Honourable Vice-Rector, Director of Graduate School of Natural and Applied Sciences Prof. Dr. Haluk Görgün,

Honourable professors and members of the academic staff of various universities in Turkey and Germany,

Dear ladies, gentlemen and representatives from industry,

Dear guests,

Good Morning

on behalf of our foundation - TEGEV - and the TEGEV Work Group ATU (Applied Technical University), I cordially welcome you to this forum.

On this occasion, I should also like to thank our host at YTU, Rector Prof. Dr. İsmail Yüksek and Vice-Rector Prof. Dr. Haluk Görgün, and his excellent team who have spared no effort to make this 2-day workshop and curriculum meeting a success.

On the streets in cities, towns and villages alike, we do not only see many cars especially in Istanbul but also a wide variety of them: red and blue and many other colours, small and big, fast and slow ones, old and new.

Why is this so?

The reason is us – you and me – the consumers who decide what they want, and who determine our daily demand,

while the market reacts to this demand with development and production.

<u>Demand and supply - the fundamental law of economics.</u> The market for human resources – the so-called labour market – works in <u>exactly the same way.</u>

The demand side (workshops of craftsmen, small and medium-size enterprises, but also large companies) determines the <u>quantity</u> and the <u>quality</u> of the labour needed in the economy.

By extension, the labour market also <u>determines the quality of education and</u> <u>training and the necessary capacities at schools and universities.</u>

This is the underlying reason for the diversification of universities in Germany into:

What is the actual situation in Germany regarding number and type of University?

a) Classical universities (science-oriented institutions)

(As of 2013/14, Germany had: 106)

and

b) Application-oriented universities to explain Fachhochschule and Meslek Yüksek Okulu (<u>Applied Science</u> Universities)

(As of 2013/14, Germany had: 212)

and

c) Other universities such as art schools, conservatories (music colleges), etc.

(As of 2013/14, Germany had: 100)

Totally there are 412 Universities in Germany; nearly 50% are Applied science Universities

In the 1970s, industry in Germany lobbied hard for a re-organisation of the engineering education, with the highly industrialised federal states of Baden-Wuerttemberg, Bavaria and North-Rhine-Westphalia spearheading pushing the reform.

The profile of the "Applied Technical Universities – ATU" was shaped in those years.

The ATUs laid the foundation of Germany's strong economy, because their engineers are educated and trained in close cooperation with industry.

The ATU system (University System of Applied Sciences) has quickly spread in Europe, then crossed the Atlantic to the United States and Canada, and today it is even integrated into the national education systems of China and India. We in Tegev as well as for this project use generally the abbreviation ATU. ATU standards for Applied Technical University ......means in content and method exactly the German University System of Applied Sciences. What are Features: of the ATU System

Important Features of the ATU –System:

1. Internship semester as an important educational <u>step towards competence</u> <u>development</u>

Competence: Knowledge, skills and attitude behaviour

A characteristic feature of ATU is a practical semester with a company. This internship is organised either at the end of the undergraduate studies or at the beginning of the graduate studies.

In the course of their internship, students work in various company departments and get an idea of its structure and operations. And they have the opportunity to put their theoretical knowledge into practice. At the same time, they are prepared – in a practice-oriented approach – for the theoretical content of their subsequent academic semesters. The internship constitutes the link between academia and professional life. Students are encouraged to check their theoretical knowledge against the demands of the professional practice, expand their knowledge, see connections and learn to think scientifically in a practical way.



Internships also constitute the first step towards later employment —> % employment

For students, a practical semester with a company can become the gate springboard <u>for entry into professional life.</u> Internships potentially offer students interesting cooperation opportunities with industry. The ATUs have specialised departments (Akademisches Auslandsamt) for internship placements in foreign countries. Various student organisation also offer similar support services.

In many cases, academic staff see this placement task as part of their job. In this context, cooperation with companies can be of great help. Such contacts may lead to further cooperation and even to the establishment of third-party-funded projects.

Orientation, coaching and supervision in the company – is done by qualified craftsmen ("Meister") and competent engineers during the internship. These engineers in the companies who care about the students in their practical semesters have an additional qualification as certified trainer!

The mentioned company professionals with practical experience are responsible for the guidance of students during their internship. However, the academic staff at the university remains at the disposition of students during their practical semester to answers questions and help to solve problems. This may aid the (theoretical) reflection of the practical work as well as the transfer of theoretical knowledge into professional life.

The supervisor/coach at the company is also qualified for this part of the education in industry.

So the trainers in the companies and the academic staff work very close together.

2. Another important feature is <u>the ATUs' academic staff</u> which have several years of experience in industry. More about important criteria that later.

Education of engineers at classical universities and ATUs in Germany As an bench mark 2 system in one country

A particularity of engineering education in Germany are the different profiles by classical universities on the one hand and ATUs/Universities of Applied Sciences on the other. Despite their many similarities and overlaps, both profiles have

stood the test of time and are <u>appreciated</u> by many many <u>employers</u> of the <u>graduates</u>.

Both branches provide a solid undergraduate education in mathematics and science, and a scientificly sound engineering education.

Due to its strong focus on practical education and training (application-oriented profile), ATU graduates are able to apply a scientific approach to their methodological competence when solving practical engineering problems. Since ATU graduates have received part of their education in the practical environment of industry, they can immediately and productively be employed in this environment.

(time to generate income in the company is less compared to other engineers coming ......)

On the other side they typically find work in construction offices, experimental and testing departments, in product development, production, production technology and management, and in project groups, but also in research and development departments or in technical sales and support units.

The graduates of technical universities and general or classical universities are clearly more research-oriented. They are typically employed in the research and development departments of big companies, private or state research institutes and as Performance art ATUs after they have acquired experience in industry.

The engineering education at the ATUs in Germany, in Europe and even worldwide, has filled a large demand gap. This type of engineer is also of great importance for Turkey, for the growth of its industry and for the achievement of the targets set for 2023.

That is why TEGEV has been working and lobbying for this issue for many years. And that is why, three years ago, TEGEV has established its Work Group ATU. Our Work Group has given many presentations and held many discussions on this issue; finally we have reached a decisive "milestone".

We are very pleased that Yıldız Teknik University and Gaziantep University have decided to establish new faculties based on the applied sciences engineering education model in Germany. The model is German but its implementation will be adapted to our conditions in Turkey.

It will be at the end a Turkish –German model of applied technical engineering education.

This implementation requires the contribution by industry, in particular with respect to the necessary internships. That is of very great importance.

We must approach this process without being afraid and without prejudice.

And (we must hurry;) there is no time to lose.

For this project we have very strong partners at our side: namely the Federation of Applied Science Universities Southwest from Stuttgart (HFSW). The members of this association are the leading and best technical ATUS from Esslingen, Mannheim, Stuttgart, Heilbronn, Ravensburg and Aalen.

HFSW coordinates all steps and efforts necessary to correctly and sustainably implement the model of applied engineering education at Turkish universities.

To close my presentation, I wish you all an interesting and successful workshop.

And I should like to – once again – express my gratitude for your attendance and your contributions to this event.

As we get on the conferences slogan: "Those who come too late are punished by life itself" M. Gorbachev, 1989, East Berlin

A very last word: We are currently working on the foundation of an association for the support and coordination of applied engineering education (The Applied Technical University Association or ATUA).

We would be very pleased to register you as members.

ATUA will not only constitute another cultural and economic bridge between Germany and Turkey, it will also make a significant contribution to the ambitious growth target of Turkey for its anniversary in 2023.

