |           | 58           |           | 1          |               | 59          |
| <b>Others</b>                     |            |              |               |           |              |           |            |               |             |            |              |               |           |              |           |            |               |             |
| Maritime Vocational School        |            |              |               |           | 2            | 3         |            |               | 5           |            |              |               |           | 2            | 3         |            |               | 5           |
| Turkish Music Conservatory        | 1          | 2            | 2             | 18        | 8            | 1         |            |               | 81          | 3          | 2            | 3             | 18        | 8            | 1         |            |               | 68          |
| School of Foreign Languages       |            |              |               |           |              |           |            |               |             |            |              |               |           |              | 1         | 24         |               | 25          |
| <b>Total</b>                      | <b>379</b> | <b>169</b>   | <b>268</b>    | <b>71</b> | <b>709</b>   | <b>74</b> | <b>109</b> | <b>49</b>     | <b>1854</b> | <b>383</b> | <b>186</b>   | <b>263</b>    | <b>69</b> | <b>757</b>   | <b>72</b> | <b>148</b> | <b>33</b>     | <b>1911</b> |

\* Abbreviations: Prof.: Professor, Assoc. Prof.: Associate Professor, Assist. Prof. Assistant Professor, Res. Assist.: Research Assistant, Lect.: Lecturer, Spec.: Specialist, Inst.: Instructor.

Table C.2 Number and Distribution of Academic Staff in 1999-2003 Period\* (Contd.).

| Years                             | 2003       |              |               |           |              |           |            |               |             |
|-----------------------------------|------------|--------------|---------------|-----------|--------------|-----------|------------|---------------|-------------|
|                                   | Prof.      | Assoc. Prof. | Assist. Prof. | Lect.     | Res. Assist. | Spec.     | Inst.      | Foreign Lect. | Total       |
| <b>Rectorate</b>                  |            |              |               |           | 11           | 47        | 109        |               | 156         |
| <b>Faculties</b>                  |            |              |               |           |              |           |            |               |             |
| Maritime                          | 4          | 1            | 6             | 18        | 12           | 3         |            |               | 44          |
| Electric and Electronics Eng.     | 35         | 22           | 30            | 2         | 76           | 1         |            |               | 166         |
| Science and Letters               | 52         | 26           | 51            | 4         | 113          |           |            |               | 246         |
| Naval Architecture and Ocean Eng. | 11         | 14           | 10            | 2         | 16           | 1         |            |               | 54          |
| Civil Eng.                        | 73         | 33           | 42            | 7         | 101          | 1         |            |               | 257         |
| Management                        | 16         | 13           | 18            | 4         | 44           | 1         |            |               | 96          |
| Chemical and Metallurgical Eng.   | 41         | 15           | 8             | 2         | 59           |           |            |               | 125         |
| Mines                             | 34         | 14           | 20            | 2         | 46           |           |            |               | 116         |
| Mechanical Eng.                   | 46         | 17           | 36            | 5         | 51           | 3         |            |               | 158         |
| Architecture                      | 46         | 20           | 40            | 8         | 89           | 4         |            |               | 207         |
| Aeronautics and Astronautics      | 14         | 7            | 12            | 2         | 20           | 1         |            |               | 56          |
| <b>Institutes</b>                 |            |              |               |           |              |           |            |               |             |
| Science and Technology            |            |              |               |           | 42           |           |            |               | 42          |
| Energy                            | 7          | 2            | 7             |           | 10           |           |            |               | 26          |
| Social Sciences                   |            |              |               |           | 13           |           |            |               | 13          |
| Eurasia Earth Sciences            | 1          |              | 2             |           | 8            |           |            |               | 11          |
| Informatics                       | 1          |              |               |           | 68           |           | 1          |               | 70          |
| <b>Others</b>                     |            |              |               |           |              |           |            |               |             |
| Maritime Vocational School        |            |              |               |           | 2            | 3         |            |               | 5           |
| Turkish Music Conservatory        | 3          | 3            | 3             | 17        | 9            | 1         |            |               | 76          |
| School of Foreign Languages       |            |              |               |           |              | 1         | 42         |               | 43          |
| <b>Total</b>                      | <b>384</b> | <b>187</b>   | <b>285</b>    | <b>73</b> | <b>790</b>   | <b>67</b> | <b>152</b> | <b>24</b>     | <b>1967</b> |

\* Abbreviations: Prof.: Professor, Assoc. Prof.: Associate Professor, Assist. Prof.: Assistant Professor, Res. Assist.: Research Assistant, Lect.: Lecturer, Spec.: Specialist, Inst.: Instructor.

Table C.3 Distribution of the State Budget to Each Financial Managing Unit in 1996-2003 Period in US Dollars.

| UNITS                             | 1996              | 1997              | 1998              | 1999              | 2000              | 2001              | 2002              | 2003              |
|-----------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>Rectorate</b>                  | 15,176,667        | 19,634,304        | 20,016,746        | 20,061,577        | 21,874,442        | 15,594,480        | 27,228,631        | 34,161,911        |
| <b>Faculties</b>                  |                   |                   |                   |                   |                   |                   |                   |                   |
| Chemical and Metallurgical Eng.   | 1,129,235         | 1,092,876         | 1,539,896         | 1,619,707         | 1,498,833         | 1,011,935         | 1,491,924         | 2,100,896         |
| Naval Architecture and Ocean Eng. | 730,989           | 717,030           | 975,893           | 737,445           | 624,090           | 426,319           | 637,851           | 905,482           |
| Civil Eng.                        | 1,988,265         | 1,899,602         | 2,743,714         | 2,989,860         | 3,047,801         | 1,871,276         | 2,705,195         | 4,029,089         |
| Electrical and Electronics        | 1,522,745         | 1,525,865         | 2,117,424         | 2,093,141         | 1,851,618         | 1,268,986         | 1,635,630         | 2,357,476         |
| Mines                             | 1,156,100         | 1,178,814         | 1,861,433         | 1,753,263         | 1,550,525         | 1,049,451         | 1,406,272         | 1,998,905         |
| Mechanical Eng.                   | 1,475,570         | 1,457,369         | 2,219,194         | 2,232,327         | 1,951,966         | 1,331,920         | 1,938,168         | 2,769,581         |
| Architecture                      | 1,437,954         | 1,445,820         | 1,882,047         | 2,086,198         | 1,997,026         | 1,374,176         | 1,974,857         | 2,922,366         |
| Aeronautics and Astronautics      | 669,865           | 582,023           | 1,055,945         | 928,522           | 795,737           | 529,057           | 793,698           | 1,147,492         |
| Maritime                          | 1,417,891         | 1,387,435         | 2,122,847         | 1,676,130         | 1,159,136         | 762,977           | 1,021,995         | 1,351,741         |
| Management                        | 774,251           | 2,492,281         | 1,204,837         | 1,141,835         | 1,025,178         | 703,312           | 1,050,192         | 1,505,929         |
| Sciences and Letters              | 1,721,529         | 1,619,509         | 2,299,177         | 2,473,267         | 2,486,226         | 1,486,722         | 2,121,748         | 3,078,226         |
| <b>Institutes</b>                 |                   |                   |                   |                   |                   |                   |                   |                   |
| Science and Technology            | 123,871           | 97,448            | 153,973           | 176,142           | 438,761           | 319,085           | 678,123           | 1,183,249         |
| Energy                            | 331,414           | 307,547           | 373,239           | 498,032           | 382,782           | 272,416           | 374,789           | 513,895           |
| Social Sciences                   | 3,075             | 1,971             | 2,681             | 3,650             | 4,496             | 2,861             | 3,251             | 10,760            |
| Eurasia Earth Sciences            | 0                 | 0                 | 7,276             | 6,060             | 3,693             | 2,207             | 46,442            | 73,920            |
| Informatics                       | 0                 | 0                 | 0                 | 0                 | 4,175             | 28,607            | 72,715            | 459,759           |
| <b>Other</b>                      |                   |                   |                   |                   |                   |                   |                   |                   |
| Maritime Vocational School        | 230,706           | 182,000           | 86,175            | 26,745            | 183,065           | 43,482            | 57,323            | 72,783            |
| Turkish Music Conservatory        | 1,654,218         | 1,306,641         | 1,864,248         | 2,239,604         | 1,795,526         | 1,343,608         | 1,823,920         | 2,351,728         |
| School of Foreign Languages       | 0                 | 0                 | 0                 | 0                 | 0                 | 644,301           | 1,168,885         | 1,177,501         |
| Service Departments               | 1,029,153         | 684,957           | 1,334,550         | 1,833,950         | 2,035,550         | 268,002           | 152,198           | 156,996           |
| Centers                           | 4,551             | 1,971             | 1,915             | 3,722             | 4,496             | 2,861             | 3,052             | 3,810             |
| Foreign Credit for Projects       | 0                 | 0                 | 0                 | 9,013,000         | 11                | 1,167,000         | 4,644             | 1,511,000         |
| Supplementary Budget              | 10,298,447        | 16,769,285        | 5,719,684         | 4,044,288         | 5,471,053         | 7,619,704         | 6,298,070         | 3,073,227         |
| <b>TOTAL</b>                      | <b>42,876,497</b> | <b>54,384,748</b> | <b>49,582,894</b> | <b>57,638,465</b> | <b>50,186,187</b> | <b>39,124,743</b> | <b>54,689,576</b> | <b>68,917,724</b> |

Table C.4 Number of Bachelors Degrees Conferred by Faculty in 1997-2003 Period.

| Year         | Electrical  | Letters & Sciences | Naval Architecture | Civil       | Management  | Chem. & Metal. | Mines      | Mechanical  | Architecture | Aeronaut. & Astronaut. | Maritime   | TOTAL        |
|--------------|-------------|--------------------|--------------------|-------------|-------------|----------------|------------|-------------|--------------|------------------------|------------|--------------|
| 1997-1998    | 529         | 270                | 112                | 532         | 273         | 315            | 249        | 395         | 298          | 172                    | 149        | <b>3294</b>  |
| 1998-1999    | 482         | 218                | 87                 | 453         | 276         | 224            | 213        | 341         | 268          | 112                    | 135        | <b>2809</b>  |
| 1999-2000    | 249         | 134                | 58                 | 296         | 202         | 183            | 123        | 252         | 285          | 70                     | 139        | <b>1991</b>  |
| 2000-2001    | 365         | 134                | 54                 | 300         | 200         | 143            | 161        | 247         | 220          | 86                     | 118        | <b>2028</b>  |
| 2001-2002    | 311         | 108                | 53                 | 266         | 202         | 146            | 118        | 230         | 194          | 74                     | 88         | <b>1790</b>  |
| 2002-2003    | 334         | 137                | 75                 | 295         | 188         | 176            | 130        | 244         | 241          | 102                    | 114        | <b>2036</b>  |
| <b>TOTAL</b> | <b>1936</b> | <b>864</b>         | <b>364</b>         | <b>1847</b> | <b>1153</b> | <b>1011</b>    | <b>864</b> | <b>1465</b> | <b>1265</b>  | <b>514</b>             | <b>629</b> | <b>13948</b> |

Table C.5 Number of Internal and External Transfer and Double Major Students in 1992-2003 Period.

| Academic Year | Internal Transfer | External Transfer | Double Major |
|---------------|-------------------|-------------------|--------------|
| 1992-1993     | 46                | 72                | --           |
| 1993-1994     | 58                | 87                | --           |
| 1994-1995     | 40                | 72                | 11           |
| 1995-1996     | 48                | 75                | 21           |
| 1996-1997     | 49                | 93                | 19           |
| 1997-1998     | 52                | 97                | 34           |
| 1998-1999     | 54                | 27                | 20           |
| 1999-2000     | 82                | 20                | 32           |
| 2000-2001     | 116               | 31                | 47           |
| 2001-2002     | 118               | 34                | 64           |
| 2002-2003     | 115               | 36                | 90           |

Table C.6 Number of Masters Degrees Conferred by Faculty in 1998-2002 Period.

| <b>Institute</b>       | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>1998-2002</b> |
|------------------------|-------------|-------------|-------------|-------------|-------------|------------------|
| Science and Technology | 527         | 433         | 418         | 480         | 508         | 2366             |
| Social Sciences        | 50          | 31          | 27          | 82          | 54          | 244              |
| Energy                 | 6           | 9           | 6           | 10          | 7           | 38               |
| Informatics            |             |             | 11          | 25          | 22          | 58               |
| Eurasia Earth Sciences |             |             |             |             | 17          | 17               |
| <b>TOTAL</b>           | <b>583</b>  | <b>473</b>  | <b>462</b>  | <b>597</b>  | <b>608</b>  | <b>2723</b>      |

Table C.7 Number of Doctorate Degrees Conferred by Faculty in 1998-2002 Period.

| <b>Institute</b>       | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>1998-2002</b> |
|------------------------|-------------|-------------|-------------|-------------|-------------|------------------|
| Science and Technology | 95          | 108         | 107         | 94          | 82          | 486              |
| Social Sciences        | 3           | 4           | 5           | 7           | 6           | 25               |
| Energy                 | 4           | 3           | 4           | 4           | 2           | 17               |
| Arts                   | 5           | 4           | 4           | 1           | 1           | 15               |
| <b>TOTAL</b>           | <b>107</b>  | <b>119</b>  | <b>120</b>  | <b>106</b>  | <b>91</b>   | <b>543</b>       |

Table C.8 Number of Students Enrolled in the Advanced Technologies in Engineering Program in the 2002-2004 Period.

| Programs          | 2002-2003   |     |          |     | 2003-2004   |     |          |     |
|-------------------|-------------|-----|----------|-----|-------------|-----|----------|-----|
|                   | Application |     | Accepted |     | Application |     | Accepted |     |
|                   | MSc         | PhD | MSc      | PhD | MSc         | PhD | MSc      | PhD |
| Computer Eng.     | 80          | 14  | 10       | 1   | 96          | 20  | 15       | 1   |
| Comp. Sci. & Eng. | 57          | 20  | 13       | 9   | 66          | 35  | 14       | 9   |
| Mat. Sci. & Eng.  | 32          | 9   | 13       | 4   | 40          | 10  | 10       | 10  |
| Mol. Bio. & Gen.  | 36          | 5   | 13       | 2   | 52          | 8   | 20       | 4   |
| Aerospace Eng.    | 25          | 4   | 9        | 0   | 16          | 3   | 8        | 3   |
| Satellite Com.    | 39          | 3   | 10       | 0   | 58          | 13  | 9        | 2   |
| TOTAL             | 269         | 55  | 68       | 16  | 328         | 102 | 76       | 29  |

Table C.9 Number of Students and Staff in the School of Foreign Languages in the 2002-2004 Period.

| Academic Year | Number of Students | Number of Teaching Staff |         |       |
|---------------|--------------------|--------------------------|---------|-------|
|               |                    | Turkish                  | Foreign | Total |
| 1997-1998     | 1750               | 134                      | 40      | 174   |
| 1998-1999     | 2008               | 129                      | 38      | 167   |
| 1999-2000     | 2099               | 123                      | 39      | 162   |
| 2000-2001     | 1994               | 120                      | 38      | 158   |
| 2001-2002     | 1702               | 117                      | 30      | 147   |
| 2002-2003     | 1622               | 113                      | 28      | 141   |

Table C.10 Area of the Built Environment in ITU Campuses

| <b>Campus</b> | <b>Built Environment (square meters)</b> |
|---------------|--|
| Ayazağa       | 303,220                                  |
| Taşkışla      | 41,744                                   |
| Gümüşsuyu     | 57398                                    |
| Maçka         | 67,500                                   |
| Tuzla         | 16,722                                   |
| Florya        | 2,486                                    |
| <b>TOTAL</b>  | <b>489,070</b>                           |

Table C.11 Land Owned by ITU

| <b>Campus</b> | <b>Land Area (square meters)</b> |
|---------------|----------------------------------|
| Ayazağa       | 1,641,692                        |
| Taşkışla      | 56,566                           |
| Gümüşsuyu     | 58,365                           |
| Maçka         | 106,000                          |
| Tuzla         | 52,252                           |
| Florya        | 261,845                          |
| <b>TOTAL</b>  | <b>2,176,720</b>                 |

Table C.12 ITU Academic Staff Who are Members of Turkish, European and American Academies of Sciences

| <b>Members of Turkish Academy of Sciences from ITU</b>  |                           |
|---|---------------------------|
| <b>Name</b>   | <b>Research Area</b>      |
| Prof. Dr. Bahattin Baysal                               | Chemistry                 |
| Prof. Dr. Özer Bekaroğlu                                | Chemistry                 |
| Prof. Dr. Nihat Berker                                  | Physics                   |
| Prof. Dr. Alinur Büyükaksoy                             | Applied Mathematics       |
| Prof. Dr. Can Fuat Delale                               | Applied Mathematics       |
| Prof. Dr. Metin Demiralp                                | Applied Mathematics       |
| Prof. Dr. Hilmi Demiray                                 | Mechanics                 |
| Prof. Dr. M. Cengiz Dökmeci                             | Mechanics                 |
| Prof. Dr. Ayşe Erzan                                    | Physics                   |
| Prof. Dr. Naci Görür                                    | Earth Sciences            |
| Prof. Dr. Mahmut Hortaçsu                               | Physics                   |
| Prof. Dr. Mithat İdemen                                 | Mathematics               |
| Prof. Dr. Aral Okay                                     | Earth Sciences            |
| Prof. Dr. Derin Orhon                                   | Environment               |
| Prof. Dr. Onder Pekcan                                  | Physics                   |
| Prof. Dr. A. M. Celal Şengör                            | Earth Sciences            |
| Prof. Dr. Erdoğan Şuhubi                                | Mechanics and Mathematics |
| Prof. Dr. Yusuf Yağcı                                   | Chemistry                 |
| Prof. Dr. Yucel Yılmaz                                  | Earth Sciences            |
| <b>Members of European Academy of Sciences from ITU</b> |                           |
| Prof. Dr. A. M. Celal Şengör                            | Earth Sciences            |
| Prof. Dr. Erdoğan Şuhubi                                | Mechanics and Mathematics |
| <b>Members of American Academy of Sciences from ITU</b> |                           |
| Prof. Dr. A. M. Celal Şengör                            | Earth Sciences            |

Table C.13 List of Student Clubs

| <b>Culture and Arts Union Clubs</b>               |   |
|---|---|
| ASME International Club                           | Management Engineering Club                 |
| Enlightenment 1923 Club                           | Geodesy and Photogrammetry Club             |
| Computer Aided Design Club                        | Geophysical Engineering Club                |
| Computer Club                                     | Geological Engineering Club                 |
| Informatics Club                                  | Women's Workshop Club                       |
| Fuzzy Logic and Design Club                       | City and Suburban Club                      |
| Jazz Club   | Chemical Engineering Club                   |
| Environmental Engineering Club                    | Chemistry Club                              |
| Comic Book and Animation Club                     | Cultural Activity Club                      |
| Maritime Faculty Journalism Club                  | Maçka Dance Club                            |
| Language and History Club                         | Mining Engineering Club                     |
| Electrical Engineering Club                       | Mathematics and Computer Club               |
| Electronics and Telecommunication Eng. Club       | Metallurgical and Material Engineering Club |
| Industrial Engineering Club                       | Molecular Biology and Genetics Club         |
| Industrial Product Design Club                    | Student Union Club                          |
| Industrial Project Development & Cooperation Club | Polymer Club                                |
| Photography Club                                  | Project Management Club                     |
| FRP Club  | Radio Club                                  |
| Naval Architecture Club                           | Painting Club                               |
| Young Comedy Writers Club                         | Robotics Club                               |
| Food Engineering Club                             | Rock Club                                   |
| Entrepreneur Engineers Club                       | Cinema Club                                 |
| Guitar Club                                       | Social Research Club                        |
| Go Club   | Poem Club                                   |
| Gümüşsuyu Organization Club                       | Textile Engineering Club                    |
| IAESTE Student Club                               | Theatre Club                                |
| IEEE Student Club                                 | Aeronautical Engineering Club               |
| Communication Club                                | International Mechanical Engineering Club   |
| Civil Engineering Club                            | Investment Club                             |
| <b>Sports Union Clubs</b>                         |   |
| Ski Club  | Aikido Club                                 |
| Dance and Gymnastics Club                         | Tennis Club                                 |
| Scuba Diving Club                                 | Aeronautics Club                            |
| Mountaineering Club                               | Badminton Club                              |
| Volleyball Club                                   | Football Club                               |
| American Football Club                            | Basketball Club                             |
| Taekwando Club                                    |   |

Table C.14 Teaching Support to Other Universities in 1999-2002 Period.

| Academic Year | University                 | No. of Staff | Spring (hours/week) | Fall (hours/week) |
|---------------|----------------------------|--------------|---------------------|-------------------|
| 1999-2000     | <i>Bilgi University</i>    | 1            | 1                   | 0                 |
|               | <i>State Universities</i>  | 58           | 155                 | 233               |
|               | <i>Isik University</i>     | 9            | 32                  | 16                |
|               | <i>Yeditepe University</i> | 14           | 48                  | 22                |
|               | <b>Total</b>               | <b>82</b>    | <b>236</b>          | <b>271</b>        |
| 2000-2001     | <i>Bilgi University</i>    | 6            | 26                  | 21                |
|               | <i>State Universities</i>  | 48           | 156                 | 160               |
|               | <i>Isik University</i>     | 21           | 70                  | 42                |
|               | <i>Yeditepe University</i> | 17           | 53                  | 43                |
|               | <b>Total</b>               | <b>92</b>    | <b>305</b>          | <b>266</b>        |
| 2001-2002     | <i>Bilgi University</i>    | 12           | 36                  | 42                |
|               | <i>State Universities</i>  | 47           | 215                 | 220               |
|               | <i>Isik University</i>     | 28           | 36                  | 42                |
|               | <i>Yeditepe University</i> | 24           | 100                 | 92                |
|               | <b>Total</b>               | <b>111</b>   | <b>387</b>          | <b>396</b>        |

Table C.15 ITU-KOSGEB Incubation Centre Statistics

| Number of Projects Applied                         | Number of Projects Accepted | Number of Projects Completed | Number of Projects Terminated due to Economical Constraints | Number of Continuing Projects | Number of Projects of Advanced Ceramic and Composites Center |
|--|-----------------------------|------------------------------|---|-------------------------------|--|
| 487  | 186                         | 72                           | 11  | 92                            | 11   |
| TOTAL FINANCIAL SUPPORT: 4200000 USD               |                             |                              |   |                               |  |
| Number of Consultants from ITU Academic Staff: 115 |                             |                              |   |                               |  |
| Total Budget for Consultants from ITU: 553000 USD  |                             |                              |   |                               |  |

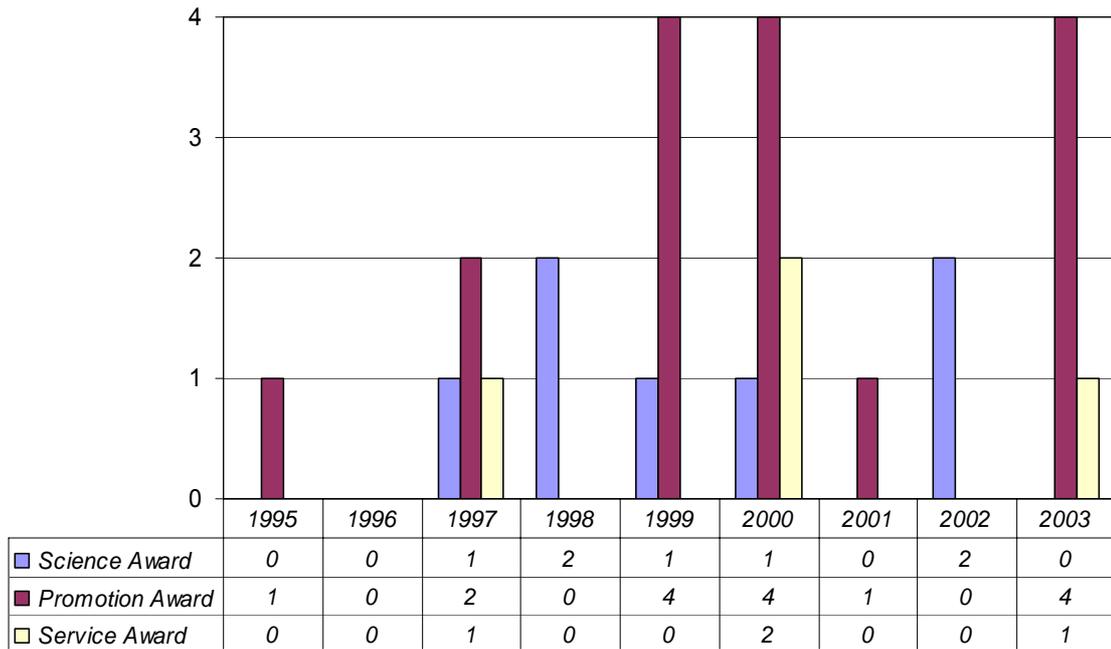


Figure C.1 TÜBİTAK Awards Presented to ITU Staff in 1995-2003 Period.

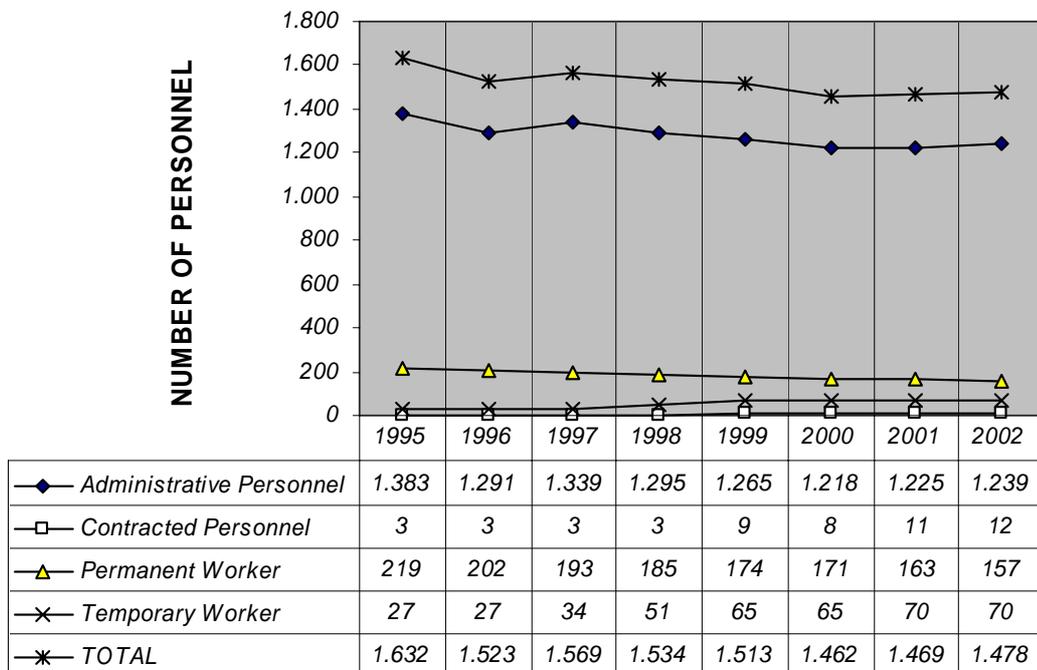


Figure C.2 Number of Administrative Staff in 1995-2002 Period.

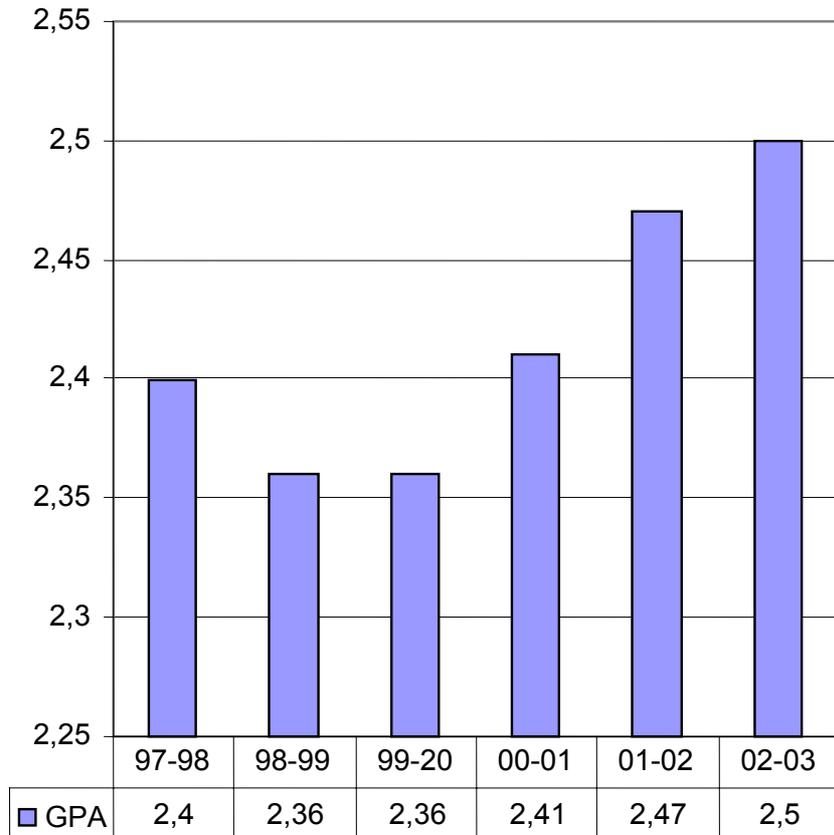


Figure C.3 Distribution of Mean Grade Point Average of All Students in 1997-2003 Period.

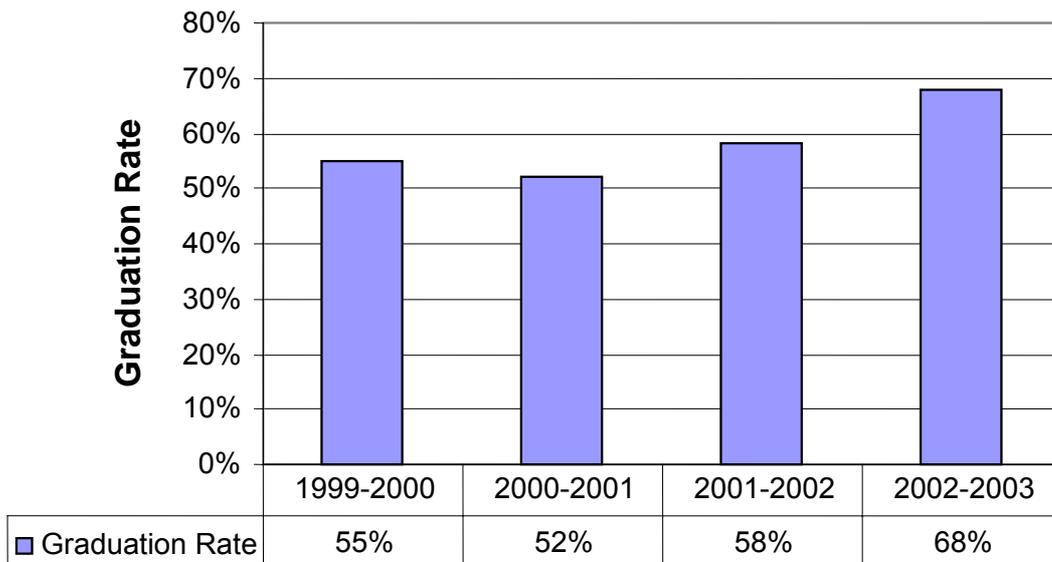


Figure C.4 Graduation Rate After Eight Semesters in 1999-2003 Period.

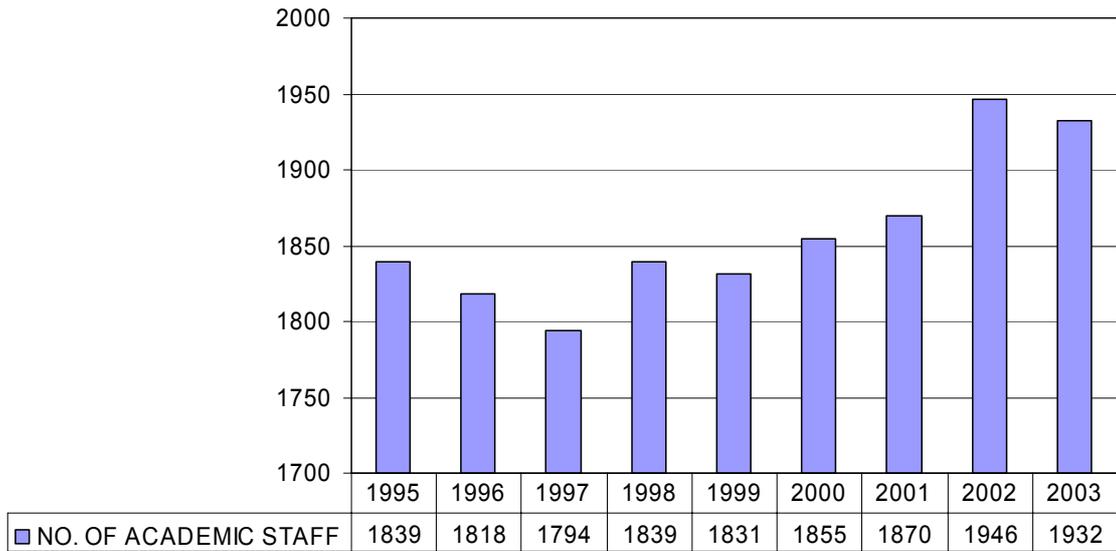


Figure C.5 Total Number of Academic Staff in 1999-2003 Period.

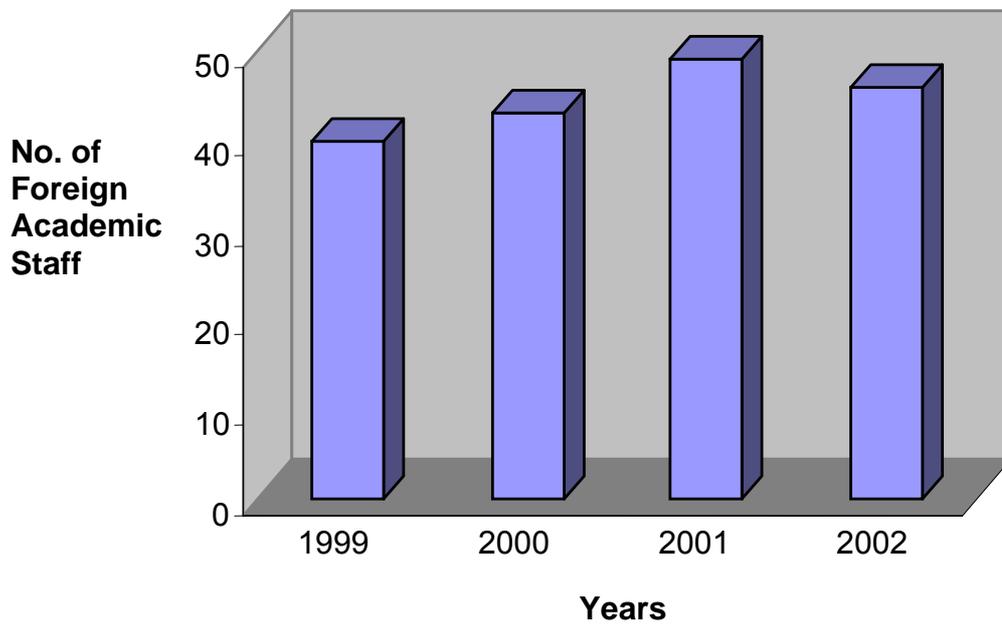


Figure C.6 Number of Foreign Academic Staff in 1999-2002 Period.

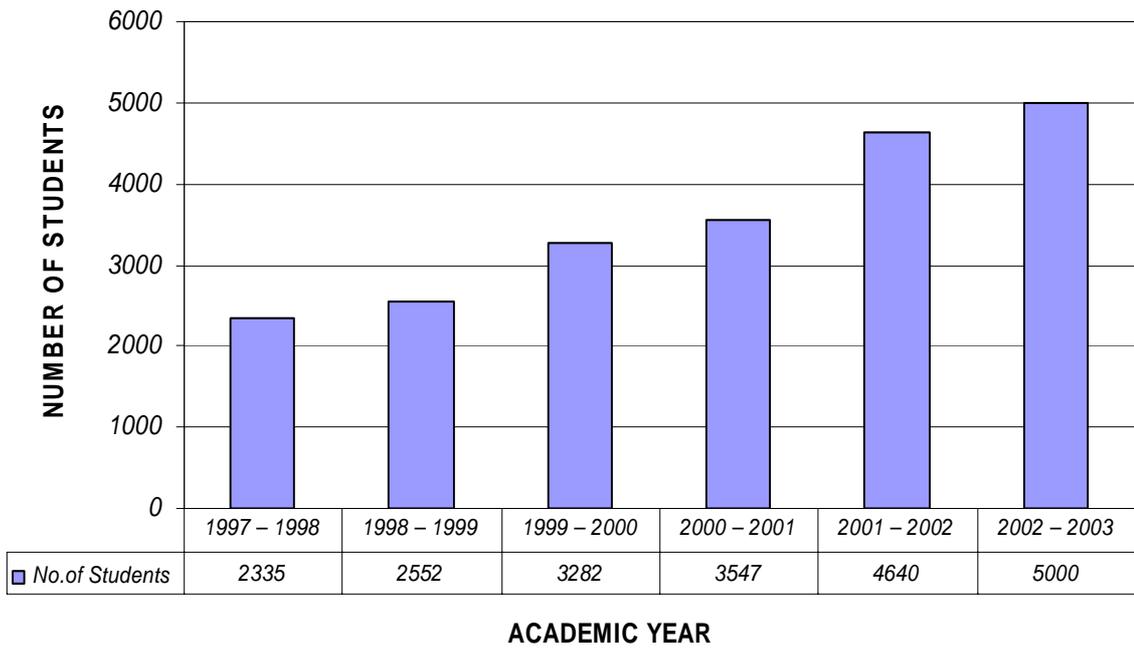


Figure C.7 Number of Students Awarded Scholarships in 1997-2003 Period.

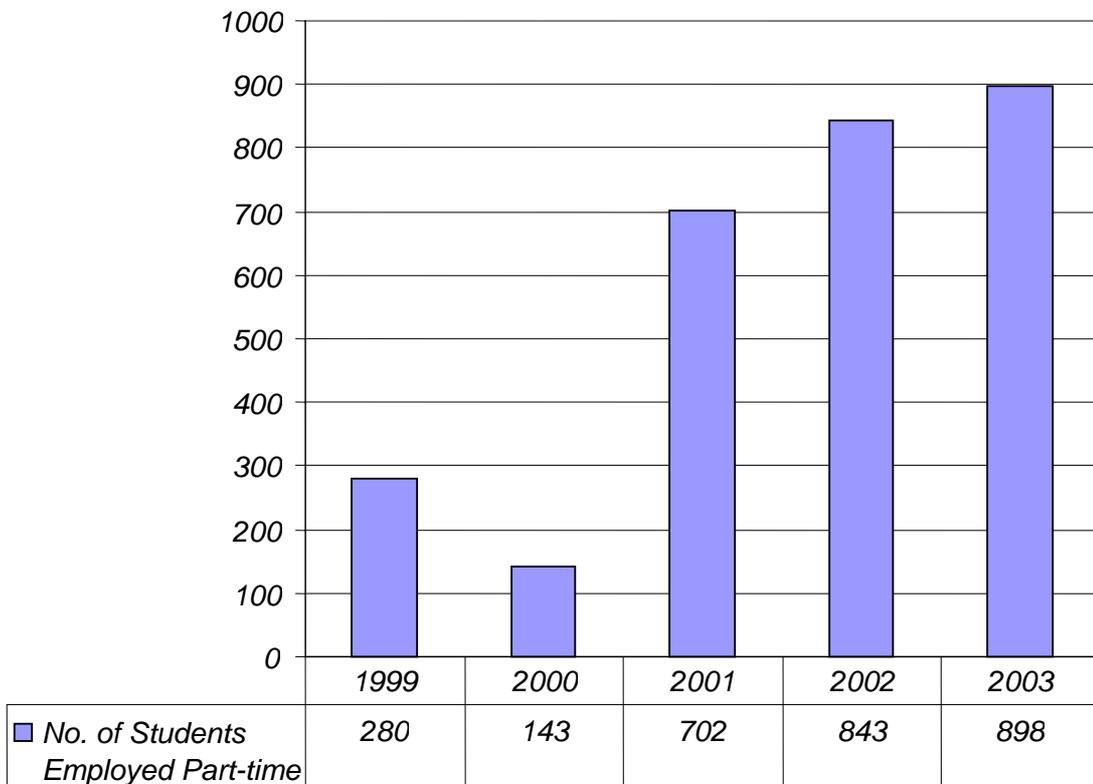


Figure C.8 Total Number of Students Employed Part-Time in 1999-2003 Period.

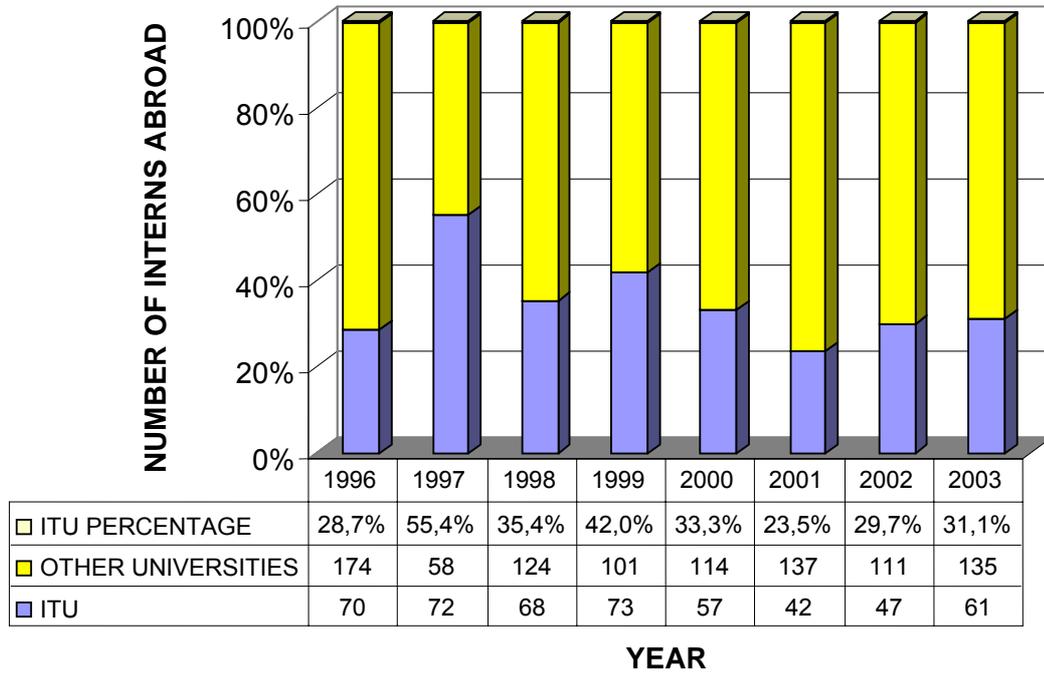


Figure C.9 IAESTE Participation of ITU Students in 1996-2003 Period.

**Senate Accreditation Committee  
Educational Seminar Series Program**

2002-2003 Academic Year

|   |                              |
|---|------------------------------|
| <b>A Roadmap for ABET EC2000 Accreditation</b><br>Prof. Dr. Yılmaz Taptık   | November 11, 2002, Monday    |
| <b>Preparation for the first ABET Visit</b><br>Professor James L. Hendrix   | November 20, 2002, Wednesday |
| <b>How an Engineering Faculty had prepared for the Continuous Improvement Model?</b><br>Prof. Dr. Hasancan Okutan                   | November 27, 2002, Wednesday |
| <b>ABET EC2000 and the Design Component</b><br>Prof. Dr. Mehmet Demirkol  | December 11, 2002, Wednesday |
| <b>Teamwork</b><br>Prof. Dr. Ayşe Erdem-Şenatalar   | December 25, 2002, Wednesday |
| <b>Effective Teaching Techniques</b><br>Prof. Dr. Birgül Tantekin-Ersolmaz  | January 8, 2003, Wednesday   |
| <b>Closing Cycles in the ABET EC2000 Continuous Improvement Model</b><br>Prof. Dr. Ayşe Erdem-Şenatalar and<br>Prof. Dr. Ahmet Aran | January 15, 2003, Wednesday  |

## **APPENDIX D**

### **Institutional Support Units**

## Appendix D

### Institutional Support Units

Some of the main institutional support units at ITU are presented in the following sections.

#### School of Foreign Languages

ITU School of Foreign Languages provides English language education to all ITU students. It also offers elective courses in French and German. The school was established in 1960. In 1997, the School began providing English language education to all new entrants who lack the required level of proficiency, upon the ITU Senate decree indicating that 30% of courses should be conducted in English. The School also provides freshmen and sophomore level language courses in English.

The School is linked directly to the Rectorate and headed by a Director assisted by two Vice Directors. As of October 2003, the School employed 135 full-time English instructors assigned either to the Prep or to the Advanced Levels. Twenty-four of these instructors are native speakers of English. There are 7 German instructors and 3 French instructors; one of the latter is a native speaker of French.

After the Senate decree of a minimum of 30% English instruction, the Language School was restructured in collaboration with the University of Connecticut. As part of this collaboration Professor Tim Reagan, the Dean of Neag School of Education at the University of Connecticut, and his team were asked to evaluate the progress of all English teaching programs every year. Randomly chosen students are asked to take the TOEFL exam for benchmarking purposes (fees are paid by the University). A summary of the TOEFL scores are shown in Table D.1 for the last four years.

Table D.1 TOEFL Scores Obtained by the Students of ITU School of Foreign Languages

| Academic Year | Score             | Number of Students | %    |
|---------------|-------------------|--------------------|------|
| 1997-1998     | 550 & above       | 25                 | 16.8 |
|               | 500-549           | 68                 | 45.6 |
|               | 499 & below       | 56                 | 37.6 |
|               | Total             | 149                |      |
| 1998-1999     | 213 (550) & above | 16                 | 20.0 |
|               | 173-210 (500-547) | 42                 | 52.5 |
|               | 170 (497) & below | 22                 | 27.5 |
|               | Total             | 80                 |      |
| 1999-2000     | 213 (550) & above | 41                 | 30.4 |
|               | 173-210 (500-547) | 78                 | 57.8 |
|               | 170 (497) & below | 16                 | 11.9 |
|               | Total             | 135                |      |
| 2000-2001     | 213 (550) & above | 16                 | 19.0 |
|               | 173-210 (500-547) | 54                 | 64.3 |
|               | 170 (497) & below | 14                 | 16.7 |
|               | Total             | 84                 |      |
| 2001-2002     | 213 (550) & above | 27                 | 20.0 |
|               | 173-210 (500-547) | 81                 | 60.0 |
|               | 170 (497) & below | 27                 | 20.0 |
|               | Total             | 135                |      |

The yearly report prepared by Professor Reagan and his team, the scores of home exams, and TOEFL scores are used as feedback to set up new strategies in the Language School.

The two streams of English language education provided by the School are briefly described below.

### The English Prep Program

The School of Foreign Languages provides an 8-month intensive English program for undergraduate students. Approximately 50% of first-year ITU students are able to pass the proficiency exam and go directly to their faculties. The other half, about 1800 students, enters the intensive English Preparation (Prep) Program. Students in the Prep Program have approximately 16-28 hours of class time per week depending on their level. Graduate students who cannot pass the proficiency exam are advised to take special courses on a fee-paying basis provided by the Continuing Education Centre (CEC) in conjunction with the School.

There are four divisions in the Prep Program: A-level (upper-intermediates), B-level (intermediates), C-level (pre-intermediate) and D-level (beginners).

A-level (upper-intermediate) – These students are usually able to test out of the program after one semester. Most students in A-level are private school graduates, which often mean they have had the most experience in English. They follow a first-certificate course book along with some skills books to brush up their knowledge and use of English.

B-level (intermediate) – These students have had previous exposure to English but do not have enough experience to have a good command of written and spoken English. They start with an intermediate level course book along with some skills books, and proceed to repeat the A-level program.

C-level (pre-intermediate) – These students are false beginners. They are usually students who have had English before but have forgotten the basics. They start with a pre-intermediate level course book along with some skills books, and proceed to repeat the A- and B-level programs.

D-level (beginners) – These students come into the program with little or no English, therefore needing an intensive course level. They start with a beginner level course book, and after a one-month period of intensive grammar they begin focusing on reading and writing skills. Later in the year, they proceed to repeat the A-, B-, and C-level programs.

### The Advanced English Language Program

The School of Foreign Languages offers classes to students who have entered their faculties. These courses include:

#### Freshman Year Courses:

English 101R & 101S, Basic Writing – These courses are the most basic writing courses. In fact, they are the same course and design, but 101R provides more grammar exercises. It is designed for students who pass the proficiency exam, but score 14 or below on the writing section of the proficiency exam. Students who score 11-14 are assigned to 101S. 101S focuses on sentence structure with the aim of building into effective paragraph writing. At the end of this course, students are expected to express themselves in correct, comprehensible sentences, and to produce a solidly-written paragraph. In addition, students will have the rudiments of structuring an essay in preparation for English 102.

English 102, Essay Writing – All students are required to take this course no matter how well they score on the proficiency. It is a prerequisite for 201. This course is designed to prepare students for writing complete essays, which will better prepare them for research paper writing done in course 201. At the end of this course, students generate a viable 500-600-word academic essay as well as become more skilled in the use of computers.

English 103, Elective Courses – A wide variety of elective courses are offered under the “103” heading. Some of these include: Film Studies, American Literature, English Literature, Psychology, and Writing on Computers. The 103 courses are enrichment and investigative classes. Students are required to write a 250-word essay each week. Student curriculum focuses on reading comprehension and written expression, organizational writing as well as verbal communication skills.

Sophomore Year Course:

English 201, Research Methods/Technical Writing – This course focuses on research paper writing and is compulsory for all second-year ITU students. Its goal is to produce a 1500-word written work using technical language, research and organizational skills. The topic of the paper must be related to the faculty in which the student is enrolled. At the end of this course, students improve the latter skills mentioned in addition to increasing their awareness and application of the research process.

#### Courses in French and German

French and German language courses are offered by the College at the beginning, intermediate, and advanced levels as 2-credit or 3-credit electives. There is a Head Teacher for each language who is responsible for all administrative tasks.

### **Library Services**

The aim of the library services is to provide a better learning environment for the faculty members and students, with wide access to scientific, technological, cultural and other information to support academic and educational activities.

ITU has one main and six branch libraries situated in different campuses, integrated with INNOPAC library automation software. INNOPAC is worldwide known, functional and user-friendly library software. The URL is <http://www.library.itu.edu.tr>.

ITU Libraries are physically open 13 hours a day and six days a week. Most of the library services are available 24 hours via Internet. Over 19000 students and 2000 academic personnel have access to the library facilities. The following services can be used via Internet:

- search for the online library catalogue
- literature search on electronic databases
- read or print articles from electronic journals
- order books for the ITU libraries
- request article, book, report, thesis etc. from other libraries via Inter Library Loan (ILL)
- renew checked out books
- place hold on a book checked out by another user
- send requests and complaints to the library.

All users are informed on book orders, new library services and other requests through electronic mail. Most of the electronic messages are issued automatically by the library system. Users receive electronic messages for late library materials and material placed on hold by users. Also a monthly electronic library bulletin is published and sent to the email addresses of the users.

#### Library Acquisitions and Resources

ITU Library, with its automation and electronic services, is one of the leading libraries in Turkey. Also, being the oldest continuously running university from the Ottoman Empire to the Turkish Republic, the ITU possesses one of the most valuable collections of historical technical books in Turkey. A modern and prestigious library building is in construction at the centre of the Ayazağa Campus.

ITU academic staff and students have opportunities to order books without any limitation. Book ordering is done electronically from the library's web site. All book requests are evaluated and ordered by the library. ITU Library subscribes to 3360 print and electronic journals. In addition, ITU library has full-text database subscriptions through which over 2000 full-text journals are accessible. In total, more than 7300 full-text journals are accessed by ITU members.

The number of electronic resources available to ITU members has been increasing every year. At present, over 7300 print + electronic journals, 260,000 full-text thesis and dissertations, 163 full-text proceedings, 33 full-text and abstract databases are accessible through the library's web site. The library policy is to expand the journal accessibility every year, especially with electronic media. ITU Library subscribes to all electronic journals published by the Elsevier Science, Springer, Kluwer, Wiley, Blackwell, Taylor & Francis, Oxford University Press, Cambridge University Press, IEEE, ACS, ASME, ASCE, IOP, ACM. ITU libraries had more than 1300 new subscriptions in 2004. With these new titles number of journals accessible in ITU campuses reached 8651.

Main subscriptions to databases in science and technology are as follows:

- Engineering Index
- Science Citation Index
- Applied Science and Technology Index
- Chemical Abstracts
- Food Science & Technology Abstracts
- Georef
- Iconda
- Digital Dissertations
- Engnetbase
- Foodnetbase
- Chemnetbase

Some of the other databases are listed below:

- Social Science Citation Index
- Arts and Humanities Index
- Econlit
- ABI/INFORM Global
- INIS
- Expanded Academic ASAP International
- MathSciNet
- Table of Contents.

ITU Library aims to maintain and improve its support to academic and educational activities by adopting latest developments in library and information science.

#### Audio-Visual Centre

The number of audio-visual materials has been increasing rapidly. There is an Audio-Visual Centre in the main library for collecting and serving this type of material. The centre is equipped for using CD, DVD, VCDs, audio and video cassettes and transparencies. This centre is also used for library-orientation programs.

#### Library Budget

Besides the government funds, ITU and ITU Foundations provide financial support to the library. The total library budget of the last five years and data on printed and electronic collections are summarized in Table D.2. The increase in the total library budget over the last eight years is presented in Figure D.1. As seen in Figure D.1 the total library budget has increased tremendously during the restructuring period at ITU.

Table D.2 Library Budget and Acquisitions in the 1999-2003 period.

| <b>Years</b>           | <b>1999</b> | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>2003</b> |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| Budget (million USD)   | 1.0         | 1.4         | 1.3         | 1.7         | 1.9         |
| No. of books purchased | 5723        | 7000        | 6175        | 5171        | 7019        |
| No. of periodicals     | 1028        | 1104        | 4200        | 6578        | 7352        |
| No. of data bases      | 16          | 20          | 23          | 27          | 33          |

ITU students and staff are utilizing the library sources more than any other university in Turkey. A comparison to some of the major universities in Turkey is presented in Figure D.2.

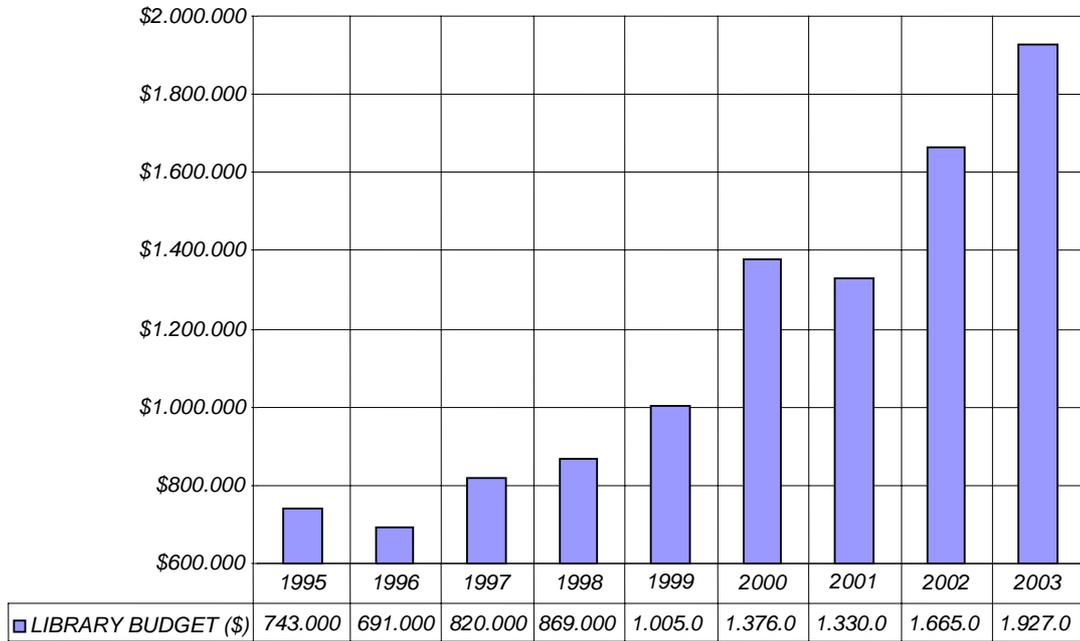


Figure D.1 Library budget over the years 1995-2003

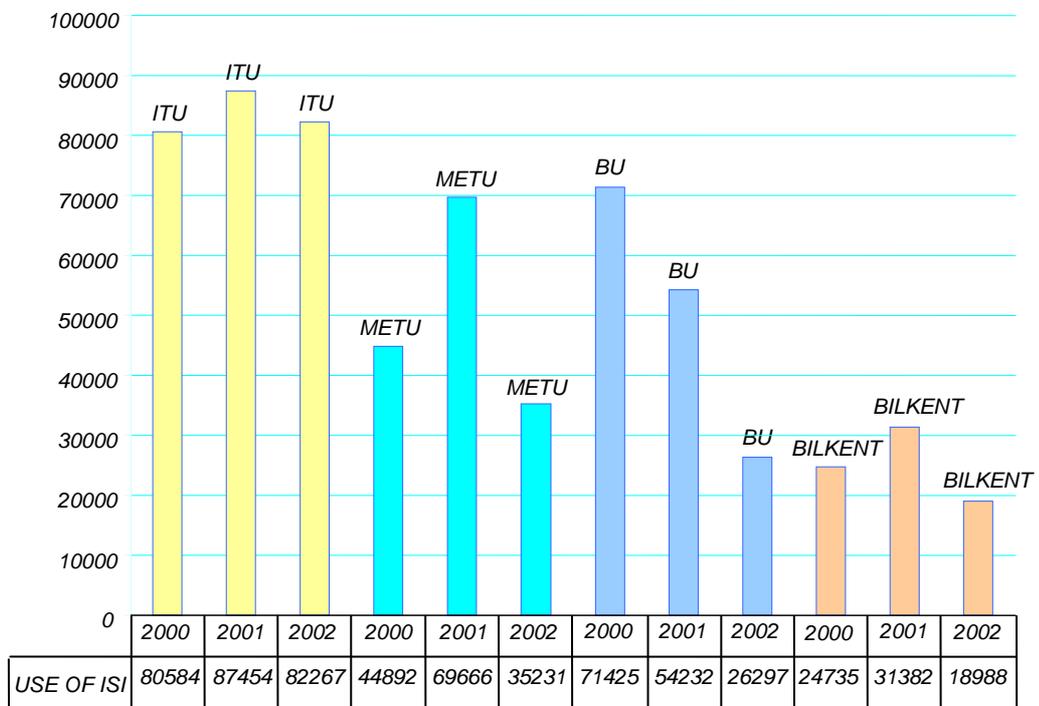


Figure D.2 Use of ISI Web of Science Index at ITU and comparison to some of the major universities in Turkey.

## Computer Centre

A total of 2500 computers are in use in the student laboratories, all of which are Internet connected. All ITU students have e-mail addresses and are encouraged to build their own web pages. ITU computing resources are in service 365 days a year and 24 hours a day.

The duties and services of the Computer Centre (ITU-CC) can be summarized as follows:

- Providing domain name service (DNS) for the university
- Managing and extending the availability of the ITU network
- Administering central computer systems reserved for students and academic/administrative purposes
- Providing high-performance computing centre for researchers of the university
- Supporting services for software, hardware and network problems for the university
- Operating and administering student computer laboratories in all ITU campuses
- Designing, mastering and developing web and new media projects for ITU
- Providing network connectivity support and services for ITU dorms
- Providing software and solution development for the administrative units of the university
- Supporting 24/7 call centre for academic and administrative units and students.

### Organization of the Computer Centre

The Computing Centre staff includes 16 research assistants and 43 part-time student assistants. Student staff work on shift basis for 24 hours all through the year and are responsible for giving support for the university staff and students.

The Computing Centre is divided into 4 groups: System and Support Group, Network Management Group, Software Development Group and New Media Group.

The System and Support group consists of 8 research assistants and 5 student assistants. The duties of this group can be summarized as follows:

- Directory services and identity management Systems
- E-mail, e-mail-lists, web services
- Core networking services such as DNS, DHCP, FTP, WINS,
- Security services such as antivirus-antispam, certificate, IpSec, Intrusion Detection and Prevention Systems (IDS&IPS), Patching Systems
- Change and Configuration Management Systems such as remote deployment, monitoring and alerting services
- Document and project management systems
- Data Storage services
- Licensed software and licensing services
- Terminal services
- Operating and administering student computer laboratories at all ITU campuses
- Managing backups for servers located at ITU-CC and ITU Library
- Administering the high-performance computing centre
- Managing Microsoft AATP (Authorized Academic Training Provider) courses.

The Network Management Group consists of 6 research assistants and 3 student assistants. The duties of this group can be summarized as follows:

- Managing and supporting the ITU network
- Providing IP addresses for units at ITU
- Providing network services for ITU dorms
- Managing CNAP (Cisco Network Academy Program) courses.

The Software Development group is composed of 4 research assistants and 3 student assistants. This group is responsible for developing software for ITU-CC and administrative units of ITU. The projects completed by this group can be summarized as follows:

- ITU Yellow Pages
- ITU Online Announcement System
- ITU Online Telephone Guide
- ITU Card Project
- Web Pages for Management of Computer Laboratories
- Online student evaluations
- Online registration for CNAP and AATP courses
- ITU Research Fund Automation Project
- ITU Revolving Fund Automation Project
- ITU Student Social Services Automation Project
- ITU Rectorate Fund Automation Project
- ITU Administrative and Financial Work Inventory Stock Department Automation Project
- ITU Finance Project
- ITU Urban and Regional Planning and Research Centre Web Pages.

The New Media Group is focused on high-quality web and graphic design, multimedia projects, and interactive information systems for all members of ITU. The services of this group include:

- Web site concept design
- Interactive multimedia design
- Desktop Publishing and Graphic design
- Corporate Identity Design.

#### Available Computer Systems

The services available at ITU-CC are hosted from middle- to enterprise-scale hosts. The computer systems located in the Computer Centre can be summarized as follows:

- 35 pieces HP Proliant DL 380 Rack Servers
- 14 DELL PowerEdge 2650 Rack Servers
- 2 IBM xSeries Rack Server
- 2 HP EVA 5000 Storage Area Network
- 1 Raidtech FiberArray AA Storage Area Network
- 23 pieces of Unisys Aquanta GPS
- 5 pieces of Unisys Aquanta DS/2B
- 2 pieces of OEM Servers with Intel CPU's
- One piece of HP 715/80
- One piece of SGI Origin/2200
- One piece of SGI Origin/3200

#### Computer Laboratories

ITU-CC operates 22 labs throughout ITU campuses. These labs are located in various departments and are accessible from 9 AM to 6 PM weekdays. The Central Computer Laboratory is accessible from 9 AM to 12 PM weekdays and from 10 AM to 6PM at weekends. The PC's are mainly Pentium 4 3GHz Hyperthread (a total of 1000), and other Pentium machines (a total of 280). All PC's are implemented as dual boot boxes which operate on Microsoft Windows XP Professional and Red Hat Linux 9.0/Fedora Linux operating systems. Users may select one of the operating systems to utilize the computer interface. Other PC's have Microsoft Windows NT 4.0 Workstation as the operating system.

All students at ITU have accounts to gain access to computers located in the laboratories and the entire ITU Information System. All students have personal e-mail accounts and are able to publish their own web pages.

There are 10 servers, located at ITU-CC, and these servers are used for managing the computer laboratories at various sites in the ITU campuses. Approximately 5 TB network storage space is reserved for students' e-mails and personal files.

The domain accounts are implemented on a central database located at ITU-CC and managed remotely over advanced administrative interfaces on the WWW.

### Network Infrastructure and Net-Services

To meet the increasing bandwidth demand, ITU Network backbone is composed of the latest technology of WAN and LAN systems supported by Cisco Systems. Currently ITU is connected to Internet via the Turkish National Academic Network (ULAKNET) with a 100 Mbps link. ITU is also the Istanbul POP of ULAKNET.

The Ayazağa campus is wired with fibre-optics, and Gigabit Ethernet is implemented in the campus-backbone. In 1999, the ATM network was expanded and four campuses (out of five) are now seamlessly integrated in a high-bandwidth wide-area network. ITU provides dial-up services to academicians with a total of 62 modems, 24 hours a day.

ITU Computer Centre aims to disseminate knowledge and experience on the latest networking technologies. In this light ITU-CC is currently cooperating with Cisco Systems to promote continuing technology education programs at ITU. ITU Computer Centre is now a CNAP Regional Academy housing 10 local academies. CCNA, CCNP and UNIX courses are offered in this program.

### High Performance Computing Centre

ITU-CC operates a HPC centre for researchers at the university. A SGI/2200 system (with 4 300Mhz R12000 CPUs and 2 GB main memory) and a SGI/3200 system (with 8 400Mhz R12000 CPUs and 5 GB main memory) are dedicated for high performance computing. These systems have IRIX 6.5.10 operating systems. Numerous software are accessible to users such as, Fortran 77 and 90 compilers, C/C++ compilers, debuggers, profiler, Static Analyzer, libraries for Parallel Computing, PARTRAN, NASTRAN, and SPSS.

### Services

ITU-CC provides various services for the local and Internet users. Most used services are given below:

- Electronic Mail (E-mail) Service: ITU-CC provides e-mail service to all students and staff at ITU. Four servers with a total amount of 80 GB storage area are dedicated for e-mail service. All users can access their e-mail through web and e-mail clients which support POP3 and IMAP protocols.
- Web Service: ITU-CC administrates public and private web services. Public services are accessible through the Internet. Private services are accessible through ITU intranet. ITU-CC provides web service for ITU students and scholars. Virtual hosts for clubs and seminars are also managed by ITU-CC.
- Proxy Services: ITU-CC provides proxy service for ITU network. Two Cisco content engines are reserved for this service. For the effective usage of the network, transparent proxy service through WCCP protocol is also provided.
- FTP service: ITU-CC provides public ftp service to Internet. Ftp site generally contains open source software.
- Electronic List Service: ITU-CC provides electronic list service for general use and announcements. This service is provided by Mailman list management program. At present, there are 168 mailing lists.

### Software Present

All users have shell access to Linux servers. Also numerous software are accessible to users. A partial list of campus-wide licensed programs includes Microsoft products, NASTRAN, PATRAN, FLUENT, AutoCAD, ANSYS, ADAMS, IDEAS, SPSS, MATLAB, Mathematica, AutoCAD Architectural Desktop.

## Accommodation, Scholarships and Student Assistantships

### Accommodation

About 60% of all ITU students are not residents of Istanbul and may be accommodated in the modern dormitories managed by the ITU Rectorate and ITU Foundations. By contributions of ITU alumni and friends, and University resources, new high-quality dormitories were built; in addition existing dormitories and supporting facilities were upgraded to the high-quality standards. Student housing capacity has been increased from 800 to 3000 (950 woman and 2050 men) since 1996. At present the available accommodation capacity fulfills student demand. The dormitories are in walking distance to the educational buildings and contain single-, double- or triple- occupancy rooms. There are also common rooms containing TV, phone, Internet, study area, and laundry and ironing facilities. Each dormitory has its own security and cleaning personnel.

### Scholarships and Financial Aid

The ITU Rectorate, ITU Foundations, alumni, private companies, and individuals support the scholarship and financial aid program, which is managed by the Scholarships and Accommodation Centre. This program offers full and partial scholarships to 35% of the undergraduate students. Graduate students may also apply for scholarships awarded on a merit and need basis and financial aid for food and dormitories. The University Executive Board determines the conditions and requirements of the scholarships and financial aid at the start of each academic year. The scholarship program is also designed to attract the best students of Turkey. The students who rank in the top 2000 of the National Student Selection Exam (ÖSS) qualify for the highest class of scholarships and free housing.

The overall scholarship program budget of ITU is the largest among universities in Turkey. The total budget of the scholarship program and the total number of students who received scholarship over the years is presented in Table D.4 and Figure D.3 respectively. The drop in the scholarship budget in last few years was due to the acute economic crises, which resulted in high devaluation.

Table D.4 The Total Budget of the Scholarship Program over the Years 1997-2003.

| Academic Year        | 1997-98 | 1998-99 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 |
|----------------------|---------|---------|-----------|---------|---------|---------|
| Budget (million USD) | 2       | 4       | 2.5       | 3       | 2.5     | 2.5     |

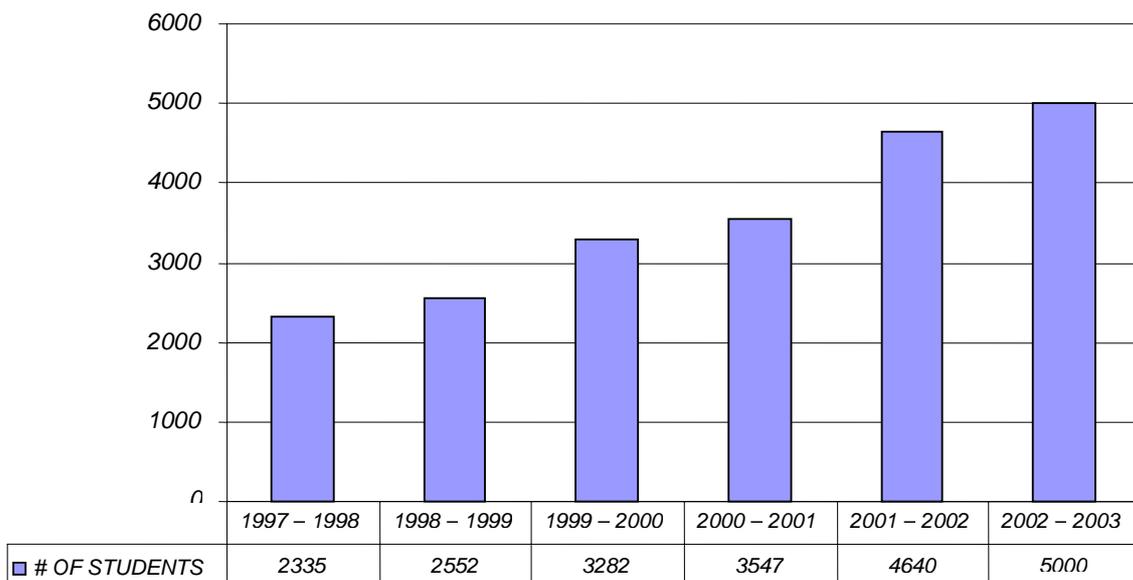


Figure D.3 The number of students who were awarded scholarships over the years 1997-2003.

All ITU students may also apply to work as a student assistant in research and services to obtain additional income and experience. The number of part-time student assistants over the years is presented in Figure D.4.

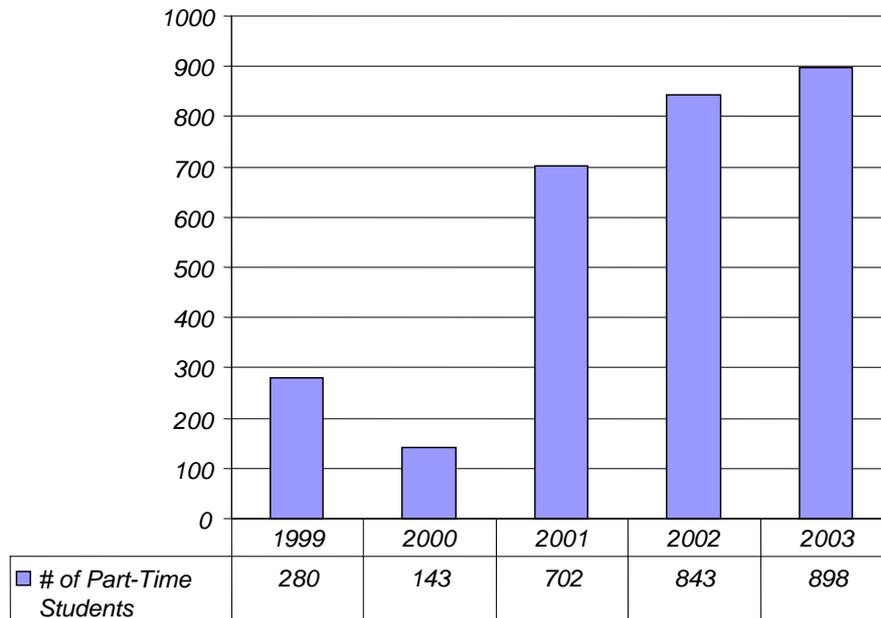


Figure D.4. The number of part-time student assistants over the years 1999-2003.

### Continuing Education Centre (CEC)

One of the most important issues facing our country is without doubt the rapid pace of innovation in information and technology. Continuing education centres, which make these new innovations and information accessible for the use of industries, and more generally, societies, have become undeniably complementary institutions required for the economic development of a country.

Istanbul Technical University has been consistently the leading institution to meet the needs of Turkish society, and accordingly formed the first continuing education centre in Turkey in 1997. Since then, the ITU Continuing Education Centre (CEC) has been contributing to the cooperation between the University and the private and public sectors, as well as international institutions. It also aims to increase the awareness of professional bodies contributing to the economic growth of Turkey on new developments in technology through the organization of educational courses beyond regular university programs. In addition, CEC organizes programs to meet the needs of individuals and various public- and private-sector institutions.

In light of the objectives of CEC, the following programs have been designed for the public:

#### PROFESSIONAL DEVELOPMENT PROGRAMS

The following Professional Certificate Programs are offered to the interested graduates of four-year university programs:

- Industrial and Business Management
- Financial Management
- Quality Control Management
- Construction Management
- Logistic and Provision Management
- Risk and Insurance Management

Project Research and Development Management  
Information Systems Management  
Basic Maritime Education  
International Security Management

#### PERSONAL SKILL DEVELOPMENT PROGRAMS

These programs aim to improve the personal professional skills of individuals with high school and university diplomas, required in a competitive business environment.

Computer and Information Programs:

Word; Excel; Access, PowerPoint, AutoCAD, Internet Explorer, NetCad, Java, Visual Basic, AutoLisp, HTML, Website design, computerized graphic design, Architectural modelling techniques.

Foreign Language Programs:

General English proficiency, KPDS (Test of English for Government Personnel), ÜDS (Test of English for graduate school candidates), TOEFL, business English, presentation techniques, public speaking, speedy reading, general German.

#### CAREER-RELATED PROGRAMS

These programs provide courses directly related to specific careers:  
Basic hotel and tourism education, qualified office personnel education

#### CULTURAL AND ARTISTIC PROGRAMS

Ballet, basic drama, piano, classical guitar, flute/clarinet, lute/violin, reed flute (ney), baglama (traditional Turkish stringed instrument), voice, theatre, Latin-American dance, modern dance.

#### PHYSICAL EDUCATION PROGRAMS

Sports for healthy living, fitness

In addition, CEC organizes special courses for public and private organizations on demand.

### **Distance Learning (DL)**

Istanbul Technical University has long recognized the significance of using advanced information technologies in providing high-quality education to its students. The university started to implement its intra-campus DL network in 1997 and a system was put into service in fall 1998. One fully digitally equipped video classroom in each of the three city campuses, which accommodate 120 students, each were installed for live transmission/reception of undergraduate courses and got connected to the others via an 11 GHz analogue radio-link. The inter-campus connections have recently been changed to 155 Mbit/sec ATM for further reliability and better transmission quality. Sessions are fully two-way audio/video interactive and the reception is in broadcast quality at both ends. The system is the first of its kind in the country and has been a source of prestige for the university.

ISDN-based videoconferencing is also one of the synchronous DL options at ITU. 2 Mbit/sec ISDN lines are available in three campuses, and multicasting of live ISDN conferences are carried out via an ITU wide-area network (WAN). IP-based videoconferencing is also a very near-future option and is likely to take the place of the ISDN-based one.

ITU's Centre for Distance Learning (UZEM) was created in 1996 for establishing the necessary DL infrastructure, coordinating projects, offering DL courses and organizing relations with other educational institutions.

First-year science courses have been delivered to ITU undergraduate students via the DL network since fall 1998. These can be considered as pilot transmissions prior to larger implementation of ITU's distance learning project in the near future. ITU-UZEM has taken the initiative to extend its capability to international DL. Following the quick installation of required infrastructure, ITU students have started to receive ISDN-based live humanities courses from the University of Virginia (UVa) since spring 2000. For the first time in Spring 2002, ITU and UVa students started to take a joint course broadcast live from both ends. The course has turned out to be of great interest to both American and Turkish engineering undergraduates.

Asynchronous distance learning is an integral part of the ITU WAN-based teaching network. A total of 6000 client PCs for students, over 1000 PC's for faculty members, 4 main servers, plus 11 Faculty servers, currently 8 Mbit/sec international Internet access, 35 Mbps national Internet access and 2 Mbit/sec access to the National Academic Network (ULAKNET) form the present-day infrastructure for asynchronous delivery.

Two on-line courses developed by the University Informatics Institute on computer literacy have been served to 2500 undergraduates since Fall 2000 via the WAN on trial basis. Commercially available undergraduate/graduate level computer, informatics, telecommunications and networking courses are served to ITU students via ITU LANs/WAN and the Internet on a no-fee and non-credit basis. A recently created *Course Design Office* has been working on creating WEB-based undergraduate/graduate courses via an intelligent DL user interface, namely, Learning Space 5.01. These stand-alone courses are to be served over Internet/LANs by the end of 2004.

## **APPENDIX E**

### **Research Support Units**

## Appendix E

### Research Support Units

#### Research Support

Research and Research and Development activities are financed through multiple channels at ITU. The main support channels include:

- Governmental research budget administered by Scientific Research Project Unit of the University (SRPU)
- State Planning Organisation supported projects administered by SRPU
- TUBITAK research support for nationwide calls administered by TUBITAK
- International research projects supported by NATO, UNIDO, EU, TUBITAK and the parent institutions
- National projects supported by central and local governments and private sector administered by ITU Revolving Fund, ITU Development Foundation and ITU Foundation.

#### Governmental Research Support

Every year central government allocates funds to support research in the University. This fund is also supported by 10% of Revolving Fund incomes and by the ITU Development Foundation. The support of the government for 2003 is approximately \$1,400,000. The expected sum of the ITU contribution is about 25% of the government support.

SRPU supports research projects on eight different programs designed to promote research, research and development, research substructure and international scientific interaction:

- **Scientific Research and Development Support Program:** aims to create a suitable environment for the staff to carry out scientific and technological research.
- **Substructural Support Program for Scientific Research and Development:** aims to support physical substructure.
- **Young Scientists' Support Program:** aims to support PhD graduates to initiate independent research and to encourage young scientists to publish.
- **Multi-Disciplinary Research Support Program:** aims to support collective research among different disciplines to initiate mega projects.
- **Defence Related Research Support Program:** aims to bring funds from the Ministry of Defence to the University by initiating research and development projects.
- **International Linkage Support Program:** aims to support cooperation of ITU staff with overseas researchers on research and teaching.
- **Graduate Student Support Program:** aims to support masters and doctorate students in their research.
- **Improvement of Educational Quality Support Program:** aims to support and improve the quality of education in ITU.

Project applications are accepted all year round. The proposals are reviewed by the experts in the subject area and decided by the executive committee of SRPU. The executive committee consists of the Rector or an appointed Vice-Rector, the Directors of the Institutes and 3-7 members elected by the Senate among distinguished researchers. The number and budget of projects may differ for different types of programs.

The numbers of research projects initiated by SRPU by different faculties and units over the years are presented in E.1. The drop in 2002 is due to the governmental reorganization procedures which froze the project grants for seven months of the year.

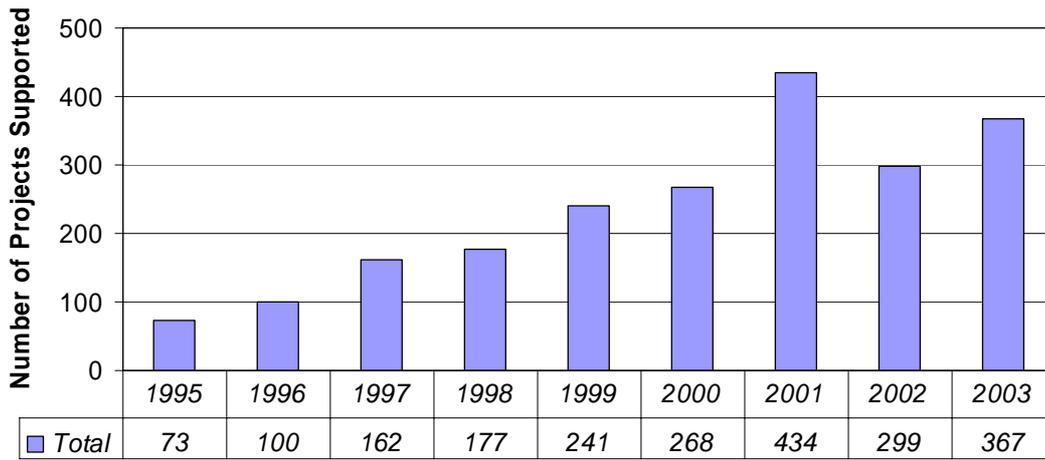


Figure E.1 The numbers of research projects initiated by SRPU over the years 1995-2003.

State Planning Organisation (SPO) Supported Projects

SPO is the planning instrument of Turkey. As part of the development strategies, SPO make calls for general research projects from universities and also invites proposals for specific projects. An example of an “invited project” is the Advanced Technologies in Engineering Program of ITU. The ITU Rectorate initially designed this program as a new graduate program on advanced and priority topics. SPO granted a \$ 25 million budget to ITU graduate studies in six different fields as one of the possible measures against brain drain. Some of the major SPO Technological Research Projects granted to ITU are as follows:

|   |  |
|---|--|
| Information Technologies Substructure Development                     | \$2 million tender is in process   |
| Satellite Ground Station Project                                      | \$11 million realised<br>\$3 million in process  |
| Distance Learning Project   | \$2 million tender is in process   |
| Advanced Technological Ceramics and Composites R&D Center             | \$3 million realised<br>\$4 million second phase tender realised<br>\$4 million third phase in process |
| ITU Technocity Development Project                                    | \$15.5 million in process  |
| Automotive Industries R&D Center                                      | \$5 million tender realised  |
| Mechatronics Education and Research Center                            | \$6 million planned for 2005   |
| Advanced Technologies in Engineering Project (Research and Education) | \$25 million project is in the third year  |
| Development of Productive Information Technologies Project            | \$12 million project started this year   |
| Aerospace Research and Development and Application Project            | \$15 million project started this year   |

Apart from these major projects, 15 others are continuing from the previous years, and 5 new projects has been granted by SPO in 2003. Also five new projects which focus on end products in certain areas are granted by SPO in 2004.

#### Tubitak Research Support

Turkish Scientific and Technological Research Institution (TUBITAK) is the main granting organisation of Turkey. Project proposal calls are made twice a year. Submitted projects are supported subject to referee reports and related committee decisions. The number of projects submitted by and granted to ITU staff are shown below. For the years 2000 and 2001, the acceptance ratio for ITU was the highest in Turkey.

| <u>Year</u> | <u>Proposed Projects</u> | <u>Accepted Projects</u> |
|-------------|--------------------------|--------------------------|
| 1999        | 23                       | 7                        |
| 2000        | 37                       | 21                       |
| 2001        | 26                       | 15                       |
| 2002        | 48                       | 29                       |
| 2003        | 36                       | 17                       |

#### International Research Projects.

ITU has been succesful in receiving international funding from agencies such as NATO, UNIDO, EC, GTZ, British Council, Julich and others. Various Science for Stability and Science for Peace Projects have been granted and completed by ITU staff. At present a \$14 million JICA project of Japan is being realised at the Maritime Faculty. A comprehensive earthquake laboratory was also realised with the contributions of JICA.

So far, European Community (EC) projects have been open to Turkish researchers on a project basis in which the cost of the project on Turkish side was met by Turkey. Turkey decided to participate in the EC 6. Framework Program in full scale in 2002. ITU encourages its academic staff to participate in EC Framework Programs.

#### National Projects

ITU encourages its staff to carry out research and projects for industry and local and central governments. Therefore, ITU has developed the ITU Revolving Fund, ITU Development Foundation and ITU Foundation to help provide services to these constituencies. Generally the local and central government, and private sector applications are made to the Revolving Fund. The R & D and Revolving Fund income realized in 2003 is about \$7.1 million.

### **International Scientific Activities Support Program**

Istanbul Technical University has the principal aim of producing worldwide competitive graduates and therefore attaches utmost importance to international experience, cooperation, and collaboration. For this reason, long- and short-term support programs have been developed.

According to the regulations related to the Overseas Scientific Activities Support Program, each member of staff is entitled to receive support once a year to attend a conference, symposium or meeting to present a paper. The support is uniform for associate and full professors, but more generous to assistant professors and research assistants. Staff members involved in special duties, such as lecturing in English, are supported twice a year. Figure E.2 presents the number of academic staff who received financial support to attend conferences etc. over the last eight years.

Forming international networks, teams and interest groups became an essential part of keeping the competitive edge in the world due to the recent developments shaping globalisation. In order to meet demands and to encourage staff, the Academic Link Program was established as one of the eight Scientific Research Administration Programs of the University. The Link projects may be submitted for a singular visit to a conference or institution or may be a long-term proposal which

may involve several reciprocal visits. The result of Link projects is expected to be a long-term cooperation between ITU and foreign partners.

The short-term program is financed by the Faculties' travel budget and by the Scientific Research Projects Unit. If the demand supersedes these two budget sources, then funds from ITU Revolving Fund and ITU Development Foundation are used.

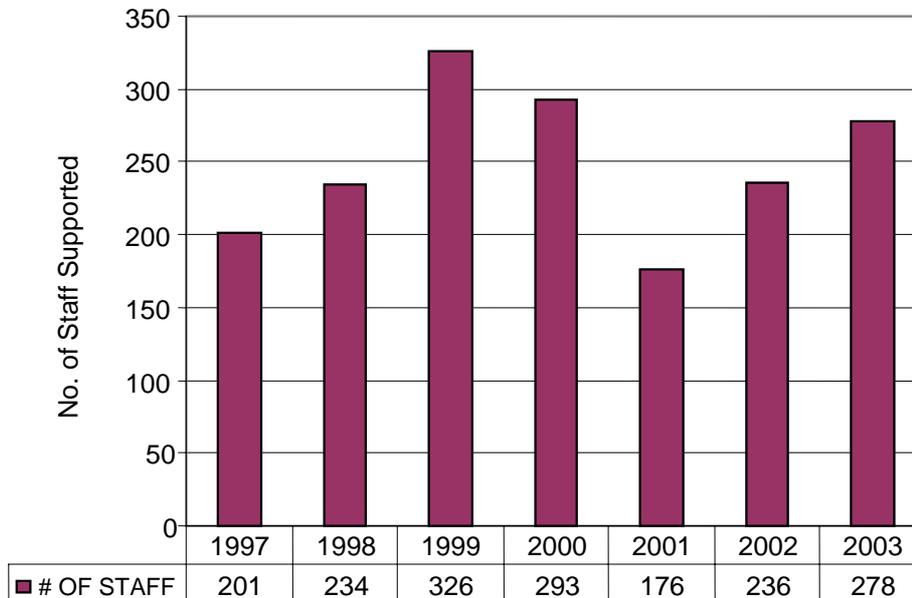


Figure E.2 The number of academic staff supported to attend conferences in the 1997-2003.

### Scientific and Art Publications Support Program

Turkish industry is not as supportive as needed to sustain a highly productive publication rate. The income of academicians also is generally too low in Turkey. Therefore, to help cover publication expenses and supplement the low salaries, the University developed a scheme to support academicians for their publications.

The basis of the support is international acknowledgement, which is mainly measured by the Science Citation Index (SCI), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (AHCI); these indexes constitute the highest rate of reward (top category). The second rate is given to publications cited by Engineering Index (EI), Chemistry Citation Index, Compu Math, Index Medicus, Anbar and Econlit, and other refereed journal publications not cited by the above mentioned indexes. Symposium and conference papers, as well as editorial activities are also rewarded on a weighted basis. Besides conventional publications, patents, short communications, technical notes, letters to the editor and discussions are also supported as a proportion of the support provided to the related classification. The total amount of award in a year is presented in Figure E.3 for the 1997-2002 period.

The Scientific Research Projects Unit has a seven-member commission appointed by the Rector for a two-year period. This commission collects and evaluates the publications and distributes the support. The amount of publication support is decided by the University Executive Board for the top category each year, and the other categories are decided as fractions of the top category.

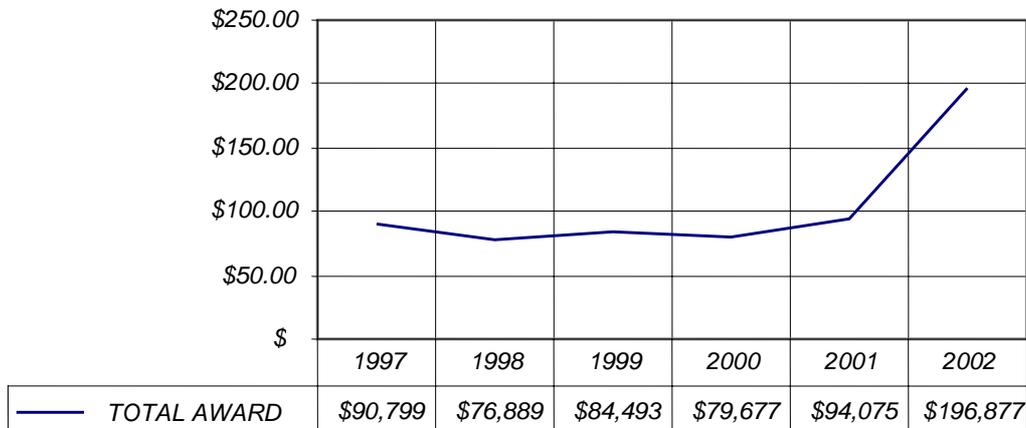


Figure E.3 The total amount of award in a year for the 1997-2002 period.

Apart from single article support, members of staff are also rewarded for some distinctive achievements, such as publishing more than a certain number of publications (i.e. six for engineering departments) in a year or reaching to a total of 30 top-category publications. The faculty members who are rewarded are announced to the University on their achievement.

One of the parameters to assess the research performance of the engineering faculty is the number of publications in refereed journals in the Science Citation Index (SCI). The number of articles published in the refereed journals in the SCI by ITU faculty is given in Table E.1.

Table E.1 Articles published in the refereed journals in the SCI by ITU faculty in 1997-2002.

| Year   | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--|------|------|------|------|------|------|
| No. of publications in science and engineering | 227  | 243  | 270  | 379  | 462  | 533  |

### **Research Support Program for Young Staff Members**

In 1998 the Rectorate of ITU initiated a program to support young researchers to perform research at leading universities around the world. Figure E.4 presents the number of staff who has been supported by this program in 1999-2003 period. Up to now the program has supported 137 researchers to spend from three to ten months abroad, with stipend and travel expenses paid by the University through alumni donations. Faculty members who have been awarded these grants are expected to return to ITU to teach in English, and to develop and continue the research projects they have carried out abroad. Due to the success of this program, the general standing and quality of the younger faculty members has improved. The program supports approximately 15-20 faculty members each semester to attend leading universities in English-speaking countries, mainly England and USA.

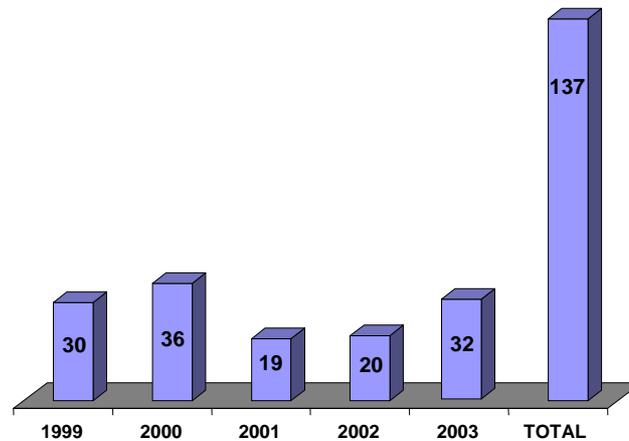


Figure E.4 The number of academic staff supported by Young Researchers' Overseas Research Support Program in the 1999-2003 period.

### Centres of Excellence

With its highly qualified personnel and solid infrastructure, ITU holds a leading role in solving a large variety of industrial problems, particularly in Istanbul and its vicinity. ITU personnel have innovative and creative ideas but lack the benefits of extending their ideas and scientific and technological findings into application. In order to help the undergraduate and graduate teaching, research, service to industry, and the ITU Technocity, many centres of excellence have been designed and developed. The Centres of Excellence at ITU are:

- Polymers Research and Testing Centre
- Automotive Technology R&D Centre
- CAD-CAM R&D Centre
- Food Quality Control and Technology Development Centre
- Textile R&D Centre
- Project/Construction Management and Technology R&D Centre
- Distance Learning Centre
- Software Development and Multimedia Centre
- Adnan Tekin High Technological Ceramics and Composites Research Centre
- Building and Earthquake Applied Research Centre
- Satellite Ground Receiving Station
- Advanced Electronics Technologies R&D Centre (ETA Design Centre)
- Centre for Disaster Management
- Centre for Advanced Technologies in Engineering
- Centre for Housing Research
- Environmental Biotechnology Research Centre
- Rotorcraft Centre

Each R&D centre project is expected to:

- provide collaborative R&D relationships between graduate programs & industries
- provide easy access to an R&D environment
- provide information about alternative technologies
- provide consultancy/educational services
- derive scientific solutions for specific problems of industry
- equip industry with skills to become more enterprising
- improve vision and level of knowledge

- offer methods for gaining competitiveness
- develop an interactive environment with other organizations.

#### Polymers Research and Testing Centre

During the past 40 years, polymer chemistry has had a marked and direct practical influence on the way of life in nearly every region of the earth. The rapid increase in the range of manufactured products has resulted directly from the development of a broad range of fibres, plastics, elastomers, adhesives and resins. These new materials are polymers and their impact on our present way of life is almost incalculable. Parallel to this development all over the world, industry related with polymers, which develops faster than other branches, has become very important in Turkey.

The Polymers Research and Testing Centre (PRTC) is equipped with all synthetic and polymer processing facilities to provide links between the polymer scientists and polymer industry in the Istanbul region. This centre performs research on basic and applied polymer science. Quality control, testing and training services is provided to relevant industries in the region. Many medium- and small-scale companies demand help from the centre concerning their product analysis and certification of their products.

#### Automotive Technology Research and Development Centre

At present, the automotive industry is the second largest industry in Turkey. Integration of the Turkish industries with the European market brings out the necessity of well-established independent R&D facilities as well as human resources operating in parallel with the industrial organizations. This centre aims to develop the measurement and evaluation facilities in the existing automotive laboratories at ITU, and equip these labs for R&D and product evaluation purposes in product development for the automotive industry.

#### Textile Research and Development Centre

This centre aims to act as an advisory body to investors in the selection of the most appropriate textile machinery, thereby providing savings in the economy and guaranteeing future success. Through the know-how and research facilities offered by the centre, the textile and clothing industry will benefit from modification of production techniques, textile machinery, and product development. With the development of textile processes and products, new opportunities will be provided to textile industrialists in penetrating new markets.

#### CAD-CAM Research and Development Centre

Machine manufacturers of large, medium, and small scales competing in the world markets must be able to use and systematically apply new design and manufacturing concepts and technologies such as computer aided design, computer aided manufacturing, computer aided assembly, computer aided measurement, computer aided testing, and so forth.

This centre aims to transfer the latest design and manufacturing technologies to the machine and dye manufacturers in Turkey and to help increase their competitive power in global markets. The centre enables the unification of academic knowledge and experience of ITU with the practical know-how, production experience and dynamism of manufacturers.

#### Food Quality Control and Technology Development Centre

The food processing industry, alongside the textile and leather industries, is one of the most competitive and outstanding sectors of the Turkish economy. This sector transforms a growing share of Turkish agricultural production into processed commodities and makes it available for both the domestic and export markets.

The centre, after obtaining laboratory accreditation, is expected to conduct quality control analyses mainly for the export markets, thus overcoming many problems being already experienced by

Turkish food exporters. The Centre is expected to soon become a self-financing institution by the income generated from analytical and consultation services. Development of existing food processing technologies constitutes the most efficient way of improving the quality of food products.

#### Project/Construction Management and Technology R&D Centre

The mission of this centre is to bridge the gap between the theoretical studies administered in the academic environment of universities and the practical undertakings of the construction industry. The Centre also aims to establish cooperative links with other universities and related research centres in transferring information at both national and international levels.

The Project/Construction Management and Technology R&D Centre provides services under the categories listed below:

- Project & Construction Management
- R&D in Organizational Development
- Professional Development and Continuous Education
- On-line Construction Management
- IT based Construction Management Executive MBA Program
- Construction Contract Consultancy
- Web-Based Construction Management Software Applications
- 3-D Architectural Design and Modelling Studio

The Centre is also responsible for the management of all construction projects at ITU campuses.

The Centre is running an important project (TURKCONNET) with the European Construction Network Group. The mission of TURKCONNET project is to improve the competitiveness of the Construction Industry by creating a "virtual technology park", an Internet-based environment that facilitates construction community networking and makes digital dissemination of technical and product-oriented information possible, regardless of national boundaries.

#### Distance Learning Centre

Turkey has the youngest population and the highest rate of population increase among the European countries. This young population can become a rich human resource if adequate education can be provided at all levels. It is therefore necessary to mobilize available resources by all means to increase the extent and quality of education.

ITU has developed a project called "*Satellite University of Science and Technology for the Regions of Eastern Europe and Central Asia*", aiming at delivering real-time distance education nationwide and at the international level. The Satellite University will transmit lectures, seminars, conferences and other educational programs to reception centres located in Turkey, Central Asia, Caucasia, Balkans and Eastern Europe via satellite.

SUNY and ITU will be starting a new project for joint programs between the two universities and this project will be funded by the Bureau of Educational and Cultural Affairs of the US Department of State.

#### Software Development and Multimedia Centre

This centre aims to:

- provide financial technical and marketing aid
- help transform knowledge into products
- foster relationships between University and Software Industry
- organize seminars, courses and conferences on Software related topics
- support the "Computer Aided Education" project of the Turkish Ministry of Education.

### Adnan Tekin High Technological Ceramics and Composites Research Centre

ITU High Technological Ceramics and Composites Research Centre started its activities in 1999. The project was initiated by the Turkish State Planning Organization, French and Japanese governmental funds. This centre aims at:

- solving the problems of the university, industry, and technocity in the area of material characterization
- providing process know-how to the industry in the related fields
- developing appropriate technologies in ceramics and composites mainly using indigenous raw materials.

### Mechatronics Centre

Mechatronics Centre is established as a joint project between the Faculties of Mechanical Engineering and Electrical and Electronics Engineering. Other departments also give support to this centre. The centre is built mainly on two shops and a laboratory:

- Machine Shop

In this workshop, there are various equipment and devices that can be used to produce prototypes for research and development activities. The CNC machines can also be used for mould production. The workshop is capable of using CAD files directly for production and prototyping.

- Electronics Shop

In this workshop, there are various equipment that can be used to produce electronic circuits for research and development activities.

- Robotics and Automation Laboratory

In this laboratory, there are various systems and software on robotics and automation that can be used for education, assembly and production. This laboratory is capable of achieving an unmanned production line.

### Satellite Ground Receiving Station

Satellite Ground Receiving Station is built at the Ayazağa Campus for \$14 million, capable of receiving archiving and processing data for SPOT, URS and RADARSAT satellites. At the moment, this project is at the stage of finalizing an upgrade of the system to increase its resolution to 0.6 m. An agreement is being worked out with QUICKBIRD satellite. ITU and TUBITAK have recently signed an agreement for the operation and management of the ITU-SAGRES ground station.

### Advanced Electronics Technologies R&D Centre (ETA Design Centre)

The ETA Design Centre was founded by the ITU Electronics Engineering Department in cooperation with the industry in 1991. In this centre there are seven representatives from the industry in the areas of electronics, telecommunications, and control.

The centre aims to:

- promote university-industry cooperation in the area of electronics engineering
- provide necessary services for designing, prototyping, and mass production of industrial ASICs
- offer consultancy and training in related topics
- monitor global ASIC development trends and propose R&D projects accordingly.

### Centre for Disaster Management

The Centre for Disaster Management was established in 2001 at ITU under a memorandum of understanding with the United States Federal Emergency Management Agency (FEMA). ITU and FEMA carried out project ACHIEVE (A Cooperative Hazard Impact reduction Effort Via Education), a Disaster Management Education Project implemented according to an agreement signed in 2000

between the Prime Ministry of the Republic of Turkey and Federal Emergency Management Agency (FEMA) of the U.S.A.

As part of the US response to Turkey's 1999 devastating earthquakes, FEMA launched an extensive emergency management training partnership with ITU. The objective of ACHIEVE was to create an educational model for the development of professionally trained emergency managers in Turkey and to increase the general population's understanding of the need for earthquake planning and preparedness.

FEMA has sent trainers from its Emergency Management Institute (EMI), along with expert technical consultants, to the ITU campus to conduct "train-the-trainer" emergency management classes and exercises. FEMA, working with ITU, developed a 19-course curriculum constituting the basic building blocks necessary for effective emergency management training. The first of these intensive education sessions began on September 25, 2000 and the efforts continued over the following seven months. FEMA trainers have spent one week each month on the ITU campus, through spring 2001.

Participants in the classes include ITU faculty who have translated and adapted the training materials for use throughout Turkey. Fourteen books have been published by ITU Press on various topics of disaster management.

Funding for the FEMA program has been provided by the Office of Foreign Disaster Assistance of the United States Agency for International Development. The aim of the Centre for Disaster Management is to train local and organizational officials for disaster management, who are employed as public or private officials required to work at disaster sites, officials working in local authorities and emergency operations centres, architects, engineers, teachers, students, and volunteer non-governmental organizations. All new techniques and knowledge regarding Disaster Management are conveyed by seminars and courses to the target groups listed above.

This centre is cooperating with all Disaster Management organizations of the Prime Ministry of the Republic of Turkey. The long- and short-term goals of the centre are to train officials for disaster prevention and mitigation. Priority is given to emergency managers of relevant institutions and local authorities, and secondly to public training programs. The centre is able to organize education seminars on national and international levels and coordinate research projects.

The Centre for Disaster Management also initiated a graduate-level education program, for professionals who are seeking a Masters Degree in Disaster Management. The graduate program is carried out in cooperation with the Oklahoma State University, and is a one-year degree program.

#### Rotorcraft Centre

The Rotorcraft Centre was established in 2001 upon the request of the State Planning Organization to build up expertise in the design of helicopter components. This centre is in the process of designing and developing a small scale helicopter for two passengers and the first prototype is due 2005.

Due to the complex nature of the helicopter design, this centre is composed of the academic staff members of the Faculties of Aeronautics and Astronautics, Electrical and Electronics Engineering, and Mechanical Engineering. This interdisciplinary centre collaborates with the Georgia Institute of Technology.

#### Environmental Biotechnology Research Centre

The Environmental Biotechnology Research Centre is one of the ten national interdisciplinary centres of excellence established jointly by the Turkish Scientific and Technical Research Council (TÜBİTAK), to manage existing R & D potential, to keep up with the emerging scientific and technological developments, to generate cooperative contribution to the international science base and to train new researchers.

## **Research and Application Centres**

In order to establish cooperation between industry and one or more Faculties, research and development centres were formed at ITU in 1980's. These centres aim to answer the need of industry to solve its problems, ranging from analysis and testing to process development. For this reason research and development centres are designed to be multidisciplinary, flexible, and independent of academic units. The ITU Research and Application Centres are:

### Environmental and Urban Planning Application and Research Centre

The centre is organized to carry out research and consulting related to environmental and urban planning issues. The activities include providing solution to urban planning, environmental pollution, research in the ancient cities, survey of conservation areas, restoration of buildings, generation of information on works of art, and architectural design.

The centre is composed of four units: environment, urban planning, history of architecture and restoration, architectural planning and design. The Environmental Engineering Laboratory occupies an area of 600 square meters and caters to all kinds of laboratory, model and in-situ testing including advanced measurements.

### Energy Science and Technology Application and Research Centre

The activities of this centre include planning, rationalization and economics of energy sources; solving problems related to energy; production, design, development and instrumentation of all kinds of energy-producing machinery. The centre is organized in three units comprising heat technology and thermal machinery, special-energy resources, and fossil-energy resources. The laboratories affiliated with this centre are:

- Thermal Measurements
- Boilers
- Heat and Mass Transfer
- Pressurized Gasses
- Thermal Machinery
- Hydromechanics and Hydraulic Machines
- Nuclear Physics
- Basic Processes

### Electronics and Control Application and Research Centre

The problems encountered in the Turkish Electronic Industries are the primary concern of this centre. Besides supporting research in related fields, it provides solutions to problems in electronics, computing and control engineering. The areas of interest of this centre are electronic systems, microelectronics, radio, TV, radar, communications, on-line control, automation, process control, machine-tool control, power electronics, electrical-machine control, computer hardware and software, microprocessor systems, CAD/CAM, and robotics.

The centre is comprised of the electronics and communications, control and automation, and computer and real-time systems units. The laboratories assisting research and consulting are as follows:

- Electronics and Micro Electronics
- Communication and Acoustics
- Electromagnetic Field and Microwave Techniques
- Electrical Network and Systems
- Electric Motors Control
- Electrical Engineering Controls
- Mechanical Engineering Controls
- Electrical Measurement and Instrumentation

- Computer and Real-Time Systems
- Hardware/ Software
- Digital Systems

#### Machine Construction Science & Technology Application and Research Centre

All projects pertaining to the design and construction of manufacturing machines are implemented in this centre. The centre consists of three units: design and construction, agricultural machinery, and textile machinery. These units are supported by the following laboratories:

- Machine Elements
- Strength of Materials and Experimental Stress Analysis
- Automatic Control
- Thermal Turbo-machinery and Heat Technology
- Casting, Welding, Forming, Mechanical Testing, Metallography
- Internal Combustion Engines & Automotive Vehicles
- Agricultural Machinery
- Textile

#### Materials Science and Production Technology Application and Research Centre

The production, use and industrial application of metallic and non-metallic materials constitutes the field of interest of this centre. Research and consulting is carried out in civil, mechanical, and chemical engineering fields as well as ceramics, metallurgy, and chemistry. The centre is composed of four main units: structural materials, metallic materials, non-metallic materials, and ceramics. The laboratories providing support to this centre are:

- Structural Components and Materials
- Extractive Metallurgy
- Materials Science
- Materials Testing, Casting, Welding, Metallography, Plastic Deformation
- Chemical Technologies
- Unit Operations and Processes
- Inorganic Chemistry
- Organic Chemistry
- Physical Chemistry
- Analytic Chemistry
- Physics
- Ceramics

#### Oceanography and Aquatic Sciences Application and Research Centre

The activities of this centre cover all fields of civil engineering hydraulics and marine technology including water resources development, dams, water intake structure, harbours, navigation in rivers, reservoirs, and sea, shipbuilding and development of vessels. The units in this centre are hydraulics and hydraulic structures, sea hydrodynamics and marine structures, and aerodynamics. They are supported by the following laboratories:

- Hydraulics and Hydraulic Structures
- Ship Modelling and Experiment basins
- Cavitations and Open Water Channels
- Air Tunnels

#### Transportation and Transportation Vehicles Application and Research Centre

The centre is organized to carry out research and consulting work related to sea, land and air transportation systems. The activities cover planning and evaluation of transport facilities and all kinds of transportation vehicles. Special emphasis is placed on industry-related research on planning, design, systems approach, and modelling issues. The main units of the centre are land

transportation, sea transportation and air transportation. The laboratories assisting in the projects are:

- Road Materials
- Internal Combustion
- Ship Model Testing
- Aerodynamics

#### Building and Earthquake Application and Research Centre

This centre is organized to handle problems arising from earthquakes. The activities cover a broad area in development of structural systems, design and static/dynamic analysis of buildings. The centre activities concentrate in two main areas: dwellings and industrial structures, and earthquake research.

The affiliated laboratories are Structural Engineering, Geotechnical Engineering, and Geophysics. The centre occupies a 2000 square meters area including Shaking Table (the procurement process is completed, the cost approx. \$3 million), administrative offices, laboratories, and meeting rooms. The total amount of investment realized for this centre is \$5 million.

#### Earth Sciences and Underground Resources Application and Research Centre

The evaluation of the surface and subsurface natural resources of the earth constitute the areas of work in this centre. The activities include geological and geophysical surveys, concerning engineering geology, ore deposits, ore dressing, coal briquetting, mineralogical and petrological studies, prospecting of petroleum, natural gas and geothermal energy, pipeline design, and organization of courses in all fields of earth sciences and mining.

The centre is organized in two main units of earth resources, and earth sciences, the latter consisting of seismology and seismotectonic subunits. The laboratories serving the centre are:

- Microscopy, X-Ray and Geochemistry
- Engineering Geology
- Rock Cutting and Sample Preparation
- Geophysics
- Mine Production and Technology
- Petroleum and Sedimentology

## **APPENDIX F**

### **Restructuring of Undergraduate Programs**

## Appendix F

### Restructuring of Undergraduate Programs

#### Undergraduate Curriculum Development

In 1996, all of the engineering programs have been restructured to meet the requirements of the mission of the University and conforming to the needs of up to-date engineering education. ITU has decided that its mission was “to graduate worldwide competing engineers” and all of these changes needed to be substantiated by international accreditation.

The strengths of ITU, national and regional needs and characteristics of each engineering discipline are considered in the development of the programs. The main framework of the engineering curriculum passed in the Senate meeting of March 27, 1997. The framework of the engineering curriculum as accepted by the Senate is summarized below:

1. The programs will have minimum and maximum credits of 142 and 150 respectively, including Turkish History and English courses which total to 17 credit hours. Under extraordinary conditions, departments may exceed this limit up to 153 credit hours subject to the approval of the Senate Education Committee and the Senate.
2. The distribution of credit hours among the four main course groups are set as:
 

|  |         |
|--|---------|
| “Mathematics and Basic Sciences” courses         | min 25% |
| “Engineering Fundamentals” courses               | min 29% |
| “Humanities and Social Sciences” courses         | min 20% |
| “Discipline Specific Engineering Design” courses | 25-35%  |
3. The credit-hour distribution must also satisfy a minimum ratio of 20% for elective/compulsory courses, which results in 17% ratio of elective/total courses. The electives are aimed to enrich students in the fields of their interests. Each student is advised to take at least two courses from the “Humanities and Social Sciences” group. Each program should ensure at least one unrestricted elective and a minimum of 12 credit hours in the technical electives group.
4. In the “Mathematics and Basic Sciences” group, Mathematics I (3+2 or 4+2), Mathematics II (3+2 or 4+2), Differential Equations (4+0), General Physics I (3+2), General Physics II (3+2) and General Chemistry I (3+2) are compulsory courses for all engineering departments. Mathematics electives include Numerical Analysis, Linear Algebra, Complex Variable Functions, Partial Differential Equations, Statistics and Probability, Advanced Mathematics, and System Analysis courses. Basic Sciences electives include Optics, Classical Mechanics, Modern Physics, Quantum Physics, Astronomy, General Chemistry II, Analytical Chemistry, Physical Chemistry, Organic Chemistry, Earth Sciences, General Biology, Microbiology, and Environmental Sciences.
5. In the Engineering Fundamentals group, Introduction to Computers and Information Systems (1+2) course is compulsory for all programs. Introduction to Scientific and Engineering Computing (3+0) course is compulsory to all engineering programs.
 

“Engineering Fundamentals” courses bridge the gap between Mathematics and Basic Sciences, and Engineering Design courses. Some of the courses in this group are Engineering Mechanics, Thermodynamics, Materials Science, Electrical Engineering, Transport Phenomena, and Technical Drawing.
6. Turkish I (2+0) and Turkish II (2+0), History of Turkish Revolution I (2+0), History of Turkish Revolution II (2+0), English I (3+0), English II (3+0), and English III (3+0) are designed as compulsory courses in the “Humanities and Social Sciences” group. Each program must

choose one course between Economics (3+0) and Law (3+0). The other electives in the "Humanities and Social Sciences" group include Foreign Languages, Linguistics, History, Psychology, Sociology, Philosophy, Anthropology, Literature, Political Science, Management Science, Fine Arts, History of Science and Technology and other courses in the related fields.

7. The graduation project (0+6) must be a part of "Engineering Design" group.
8. The courses are encouraged to be designed as 3 credit hours. This is especially important for double major students and interdepartmental transfers.
9. The curriculum consists of 30% English and 70% Turkish courses. Besides English I, II and III, Introduction to Computers and Information Systems, and Introduction to Scientific and Engineering Computing courses must be taught in English. The departments decide on the courses to be taught in English.

The proposed programs of each department were evaluated by the Senate Education Committee and accepted in the Senate. The curricula of 34 programs, 28 of which are engineering, were changed. This involved a reduction of about 25% in credit hours of the previous engineering programs.

To match the improvements in the engineering curriculum, the physical and technical infrastructure of the classrooms and student laboratories in the faculties was also tremendously improved. Most of the classrooms are furnished with audiovisual equipment such as data and overhead projectors, Internet access, stationary screen, and some classrooms have air-conditioning facilities for summer school. In the laboratory restructuring process, common laboratories for many engineering departments such as chemistry and physics laboratories were given the priority.

### **Advising and Monitoring of Students**

Students receive academic advice throughout their undergraduate education. An orientation program is carried out by each Faculty, for the entering students at the beginning of their first semester in ITU. The purpose of this one week program is to adopt the students to the academic and social environment of the university, and their faculty and department. Students are provided with information about the services and resources available to them, about the structure of the concerned department, the curriculum of their program, and about the academic advising procedures. Each student receives an advising package containing information about the undergraduate regulations, undergraduate curriculum, contact information (name, office number, phone number and e-mail address) of the faculty members and information about the orientation activities.

An academic advisor, who is a full-time faculty member, is assigned by the departments, to each student, in the first week of the first semester. The advisor generally remains unchanged until the student graduates. All information about the academic status of a student can be reached by his/her advisor on the web. Advisors are required to follow the academic development of their advisees throughout their undergraduate education, to provide advice on the selection of courses, during the add-drop periods, and information on the possibilities of scholarships, graduate programs, programs abroad, etc. Advisor also checks the record of the student for the requirements of the undergraduate degree and makes timely warnings, and helps the student in handling personal problems, when necessary. The common procedures of advising adopted in ITU, are available at the [www.sis.itu.edu.tr/yonetmelik/danisman.html](http://www.sis.itu.edu.tr/yonetmelik/danisman.html) address. Academic information is available for the students on the web pages of the university at the [www.itu.edu.tr](http://www.itu.edu.tr) address.

A computer-based registration and monitoring system, Banner 2000, was established in ITU in 1998. The system is operated by the ITU Student Affairs Office and can be reached at the [www.sis.itu.edu.tr](http://www.sis.itu.edu.tr) address. Access at different levels is provided to the students, instructors and advisors through passwords and different menus.

The students can reach information on the curriculum, available courses, instructors, sections, capacities, timetables, classrooms, etc., and self-register via the internet by the help of this system. Consent of the academic advisor of the student is required for the add-drop actions. Grades are given by the instructors electronically and transcripts are produced and updated automatically. Advisors have access to the academic data of their advisees and can monitor the progress of them through the same system.

Students who obtain a GPA between 3.00-3.49 at the end of a semester, while carrying a normal course load, are referred to as "**Honours**" students. Those earning an average of 3.50 and above, under the same conditions, are awarded with "**High Honours**". Students who have taken less than 75 credits are put on the "**probation**" list if their GPA's fall below 1.80 at the end of any semester. Similarly, those who have taken 75-110 credits are put on probation if their GPA's fall below 1.90. A student must earn a GPA above the mentioned limits in order to be removed from the probation list. Those students who are still on probation after two consecutive semesters are dismissed. Students who receive an FF in a course have to repeat that course the next time it is offered. Courses for which the obtained grades are DC or lower may be repeated by the students in order for the GPA's to be improved.

The requirements that a student must fulfill in order to graduate are:

- 1) to complete the coursework (150-153 credits depending on the program) with a minimum GPA of 2.00,
- 2) to complete the internship requirements of their program, and
- 3) to have taken 30% of the credits from the courses taught in English.

The normal period of undergraduate education is four years. Students are allowed to complete the requirements for graduation in a shorter time period by taking courses offered in the summer school. A maximum coursework of 12 credits is permitted during the summer school. Seven academic years (excluding the English preparatory class) is the maximum allowable time for the completion of graduation requirements.

## **APPENDIX G**

### **Academic Rules and Regulations for Undergraduate Study**

## Appendix G

### Academic Rules and Regulations for Undergraduate Study

#### ISTANBUL TECHNICAL UNIVERSITY UNDERGRADUATE ACADEMIC REGULATIONS

##### Part I: General Rules

###### Scope

Article 1 – Undergraduate education, instruction and examinations at Istanbul Technical University Faculties and Departments are carried out according to these rules and regulations, Education and instruction at the Maritime Faculty, the Vocational School of Higher Education and the Turkish Music Conservatory are based on different regulations.

###### Diploma

Article 2- Students who successfully complete their studies at Istanbul Technical University Faculties and Departments according to these regulations are granted a diploma with the name of the Faculty and Department. If necessary, the name of the program is also indicated. Faculties and Departments of Engineering grant Engineering diploma (ITU); Faculties and Departments of Architecture, Urban and Regional Planning and Industrial Product Design award a diploma of Architecture (ITU), an Urban and Regional Planner's diploma (ITU) and an Industrial Product Designer's diploma (ITU) respectively. Other undergraduate Faculties and Departments grant an Undergraduate diploma (ITU). Titles for graduates of new Faculties and Departments to be established are determined by the University Senate.

###### Student Fees

Article 3 – In every academic year, undergraduate students pay a legally determined fee. Students registered for English Development Instruction are also required to pay a fee equal to the fee of the Faculty they are enrolled in. Students who fail to pay their fees cannot complete their registration and are dealt with according to articles 5 and 6 of these regulations.

###### Student Affairs

Article 4 – Registration in Faculties and Departments, transfers, instruction and examination procedures and dismissal from Faculties and Departments in each semester are decided the Faculty Administrative Boards. Students can appeal to these decisions by applying to the University Administrative Board with in 15 days.

##### Part II: Registration

###### Admission Principles and Final Registration

Article 5- An adequate score on the Central Student Selection and Placement exam, and no enrollment at another Higher Education Institution are requirements for admission to ITU Faculties and Departments

The final registration date, the documents required and the principles to be applied are announced upon their determination by the University Board. Students who register take the English Proficiency Exam set by the university on the date announced.

Those documenting their success on an international or a national exam whose equivalence to the English Proficiency Exam is accepted by the Senate, at a level determined by the Senate, are also admitted as undergraduate students on the decision of the Administrative Board of the Faculty concerned. These students are not required to take the English Proficiency Exam. Students who pass the English Proficiency Exam become undergraduate students and start their undergraduate study on the decision of the Faculty Administrative Board concerned. Those who fail this exam and those who do not take it, register with ITU Department of Languages and History of ITU College of Foreign Languages within a specified period of time and receive "English Development Instruction" through this department. Students who do not earn the right to begin their undergraduate study at their Faculties and Departments can attend all the English Proficiency Exams in the following academic year including the exam at end of summer school. Failing on those exams leads to dismissal from ITU. According to Article 9 of 'Regulations Relating to Foreign Language Education and Instruction and Principles of Education – Instruction in a Foreign Language at Higher Education Institutions', such students may apply for transfer to universities where instruction in English is not compulsory.

The application principles of English Development Instruction (the English Preparatory Classes) organised by ITU College of Foreign Languages are based on different regulations. Applicants who do not complete the final registration procedures within the set period of time are considered to have withdrawn and cannot claim any rights.

If need be, applicants can petition the Student Affairs Head office for registration through legally notarised proxies, provided that the rules stated above are adhered to.

#### Re-Registration

Article 6 – ITU students are required to re-register each semester on the days set by the University Administrative Board. Students who cannot re-register on the announced days can do so within a week of the last day of registration. The University Administrative Board annually determines the conditions pertaining to delayed registration. Registration schedule is announced in the last week of the previous term. Failure to re-register in 2 consecutive or in any 2 given terms is grounds for dismissal from the University. The term for which the student has failed to register is considered part of the academic program.

#### Student Advisors

Article 7- Every student is entitled to an Advisor, who is either a lecturer or an instructor, chosen by the Department concerned. The advisor observes the students' progress and advises the student on the compulsory and elective courses he/she is supposed to take in the Undergraduate, English Instruction and Double Major Programs, whichever the student is attending. During registration and re-registration, the student plans his/her courses with the advisor and has them approved by the advisor.

An advisor with a valid reason for being absent from the University during the registration period notifies the Department Chairman in writing. The Chairman temporarily appoints another lecturer to substitute for this advisor and announces this to the students.

#### Identification Card

Article 8- The rectorate issues an ID card with identifying photograph to those students who have completed their final registration according to Article 5.

#### Transfers

Article 9- All kinds of transfers to ITU Faculties from within the University or from other universities are conducted in accordance with the rules in 'Regulations Relating to Principles of Transfers at Pre-degree Certificate and Undergraduate degree Levels among Higher Education Institutions'.

Transfers are restricted to quotas set by the Faculty Administrative Board. Adjustment operations are also conducted by the Faculty Administrative Board.

According to these Regulations, students planning to transfer from 2- year higher education institutions and from other 4- year universities have to either document their success in English as defined by the ITU Senate or pass the English Proficiency Exam organised by the School of Foreign Languages of ITU College of Foreign Languages. Students of 4- year Undergraduate Institutions who cannot pass the Proficiency Exam cannot transfer to ITU.

Transfers from 2 – year higher education institutions are based on the rules in the Regulations Relating to the Accession of Vocational School of Higher Education and Open University Pre-degree Program Graduates to Undergraduate Programs.

### **Part III: Instruction**

#### Academic Year

Article 10- The academic year consists of fall and spring terms and summer school. Fall and spring terms are normally each 14 weeks long. This period may be changed by the University Senate when necessary. The academic calendar is prepared and announced by the Senate before the academic year begins. The application principles of the summer school are based on different regulations. The days and hours of instruction are determined by the University Senate. No classes and exams are held on official holidays. However, the classes and exams of some courses recommended by the unit offering the course can be held on Saturdays and Sundays when necessary, if approved by the University Administrative Board.

#### Duration and Manner of Instruction

Article –11 The normal period of instruction at ITU Faculties in accordance with these regulations is eight terms excluding the period of English instruction at ITU College of Foreign Languages.

Instruction may be composed of classes, applications project and studio work, workshops, laboratory work, practice, preliminary sketches, field work, seminars, graduation projects, preliminary, and the like. The duration of the compulsory and elective courses in the curricula and of their related activities including projects, laboratory and field work is one term unless otherwise stated by the University State.

The curriculum consists of compulsory and elective courses. Compulsory courses are those the students are obliged to take whereas the elective courses are those the students must choose from certain groups of courses. Over the course of the year, the undergraduate program students must complete a minimum of 30% of their curriculum credit hours in courses offered in English. Upon the approval of their advisors, students can take some courses from the curricula of other faculties of the University.

#### Curricula

Article 12- Instruction at ITU Faculties and Departments is based on a curriculum determined by the Faculty Board and approved by the Senate taking into account the common courses which are determined by the Higher Education Board and accepted by the Senate in consultation with the departments.

Students defined as sophomore when complete at least 35 credits, junior when complete at least 75 credits and senior when complete 110 credits.

In the first term, students must take the first term courses of the Department curriculum. However, those who start their undergraduate study in the second term (students who have attended English

preparatory classes for one term) can take courses from the upper term in addition to the first term courses - provided that there are no prerequisites and that they conform to the credit limits specified in Article 14. Students who complete at least 35 credits by the end of the first year and at least 75 credits by the end of the second year and whose cumulative grade point averages (GPA) are at least 3.00 can apply to the "Double Major" program. Moreover, these students may exceed the maximum credit limit indicated in Article 14 to graduate in a shorter period of time.

Students can continue their education on the condition that their courses, either with or without prerequisites, do not conflict, that they abide by the credit limits as stated in Article 14 and that they fulfil the requirements of Article 18, item a.

Internship studies, which are part of the curriculum, are carried out according to department-specific principles set by the Faculties. Classes and applications which must be held outside the University buildings can be held either during the term or during periods specified by the units concerned following the spring term.

#### Prerequisites

Article13- Course prerequisites are set upon the recommendation of the Department concerned and after approval by the Faculty Board. In order to attend any course in the curriculum, a student must qualify for an exam in the course pre-requisite(s). However, the student may request to be considered successful in the pre-requisite(s) of a course with the department's recommendation and the Senate's approval.

#### Enrolment

Article14- Every student can enrol in the studies listed in the first paragraph of article 11 on conforming to the conditions below. Except for those on probation as stated in article 18, item a, students of the first term and double major students, all students must take a minimum of 15 with a maximum of 22 credits in one term. Student who has a grade point average of 2.25 can extent maximum credits to 25 and student who has a grade point average of 3.00 can extent maximum credits over 25. The credit load can be changed when necessary upon the decision of the Faculty Administrative Board.

Students can add and drop courses in the first 15 days of the term with their advisors' approval. In addition, students can drop a course in the first month of the term. A student can drop a maximum of 1 course in one term, first term excluded, and a maximum of 7 courses over the course of the whole undergraduate program.

Students may choose not to take a few or any of the curriculum courses in the term if their classes conflict or if they are taking or repeating too many courses. However, the inability to enrol for the above reasons does not affect the adherence to the education period required in Law No. 2547, Article 44.

#### Graduation Project

Article 15- Every student must complete a graduation project to show that he/she has reached the required professional level. The graduation project is accepted as an eighth term course in the curricula. The project can be done in English if approved by the project supervisor and if it is found to be successful, the project credits may be counted as part of the 30% English requirement.

Graduation project topics can be distributed to students in earlier terms according to the conditions stated in the ITU Senate Principles. Those students who cannot register to a graduation project in the last term may register in the following term. Issues related to graduation projects are defined by the principles set by the Senate, in consultation with the Faculty Boards.

## Part IV: Grades, Symbols, Exams and Achievement

### Grades and Symbols

Article 16 – grades, exams and achievement issues relating to English Development Instruction are defined by a different set of regulations.

Article 17- Achievement in a course during the undergraduate program is determined by the Relative Evaluation method. In this method, the student's achievement during the term, and his/her final exam grade at the end of the term, are evaluated together and the general achievement level of the class is also taken into account. When evaluating a student's achievement, the course lecturer takes into account both the distribution of the grades and the average class grade.

The following table illustrates the degree of achievement that the grades indicate and their coefficients. (AA), (BA), (BB), (CB) and (CC) indicate that the student has been *successful* in the course. (DC) and (DD) indicate that the student has been provisionally successful in the course.

| Course Grade  | Coefficient | Explanation                                      |
|---|-------------|--|
| AA  | 4.00        | Excellent  |
| BA  | 3.50        | Very good  |
| BB  | 3.00        | Good   |
| CB  | 2.50        | Average  |
| CC  | 2.00        | Satisfactory                                     |
| DC  | 1.50        | Poor   |
| DD  | 1.00        | Minimum Acceptable                               |
| FF  | 0.00        | Failure  |
| VF  | 0.00        | Not permitted to take courses with prerequisites |
| <p><b>T:</b> The student dropped the course he was enrolled in within the time period stated in Article 14</p> <p><b>E:</b> The student could not complete the project, graduation project etc. within the required period of time. The due date will be determined by the lecturer. If the project cannot be completed within the deadline, the student receives FF.</p> |             |  |

Article 18- a) Students whose cumulative achieved credits are 75 and below are placed on a probation list when their cumulative grade point average is below 1.80 at the end of any given term. Likewise, students whose cumulative credits are over 75 and at or below 110 are also placed on probation if/when their cumulative grade point average is below 1.90. If a student is placed on probation list twice in succession and cannot raise his/her cumulative grade point average over the defined level at the end of the second probation period, he/she is dismissed from the University. Students are removed from the probation list if/when their grade point averages are over the defined values and they continue their studies as regular students. Students who are dismissed from the University retain their rights as stated in article 25, item (a). Students whose cumulative credits are over 110 and whose grade point averages are below 2.00 are placed on probation lists. If dismissed, they are entitled to the rights stated in item(b) of the 25<sup>th</sup> article.

Students on probation cannot register for more than 15 credits in one term. These students can take the courses for which they were found unsuccessful or provisionally successful and/or for those which they fulfilled the pre-requisites in any term.

b) When calculating the cumulative grade point average as of the end of the term the student is enrolled in, the courses which the student could not take in the lower terms and the courses which the student withdrew from according to paragraph 3 of article 14 are not taken into account.

## Raising the 'Weighted' Grade Point Average

Article 19- To raise his/her cumulative grade point average, a student can repeat the courses which he/she was enrolled in and succeeded in provided that the provisions in Article 14 are observed. In this case, the most recent grades are valid. All the grades and standing the student has been given are indicated on the grade document.

## Passing Grade

Article 20 – **a)** A minimum 70% class attendance and 80% attendance at independent application classes such as laboratory and workshops is mandatory. Students who cannot fulfil the attendance requirement cannot sit the final exam at the end of the term. The achievement grade for a course is determined by the course components during the term (midterm exams, quizzes, field work, applications, assignments, workshops, seminars, attendance, laboratories etc.) and a final exam at the end of the term. A week prior to the beginning of each term, the achievement evaluation systems (type and number of term work activities percentages of the term work and of the final exam on the achievement) for the courses to be offered in the term are proposed by the course lecturers who fill in the information in evaluation forms. A proposal must first be approved by the Chairman of the department concerned then finalised by the decision of the Faculty Board and announced by the Dean's Office.

**b)** The names of students who do not qualify for the final exam are listed and posted in the last week of the term. Such students receive (VF) from that course.

**c)** The contribution of the final exam to the achievement grade cannot be less than 40% or more than 60%. These ratios can be altered if necessary by the decision of the relevant Faculty board.

**d)** There are no make-up exams for mid – term exams. Students who do not take the mid – term exam receive (0.00) as their grade. However, students who are on duty representing the University and thus cannot take the mid-term exam may be given a make-up by decision of the University Board.

**e)** A student who cannot attend the final exam at the end of the term with an excuse accepted by the Administrative Board of the Faculty concerned. He/She can take the final make – up exam conducted in the week after the final exams are given. The highest course grade awarded on a final make – up exam can be (CC).

**f)** The course achievement list is announced by the course lecturer within one week of the final exam is given. When deemed necessary, the Faculty Board may require a lecturer to review the achievement evaluation.

**g)** Students who have a cumulative grade point average of at least 2.00 and who have successfully completed at least 18 credit hours in a term or will graduate at the end of the term with minimal period are awarded an honour degree if their grade average is 3.00 – 3.49 at the end of the term. A high honour degree is awarded if the GPA is 3.50 – 4.00 for that term.

These honour degrees are indicated in the students' grade documents. Students who have FF and/or VF in any term in their documents cannot qualify for honours even if they attain the adequate grade average.

## Final Examination Period

Article 21- In every term, the instruction period is followed by an examination period. The examination period is extended by the number of days on which exams cannot be held due to reasons accepted by the Board of the Faculty concerned. The final exams of courses which include field work and those in which the student's right to take the exam is dependent on the field

work result can be conducted after the field work is completed. Graduation work exams are given either during the term or summer school finals or in the following week.

#### Examination Schedule and Place

Article 22- Final exam schedules are determined by the Faculty Boards and announced at least two weeks before the examination period begins. The exams are held at the set time and as announced.

#### Manner of Examination

Article 23- Finals are usually written exams. However, upon the request of the department, the Faculty Board can decide for the final to be an oral or an oral-written exam. The decision is set out in the achievement evaluation form at the beginning of the term.

Final exams are organised and administered by the lecturers or instructors teaching the courses. In case of the lecturer's or instructor's absence on the exam day, the chairman of the major field appoints on the exam proctor and notifies the Directorate of the Department concerned. All lecturers and assistant instructors in a Faculty may be assigned duties to ensure the proper administration of the final exams.

#### Appeal of Exam Results

Article 24- A student may appeal his/her achievement evaluation result by applying in writing to the Faculty Dean's Office within a week after the announcement of the achievement results of the course. The Dean's Office requires the lecturer concerned to re-evaluate all the work contributing to the Faculty Administrative Board decision. Both the student's appeal and the lecturer's re-evaluation are taken into account.

#### Extension Period

Article 25-a) Students who are to be dismissed in the first year, if they are unsuccessful (FF) only in one course, and those to be dismissed in the second and third year, if they are unsuccessful (FF) only in three courses, are given the right to take three more final exams without repeating the courses. They can make use of this right within a three year period. They can use this right during the exam period of the terms when the courses concerned are offered. Students who have not scored FF can use their exam right for the courses in which they have scored DD and DC, as well. If they fail in these exams and/or if they cannot achieve the "weighted" grade point average defined in item (a) of article 18, they are dismissed from the University. Students wishing to benefit from the rights explained above can petition the Student Affairs Head Office.

b) Students of the undergraduate program enrolled in ITU Faculties and Departments are allocated seven years maximum to complete the program (preparatory classes excluded). Senior students who cannot graduate at the end of the maximum allocated period of time are given two additional exam rights (Additional Exam 1 and Additional Exam 2) for all the courses they have failed. These rights have to be used in the exam periods of the first 2 terms in which the courses are offered (Additional exam rights do not apply to courses which the student has not taken or where he/she has not qualified to take the exam). After taking these additional exams, if the number of courses in which the student has been unsuccessful drops to 4 or 5, the student is granted the right to repeat the finals of these courses for another 3 terms. However, if the number of the courses the student has been unsuccessful in drops to 4 or 5 without him/her taking the additional exams, he/she is given the right to repeat those course finals for another 4 years. In cases where the drop mentioned above is greater (to 3 or less than 3 failures) the students is given an unrestricted right to repeat the finals of the courses he/she has been unsuccessful in.

Students who, at the end of the maximum period and the additional exams following it, have 5 or less courses to complete for graduation, must apply for there rights to take the exams of the

courses they have not taken before or the courses in which they did not qualify for the final exam. To do so, they must register for these courses in conformance with the rules and regulations. They may only take the exams at the set times. Following this, if the number of the courses they have failed does not drop to three or below, they will be dismissed from the Faculty. Students who can reduce the number of courses they did not succeed in to three or less at the end of the extension period can benefit from the indefinite exam right.

In the extended period, attendance is not mandatory except for application classes and courses the student has not taken before or in which he/she did not qualify for the final exam. The achievement of students with no attendance obligation is evaluated by their course instructors on the basis of the course components and the final exam results.

Senior year students whose cumulative grade point average is less than 2:00 (the success requirement) although they have succeeded in all courses and have taken 30 % of their classes in English are given an unlimited number of exam rights to increase their grade point average. (Students who are in such a standing before the 7 year maximum period can apply in writing to their Faculty for the same right.)

Students who have three or fewer courses to complete for graduation before the extension period, provided that they have earned the right to take the final exam once, can apply to their Faculty in writing to benefit from the unlimited final exam right.

Students benefiting from the five or four course right pay their tuition fees and also benefit from the rights of being students.

Students using their unlimited exam right continue to pay their tuition fees but cannot benefit from the other rights granted to students. Their final exam grade determines their achievement regardless of their former term grades.

Students who do not use their unlimited exam right for a total of three consecutive or separate academic years are considered to have abandoned this right. Hence, they can no longer benefit from it.

## **Part V: Evaluations**

### **Unit Credit**

Article 26- Courses, laboratory sessions, projects, seminars, workshops and graduation projects are evaluated in "credits". Courses and seminars are allotted one credit per hour per week. Applications, laboratory sessions, projects, workshops and graduation projects are allotted half a credit per hour per week.

### **Grade Point Average**

Article 27- The grade point average (GPA) is a weighted average determined by multiplying the coefficient of the grade received in each course, and in each activity equivalent to a course, such as laboratory session, project, workshop, seminar, graduation project etc, by the number of its credit hours and then dividing the sum by the total number of credits earned. The average is a rounded up figure of the two digits after the decimal point.

### **Graduation**

Article 28- students who have successfully completed the compulsory courses of the department curriculum and the elective courses to fulfil the credit

requirement of the department, have fulfilled all studies stated in the regulations (including internship) and have achieved 30 % of the total credit hours in English, are considered to have completed their studies and so will be granted the graduation diploma provided that their GPA is at least 2.00.

The graduates are issued a transcript which indicates the name of the department and program attended, the courses, projects, laboratory, graduation project etc. taken the achievement grade and the grade point average (GPA). Whether the student has been on the probation list or honor list is also stated in the transcript. The courses taken in English which the student has successfully completed are also listed in the transcript.

## **Part VI: Other Rules**

### Granting Leave and Legal Guarantee of Rights

Article 29- students can be granted leave for maximum two terms at one time for justifiable and valid reasons as determined by the Higher Education Council upon the decision of the Faculty Administrative Board. Students on leave cannot continue their education or take the final exams given at the end of the term during which they were granted leave.

Unexpected reasons such as illnesses, natural disasters, being under arrest and sentence and the removal of military postponement are also grounds for leave during the term. If the reasons mentioned apply during the exam period, the procedure is the same. A leave at any time during the term is considered to have started at the beginning of the term.

When a student requests a leave for the reasons stated above, he/she must apply submitting documents to the Faculty within 15 days after the need has emerged.

Leave for economic reasons and other reasons which may be accepted by the Administrative Boards can be granted only at the beginning of the term. In this case, the application for the leave, explanation of the reasons and documentation must be done within a month after registration has been completed.

When the leave ends, the student continues study from the point where the student left.

Permission for leave arising from justifiable and valid reasons defined by the Higher Education Council and other reasons approved by the university Board do not count towards the education period, provided that this is noted in the decision. A student whose absenteeism throughout the whole academic program exceeds two years due to psychological disorders documented with a medical report given by the health Committee will be required to get a new Medical excuse if he/she wishes to continue his/her education. The Faculty Administrative Board decides whether the student can pursue his/her education or not after analyzing this medical report. The student will be dismissed from the Faculty if the Board decides that he/she cannot pursue his/her studies.

### Withdrawal from the University

Article 30- Students voluntarily withdrawing from the University, apply in writing to the Dean's Office of the Faculty in which they are enrolled. A student whose registration is cancelled upon his/her application will be given a document indicating his/her standing in the Faculty if he/she wishes, the diplomas submitted to the Faculty for registration and other documents.

### Students Sent to Universities Abroad Upon Agreement

Article 31- the University can send students to Universities abroad for one or two terms within the framework of student exchange programs in accordance with the agreement between ITU and a

University abroad. The student's enrolment at ITU continues during this period and the period is considered part of his academic program.

How the courses taken at the University abroad with the advisor's approval and the student's achievement grades in these courses will be evaluated in relation to his/her achievement at ITU is determined by the faculty Administrative Board in consultation with the Faculty Transfer Commission.

#### Summer School and Double Major Program

Article 32- Summer School is organized according to the regulations and the Double Major program (ÇAP) is organized according to Senate Application Principles.

#### Pre-degree Certificate

Article 33- Students who are to be dismissed from their Faculty and have successfully completed the compulsory and elective course credit hours in the curriculum up to the end of the fourth term in accordance with the rules in these regulations are granted a "Pre-degree Certificate" only if their cumulative grade point average by the end of the fourth term has reached at least 2.00. These students are not obliged to have fulfilled the 30% English education requirement.

Temporary Article 1- The rules in the regulations herewith, with the exception of dismissal in the second and third years, are applicable to students who entered ITU in 1996 and attended English Preparatory Classes at ITU's Department of Languages and History of Atatürk Reforms (DIB) in the 1996-1997 academic year as well as to students who started their academic study in their Faculties or departments prior to the 1999-2000 academic year. Those students who chose the Turkish program are not held responsible for the 30% English course requirement.

These regulations apply to the above-mentioned student categories starting with the fall term of the 2000-2001 academic year.

Temporary Article 2- ITU Faculties Undergraduate Academic regulations published in the official Newspaper on August 20, 1995, no, 22380 and English Development Undergraduate Academic Regulations apply to those students who started their undergraduate program in their faculties or departments before the 1997-1998 academic year.

Temporary Article 3- These rules and the regulations apply with no alteration to the students who registered at ITU before the 1999-2000 academic year.

#### Validity

Article 34- "Istanbul Technical University Faculties Undergraduate Academic Regulations" published in the Official newspaper on August 20, 1995, no: 22380 and "Istanbul Technical University Undergraduate Regulations" published in the Official Newspaper on September 5, 1997, No: 23101 are no longer valid.

Article 35- These regulations are valid on the date of their publication as of the beginning of the 1999-2000 academic year.

#### Implementation

Article 36- The rules and regulations herewith are implemented by the Rector of Istanbul Technical University.

## **SENATE APPLICATION RULES OF THE DOUBLE MAJOR PROGRAM (DMP)**

### **Aim**

Article 1- The aim of the double major program is to provide education for academically successful students to get a second undergraduate diploma in another major.

Article 2- It is possible to do a double major program in any of the two departments at ITU. DMP across departments is prepared by the faculty DMP commissions mentioned in Article 5 and presented to the University Senate with the decision of the Faculty Board. The program approved at the Senate is applied in the following semester.

Article 3- At the beginning of each academic year, with the approval of concerning departments, DMP quota is announced by the faculties one month before the beginning of the semester. The quota can not be less than 5% of the department's number of pupils accepted to the first class in that year. If the applications are more than the quota, then the faculty decides on how to do the ranking and announces it to the students with the quota announcement.

Article 4- In order to apply for the double major program, students must complete at least 35 credits at the end of the first year or 75 credits at the end of the second year in their own program. A GPA of at least 3.00 is required from double major program applications. Students may apply to the double major program in writing to their 1<sup>st</sup> and 2<sup>nd</sup> Major Faculties three weeks prior to the beginning of each semester. A week before each semester, all the successful students and standbys are announced. The accepted students register to both the major programs during the registration week.

### **Program**

Article 5- Double Major Programs are observed by DMP advisers selected for 3 years. These advisers are proposed by the concerned departments and the final decision is made by the Faculty Board. In order to serve this purpose, the Faculty Board, for each department, assigns at least one adviser and these advisers make up the faculty's DMP commission. Every year, this commission prepares an annual evaluation report in July and presents it to the Dean to be passed on to the Senate.

Article 6- For the DMP students, the advisers of both majors prepare the students' double major programs. This program is discussed at the Second Major's Faculty Board.

An adviser is assigned to the DMP student by the Head of the Department in the 2<sup>nd</sup> Major Program Faculty.

Article 7- If there are some lessons with the same name and content but with different credit hours in the 1<sup>st</sup> and 2<sup>nd</sup> Major programs, students take the ones with more credits hours.

Article 8- Those who start DMP at the beginning of the 3<sup>rd</sup> semester are required to take at least 6 credit hours and those who start DMP at the beginning of the 5<sup>th</sup> semester are required to take at least 9 credit hours each semester. These credit hours can be halved by a decision of the 2<sup>nd</sup> Major's Board.

Article 9- DMP students are responsible for the ITU Undergraduate Education and Instruction Regulations in both their major programs. 30% credit hours in English is not sought in the 2<sup>nd</sup> Major program.

Article 10- A DMP student must complete a program of study that includes at least 36 credit hours in the second major.

Article 11- Student's own departments' major programs are kept separate from the double major program. The student's graduation from the 1<sup>st</sup> Major program is not affected by the Double Major

Program. The students who graduate from the 1st Major Program receive the 1st Major Program's Diploma.

Article 12- Only one transcript showing all the credits taken from both majors is given to DMP students.

Article 13- Students who are in the probation list at their major or second degree programs are required to withdraw from the double major program. Students may also withdraw from the double major program at their own behest both with the adviser's consent and the decision of the Board of his/her second major.

#### Period

Article 14- In the double major program, students are required to complete all the 1<sup>st</sup> and 2<sup>nd</sup> Major program credits within the maximum and additional period of time determined in Article 44 of Statute no: 2457.

Article 15- Students are required to complete their graduation projects and different types of practical work in both their 1<sup>st</sup> and 2<sup>nd</sup> Major programs. The DMP Commission decides on the equivalence of the internship and practical work and which ones to be undertaken in the 2<sup>nd</sup> Major Program.

Article 16- The procedures of those who graduate from their 1<sup>st</sup> Major Program during their double major program are carried out by the 2<sup>nd</sup> Major Program's Faculties.

Article 17- Conditionally upon successful graduation from the 1st Major Program, students who complete their double major program within the time limits, are also given a 2<sup>nd</sup> Diploma from the 2<sup>nd</sup> Major Program's Department/Faculty

Article 18- DMP students pay their fees for the 1<sup>st</sup> Major Program until they graduate from this program and for the 1<sup>st</sup> Major Program after graduation without penalty.

Article 19- 'DMP Application Regulations' accepted by the University Senate on 22.4.1999 in meeting no: 276 are abolished

Article 20- These regulations are accepted by the ITU Senate on 20.7.200 in meeting no: 303.

## **SUMMER SCHOOL REGULATIONS**

### Definition and Aim

Article 1- Summer education is carried out during the summer holiday months i.e. the period outwith the Fall and Spring Semesters. It is a program which aims at increasing the quality of the education and instruction, helps students graduate in a shorter time and supports those students wishing to do a double major program.

### Summer School Regulations

Article 2- All the lessons in ITU's undergraduate and graduate programs are required to run in the Fall and Spring Semesters as necessary. The running of these programs cannot be delayed until the summer school.

Article 3- Summer School's registration, instruction and exam dates are determined by the University Senate. Summer School's education lasts at least 7 weeks. A course in Summer School has the same credits hours as that of one in the regular term.

Article 4- Summer School is organized by the "Summer School Coordination Board", selected by the University Board every year and consisting of 3 faculty members.

Article 5- It is the related administrative board's duty to decide on whether or not a class will be run and its conditions for being run.

Article 6- Classes to be run during the Summer School are determined by the "Summer School Coordination Board" with the acceptance of the department (Major in institutes) and approval of Faculty, Institute, Conservatory and College of Foreign Languages' Board. They are then announced. Students register to these classes during the summer school registration week. In case of necessity, classes are run with the decision of the related administrative board. Although not announced before, classes with sufficient number of students may be run with the decision of the related administrative board.

Article 7- During summer school, students can enrol both in classes where they have fulfilled the prerequisites for attending and those in which they have not fulfilled these prerequisites (except for the graduation project).

Article 8- During the summer school, students can take a maximum 12 credit hours from within and outside ITU.

Article 9- Evaluation of the classes and determination of the success during the Summer School is done according to ITU Undergraduate Education and Instruction Regulations.

Article 10- During the summer school exam period, students do not have the right to sit for the make-up exams 1 and 2. Those who have an unlimited right to take an exam can sit for the summer school exam if they so register.

Article 11- Excluding those who are in a position of dismissal according to Articles 18/a and 6 of the ITU Undergraduate Education and Instruction Regulations published in Official Newspaper issue: 23938 on 19.1.2000, students who are about to be dismissed can benefit from summer school according to Article 10 of the same regulations.

Article 12- Grades of the courses taken during the Summer School are added to the following Fall Semester's GPA at the beginning of the semester.

Article 13- Students who are in a position to graduate at the end of the summer school are given an 'Exit Document'. Their graduation rankings are calculated with the inclusion of the summer school grades.

Article 14- "Higher Education Personnel Law" Article 11 is applied to the faculty members teaching during the summer school.

Article 15- In cases not mentioned in that Regulation, ITU undergraduate and graduate regulations are practised.

Article 16- Students from other universities who register to ITU Summer School are given a document which indicates the length of the summer school, the names of the courses taken together with their credit hours and grades. This document is signed by the Dean or Head of the Faculty. One copy is kept in the Faculty's Archives.

Article 17- With the approval of the concerned department boards, İTU students can take a summer school course outside İTU regardless of the language of instruction (however, at İTU if the medium of instruction is English in a course, then students cannot take it in a different language), the credits hours being equal or more (at İTU, it is counted as İTU credit hours) with the only condition that content is required to be the same. Students can take a maximum of 9 credit hours courses from other universities during their undergraduate education. Grades below CC from other universities are not accepted at İTU and students are required to retake them at İTU.

Article 18- İTU Summer School Regulations published in the Official Newspaper issue: 22523 on 14.1.1996 are abolished.

Article 19- This Regulation is in operation once published in the Official Newspaper

Article 20- This Regulation is overseen by the Rector of Istanbul Technical University.

## **REGULATION OF TRANSFER ADMISSION**

Students who are enrolled in other universities and wishing to transfer to İTU degree programs should have a minimum cumulative grade point average (GPA) of 2.0 on a 4.0 scale for all courses previously taken at a recognized university and be in good academic and disciplinary standing at the university previously attended. Registration office lists the applicants according to their academic achievements (GPA+ÖSS score). A transfer student's eligibility for admission is determined by the Faculty Administrative Board. Transfer credits are evaluated by the Faculty Administrative Committee of Transfer Students and some of them may not be accepted. Grades of students taken from another institution are shown as "waved" on their İTU transcripts.

Transfer students must certify their level of English language according to İTU requirements or succeed at İTU proficiency exam. Otherwise, students can not transfer to İTU. İTU offers admission to a limited number of transfer applicants from other universities. This number is set by departments every academic year and announced in the press and on the İTU web page. The majority of the transfers are realized to the transfer students to junior class is restricted and there is no transfer to senior class. Internal transfer from one İTU program to another is allowed under the same rules that apply to external transfer students.

## **APPENDIX H**

### **ITU Academic Appointment and Promotion Criteria**

## Appendix H

### ITU Academic Appointment and Promotion Criteria

#### OBJECTIVE

**Article 1** – Academic Promotion and Appointment Criteria have been defined as one of the basic means for the purpose of forming and extending the academic staff required to realize the duties and responsibilities taken by ITU among other institutions of higher education and the vision and the mission determined and identified in this manner.

In this framework, Academic Promotion and Appointment Criteria aim at determining the required principles on the subjects of meeting the personnel needs of ITU's academic units in line with the priorities determined by the objectives of development; evaluating academic levels of the candidates realistically; providing cooperation and facilities to the academic staff preparing reports relevant to the applications and to the administrators and boards authorized in the appointment; candidates' self-preparation and improvement having evaluated their own academic performances.

#### ESSENTIAL PRINCIPLES

**Article 2** – The essential principles to be taken into consideration in practice of Academic Promotion and Appointment Criteria have been summarized as follows:

- 2.1. The Promotion and Appointment Criteria designated in the principles of the Executive Board determine the common lowest level valid for the whole academic structure of ITU. This level does not hold the meaning of sufficiency for each unit. Each unit may identify and apply various criteria in line with their objectives and priorities of development on condition that they are above the level determined by the Academic Promotion and Appointment Criteria.
- 2.2. The principles of the Executive Board may only be used as the determining criterion on the subject of the acceptance or rejection of the promotion and appointment applications. In evaluating the applications, detailed and analytical examination of the academic quality and performance of the candidate is mandatory. In the evaluation stage, candidates' position and potential in the disciplinary field; their professional experience and assistance; their contributions to education, to the objectives of the unit to which they have applied, to the university/unit administration; and their services to other universities; their personal objectives and social status are taken into consideration.
- 2.3. It is essential that the Promotions and the Appointments encourage scholarly competition and are ready to welcome the applications from inside and outside ITU.
- 2.4. In the Promotions and the Appointments, it is expected that the candidates' potential for research and publication have the quality to increase the average level of the unit they have applied to.
- 2.5. In accordance with the vision and the mission of ITU, in the applications for the appointment to the staff of Assistant Professorship, it is expected that the candidates would have spent the period of time found satisfactory by the Executive Board of ITU in the international research organisations and institutions confirmed by ITU in their course of doctorate period or post-doctorate period. ITU pays special attention to support the research programmes provided abroad in their course of doctorate period or post-doctorate period.
- 2.6. In the applications made in accordance with the vision and the mission of ITU, it is expected that the candidates have fluency in English and professional proficiency level of English in terms of education. In this respect, the candidates are asked to give a seminar

or a trial lecture in English in the unit they have applied to, and they are expected to be successful.

## **APPLICATION**

**Article 3** – The candidates, in compliance with the issues required by the provisions of the Article of Law 2547 and “the Regulations of the Promotions and the Appointments”, are expected to add all the information required by the grading system to be used in the promotions and the appointments to academic staff membership identified in the Principles of the Executive Board in addition to the documents related to their academic activities and publications.

It is mandatory for the candidates to provide a list of publications defining each genre under various required titles, to add the documents of conclusive acceptance related to the publications that are ‘accepted but not publicized yet by the application date’, to hand in the documents proving the attributions and the refereeing, to state their main outputs and to add the relevant documents (projects, graduate and post-graduate studies) when necessary, to barely state the relevant publications (post-doctorate, post-assistant professorship) in the list as defined in the items 7 – 11.

## **EVALUATION COMMITTEE**

**Article 4** – To be used for determining the academic staff who are to be assigned to evaluate the applications of the candidates, a database is made use of which consists of teaching staff who have proved themselves scholarly with the studies they have done in their own disciplines from ITU and other universities in Turkey, from Institutions of High Technology, and from the universities abroad (to be used when required, if there is not enough academic staff in the relevant field of science and art). The database for the teaching staff is prepared by the Rectorate for each discipline and is updated regarding certain periods.

**Article 5** - The academic staff having been selected to evaluate the applications of the candidates are made aware of these principles. They are asked to prepare the evaluation reports in accordance with these principles. It is also stated that the reports ought to have the extension and content reflecting and being based on the results of the analytical examination to display the candidates’ academic and scholarly qualities in detail.

## **PRELIMINARY EVALUATION**

**Article 6** - The scholarly studies and other academic activities of the candidates documented in their applications are subjected to a preliminary evaluation stage in terms of their qualities, regarding a grading system, details of which are stated in Appendix 1.

## **ASSISTANT PROFESSORSHIP**

**Article 7** – As a pre-requisite to be promoted and appointed to the staff of Assistant Professorship, it is expected that the candidates must at least have 30 points, 15 points of which at least are to be from the international publications defined in items A and B, according to the grading system provided in Appendix 1. In the applications for the Assistant Professorship, it is also expected that the candidates are proficient and professionally efficient in terms English knowledge and use. This condition is stated in the relevant advertisements. In this respect, candidates are asked to present a seminar or to give a trial lecture in English, and they are expected to be successful. The seminar is evaluated by a commission chosen by the ITU Executive Board and which consists of the academic staff of the relevant unit.

## **ASSOCIATE PROFESSORSHIP**

**Article 8** – As a pre-requisite to be appointed to the staff of associate professorship, it is expected that the candidates have

- (a) at least 60 points in total, and

- (b) out of 60, at least 30 points, 15 points of which are to be from the post-doctorate studies, from the international publications defined in items A and B, according to the grading system provided in Appendix 1.

## **PROFESSORSHIP**

**Article 9** – As a pre-requisite to be appointed to the staff of professorship, it is expected that the candidates have

- (a) at least 150 points in total, and
- (b) out of 150, at least 60 points, 30 points of which are to be from the associate professorship studies, from the international publications defined in items A and B, according to the grading system provided in Appendix 1, and
- (c) undertaken the execution of at least 2 post-graduate studies, completed at least one of them and brought it to a conclusion.

## **INTERNATIONAL PUBLICATIONS**

### **MAIN OUTPUTS**

**Article 10** - Besides preliminary evaluation, the candidates are asked to meet the conditions of providing the sufficient number of “main outputs” and international scholarly articles.

“Main outputs”, subject themes of which are to be produced mainly by the candidates themselves and which consist of contributions of original knowledge, are defined as international scholarly articles published in the resources to be found in category A-1 or international books and chapters of books defined in category C in the grading system.

Main outputs are documented and evaluated regarding the issues such that the candidates are the first and corresponding authors, and that the publications have been produced from the post-graduate or doctorate thesis prepared or led by the candidates themselves, or from scholarly researches, executions of which have been undertaken by the candidates.

The applications which have not met the conditions defined in the relevant items are not taken into consideration.

### **ASSISTANT PROFESSORSHIP**

**Article 11** -To be appointed to the staff of assistant professorship, it is expected that the candidates have at least one main output.

### **ASSOCIATE PROFESSORSHIP**

**Article 12** - To be appointed to the staff of associate professorship, it is expected that the candidates have at least three international publications, consisting of articles published in the resources in category A-1 and/or books or chapters of books defined in category C, at least one of which is a main output that has been derived from the post-doctorate scholarly studies but has not been evaluated at the promotion and appointment stage of assistant professorship.

### **PROFESSORSHIP**

**Article 13** - To be promoted and appointed to the staff of professorship, it is expected that the candidates have at least six international publications, consisting of articles published in the resources in category A-1 and /or books or chapters of books defined in category C, at least two of which are main outputs that have been derived from the post-associate professorship scholarly studies.

## THE EVALUATION REPORT

**Article 14** - To evaluate the applications of the candidates, the academic staff chosen in accordance with the database made up of the applied field of discipline are asked to prepare a personal evaluation report.

In this report, it is clearly stated whether the candidates have met the conditions of preliminary evaluation and international publications defined in the relevant articles.

The grading system defined in articles 7-9 cannot be used as an evaluation component on itself, even if it is sufficient. Meeting the conditions of preliminary evaluation and publication based on the grading does not provide a binding right to the candidates in academic promotions and appointments.

The scholarly publications of the candidates that have been proved to have met these conditions are subjected to a detailed analytical examination in terms of their qualities.

In the evaluation, the place and the potential of the candidates in the relevant discipline are subjected to a detailed evaluation on condition that the factors such as

- the continuity of the candidates' publications,
- the international references made to their publications,
- the scientific researches led or carried out by them,
- and similar considerable activities

are taken into consideration.

Besides this evaluation, candidates'

- a- **Contribution to education** consisting of
  - under-graduate and graduate lectures given,
  - graduate and doctorate thesis led,
  - lectures and programmes developed by the candidates
- b- **Professional experience and contributions** consisting of
  - international professional memberships
  - duty of refereeing in refereed international journals
  - other international activities and experience abroad
  - scholarly, academic, and professional prizes received
  - professional studies and industrial activities
- c- **Contribution to university administration and other university services**

are taken into consideration in the same manner.

Should there be the same number of applicants as the number of available positions in the staff announced, it is clearly stated with the reasons in the evaluation report as to whether the candidates are worth being appointed or not. Providing that there are more applications in number to the positions available than needed, the negative evaluations are to be stated clearly with the reasons, whereas the affirmative evaluations are to be stated in the reports according to the preference order of the candidates chosen.

## THE BRIEF REPORT

**Article 15** – In order to compile the personal reports of the academic staff who have evaluated the candidates' applications, two members of the academic staff, one of whom is the Dean or the Institution Manager of the relevant faculty, the other of whom is a member of the Executive Board, prepare a brief report. In this report is the publication case of the candidate, brief information proving that the candidates meet the conditions of the application, and the conclusion sections of the reports received from the members of the evaluation commission. A copy of the documents

provided by the candidate during the application stage is attached to the brief report file; in this file are the lists of the studies and the publications, but not the copies themselves. To this report is attached the form of Appendix 2 filled in by the candidate and confirmed by the relevant Deanship.

## SPECIAL CASES

**Article 16** – The condition of main outputs and international publications defined as category A-1 in the articles 10, 11, 12, and 13 of these principles is evaluated and applied as category A for the Faculty of Architecture, the Maritime Faculty, the Faculty of Management – the Basic Field of Law, the Faculty of Science and Letters – the Department of Humanities and Social Sciences; as categories A-1 and A-2 for the Faculty of Management – the Basic Field of Social and Executive Sciences and Humanities.

In the applications related to the Faculty of Science and Letters – the Basic Field of Mathematics and the Faculty of Civil Engineering – the Basic Field of Constructive Management, the condition of main outputs defined as category A-1 in the items 10 and 11 of these principles is evaluated and applied as category A.

In the promotion and appointment of the candidates with engineering origins that are to apply to the fields except for the related departments mentioned above, the conditions stated in the special cases are not applied in Architecture and other basic fields requiring special cases but rather the conditions for the relevant engineering fields are looked for.

The publications published in the journal “ARI” are evaluated in category A-1 in the grading system that is to be used in the promotion and appointment to the academic staff; however, they cannot be accepted as the main outputs.

## Law

**Article 17** - Article 12 of these principles of the Executive Board is to be applied for the Basic Field of Law as follows;

To be appointed to the staff of Associate Professorship, the candidates are expected

- (a) to have published at least one original scholarly book,
- (b) to have at least one publication considered as the main output that has been derived from the post-doctorate scholarly studies but has not been evaluated at the promotion and appointment stage of assistant professorship,
- (c) and to have published at least two additional scholarly publications except for the main output, one of which is an article published in the resources in category A and/or a book or a chapter of a book defined in category C.

**Article 18-** Article 13 of the Executive Board principles will be implemented as follows for the Basic Field of Law.

In order to be promoted and appointed for the professorship, candidates must

- a) have one original scientific book published.
- b) have **two** main work publications, one of which must be based on their studies after their promotion to assistant professorship.
- c) have at least **four** additional publications except main works, two articles published in resources listed in **A** category , and/or books or chapters of books defined in **C** category.

## Social, Human and Administrative Sciences

**Article 19-** Article 12 of the Executive Board principles will be implemented as follows for Basic Field of Social, Human, and Administrative Sciences.

In order to be appointed for the assistant professorship, candidates must

- a) have at least **one** main work based on their studies done after the doctoral study, but not evaluated for their promotion or appointment of their associated professorship.
- b) Have at least **one** publication, an article published in the resources listed in **A1** or **A2** category and/or a book or a chapter of a book defined in **C** category.
- c) Have at least one scientific article published in addition to the ones specified in (a) and (b).

**Article 20-** Article 13 of the Executive Board principles will be implemented as follows.

In order to be promoted to the professorship, candidates must

- a) have at least **two** main works, one of which must be based on their studies done after being promoted to assistant professorship.
- b) have at least **three** publications in addition to main works, articles published in resources listed in **A1** or **A2** categories and/or books or chapters of books defined in **C** category.
- c) Have at least **one** scientific article published in addition to the ones specified in (a) and (b).

At least **one** of these publications must be in **A-1** category.

### Architecture

**Article 21-** Article 12 of the Executive Board principles will be implemented as follows.

The following conditions need to be fulfilled to be promoted to the position of associate professor:

- a) having at least two international publications, at least one being an article published in resources in **A** category and/or the other being a book or a chapter of a book defined in **C** category. One of these publications has to be a main study derived from scientific studies done after the doctoral study, but not counted when the instructor was promoted to the position assistant professor.
- b) having done at least **one** of the applied studies below:
  - b1) having been a jury member or having received a degree or a honor mansion in a competition organized in accordance with the regulations of a national or international competitions in planning, architectural design, city planning, paysage design, interior design and industrial products design.
  - b2) having done and published an applied project in accordance with the current laws and regulations.

However, this condition is not required in applications made to fields where theoretical studies are more common. In applications to such fields, in addition to the conditions defined in article (a), an additional publication is required (an article published in **A** category sources and/or an additional international publication comprising a book or a chapter of a book defined in **C** category).

- c) having done at least one of the studies below in education,
  - c1) having managed a design workshop, having exhibited the products of this workshop or having published them as an article.
  - c2) having established a laboratory, workshop or any such organization for education and having published an article introducing this organization.
  - c3) having organized a national or international workshop, summer school etc. for education.
  - c4) having prepared class material in the electronic media or supplementary notes to contribute to undergraduate or graduate courses. (Supplementary notes or class material in the electronic media need to be accepted by the related boards.)

However, in applications from out of the university, an additional study defined in articles (a) or (b) is required instead of studies in education.

**Article 22-** The 13th article of this Executive Board principles will be implemented as follows for the field mentioned.

The following conditions need to be fulfilled to be promoted and appointed to the position of professor:

- a) having at least **five** publications, at least one being an article published in resources in A category and/or the other being a book or a chapter of a book defined in C category. One of these publications has to be a main output derived from the studies done after the instructor was promoted to the position of associate professor.
- b) having done at least **two** of the studies below, at least one being done after the instructor was promoted to the position of associate professor.
  - b1) having been a jury member or having received a degree or a honor mansion in a competition organized in accordance with the regulations of a national or international competitions in planning, architectural design, city planning, paysage design, interior design and industrial products design.
  - b2) having done and published an applied project in accordance with the current laws and regulations.

However, this condition is not required in applications made to fields where theoretical studies are more common. In applications to such fields, in addition to the conditions defined in article (a) , an additional publication is required (an article published in A category sources and/or **an additional** international publication comprising a book or a chapter of a book defined in C category.).

- c) having done at least **two** of the studies below in education. At least one of these studies needs to have been done after the instructor was promoted to the position of assistant professor.
  - c1) having managed a design workshop, having exhibited the products of this workshop or having published them as an article.
  - c2) having established a laboratory, workshop or any such organization for education and having published an article introducing this organization.
  - c3) having organized a national or international workshop, summer school etc. for education.
  - c4) having prepared class material in the electronic media or supplementary notes to contribute to undergraduate or graduate courses. (Supplementary notes or class material in the electronic media need to be accepted by the related boards.)

However, in applications from out of the university, at least one additional study in each condition defined in articles (a) or (b) (at least two in total) are required instead of studies in education.

### **Transitory Article**

Within the conditions of special cases, the applications made within the scope of 16-22 articles within a period of one year as of these regulations are executed will be assessed in the framework of this or the previous Executive Board principles (dated 10.01.2002 / no: 551) depending on the preference of the candidate.

The 11th article of these regulations regarding promotion and appointment to the position of assistant professor is not in the scope of transitory implementation regardless of the candidate's preference.

### **Execution**

These principles were put in force after they were accepted at the meeting (date: 7.11.2002, no:571) of the University Executive Board .

## APPENDIX

### Grading system to be used in promotion and appointment of academic staff

|  |                       |
|--|-----------------------|
| <b>A- International articles*</b>  |                       |
| <b>A-1) Publications in the scope of expanded SCI, SSCI, AHCI</b>                        |                       |
| 1-a) Publications in the scope of SCI (A), SSCI and AHCI.....                            | 10 pts                |
| 1-b) Publications in the scope of SCB (B).....   | 8 pts                 |
| 1-c) Other expanded SCI publications not in the scope of SCI (A) or SCI (B)              | 6 pts                 |
| <b>A2) Publications in the scope of other indexes.....</b>                               | <b>6 pts</b>          |
| <b>A3) Publications in the other international refereed journals.....</b>                | <b>5 pts</b>          |
| <b>B- International papers*</b>  |                       |
| - Full - text papers.....  | 5 pts                 |
| - Abstracts.....   | 2 pts                 |
| <b>C- International book*</b>  |                       |
| - Having written a book.....   | 50 pts                |
| - Having written a chapter of a book.....  | 20 pts                |
| - Editorial.....   | 20 pts                |
| <b>D- National research articles*.....</b>   | <b>3 pts</b>          |
| <b>E- National statements*.....</b>  | <b>2 pts</b>          |
| <b>F- National Book (not class notes)*</b>   |                       |
| - Having written a book .....  | 10 pts                |
| - Having written a chapter of a book.....  | 5 pts                 |
| - Editorial.....   | 5 pts                 |
| <b>G- Published scientific reports*.....</b>   | <b>6 pts</b>          |
| <b>H- Effect factor regarding international references (e.f.)*.....</b>                  | <b>10 pts x (e.f)</b> |
| <b>I- Refereeing in international journals*.....</b>                                     | <b>10 pts x (r)</b>   |
| (r) number of times the instructor has been a referee                                    |                       |
| <b>J- Membership to editorial board of international journals defined in article A</b>   |                       |
| Editorial Board).....  | 30 pts                |
| <b>K – Thesis Adviser (Completed)</b>  |                       |
| - PhD (2 thesis at most) .....   | 6 pts/thesis          |
| - MS (2 thesis at most).....   | 3 pts/thesis          |
| <b>L- Patents</b>  |                       |
| - International.....   | 50 pts                |
| - National .....   | 25 pts                |
| <b>M- Rewards</b>  |                       |
| - International science and art rewards given permanently or periodically by a jury..... | 80 pts                |
| - National science and art rewards given permanently or periodically by a jury           |                       |
| . TUBITAK/TUBA Science rewards.....  | 80 pts                |
| . TUBITAK/TUBA Encouragement rewards.....  | 40 pts                |
| . Other rewards* .....   | 20-80 pts             |
| - Competition  |                       |
| . International  |                       |
| Degree.....  | 30 pts                |
| Honourable mention.....  | 20 pts                |

|                         |        |
|-------------------------|--------|
| Purchase.....           | 10 pts |
| . National Degree.....  | 10 pts |
| Honourable mention..... | 5 pts  |
| Purchase.....           | 2 pts  |

**N- Contribution to Education**

|  |               |
|--|---------------|
| Credit hours/term in the last two years..... | 1 pt          |
| CQI* .....                                   | 10 pts/course |

**O- Other Academic Contributions\***

|   |                            |
|---|----------------------------|
| - <i>Contribution to management</i>                           |                            |
| Administrator.....  | 4 pts/year                 |
| Board membership.....   | 2 pts/year                 |
| Commission membership.....                                    | 2 pts/year                 |
| - <i>Organizing scientific meetings</i>                       |                            |
| International.....  | 30 pts/no. of members      |
| National.....   | 10 pts no. of members      |
| - <i>Jury/Science Board membership in scientific meetings</i> |                            |
| International.....  | 30 pts/no. of members      |
| National.....   | 10 pts/no. of members      |
| - <i>Research Projects (maximum 4 completed projects)</i>     |                            |
| a. Type A.....  | 30 pts/no. of participants |
| b. Type B.....  | 20 pts/no. of participants |
| c. Type C.....  | 5 pts/no. of Participants  |
| - <i>Consultancy.....</i>                                     | 1 pt/year                  |
| - <i>Jury membership in a competition</i>                     |                            |
| International.....  | 20 pts                     |
| National.....   | 10 pts                     |

\* See appended explanations

**EXPLANATORY NOTES****A- International Articles**

**A-1)** Other releases in the periodicals with international referee scanned in Expanded Science Citation Index (SCI), Social Sciences Citation Index (SSCI) and Arts & Humanities Citation Index (AHCI) and described below.

**1.a)** Articles scanned in expanded SCI and appearing in list A valid for TÜBİTAK's application period and in periodicals with international referee scanned in SSCI and AHCI.

**1.b)** Articles scanned in SCI and appearing in list B valid for TÜBİTAK's application period and in periodicals with international referee.

**1.c)** Articles scanned in SCI but not appearing in lists A and B valid for TÜBİTAK's application period yet published in periodicals with international referee.

**A-2)** Articles published in periodicals with international referee with the framework of Engineering Index (EI), Chemistry Citation Index (CCI), Compo Math Citation Index (CMCI), ANBAR, ECONLIT and Architectural Periodicals Index.

**A-3)** Articles not included in these categories but published in periodicals with international referee.

Publications that are considered to be pre announcements of research subject matter, and results such as short communication, technical note, discussion, a letter to the editor published in these resources are evaluated on 60% of the scores given for related sections.

## **B) International Communications**

International communications in full text presented in International Science meetings with referee , put into criticism, debated, and published in proceedings book.

Abstracts of communication presented in international meeting with referee published in proceedings book.

## **C) International Book**

Articles of science and art proven to have been through referee inspection, published by internationally prestigious publishing houses, and sections written upon request in such releases including editorship of such publications.

## **D) National Research Articles**

Research articles published in national periodicals with scientific referee.

## **E) National Communications**

National communications in full text presented in national science meetings with referee, put into criticism, debated, and published in proceedings book.

## **F- National Book (except course books)**

Translated books, books published on copyright, sections written on request in this kind of publications and book editorship.

## **G- Printed Scientific Report**

Reports revealing scientific results of researches sponsored by international and national corporations (TÜBİTAK, DPT, NATO, etc.)

In clauses A, B, C, D, E, F and G, the score is multiplied by two and then divided by the number of writers if it exceeds two. For publications by five or more authors, the evaluation system for four is applied.

## **H- Influence Factor Regarding International Reference**

The influence factor related to international reference is obtained through division of the number of international references a writer receives by the total number of publications described in clause A-1. The candidate must attach the documents and printouts related to the references he has received to his/her C.V.

## **I- Being a referee for International Periodicals**

Being a referee for the assessment of the releases presented for publication in international scientific journals with arbitration.

**(Categories A-1 and A-2)**

Being a referee in the fields of Law, Social Sciences, Management and Architecture is evaluated with in the framework of category A periodicals.

The candidate must attach to his/her application a letter expressing demand for being a referee and a copy of the evaluation report made in this regard.

### **M- Awards**

Out of the other awards mentioned, the Mustafa Parlar award of honor is evaluated as 80 points, the Mustafa Parlar award of science 50 points and other awards 20 points.

Money awards for publications and presentations in science meetings are not evaluated in points.

### **N- Contribution to Education**

An average of undergraduate and graduate course the candidate has taught for the last two years is taken on the basis of credits/ hour/ semester.

This is multiplied by the base credit of the courses taught in English.

An instructor is given 10 points for each course taught if he/she prepares a course in the department curriculum in conformation with CQI criteria, and receives the approval of Department, Faculty and Senate Accreditation committees for his/her file that certifies this practice.

### **O- Other Academic Activities**

#### **Managerial Contribution**

Executive Level: Rector, Dean, Institute Manager, Director of Research and Application Centre, Department Chief, Major Science Presidents and vice-presidents.

Board Membership: Senate, ITU Board of Executives, Faculty Commission, Faculty Board, Institute Board, Research and Application Centre Board memberships.

Commission Membership: Consultants of the Rectorate and full commission members entrusted with office work by the Rectorate and Dean's Office, and consultancy and commission work less than 1 year are not put into evaluation.

#### **Holding Science Meetings /Membership of Science Electorate Board**

Those who have taken part in the boards of congresses, symposiums, seminars and science meetings and science electorate board of the same.

(Points are evaluated by dividing the number of board members. This point is doubled for the heads of organization and electorate boards. )

#### **Research Project**

##### *Type A Research Projects*

Projects sponsored by NATO, EC, COST, AVICENNE, EUREKA, MED-CAMPUS, MEDA and so on. Also those sponsored by UN, NSF and similar corporations.

##### *B Type Research Projects*

Research fund projects of TUBITAK, TTGV, DPT (State Planning Organization) and projects like linkage, Collaborative Research, British Council linkage.

##### *C Type Projects*

Other homeland projects

## **APPENDIX I**

### **SWOT Analysis**

## **Appendix I**

### **SWOT Analysis**

In order to view the University with a critical eye and lay a foundation for strategic planning, SWOT analyses in eight important areas are being carried out. These analyses are being undertaken by related standing committees, the rectorate, as well as some invited academic and administrative staff. At present, the SWOT analysis and goals-document will be open to discussions among the stakeholders for further developments. The eight areas on which SWOT analysis carried out are:

- Education
- Research
- Human Resources
- Finance
- Information Technologies
- Infrastructure
- International Relations
- Construction Investment Planning

## SWOT ANALYSIS OF EDUCATION

ITU provides a modern educational environment for its students while retaining traditional values. With a history stretching back to over 230 years, providing technical education within a modern educational environment with strong academic staff, ITU is strongly identified with architectural and engineering education in Turkey.

ITU aims to graduate engineers, architects, scientists and artists who compete at high international standards. As a higher education and research institution, ITU is dedicated to the advancement of basic and applied sciences. ITU's mission is to educate the technological leaders and entrepreneurs of the future in a rich intellectual environment sensitive both to local and global issues.

### STRENGTHS

#### **Bilingual University**

Until 1997, the education language of ITU was Turkish. In 1997, ITU changed its system and decided to be a bilingual university. Both Turkish and English are used in education. Students must complete a minimum 30% of their curriculum credits in English. This change has encouraged some students to apply for exchange programs, to go abroad and to attend international activities.

#### **Curriculum Development and Accreditation Studies**

As a part of the globalization process, the University requires constant curriculum development and updating. Objectives and inputs towards these objectives need to be revised periodically. In order to realize the mission, which was begun in 1996, ITU administrators decided to restructure the engineering programs to meet requirements presented by new developments in engineering education. It was also decided to develop a continuous quality-improvement system. The systems implemented by twenty engineering programs are being assessed by ABET EC2000 Substantial Equivalency Accreditation Criteria. The Maritime Faculty has been accredited by IMO. The Architectural program is presently being evaluated by NAAB, which will conclude by the end of 2004. The accreditation process of the Urban Planning Department from PUB will begin in 2004.

#### **Teaching Staff Quality**

The number of teaching staff is 1,112 and the number of the students is approximately 19,000 (undergraduate + graduate). Therefore, the student-to-staff ratio is 18-to-1. This is very close to that of well-known universities in the world.

#### **Student Quality**

Admission of students to ITU is administered through a central-examination system organized by a "Student Selection and Placement Centre" (OSYM). Approximately 1.5 million high-school graduates take a central examination (OSS) every year. Students are placed in a higher education program according to their preference list, their high-school GPA, and their score on OSS exam. Student matriculation to ITU is within the first percentile of the 1.5 million students taking the exam.

#### **Infrastructure/Facilities**

In order to match developments in the engineering curricula, the physical and technical infrastructure of the classrooms, computer laboratories, teaching and research laboratories, have been upgraded and increased in number.

#### **ITU Library Services**

Academic staff and students have the opportunity to order books on-line without limitation. The ITU Library subscribes to over 7,000 printed and electronic journals. In addition, the ITU library has full-text database subscriptions. Through these databases over 2,000 full text journals are accessible.

#### **ITU Computer Centre (CC)**

Computing resources are in service 365 days a year and 24-hours a day. A total of 2,500 computers are in use in the student labs, all connected to Internet. ITU-CC operates 55 labs at all

ITU campuses. Continuous investment plans are realized to sustain an up-to-date IT substructure. At present a 2 million USD worth of investment is in process.

### **Information Systems**

A centralised and automated student-affairs system for registration, assessment and advising, etc., an SCT Banner 2000 Software program, was purchased from a company in the United States. With the help of this system, students are able to register, learn their grades and have access to information via the Internet. All the statistical data can be accessed in a short time with absolute certainty. This system is a part of the ITU e-university system.

### **Campus Housing**

Residential housing for ITU is located on the Ayazağa and Gümuşsuyu campuses, with a total accommodation capacity of 3,000. All housing units are managed by the ITU rectorate and ITU foundations. All residence halls are connected to the University computer network system and the Internet. The halls are in walking distance to the educational buildings and contain single-, double- or triple-occupancy furnished rooms.

### **Financial Aid**

The scholarship and financial-aid program is supported by the ITU rectorate, ITU foundations, alumni, private companies, and individuals. This program offers full and partial scholarships to 35% of the undergraduate students. Students may apply for scholarships awarded on merit and need-bases, and financial aid is provided for food and dormitories. The students who rank in the top 2000 of the National Student Selection Exam (ÖSS) qualify for the highest class of scholarships and free housing. All ITU students may also apply to work as student assistants in research and services to obtain additional income and experience.

### **International Activities**

Through its International Office, ITU maintains a strong commitment to create close links with institutions abroad and to promote international exchange of students and scholars, encouraging advancement of educational achievement, academic development, and cultural enrichment at the international level. ITU currently has signed agreements with over 100 institutions.

Strong relations with alumni provide ITU students with internship possibilities in Turkey and abroad. In addition, for their compulsory vocational training, ITU students benefit from organizations such as IAESTE and AIESEC, as well as national institutions. There has been a remarkable increase in the participation of ITU students in international organizations, such as AEGEE (European Students Forum) in recent years.

### **Student Life**

The ITU campuses, located in the centre of Istanbul, provide its students with opportunities to take part in the diverse cultural and artistic activities in the metropolis of Istanbul. Students can spend their free time at the ITU Sports Union and the ITU Culture and Arts Union. There are fifty-three student clubs and the number of clubs increases every year.

The ITU basketball team is the only university team currently playing in Turkey's professional basketball league.

### **Double Major Program and Internal Transfer**

ITU has developed a flexible structure which affords its students two new opportunities: internal transfer to the program of their choice (provided quotas allow them); and concurrent education for academically-successful students toward earning a second undergraduate diploma from another discipline.

### **Distance Learning Project**

Turkey has the youngest population and the highest rate of population increase among European countries. This young population can be developed intellectually if adequate education can be provided at all levels. It is therefore necessary to mobilize available resources to increase the extent and quality of education. Toward this aim, ITU has developed "Distance Learning" project, which aims to deliver real-time distance education nationwide and at the international level.

## **WEAKNESSES**

### **Inefficient Advisory System**

The advising system is not functioning properly. This system requires revising, and a more effective and an efficient structure must be established.

### **Credit Hours**

In education restructuring begun in 1996, programs were established according to guidelines. One of the guidelines was to decrease the number of the total credits from 180-190 to 153. The decrease in the number of the courses enables students use the library, computer labs and other educational media. However, 153 credit hours is still higher than that of well-known universities in United States.

### **Low Number of Exchange Students**

The number of the exchange students is low, both outgoing and incoming. ITU students are not willing to go abroad for one or two terms because of financial problems.

### **Lecturing**

There are no requirements for using modern technologies in lectures. While some of the teaching-staff develop course materials on the Web, some other still use traditional methods in teaching.

### **Career Office**

The Career Office promotes effective career-planning, teaches job-search strategies, and facilitates contact between ITU students, alumni and prospective employers. However, these have not yet achieved a desired level.

## **OPPORTUNITIES**

### **Joint-Degree Programs**

ITU and SUNY (State University of New York) began a new project for joint-degree programs. Graduate of these programs will have two diplomas, both from ITU and SUNY. This program will enable students to gain international experience. In the long run, ITU expects to enrol foreign students in these programs.

### **Socrates Program**

The Socrates program officially started in 2003 in Turkey. In 2003, nine ITU students studied in Germany on this program. It is hoped that in the future the number of exchange students will flourish.

### **TIME Association**

ITU is the first and only executive member of the TIME Association in Turkey. The Time Association education system offers graduate students to achieve a double diploma from two universities (home and abroad). This is the real opportunity for ITU students to go abroad during their graduate education.

### **Education System**

ITU switched its education system in 1969 from a five-year program to one based on four-year B.Sc. degrees and two-year M.Sc. degrees programs. After the Bologna Declaration, EU universities have been transforming their education systems to 3+2 or 4+1 systems. The completion of this transformation will facilitate an increase in exchange opportunities for ITU students.

### **Summer Schools**

Summer schools help ITU students to graduate earlier. Summer schools attract foreign academic staff and students to ITU.

**Technocity**

ITU Technocity provides opportunities for ITU undergraduate and graduate students to work in innovative technology-based companies which are located on the University campus. Thus they may gain work experience and even establish their own start-up companies.

**Continuing Education**

The Continuing Education Centre (CEC) has two important functions: First is to offer courses to professionals to upgrade their qualifications and train themselves for emerging jobs. Second is to offer courses to enable students to equip themselves for the job market. The most attractive courses for students are Cisco and Microsoft academic programs and business, management and foreign-language courses (second foreign language ). IT courses often serve as a minor degree in engineering education.

**“Advanced Technologies in Engineering” Graduate Programs**

These new postgraduate programs are carried out in the framework of a project financed by the State Planning Organization. Students admitted to these graduate programs work with international academic staff and gain research experience abroad during their graduate studies. Qualified students are offered cost-free accommodation and research assistantships.

**THREATS****Low Income of Faculty**

Since ITU is a state university, salaries of the faculty are defined by the government. Salary level is very low and there is no flexibility to change the salaries according to “academic performance.” Therefore, it is getting very hard to prevent the leaving of the young and qualified teaching faculty from the state universities.

**Decreasing Number of the PhD Students**

Low-level income and insufficient numbers of positions available, dissuade PhD students from carrying out their studies in Turkish universities. This situation is damaging for state universities, because PhD students are one of the main components of the research studies.

**Brain Drain**

Economic and political instability and low income cause migration of well-educated young researchers towards United States and the EU.

**Number of the Students**

Turkey has a young population. Existing capacity in higher education institutions is not enough to house all the applicants which are approximately 1.5 million every year. Only one out of every five are able to enter universities. In the future, government could direct the universities to increase the number of newcomers. Without new investments and additional resources and staff, this cannot be realized, and the quality of education cannot be controlled.

**Low Job Opportunities**

Although ITU graduates are well-educated, economic instability in Turkey presently complicates finding employment.

**GOALS AND HOW TO REACH THEM**

Increase the number of international students: Inform institutions about its education system and facilities.

Increase the number of the students going abroad: Provide financial support for students who want to go abroad. Encourage alumni to provide funding toward this goal.

Achieve an efficient advisory system: Provide advisers with training and new incentives such as additional credits or benefits.

Increase the efficiency in teaching: Encourage staff to use modern technology by offering them special incentives and training to develop their own course materials on Web.

Fight the brain drain: Provide an excellent research and teaching environment with additional income for the academic staff depending on their performances.

Increase the number of interdisciplinary activities: Encourage research groups to work together by using special funds for this kind of research projects. Create interdisciplinary undergraduate and graduate programs.

Promote relations between education and research: Include undergraduate students in research activities.

Graduate technological leaders and entrepreneurs: Promote ITU Technocity and add some courses about entrepreneurship to the curricula.

## SWOT ANALYSIS OF RESEARCH

### STRENGTHS

#### **Strong Commitment of the University in Research**

Istanbul Technical University maintains a strong commitment to be a research university. Towards this goal, ITU has increased the research budget progressively over the last seven years. The Scientific Research Projects Unit of the University was restructured to support projects more effectively, and University funds have been directed toward research activities along this policy. The research activities of academic staff are used as an important factor for their promotion. SCI publications among the faculty are considered as an indirect measure of research output. Such output is promoted by giving awards to the publications of academic staff.

#### **Increasing R&D Funds of the University**

To be a research university, ITU has increased its research and development funds. Although Turkey faced an acute economic crisis in the past ten years, the research fund was progressively increased over this time. The budget allocated for R&D activities is a main strength of the University. The research budget consists of state funding plus incomes generated by the University from services to third parties and R&D projects.

#### **Strong Academic Team Capable to Carry out R&D Projects**

ITU has a very strong academic team, capable of conducting high-level research and development projects in science and engineering disciplines. Most of the faculty of ITU have worked and studied in universities in the United States and Europe, and they have proven ability to conduct high level of R&D projects. By creating a suitable R&D environment, the output of this team considerably increased during the last decade.

#### **Wide Range of Post-graduate Programs in Science and Engineering, as Compared to Other Universities in Turkey**

Istanbul Technical University concentrates on postgraduate studies and along this line the number of undergraduate students has been decreased while the number of graduate students has been increased since 1996. The present ratio of postgraduate to undergraduate students in ITU is 2/3. Istanbul Technical University has a wide range of postgraduate programs in engineering-related disciplines. Currently 130 research-oriented graduate programs are offering Master's and Ph.D. studies. In order to produce innovative graduates and highly-qualified researchers in interdisciplinary areas, Istanbul Technical University has created a new project called Advanced Technologies in Engineering, which includes six postgraduate programs. This project is supported by the State Planning Organization with a budget of 25 Million USD. The duration of the project is six years and was begun in 2001. These programs are Computer Science & Engineering, Computational Science & Engineering, Material Science & Engineering, Aerospace Engineering, Satellite Communication & Remote Sensing, Molecular Biology, Genetics. A strong international and industrial relationship, fostered by this project, is one of the main components of the research activities at Istanbul Technical University. Students of these programs are strongly encouraged to establish their projects in the Technocity.

#### **Strong Laboratory Support**

The University has a strong laboratory infrastructure with a large number of laboratories, over 160 distributed throughout all disciplines. A large number of these laboratories are located in the Faculties and Institutes related to research groups. Istanbul Technical University has also established large-scale laboratories for interdisciplinary research activities. The High Performance Ceramics Laboratory, Automotive Research Laboratory, Satellite Ground Station, Seismic Simulator, Rotorcraft Centre of Excellence, Laboratories of the Advanced Technologies in Engineering, are all examples of large-scale research laboratories. New laboratories in environmental engineering, electronics and telecommunication, food engineering, polymer science, and textile engineering are in the process of establishment soon within the frame of Technocity project. These laboratories are expected to support research activities in the University, and will be in used in the various research projects within Technocity.

**Trust and Support from State Planning Organization and Treasury**

The State Planning Organization supports projects throughout the universities. A considerable amount of this support comes to Istanbul Technical University due to its success in completing the projects and its research potential. In other words, the University has earned a trust at the state level due to its successful research activities. The Treasury provides strong support in obtaining international funds for the research projects in the University. Most of the large-scale laboratories mentioned above were established with the support of the State Planning Organisation and Treasury.

**Centre of Excellences and Interdisciplinary Inter-phases**

The University has a strong potential to create and establish projects in the interdisciplinary research areas. High Performance Computing, High Technology Ceramics, Automotive R&D Centre, Satellite Ground Station, Rotorcraft Centre of Excellence, Molecular Biology and Genetics, Material Science and Nano-technology, Aerospace Wind Tunnel and Mechatronics projects, are some examples of interdisciplinary projects well-established in the University by researchers from different disciplines. Most of the graduate programs in the University provide postgraduate studies in interdisciplinary areas. The Centres of Excellence and R&D centres conduct research activities in interdisciplinary areas. The University has created a number of Centres of Excellence which specialize in the different fields and interdisciplinary-research areas. With high-qualified researchers and laboratory infrastructure, these Centres play a driving role in the research activities of the University.

**Strong Industrial Relations**

The University, located in the Marmara region, enjoys a very close relationship with industry. The University supports industry both by permitting its academic faculty to work in industry as an advising expert or by solving their technological problems when it is needed. Such relations keep the University in touch with real-life problems and allow it to establish projects connected to applied technologies. The relations with the industry have become now more close and effective through the Technocity established in the campus area of the University.

**Support of Alumni**

Being a historical university, ITU enjoys the benefits of powerful alumni organization. Most of the ITU graduates who hold key positions in industry, provide continuous support to their alma mater in the form of research grants and projects.

**Quality of the Students**

The students of ITU are selected from the 1.5 million applicants through the central entrance examination system. ITU receives students from the top 1.5% of this population. Hence the quality of students with a potential for participation in research is very high. The postgraduate student quality and numbers are a distinctive strength of ITU, which is represented in comparative statistics with science- and engineering-based universities in Turkey. The postgraduate students are selected among high number of applications. The ratio-acceptance of applications to postgraduate programs is usually above 3 to 1.

**WEAKNESSES****Lack of Qualified Technicians and Logistic Staff**

The well-established laboratory infrastructure needs highly-qualified technicians. The support of technicians plays a key role in conducting experimental studies. Due to the lower salaries and government limitations on the number of positions, it is difficult to hire mid-level technicians for the laboratories. Similar problems exist in the administrative staff which provides logistic support to research.

**Low Income Level of Researchers**

The income of the faculty members and researchers working in the state universities is very low compared to private universities and industry. This inconvenient situation pushes the University

faculty to look for other sources to increase their incomes which causes to lose their concentration on the research activities.

#### **Maintenance of R&D Equipments**

Maintenance of the laboratories and the related infrastructure is difficult due to financial bureaucracy. While the system allows for procuring the necessary laboratory equipment, it is very difficult to make budgetary allocations for running and the maintaining the laboratories.

#### **Rigidity of Purchases**

Purchasing procedures for state universities are very strict and tedious. Although enough financial support is allocated for the projects, due to the ill-nature of the system, progress in the projects is slow and efficiency is low.

#### **Traditions of Industry**

Most of the projects come to the University from the state and military. Industry has lacks a culture which would allow for funding of research activities and for collaboration with universities for technological development. This creates a negative impact on the development of the research capacity of the universities.

#### **Not Being Able to Motivate All Academic Staff for R&D**

Academic faculty have varying attitudes toward research activity.

#### **Distributed Campus Structure**

Not all the engineering faculties are collected in the same campus. The Mechanical Engineering Faculty and Industrial Engineering Faculties are in the city centre while majority of the engineering faculties are located on the main campus. Such a structure does not help to generate the synergy required in collective research projects.

### **OPPORTUNITIES**

#### **ITU Technocity**

ITU Technocity, established in the campus area, is one of the most important projects of the University. It is a bridge between the University and industry. The interaction between ITU and industry creates an environment for innovative research. Students, academic staff, and even administrative staff are able to join research activities of the companies located in Technocity. Academic staff is able to see their research converted into end-products which make strong contributions to the economy. Furthermore, they have opportunities to establish their own companies. While researchers are able to earn more, the income of the University will also increase. ITU will therefore be able to make more investments and hire increasing numbers of highly-qualified academic, administrative and technical faculty.

#### **Framework Program VI**

The EU Sixth Framework Program is a good opportunity for the research activities in the participating countries. The University gives special importance to the Sixth Framework Program and encourages its academic faculty to lead or join the Framework projects. It has established an EU Centre to educate the academic faculty about the Sixth Framework Program. Along this line, the Centre arranges several activities in the University. The EU Centre hired consultants from EU universities that have been successful in previous Framework programs. With successful projects, a considerable amount of support will come to the University. In addition to this, high-quality research projects will be realized and this will lead to great improvement in the research culture of the University. All these activities will help to integrate the University with the European Research Area.

#### **Improved International Relationships**

During the last seven years, ITU has increased its international relations and along this line over 100 agreements have been signed with the foreign universities. At the same time, the University became a member of several international associations. Via exchange programs, the faculty and students will have more opportunities to increase their experience and to make collaborations with

counterparts for the international projects. The budget allocated for international activities have been increased to stress the importance of international relationships.

#### **Location of ITU**

Being conveniently located in Istanbul, ITU is in the close vicinity of developed industry in Turkey. The location of Istanbul is again a primary advantage to conduct global research for industry in Europe, Asia, and the Middle East.

### **THREATS**

#### **Challenge of Higher Salaries in Private Universities and Industry**

Private universities and industry generally offer higher salaries for research-oriented university staff. Therefore qualified research personnel of the state universities may prefer to work in private sector, which weakens the research potential of the state universities.

#### **Economic Crisis**

The Turkish economy faced crisis several times and this constantly caused the allocated research funding by government or industry to be reduced. After an economic crisis it requires years to return to previous levels of funding. Presently this is still a threat towards research.

#### **State Scientific Policy**

Since most research funding come from the state, its scientific policies strongly effects the research activities in the University. Sometimes the government may decide to stop any large scale project in the middle of the process due to its changing policies, or the fund may be blocked.

#### **Lack of Sustainable Economic Growth**

The status of the economy is the prime factor in securing research contracts with the government, military and industry. A fluctuating economy makes it impossible to increase research income progressively.

### **GOALS AND HOW TO REACH THEM**

Work toward an appropriate Higher Education Law which incorporates solutions to research problems in the universities.

Increase income of ITU foundations and revolving funding and transfer incomes to research expenditure.

Support the income level of researchers by providing them fringe benefits through the new Technocity interface.

Increase involvement of alumni financially to the research activities.

Improve efficiency of purchases to cut the costs and improve the amount spent on research.

Develop an organization and procedures for selling property rights for revenue.

Centralize laboratories to minimize costs, maintenance and service problems and to increase the efficiency of major equipment.

Employ technicians by self-created funds and employ them in centralized laboratories to increase the efficiency of their utilization.

## **SWOT ANALYSIS OF HUMAN RESOURCES**

As of January 2004, ITU has a total of 1,112 permanent teaching staff (392 full professors, 192 associate professors, 291 assistant professors, 77 lecturers, and 160 instructors) and 904 research assistants. In addition, 97 of the teaching staff are contracted, 40 of which are foreign nationals. There are approximately 19,000 students, both undergraduate and graduate. The ratio of permanent teaching staff to student is 18%. The female academic staff ratio is 39%. The University has a total of 1,426 administrative staff, 34% of which is female.

### **STRENGTHS**

#### **Strong Alumni and Faculty**

ITU graduates enjoy a strong reputation across the country. Two former presidents and three former prime ministers are ITU graduates. Many ITU graduates have served and still serve as government ministers. ITU's academic staff members have won many Turkish Academy of Sciences and TUBITAK Science Awards. Such academic staff is a great asset of the University. The only Turkish member of US Academy of Sciences is an ITU faculty-member. Two of the three Turkish members of the European Academy of Sciences are from ITU. 35% of academic staff received at least one of their degrees from universities in the US or EU. At least 70% of the academic staff have research and educational experience abroad. One of the parameters to prove the quality of the academic staff is the number of publications in refereed journals in the SCI. In 2002, ITU is the leader according to the number of the published articles in Turkey (over 500 in Engineering)

#### **Quality Standards and Improvement**

ITU continues to raise academic standards, regulations and requirements to promote academic staff and to recruit new ones. Thus, the quality of academic staff has been maintained. ITU raised funding to send young academic staff abroad to conduct research, and developed rewarding policy to motivate the successful academic and administrative staff. ITU offers them new opportunities depending on their performance.

#### **Information Technologies in Human Resources Management**

ITU purchased Banner 2000 Human resource software from the SCT company in US. Using this software, ITU is implementing an electronic system in order to decrease paper work and also gain higher achievement with less human power.

#### **High Quality Facilities**

ITU helps the low-income staff by supplying transportation between home and campus and offers accommodation and sport facilities for staff and students. Staff can receive high-quality medical services from Medico-social centre of ITU. Health-services are free of charge to all registered students and staff.

### **WEAKNESSES**

#### **State Control on Personnel Policy**

Not being able to employ qualified and contracted administrative-staff and also academic staff. Being a public servant is life-long job.

#### **Performance Measurement**

Lack of a meaningful performance-assessment system for administrative staff

#### **Inbreeding**

Tendency to employ ITU graduates for academic positions.

#### **Mobility**

Academic staff is not utilizing the mobility programs at a desired level.

## OPPORTUNITIES

### Industrial Relations

ITU maintains very close links with industry and research centres. The ITU Technocity project is an opportunity for ITU academic staff to establish their own companies and to earn more income.

### Integration with EU and International Relations

Integration with programs like the Sixth Framework Program and Marie Curie are opportunities for academic staff and students.

The good reputation of ITU and excellent accommodation and other facilities may attract international academic staff.

## THREATS

### Low Salary

Since ITU is a state university, salaries of the faculty are decided by the government. Salary level is very low and there is no flexibility to change the salaries according to "academic performance." Therefore, it is becoming very difficult to prevent young and qualified teaching faculty from leaving the state universities. Young researchers graduated from US or EU universities are willing to go to the private universities where the salaries are decided by university councils according to their performance. Economical and political instability and low income cause migration of well educated young researchers and young graduates toward USA and EU.

### Restrictive Policies

Universities cannot employ sufficient academic staff, especially research assistants, due to the economic policy of the government. The low income of academic staff does not encourage the young and successful graduates to be academicians. Thus the number of PhD students is decreasing.

## GOALS AND HOW TO REACH THEM

To attract high-quality academic staff and to keep the existing ones happy, ITU has to develop new opportunities and benefits such as:

- To increase the amount of housing for academic staff, especially for young academics, in order to offset the negative effect of low income.
- To increase resources to send academic staff abroad.
- To make academic staff an active partner in decision-making processes.
- To support academic staff in establishing their own companies in the ITU Technocity.
- To support academic staff by establishing sound endowments depending on their performances.

Employ qualified administrative staff: to prepare a proposal for the government to change the regulations and allowing the universities to employ contracted administrative staff.

Increase the number of research assistants funded not only by the government but also by ITU and industry.

Increase international relations: to encourage academic staff to apply for EU exchange programs and to offer proposals to Sixth Framework Program and other programs.

Create new projects and new programs to graduate young entrepreneurs.

Increase the number of academic staff who are graduated from other world class universities in order to offset inbreeding. Increase the number of visiting academic staff for internalization.

## **SWOT ANALYSIS OF FINANCE**

Under the force of globalization, ITU has undergone an extensive restructuring process since 1996. As it is explained in the self-evaluation report, a continuous quality improvement-based management system has been the primary goal for ITU. When the Senate accepted the educational and research reforms in 1996, all the projects and plans developed for this purpose were implemented. For the realization of the projects the following actions were taken:

The existing fragmented budget structure was converted into a “project based” one, in other words, into a “focused” budget structure. New strategies have been developed to increase the state budget and new tools have been implemented to increase income. Project priorities have been defined and project-based fund-raising from alumni and industry has been started.

### **STRENGTHS**

#### **Mission, Vision and Planning**

Have a clear mission and vision for future developments. A clear mission and vision have provided opportunities to the administration to decide on the priority of the projects. Sound projects and clear development plans impressed the alumni favourably. ITU has thus been able to raise funding from them.

#### **Sound Relations with the State**

Sound arguments and logical framework for new projects created great impact on the central government. ITU has thus been able to increase the state-funded budget every year.

#### **Sound Relations with Industry**

The projects which were planned to create infrastructure and physical environment for new undergraduate and postgraduate programs or new advanced technology R&D centres, have been attracting funding from industry. ITU's well established structure and links to industry created opportunities for developing new projects to increase income. As the oldest and the best technology university in the country, ITU has close links with industry for Research and Development.

ITU established the first technology development centre in Turkey in 1990, and, later, a software development centre with incubators. ITU has had experience in establishing incubators and technoparks to support innovation

#### **Strong Community Service**

ITU has a very good reputation in all engineering fields in Turkey. The Certificate programs in the Continuing Education Centre have been very popular in the community. The University has established two foundations for fund raising, R&D and continuous educational activities.

#### **Strong Infrastructure**

ITU has six campuses with over 300 hectares of land. It has established two major technology-development areas on its two campuses, with 180 hectares of land in a distributed structure.

### **WEAKNESSES**

#### **Restrictions on Employment of the Administrative Staff**

ITU has a well-established but traditional administrative staff. This staff is not suitable for the management of new projects which are designed according to new concepts. They usually do not speak foreign languages.

Even if the University alleviates some of the bureaucracy under its responsibility, staff is still prone to function according to the old systems. It takes time and effort to train the staff to carry out new procedures.

### **Higher Education Law**

Existing university law is hindering financial developments and creating a heavy bureaucracy for financial procedures.

### **Awareness Issues**

It is very difficult to motivate all the staff for R&D. Some academic staff are against the commercialization of knowledge or not interested.

### **External Attractions**

Large number of qualified teaching staff has been attracted by teaching at the foundation universities, which keep them away from their research activities.

## **OPPORTUNITIES**

### **Location**

ITU is located in the heart of industrial Marmara region, which is home to about 40% of the industry and business in Turkey.

### **ARI Technocity**

ITU's Technocity is an opportunity to strengthen its ties with innovative industry. With its 90 hectares of land, ITU Technocity is just next to the academic campus area in Ayazağa and offers opportunities for ITU staff and students to work in technoparks and create a suitable environment to increase the number of SME's. ITU Technocity offer opportunities for real-estate developments in the campus area, thus creating income.

## **THREATS**

### **Turkey's Economic System and Bureaucracy**

The share of budget allocated for education in Turkey is insufficient and the existing budget system and central-government bureaucracy cause difficulties in the use of allocated funds.

The lack of awareness of R & D at governmental and national industrial levels.

## **GOALS AND HOW TO REACH THEM**

Seek a special university status to be exempt from some aspects of central government intervention in order to raise funding and to increase income and be able to use its own resources according to its future goals.

Complete e-university systems (students, personnel, library, security etc.) and work on the automation of financial systems to be integrated to the main system.

Increase the overall budget and funds raised from the alumni and industry.

Increase the number of alumni who are enthusiastic about new developments in ITU.

Establish a special organization for intellectual property rights and be able to create income from licence and patents.

Find new resources for its ARI (Advanced Research and Innovation) Technocity to provide infrastructure and facilities for R&D companies to speed up developments and establish Innovation Relay Centre in order to commercialize the R&D products and increase income.

## SWOT ANALYSIS OF INFORMATION TECHNOLOGIES AND SYSTEMS

### STRENGTHS

#### **An integrated, high bandwidth, private network spanning all of its five campuses**

Deploy Web-based and/or client-server applications across the whole University without worrying about performance issues. Also, provide students with home directory log-in services anywhere at any campus, and manage student labs centrally.

#### **Automated Library services**

All the operations of ITU libraries are managed through an integrated library information system. All book acquisitions, loans and access to databases are available to all members of the ITU community anytime anywhere.

#### **Student computer labs**

Labs located in all academic buildings house over 2000 computers, managed centrally. Courses ranging from basic computer literacy to computer-aided engineering can be taught through these labs and students have access to Internet and library resources.

#### **Students' registrar operations**

Students can register anywhere, follow their academic records and explore their educational options easily.

#### **The best high performance computing facilities**

This is making possible the development of computer-intensive research areas ranging from climate-modelling to computational nanoscience.

Hiring and keeping IT professionals to manage and develop our extended information infrastructure is an almost impossible task with government salaries.

### WEAKNESSES

#### **Hiring professionals**

The University has to rely heavily on student assistants and young graduates of ITU to implement and run our systems. This results in a high turnover in IT human resources.

#### **Unqualified Administrative Staff**

Lack of regular in-house computer literary training for our administrative staff is leading to suboptimal use of hardware and software at their disposition.

This leads to many unintended data security failures, and also hampers any progress toward the desired "paperless office" goal.

#### **Data Backup and Archival System**

There is no operational data-backup routine and there are no electronic archival systems in operation. Despite the presence of a high-performance network, many documents and data are kept on individually managed computers as local copies without any backup.

### OPPORTUNITIES

#### **Awareness**

Many academic units of the University are involved in IT teaching and research. A large spectrum of information technological research and development areas are covered, and many new alleys are being explored.

### **Technocity**

The presence of a newly-established technopark within our main campus, housing many strong software development companies, promises a future with new synergies.

### **State Support for IT**

Governmental funding has been available for periodic upgrades of basic IT infrastructure. The University was able to upgrade our network systems very frequently and our desktops and servers periodically.

## **THREATS**

### **New Demands in IT**

The world is moving fast in the direction of a “paperless society” and ITU, as an institution, should be ready to implement new requirements for data-privacy and security and digital-authentication.

Innovation and technological change is happening at increasingly higher pace: new funding schemes are needed to keep up continuously, rather than periodically, with developments in hardware and software.

## **GOALS AND HOW TO REACH THEM**

Create sources and develop structures to hire permanent IT professionals and administrative staff.

The security of IT systems to progress toward the paperless office and improve the data backup routine, data privacy, security, digital authentication and archival system.

Create a policy to respond to the fast developing structure of IT technologies. Plan and allocate necessary funding for software and hardware systems.

Use the advantages of the technology development regions law to build up an e-university and take active part in building up research and development work in IT.

## **SWOT ANALYSIS OF INFRASTRUCTURE**

### **STRENGTHS**

#### **Built Environment**

##### **Location: Unique Locations of Campus Areas in the City**

Although the University campus areas are located in different regions of the city, this diversity is a kind of strength. Three city campuses were the first campus locations of the University, whereas the Ayazağa Campus was allocated to the University at 1966. After that time it became the main campus area and most of the faculties and academic functions were moved there. The city campuses are still important in terms of maintaining close relations with city life. Today faculties related to management, language, music, art and architecture, textile and fashion are located on these campuses.

The Maritime Faculty is in the Tuzla Campus, where most of the shipyards are located. Part of the Ayazağa Campus area and Florya Campus area is allocated as Technocity. In Ayazağa, Technocity functions are closely integrated with academic/research functions where as in Florya nearby air-transport facilities and other transport facilities makes this campus a very important location.

##### **Transportation: Easy Access to Different Parts of the City by All Means of Transportation Facilities**

The Ayazağa Campus is located in Sarıyer District. There exist three highways connecting the Ayazağa Campus (main campus) to the Asian side by two bridges on the Bosphorous; to the other city centre of the Taksim-Pera Region (highly cultural and recreational district); to the coastal road of Bosphorous (which has unique settlement and land-use characteristics on the water). The underground metro connection is planned to reach Ayazağa campus in near future. E5 highway directly reaches to the Atatürk Airport, where E6 highway reaches to Sabiha Gökçen Airport.

The Ayazağa campus location has the strategic advantages in many terms. It is on the prestigious development axes of commercial power with its high-rise, high-density office architecture.

It is on the development axes of city residential lands. It is on the main artery of evacuation or rescue operations in case of earthquake or other hazards.

##### **Value Generation: Development of City Lands by the Existence and Functioning of University Campus Buildings**

Existing buildings of the city campuses, Taskışla, Gümüşsuyu and Maçka Buildings are registered historic, culturally-valuable buildings and add value to their surroundings. There are many newly-designed buildings in Ayazağa (main) campus, reflecting contemporary architecture of today, and rearrangements of functions, additions and renovations are planned and realized on old buildings according to emerging needs with new educational and architectural concepts. One of the important contributions to developing the environment is the Technocity project, which enables to regeneration of land, which was occupied by the squatters.

#### **Natural Environment**

##### **Mild Climate, Promoting Landscape and Natural Beauties**

İTU has used the advantages of being located in the magnificent city of Istanbul, possessing unique locations in such a city. Natural flora and fauna still exists in the Ayazağa Campus area. City campuses present quiet and peaceful corners of natural beauties in their courtyards. City campuses and Ayazağa offer extraordinary views of Bosphorus, and the Tuzla Campus is located on the coast of the Marmara Sea.

## **Socio-Economical Environment**

### **Close Public Relations with Society**

The proper distribution of functions of Istanbul Technical University in the city enables stronger contacts with both the public as well as related industries. Thus, by the realization of Technocity project, these relations will become stronger and advantageous.

Campus buildings located in the boundaries of different governmental provinces means continuous contacts with local governmental bodies, which makes the University, integrated with city/public policies. (Policies related to built environment, cultural conservation, technological policies, industrial developments, earthquake policies master plans, transportation policies, etc.)

The University campuses host exhibitions, congresses, and science and technology centres.

### **Student Accommodation and Other Student Facilities**

At present, available accommodation capacity fulfils student demands. From 1966 to present, student-housing capacity has increased from 800 to 3,000 (950 women, 2,050 men). As noted above, ITU campuses have various potentialities to enrich the social environment inside the campus areas.

## **WEAKNESS**

### **Built Environment**

#### **Inter-Campus Traffic and Pedestrian Circulation, University Transportation Systems**

There is a bus-service system to all campuses of the ITU from all parts of the city at the beginning and the end of the day, but there is no continuous ring service from city in between and in campus areas. There is a growing need to design new transportation facilities to establish a continuous flow of the students, academic and administrative personnel of the ITU in parallel to the contemporary conceptual structuring of flexibility in education and administration.

The underground metro connection will improve relations with the city functions. More efforts should be given to build a metro station on the Ayazağa Campus. This will solve the problem of easy access to city campuses.

#### **Need For Improvements on University Lands**

Although the University administration has made a concerted legal effort to provide for illegal squatters on University borderlands, there are still some districts on the Ayazağa campus that are occupied by squatters. The University is examining more effective solutions to prevent further uncontrolled occupations by squatters.

#### **Insufficient Precautions for the Disabled People**

Buildings on the main campus of Ayazağa, as well as on the other campuses, are not easy accessible for everybody. Sufficient precautions have not been taken for the disabled. Most buildings have no elevators and stairs and thresholds are not well-designed.

### **Natural Environment**

#### **Better Care or Conserving Local Flora & Fauna**

The ITU has forests, water reservoirs, conservation areas for local flora and fauna in the main Ayazağa campus and other campuses. However, better care is needed for local flora and fauna.

#### **Need for Recreation Facilities by Means of Beautiful Landscape and Mild Climate**

On the main campus and in the other campuses, the natural environment and open spaces are not used effectively. Recreation facilities can be improved by means of beautiful landscape and mild climate. Sport facilities can be enhanced.

## **Socio-Economical Environment**

### **Need For Improving Social Life Conditions: In-House Movement and Recreation**

Students need to participate in social activities as well as their academic activities. On the Ayazağa campus and Florya and even Tuzla campuses, the campus social life is inadequate for the emerging life styles. These campuses have to create more possibilities for the continuity of pedestrian communication between social buildings. Well-designed pedestrian axes and ring-services could facilitate such circulation.

The same life conditions should be provided for evenings, especially near the dormitory and housing areas in the Ayazağa Campus. New facilities are needed to support night-life activities such as cafés, small markets or cinemas. Although Ayazağa is located in the city, because of the distances, darkness and lack of public transportation services inside the campus, the people cannot use city functions properly at night.

There should be a security ring-service from faculties to dormitories and housing sites for the students and academic personnel who work late at night in their offices, laboratories or libraries.

### **The Need for New Models for Infrastructure Improvements and of Management and Maintenance in Campus Areas**

Since the University became involved in more contacts with industry (such as in the Technocity) and of other academic institutions (exchange programs, SUNY programs etc.), there is a need to develop new creative models to cope up with the emerging design, management, maintenance and improvement problems of physical environment of campus areas. New residential units, new laboratory buildings, etc., should be designed, and the existing environment should adapt to the new requirements.

## **OPPORTUNITIES**

### **Built Environment**

#### **Existing Transportation System**

The underground metro connection on the Ayazağa district will soon reach the University. The University community will benefit from this connection in social, academic and economical terms.

#### **Well-Experienced Designers and Researchers to Improve Infrastructure**

The University consists of faculties that have experienced academic staff on environmental planning, art and architecture, environmental control, and management issues. This is the basic potential of ITU: most of the new buildings and environmental projects were designed by and built under the control of well-experienced academic staff.

### **Natural Environment**

#### **Landscape and Climate**

The University has regenerated forests, water reservoirs, conservation areas for local flora and fauna in the main Ayazağa campus. The existing landscape characteristics of the campuses of the University are pleasurable and provide opportunities to use open spaces for recreational purposes. The Ayazağa campus slopes towards the Bosphorus and thus offers open, enjoyable vistas through the buildings. The Tuzla campus is on the sea side of Marmara Sea, and has more softer climatic conditions than Ayazağa district.

#### **Earthquake Zones**

The Ayazağa Campus is located on a volcanic rock formation. Since the degree of slope is high, it is considered on strong ground and resistant to earthquakes.

## **Socio-Economical Environment**

### **Well-Known Reputation in Industries for Providing Funds**

With the academic staff enjoying a high reputation in the academic media and also in industry, this enables the University to achieve more funding for her progressive projects to improve infrastructure.

### **Opportunities Created by the Technocity Project**

The Technocity project is one of the biggest projects of the University. Industry-University relations will further change the physical environment both in Technocity and on University campuses, where this integration is going to enhance the investments on the University. More funds will be received from industry for the development of infrastructure.

### **International Relations and New Opportunities for Scientific Infrastructure**

The University has many contacts with universities abroad, in Europe and in the US. Common research projects and academic exchange programs will provide opportunities for the development of new laboratories and technology buildings in the campus sites.

## **THREATS**

The University faces no important threats in these areas under existing conditions. The two possible threats relate to (i) the building allocations for the University made by the central government, and (ii) changing educational policies.

## **Built Environment**

### **Squatter Settlements on the Site of Ayazağa Campus**

Squatter settlements in the Ayazağa campus totalling 558 617 square meters, still put restrictions on the further land-use and planning policies of the University.

## **Natural Environment**

Besides the natural ones such as an earthquake and other hazards, there exist no threats.

## **Socio-Economical Environment**

Both threats are related to politics. The University administration is always cautious about public policies and adopts her strategies to gain from government policy changes for the sake of the University.

### **Financial Problems**

Intervals and delays in the payments of public funds for constructions on the campuses cause to extend construction periods, thus leading to deterioration of the buildings.

### **Legal Restrictions**

The Ayazağa campus area is located on the Sarıyer district back seen-zone of the Bosphorous Conservation area, which is defined by the 2960 No. Bosphorous Law. In addition to this law, two acts of legislation apply to the development of this area: 3030 No. Greater Istanbul Municipality Management Law, and 3194 No. Construction Law. All design projects and construction decisions are subject to these three laws in the Ayazağa campus. The renovation activities of historic buildings of city campuses are subject to the decisions and approval of the related Conservation Committee of Cultural and Natural Assets of the Ministry of Culture.

## **GOALS AND HOW TO REACH THEM**

### **Built environment**

Upgrading the quality of physical environment of campus buildings.

Environmental adaptation to the emerging needs of contemporary education policies and social life.

Continuous maintenance and renovation of historic campus buildings in use.

Legal procedures conducted by University to remove of squatter settlements.

### **Natural environment**

Nature-friendly designs for infrastructure solutions.

Using nature and natural beauties in campus life.

Improving out-door living environment and recreational facilities in campus areas.

### **Socio-economic environment**

Realization of the infrastructure for the Technocity Project for advanced research and innovation.

Providing more funding for building investments.

Developing new finance models for continuous improvement of environmental quality.

## SWOT ANALYSIS OF INTERNATIONAL RELATIONS

Globalisation requires common criteria and common values to be defined and accepted by the institutions. In this way, institutions may become accessible and may enable their students and staff to be mobile all around the globe to achieve global resources. ITU has been trying to maintain and develop its main characteristics, while also trying to absorb and integrate global values into its own system in order to reach a new synthesis for its mission.

### STRENGTHS

#### High Quality Academic Staff

35% of Academic staff received at least one of their degrees from universities in US and EU. At least 70% of the rest of the academic staff have research and educational experience abroad.

#### Bilingual Teaching

A bilingual teaching and research environment has been available since 1997. Students are encouraged to seek study-abroad programs, and ITU has been able to accept international students at the undergraduate and postgraduate levels. A sound English Prep-School has been offering language opportunities to the students and also to academic and administrative staff.

#### International Accreditation

Accredited departments have created a positive impact on the whole system. International accreditation created self confidence and as a result staff, and students have become more mobile than before.

#### Membership in International Networks and Activities

Extensive international network activities have been developed. ITU has become a member of 13 international networks. It has been very active in these networks and has been host institution for many network meetings. ITU has bilateral agreements with more than 100 universities mainly from EU and USA.

#### Funds and Facilities

ITU has sufficient funds to support its students and academic staff for international activities for the short-term. There are funds available for teaching staff for long-term study visits. The ITU Research Fund provides matching funding for international projects. Not only University resources but also resources from industry are available to support joint international projects.

The University offers excellent accommodation and facilities to visiting teaching-staff and has been able to offer furnished flats free to the visiting scholars since 1997. The University has a dormitory capacity of 3,000. The quality of dormitories are very good and the locations are attractive to students.

### WEAKNESSES

#### Lack of Information

There is a lack of information in the international academic community concerning bilingual education introduced at ITU after 1997. This limits applications to ITU from abroad.

#### Mobility

Student exchange programs were not widely exploited in the past. Thus there is not a strong tradition for exchange among ITU students.

#### Availability of Funds

Students are not able to support themselves abroad for long-term studies, and the University lacks sufficient funds for this. Funds for the organisation of international activities by academic staff are also insufficient.

## **OPPORTUNITIES**

### **Links, Double-Degree Programs and International Opportunities**

Close links with many outstanding universities of the world.

Programs started by ITU-SUNY for undergraduates and TIME Association double-degree for graduates.

EU Student exchange programs and Marie Curie and JRC Mobility opportunities.

Other International Funds such as DAAD, Von Humbolt, JICA etc

## **THREATS**

Insufficient financial resources and bureaucratic problems.

Possible risk of international terrorism affecting international constituents.

Possibility of failure of Turkey's application to EU membership

## **GOALS AND HOW TO REACH THEM**

Create and allocate more funding for study-abroad programs from university when the major infrastructure projects attain a certain level, and from national and international projects

Encourage academic staff to send more proposals to the EU Sixth Framework Program and utilise EU-exchange programs, such as the Marie Currie program and the opportunities offered by JRC, for student and faculty visits to EU countries.

Create and support new international links and activities by the integrated efforts of the ITU European Union Centre and International Office.

Attract foreign R&D companies to bring foreign investment to Turkey and offer opportunities to students and staff in international companies.

Increase international public relations using conventional and web media to inform interested parties on bilingual teaching, education and research in ITU.

Inform and encourage students on international exchange programs

## **SWOT ANALYSIS OF CONSTRUCTION INVESTMENT PLANNING**

The purpose of this analysis is to outline policies and procedures by which the University will discharge its responsibilities with respect to maintaining, managing and enhancing its investment portfolio. The University construction investment portfolio has two main components: state funds and donation funds. Each component is separate and distinct and, especially within the donation funds, there are distinct units such as endowments, loans and credits that should be managed according to the requirements of the unit.

The investment planning work of Istanbul Technical University is financed by both state and donation funds managed by two departments. While the Department of Construction Works manages state-funded construction works, a Project Management Centre was established for managing construction projects across a wide range, starting with state funds, and especially donation funds. The Project Management Centre (PMC) was formed as a platform that establishes a cooperative atmosphere by linking different finance and management tools, forming a decision making system for the University.

### **STRENGTHS**

#### **Cooperation within Parties**

A cooperative atmosphere linking academic and practical environments to the benefit of both academics and practitioners. Cooperative links with other universities and related research centres in transferring information at both national and international levels.

Theoretical and practical experience in execution of construction projects funded with both donations and governmental sources.

#### **Strong Background**

Strong research basis, evaluative and developmental support for the use of modern technology. Web tools and Information Technology practice in all project management levels. Possessing a large pool of full- and part-time academic staff with extensive practical working experience in the topics they teach, many of whom are active practitioners in their disciplines. Strong technological infrastructure.

Open-mindedness and innovativeness, administrative quality and well educated personnel in project management centres.

#### **Industrial Relations**

Success of IT based Construction Executive-MBA Program graduates enables close relations with industry.

#### **International Relations**

With its international reputation, ITU has been able to develop collaborative construction projects with international funding organizations (such as The World Bank).

### **WEAKNESSES**

#### **Awareness of professional Construction Project Management**

Lack of professional Construction Project Management practice and tradition in industry.

Bureaucratic structure (high hierarchy level), due to being a part of a state university.

Insufficient government funding, poor financing abilities, limited resources.

Lack of effective evaluative instruments.

## **OPPORTUNITIES**

### **Flourishing Investments**

Need for management and planning skills for large scale local and international investments.

### **Educational Activities**

IT in the Construction Executive MBA program and web-based learning tools that provide professional development to corporate management and business leaders.

Opportunities for articulation with community and industry to provide professional programs.

Practice opportunities for architecture, engineering and management student and student research assistants.

## **THREATS**

### **Possible Economical Crises and Instability**

Decrease in amount of donations to the University. Loss of interest among local and international companies investing in Turkey.

## **GOALS AND HOW TO REACH THEM**

Promotion of construction management concepts to Turkish investors.

Increase financial resources and develop effective evaluation instruments.

Develop Turkish component of the European initiative CONNET (Construction Information Service Network).

Develop further instructional models for appropriate and creative use of IT in the Turkish construction sector.

## **APPENDIX J**

### **ARI Technocity**

## Appendix J

### ARI Technocity

ARI Technocity initiative is a multi-faceted science park project that leverages ITU's large population of researchers, extensive R&D infrastructure and institutional standing to create a vast "entrepreneurial space" on ITU campuses in central Istanbul. The first phase of the project entails 300,000m<sup>2</sup> of development on 90ha of ITU land which can be extended to include an additional 80ha as the second phase. The first phase of the project requires approximately \$250m investment to create an expected total asset value exceeding \$500m. Tenant companies will benefit from corporate and income tax exemption in their R&D activities until 2013, making ARI Technocity a highly attractive area for technology enterprises.

#### Mission

For ITU, ARI Technocity represents a multi-layered transformation process. ARI Technocity will:

- i) transform ITU from a leading national research university into a leading international center of technological innovation by
  - attracting and training **a new generation of students** and researchers to be **creative and socially engaged leaders of innovation** as scientists, engineers, managers and policy-makers
  - attracting and hosting **technology-oriented enterprises** by offering **a dynamic participative governance structure** and a business-friendly science park environment
  - developing a **community of innovation and creativity** within a unique social and cultural setting
- ii) lead the transformation of Istanbul, a city with unmatched history and diverse tradition, into a technology generating cosmopolitan by leveraging her diversity as the engine of creativity
- iii) lead the rethink of national technology strategies and the reformulation of innovation-focused education
- iv) transform the culture of participation in global networks of innovation. Global innovation demands efficient use of global human resources but geographic and cultural disparities impede the flow of global human resources into an integrated global talent pool. Ari Technocity will act as a multicultural center of attraction and a conduit to the global networks of innovation for the young human capital in its wider region

#### Resources and Constraints

ARI Technocity is a large scale project and its success depends critically on its resources. Although there are many components and stakeholders in technology-generation, the following is an evaluation of the resources that ITU deems essential to the success of the initiative:

*Financial Resources for Real Estate Development:* The development stage is two-tiered. For small and medium sized companies that may be financially constrained, ARI Technocity is raising the requisite financing to build office space. For large companies that prefer to design and build their own space, ARI Technocity offers a build-operate-transfer (BOT) scheme that meets the standards set by ITU. Within the former scheme, ARI Technocity has already completed its first building using its own resources (6500m<sup>2</sup>), has started construction of its second building (18,000m<sup>2</sup>) with partial funding support from the World Bank and is in negotiations with other funding resources for further construction. The BOT scheme does not require funding from ARI Technocity as the

construction costs will be borne by the firms themselves in return for reduced rents for an extended period of their tenancy.

*Financial resources for technology companies:* Financial capital is pivotal for entrepreneurial initiatives in the technology sector. Turkish risk capital markets are small but expanding. ARI Technocity already hosts most, if not all, technology companies financed by Turkish risk capital firms and is developing close links with these finance firms to expand the resources that will be channelled to R&D based efforts. ARI Technocity is also developing a strategy to attract international risk capital to Turkish technology initiatives.

Quasi-public funding by Turkish Technology Development Foundation (TTGV) and SME Development Union (KOSGEB) is also available for Turkish technology companies. ITU works very closely with TTGV as a strategic partner. TTGV is a member of the board at ARI Technocity project and its Istanbul offices are located in ARI Technocity. KOSGEB has been a partner since 1991 and has two separate office facilities for start-up companies on ITU campus. ITU Rector currently sits on the KOSGEB Board.

*Human resources:* Human resources are at the core of a successful science park project. ITU currently employs nearly 2000 academic staff and trains nearly 20000 students, predominantly in science and engineering. In line with the ARI Technocity vision, ITU has shifted its student population composition in favour of research students since 1996 and ITU currently boasts nearly half of the science & engineering graduate student population in Turkey making it the prime address for technology development efforts.

ITU has also undertaken targeted educational projects to support its ARI Technocity initiative. The Graduate Programs in Advanced Technologies in Engineering initiative that began in 2001 is a unique effort that aims to train a new generation of researchers in targeted technology areas who are able and willing to commercialize their research. Similarly, ITU's management faculty is offering advanced degrees in management to help train students who can take an active part in the successful management of technology companies.

Clearly, human resource demand for technology is one of the more dynamically changing components of a society's labour demand, closely paralleling the rapid changes in technology. As ARI Technocity situates itself at the center of this process, establishing the mechanisms for planning new degrees, new courses and new teaching methods is a challenge and ARI Technocity is seeking mechanisms to achieve informed corporate participation in this planning process.

*R&D Infrastructure:* ITU has invested significant capital in R&D infrastructure in a variety of areas including automotive, satellite ground station, material science, distance learning, shaking table etc. The infrastructure needs to be continuously upgraded and extended to respond to the needs of new companies in new technology areas. Therefore, the current challenge is to involve the corporate partners in the selection of new areas for investment and to engage all players in raising the requisite financing for these investments.

*Management:* Managing a private sector driven structure like the science park while maintaining the overall vision of the university is a challenging task. ARI Technocity aims to involve private sector feedback at every level of its planning and decision-making process. The ARI Technocity Board comprises industry leaders and TTGV alongside ITU. The daily management of the company is undertaken by individuals with international private sector experience. Furthermore, as indicated above, ARI Technocity is currently designing mechanisms for private sector participation in human resource and R&D infrastructure planning.

### **How is the institution trying to achieve its mission?**

An important advantage of the ARI Technocity project is that it is being designed as a new organization which allows for innovative new organizational structures to implement its strategy towards achieving its mission. ITU encourages market-responsive modes of organization within the ARI Technocity structure and acts as the oversight entity to ensure consistency with its overall

vision. Given that the organization is effectively being designed on a clean slate, the discrepancy between “what ought to be” and “what really is” is minimal at this stage.

The overall management perspective of the entity is to be first and utmost a “facilitator” of cooperation among participants and only to assume the “service provider” role when there is a structural impediment that impairs the effective interaction among stakeholders.

As the *facilitator*, ARI Technocity’s strategy is as follows:

- Affiliation with all participants: ARI Technocity is currently informing all stakeholders (faculty, students, corporations, TTGV, KOSGEB, foreign universities, municipality, the Turkish military, and Chambers of Commerce & Industry) who are integral parts of the technology generation process about its vision and its strategy and ensuring that all participants are affiliated with the overall effort.
- Awareness among participants: ARI Technocity is currently designing interfaces (websites, publications, forums etc.) to facilitate information flow among stakeholders. Effective communication among the participants about their respective capabilities and demands is essential before they can cooperate.
- Removal of regulatory/practical barriers: Even if all participants are aware of each other’s potential and needs, regulatory structures and practical complexities may hinder cooperation or simply render the costs of cooperation prohibitively high. ITU administration is facilitating the joint efforts by outside parties with the ITU community. However, further effort is required to detect any unarticulated, subtle impediments among the stakeholders to be followed by a determined initiative to eliminate those barriers.

As the *service provider*, ARI Technocity’s strategy is as follows:

In areas where the market forces fail to achieve interaction among the stakeholders, ARI Technocity will assume primary responsibility in remedying the failures. The following is a list of some of these areas at present and the list will certainly evolve as ARI Technocity observes the functioning of the system more closely:

- Providing office space to small and medium sized companies which do not have the necessary capital to invest in their own facilities.
- Coordinating, shaping and advocating the policy choices of the science park community at the national and international level.
- Providing the necessary training for the stakeholders to enable them to explain their potential and needs in a common language/format. For example, training graduate students to prepare business plans and present the financial analysis of their project is a service that is likely to be provided by ARI Technocity.

### **Quality Management/ Capacity for Change**

The performance of the ARI Technocity initiative will be monitored based on the following measures:

Number of patents acquired by Technocity companies  
 Risk capital raised by Technocity companies  
 Foreign investment in Technocity companies  
 Export volume of Technocity companies  
 Number of successful IPO’s

Number of start-up companies established by ITU faculty and students  
 Number of start-up companies surviving after one/two year(s) of operation

Number of hours consultancy provided by ITU faculty to Technocity companies  
 Number of students employed by Technocity companies

Total income of ITU faculty from consultancy work  
Total income of R&D facilities from Technocity companies

As indicated above ARI Technocity is designed as a facilitating entity. It will use the above performance measures to track and detect failures in the working of the whole science park system. Once the problem is detected, the management will diagnose the cause, offer a remedy and then track the same measure to determine whether its actions have been successful.

ITU views the ARI Technocity project as a dynamic, rapidly evolving mechanism. Therefore, an institutional design that can respond to internal and external feedback promptly is critical to sustained success. Involvement of the private sector players and public sector actors in the analysis of the expected developments is an essential component of that design. As indicated above, these partners will be involved especially in the determination of anticipated need for new human capital and R&D investments. As the facilitator and enabler of the whole technology-generation system, ARI Technocity will rely on the input of all players to ensure sustained success of the whole project.

## **APPENDIX K**

### **Continuous Quality Improvement at ITU**

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## Continuous Quality Improvement at Istanbul Technical University

S. Birgül Tantekin-Ersolmaz, Hasancan Okutan, Ekrem Ekinci

Istanbul Technical University, Turkey  
 ersolmaz@itu.edu.tr  
 okutan@itu.edu.tr  
 ekincie@itu.edu.tr

### Abstract

The professional job market for engineers is becoming more international due to the globalization trends in the world; hence there has been an increasing demand in Turkey towards mobility after graduation. Turkish universities are now facing pressures from incoming students to get international recognition and accreditation. This paper summarizes the quality assurance programs and accreditation efforts of Istanbul Technical University serving to the need of students for global mobility.

The quality system is structured with the intense participation of staff members, students, alumni, industrialists, government and research institutions. The full system is referred in 8 different criteria, at the center of which education is processed by a well formulated educational objectives of a program, which incorporates the mission, and contributions of the constituents to satisfy the current needs for educating a global engineer. The program and system are then subject to outcome assessment procedure where specified goals are measured, evaluated and fed back for the improvement of the process. ITU is now preparing for ABET EC2000 campus visit to prove the viability of the continuous improvement system to ABET evaluators in 2003.

**Keywords:** Accreditation, quality, continuous improvement

### 1 Introduction

An important impact of globalization is the industries competing in the international market and professionals utilizing job opportunities across their national boundaries. The movement of engineering professionals in the globalized world brings together the issue of international recognition of engineering diplomas. The trans-national mobility of engineers in European Union (EU) and recognition of diplomas throughout Europe is an important problem that EU countries are facing today [1].

In parallel to this, another issue that gained equal attraction is the quality of the graduating engineers, in particular the knowledge, skills, and attitudes necessary for engineers to function in the globalized world of the 21<sup>st</sup> century. Table 1 summarizes the features of the 21<sup>st</sup> century that will pose challenges to engineers as described by Rugarcia et. al. [2]. The skills required to address these challenges are

summarized as independent and lifelong learning, problem solving, critical and creative thinking, teamwork, communication, global thinking, and change management [2]. These skills become especially important for the engineering graduates planning to take advantage of the job opportunities in the global world. Universities now either feel responsible or are held accountable for furnishing their graduates with the knowledge, skills and values required to compete worldwide. In Turkey, the approval of opening a program is carried out by the Turkish Higher Education Council. However, the quality of the graduating students is currently an issue of the university itself.

Istanbul Technical University (ITU) is a public institution founded in 1773 as the Royal School of Naval Engineering. It is now the oldest technical university in Turkey, which has enjoyed a continuous life span in higher education. Due to the phenomenal changes from the Ottoman Empire to the Turkish Republic, the institution had to respond to the needs of change. Changes involved from military to civil education, religious to secular understanding and currently from a deterministic to a quality improvement system.

| Attribute                 | Characteristics   |
|---------------------------|---|
| Information               | Proliferating, flood of information, Internet, tremendous data storage capabilities |
| Technological Development | Multidisciplinary, ever increasing speed, new dimensions                            |
| Market                    | Global, extensively competitive, requires cultural and economic understanding       |
| Environment               | Endangered, diminishing resources   |
| Social Responsibility     | Emerging  |
| Corporate Structures      | Participatory, virtual  |
| Change                    | Rapid, requires lifelong learning   |

Table 1. Technological Characteristics of the 21st Century.

In designing a new system, the ITU engineering programs were first revised in 1969 to transform from the five-year engineering diploma to a four-year B.Sc. degree and a two-year M.Sc. degree programs. Previously, the educational system at ITU was generally characterized as “Continental European” due to the major German and minor French influence during the Ottoman and Republican times. The mission of the university was redefined in 1996 as “to graduate worldwide competing engineers and scientists”. This mission required the revision of engineering programs to enable the mobility of the students and international recognition became a major issue.

Drastic actions were taken after 1996 which involved restructuring of the programs of all 34 departments to meet the requirements of the mission of the University and confirming to the needs of up to-date engineering education, changing the language of instruction from monolingual (Turkish) to bilingual (Turkish and English), and providing the substructure essential for the new model which may be summarized as “continuous quality improvement (CQI)”.

As a result of economic globalization, the incoming students in Turkey are attaching more and more importance to international accreditation in their university selection. In response to this demand, the highest ranking universities in Turkey are getting substantial equivalency from international accreditation agencies such as the Accreditation Board for Engineering and Technology (ABET) in the USA [3]. Therefore, the CQI structure employed at ITU was further identified with the ABET Engineering Criteria 2000 (EC2000) incorporating the strengths of the university, national and regional needs and characteristics of each engineering discipline. ITU is now in the “substantial equivalency” process for 12 of its engineering programs. In this paper we report on the collective efforts of ITU engineering departments to develop an educational system based on continuous quality improvement which is expected to be certified by ABET for substantial equivalency in October 2003.

## 2 Background

The 1996 program of change at ITU was planned as a four-year project named “Project 2001”, later followed by a second project under the heading of “Project 2005”. In Project 2001, the structure of engineering education, from the curriculum to the physical and technical infrastructure of the classrooms and student laboratories, was totally changed. High quality student housing facilities were built, the central library was vastly improved including the installation of a new library automation system, a respectable student scholarship program was developed, and the IT infrastructure and computer capabilities of students and academicians were upgraded to modern standards. Programs that contribute to the personal development of the faculty and staff were increased.

In designing the engineering curriculum, the strengths of ITU, national and regional needs and characteristics of each engineering discipline are considered in addition to the

attributes of the graduates which would ensure “worldwide competing engineers and scientists” in the 21st century.

The design of engineering curriculum at ITU was based on various national and international endeavours of Rectorate, Senate Education and Senate Accreditation Committees and academicians. ITU organized the 28th International Engineering Education Symposium in Istanbul together with the International Society for Engineering Education (IGIP) in 1999. The main theme of the symposium was chosen as “Engineering Education in the Third Millennium” and a strong representation from ABET was invited to discuss the new outcomes based accreditation system of EC2000 [4]. Also European systems are investigated for possible models. Since Turkey identified integration with EU as her top goal after 1990’s, a feasible accreditation match from Europe would have been preferred. Investigations showed that no widely accepted European system existed but the British engineering institutional accreditation system, which was based on quality assurance, might be an alternative. ITU has 24 engineering departments, all of which are seeking international accreditation. This means applying for 24 different engineering institutions such as Institution of Chemical Engineers, Institution of Mechanical Engineers, etc. which would be a diverse and hard to control process. However, ABET which also offers a continuous program improvement based accreditation procedure is addressing all engineering programs. Also the attributes of engineering graduates listed in EC2000 criteria by ABET [4] is very similar to those prepared by the UK Institution of Chemical Engineers accreditation document [5]. A comparison of the EC2000 a-k attributes to H3E WG3 of EFQM [4] also shows a broad agreement on the attributes of the graduates. Furthermore, the general overlap of these quality assurance systems in education agrees with the technological characteristics of the 21<sup>st</sup> century presented in Table 1. For the sake of a collective address and ease of control of all programs ITU has chosen to certify her CQI system by ABET EC2000 substantial equivalency.

## 3 Continuous Quality Improvement System

Total Quality Assurance System has first originated in the academic world, imported by Japanese industry and transformed into a global industrial management system. After a long lasting and ever developing success total quality management system returned back to home to academia mainly due to the solid commitment of ABET in EC2000. The educational excellence is sought through CQI, which is defined as a systematic pursuit of excellence and satisfaction of the needs of the constituencies in a dynamic and competitive environment. CQI exists when the continuous pursuit of excellence motivates and guides the philosophies, planning, policies and processes of the organizations. Focus of CQI in education is not on curriculum but the outcomes of it. The assessment of inputs and process only establishes the capability program. On the other hand assessment of outcomes determines what is done with that capability. The measured outcomes are evaluated and the results are fed back

to the process to increase the institutional effectiveness, learning and accountability [4]. Therefore, continuous improvement requires integration of defined objectives, performance metrics and regular assessment from different sources. Feedback system in a cyclical manner is the motor of continuous improvement and the assessment of performance is the baseline for the future assessment. The only way to establish a successful CQI system is to mobilize the entire system; in other words others cannot do it for you.

It is most essential here to define the relationship between CQI and accreditation. The role of accreditation is to provide periodic external evaluation in support of the CQI program of the institution [7]. The structure of continuous improvement system may be schematized as shown in Figure 1.



Figure 1. The CQI process.

ABET EC2000 accreditation system is a paradigm shift from the previous ABET accreditation. In response to the demands of the vastly changed working environment in the 21st century ABET revised its criteria to incorporate CQI [7]. EC2000 evaluations give less emphasis on what is taught and more on what is learned. The details are available on their website [4]. A summary of the eight main criteria of EC2000 is listed in Table 2. The CQI system is assessed on the self-study report prepared by the program officials and campus visit conducted by evaluators.

### 3 Implementation of CQI at ITU

In the context of Project 2001, ITU is restructured accordingly to meet the needs of a CQI system. For this purpose 24 different processes are defined, evaluated, and

- **Students** (registration, evaluation, advising, transfers, etc.)
- **Educational Objectives of the Program**
- **Program Outcomes, Assessment and Evaluation**
- **Professional component** (ex: major design experience)
- **Faculty** (education, experience, participation in professional societies, and registration as Professional Engineers)
- **Facilities** (classrooms, laboratories, IT infrastructure, etc)
- **Institutional support and financial support**
- **Program criteria** (specific to each program)

Table 2. Main Criteria of ABET [4]

improved to serve for the establishment of CQI as shown in Table 3. All 24 processes will not be discussed here in detail; however, the implementation of the first three processes will be presented as representative examples. The actions that ITU has taken to implement Processes 1, 2, and 3 are given below.

Process 1 - Acceptance and Registration: In Turkey students are admitted to universities centrally according to their scores in a nationwide contested exam. Therefore, the main determining factor on the incoming students is the student choices after declaration of their exam results and their placement according to their choices by the Student Selection and Placement Center. In order to attract better students, student scholarships are increased five-fold at ITU since 1996, free accommodation is provided to students ranked within the top 2000 students in the nationwide entrance exam, double major programs are initiated and transfer between engineering programs is established. A new software is purchased for easy centralized registration, add and drop, and student information archiving.

Process 2 - Student Advising: The bylaws are changed and new advising regulations are developed for each program to meet the needs of CQI system. The procedures are designed to enable interaction between the advisor and student in multiple ways.

Process 3 - Alumni Relations: This is an integral part of the CQI system since alumni are an important constituent who can give sound feedback on the graduates over the years. Alumni Relations Committees has been activated in departments to continuously gather data on the attributes of the graduates periodically. ITU alumni have been extremely supportive of the reforms and the CQI system employed at the university since the start of Project 2001. Several activities have been organized to inform and involve the alumni. The upgrading of the physical and technical infrastructure at ITU was mostly realized by the extensive donations of the alumni.

|    | Process                             | Criteria | Response      | Procedure  |
|----|-------------------------------------|----------|---------------|------------|
| 1  | Acceptance and registration         | IG       | Rector & Dean |            |
| 2  | Student advising                    | Dept.    | Dept.         | Dept.      |
| 3  | Alumni Relations                    | IGD      | IGD           | IGD        |
| 4  | Education                           | IGD      | Dept.         | DEC        |
| 5  | Undergraduate cur. development      | IGD      | Dept.         | DEC        |
| 6  | Graduate cur. development           | GSD      | GSD           | DEC        |
| 7  | Research                            | Dept.    |               | O&S        |
| 8  | Strategic planning                  | Dept.    |               | O&S        |
| 9  | Financial management                | IGD      | IGD           |            |
| 10 | Personnel management                | IGD      | IGD           |            |
| 11 | Service to public                   | Dept.    |               |            |
| 12 | Information services                | IG       |               |            |
| 13 | International relations             | Dept.    |               |            |
| 14 | Continuing education                | IGD      |               |            |
| 15 | Development of lab. facilities      | Dept.    |               | Dept. Com. |
| 16 | Publications                        | IGD      |               |            |
| 17 | Human resources planning            | IGD      |               |            |
| 18 | Employment and promotion            | IGD      |               | O&S        |
| 19 | Appreciation and awards for faculty | IGD      |               | IGD        |
| 20 | Library services                    | IG       |               |            |
| 21 | Communication within university     | Dept.    |               |            |
| 22 | Departmental area utilisation       | Dept.    |               |            |
| 23 | Student social activities           | Dept.    |               |            |
| 24 | Accreditation and assessment        | Dept.    |               |            |

IG: ITU general; IGD: ITU general and department; DEC: Department education committee; GSD: Graduate school and department; O&S: Objectives and strategies; Dept. Com.: Departmental committee.

Table 3. Processes in the CQI System at ITU [8].

Senate Education and Accreditation Committees has a set of responsibilities in running the continuous quality improvement system in the university. The Senate Accreditation Committee is composed of one member from each of the 11 Faculties, one member from the Senate Education Committee and three appointed members by the Rector. There are also accreditation committees in faculty and departmental levels. For the case of faculties, the accreditation committees are generally formed by one representative from each department. The departmental accreditation committee members are appointed by the Faculty. There are also education committees at departmental levels. Each department also establishes several different continuous improvement commissions to run the process. For example, the continuous improvement committees for Chemical Engineering Department are as follows:

- Accreditation and Quality Committee
- Education Committee
- Human Resources Committee
- Internship Committee
- Information Technologies Committee
- Infrastructure Committee

The continuous improvement process of the Chemical Engineering Department is shown in Figure 2. This figure is a structured and detailed form of the general continuous quality improvement structure given in Figure 1. Figure 2 illustrates the involved parties, involved committees, the target groups, the type of data acquired, the inner loop which is closed every year and the outer loop which is closed every other 3 years. Due to the nature of each department there are similarities and differences in the processes for each department.

In order to verify the CQI system ITU has applied to ABET in July 2002 and 12 engineering programs were found to be eligible for campus visit for EC2000 substantial equivalency evaluation. 10 more engineering programs are also applying in July 2003. ITU's next expectation is to seek accreditation by an EU appointed accreditation agency.

#### 4 Accreditation and Mobility

Globalization opened job opportunities to engineers of all countries all over the world. Therefore, an internationally accepted structure promoting the mobility of graduates is needed. So far, we are not aware of a unified body for this purpose. However, the generally accepted concept for mobility of graduates is the accreditation process based on quality assurance [1]. This has been partially accomplished by mutual recognition agreements between national accreditation bodies. The practice so far is limited with recommendation of their respective licensing bodies that it would be appropriate to give some privileges to the graduates of the accredited programs. However, the licensing and registration bodies are not bound by mutual recognition agreements (MRA).



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## S. B. Tantekin-Ersolmaz

S. B. Tantekin-Ersolmaz is a professor of Chemical Engineering at Istanbul Technical University. She is currently one of the advisors to the ITU Rector on engineering education and accreditation. She has been serving in the Education Committee of the ITU Chemical Engineering Department and the ITU Senate Education Committee for Graduate Studies.

## H. Okutan

H. Okutan is a professor of Chemical Engineering at Istanbul Technical University. He is currently the Dean of Chemical and Metallurgical Engineering Faculty.

## E. Ekinici

E. Ekinici is a professor of Chemical Engineering at Istanbul Technical University. He is currently the Head of the ITU Senate Accreditation Committee and the coordinator of the ABET Substantial Equivalency preparations. He is also a member of the Board of the Turkish Scientific and Technological Research Council (TUBITAK).

## **APPENDIX L**

### **Self Study Report of the Chemical Engineering Program**

**Prepared for ABET EC2000**

**Substantial Equivalency Evaluation**

## **Appendix L**

### **Self Study Report of the Chemical Engineering Program Prepared for ABET EC2000 Substantial Equivalency Evaluation**

The self study report of the Chemical Engineering Program is presented in electronic form on the CD attached to this report. The self study documentation of the Chemical Engineering Program and the self study reports and documentation of the other engineering programs are available upon request.