

A Faculty of Engineering at the formerly classical University of Rostock, Germany - a Model for many other Universities

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The History

The University of Rostock is one of the oldest in Germany, founded 1419, and the oldest in Northern Europe. It was long before Christophorus Columbus discovered America for the Europeans (1492).

The world was much smaller than now, but in view of scientific exchange Rostock was the university for students and professors, the so-called scholars, from the whole north of Europe, without national borders, and soon it was named "the Luminary of the North". This situation was coupled with the economic prosperity of the town of Rostock during the Hanse-time (13th -16th century), in which Rostock was by the side of the towns of Lübeck, Hamburg and Bremen a leading place of exchange and an area of rapid intellectual and cultural growth.

The borderless exchange on economic and scientific fields was the typical situation in Europe at this time.

The great humanist in the period of the renaissance, Erasmus von Rotterdam (1465 - 1536), was moving like other people freely and independently as learning and teaching person in the Europe of that time. He was active in schools and universities in states, which we are calling today Netherlands, Belgium, France, Switzerland and Italy. This and the following components are remarkable: His education was recognized everywhere for the following studies, and his study times, examinations and graduations were accepted generally. The science knew only one language, the lingua franca, latin. Erasmus was a European scholar.

Another famous scholar was Ulrich von Hutten. He wrote 1520:

"I came to Rostock poor and badly beaten,
and found here learned men of every subject
exhaulted minds which embraced such freedoms,
indulging in such niceties, as one would not have
thought possible.

I was received with great favour.
For me, it was as if I had come home."

After the renaissance these so favourable common structures were dissolved: the lingua franca disappeared as

common language of academies and universities and made room for the national languages. Europe dispersed into national states, which frequently made war against each other and closed the borders for the neighbours. School and higher school systems developed on national ways and partially contrary to each other. The slogan should be: back to the ideals in the period of Erasmus von Rotterdam.

Present Time and Desirable Future

First after the disaster of the first and Second World War came the countermovement. The European Economic Community developed to the European Community and further to the European Union (EU). The number of members grew.

First since 1975 the European Community tried by the side of economic and general political cooperation cautious steps in the field of cooperation of higher schools.

The previously named great humanist Erasmus von Rotterdam is the godfather of the EU-programme called ERASMUS-Programme (**E**uropean **C**ommunity **A**ction **S**cheme for the **M**obility of **U**niversity **S**tudents). This has overgone in 1997 to the SOCRATES-Programme which is standing for student mobility and exchange, teaching staff mobility, preparatory visits, developing of joint curricular projects and intensive education programmes.

This shall now strongly be connected with the **E**uropean **C**redit **T**ransfer **S**ystem (ECTS), which enables to value and acknowledge students' results and efficiency on the basis of the work load and curriculare transparence. And this all by "principle of mutual trust and confidence".

There exist other mobility programmes in the European Union, for example which refer to the exchange of probationers, the so-called Leonardo da Vinci-Programme. This programme prefers students of engineering and students of natural sciences. It is comparable with the world wide exchange programme for students of technical, natural and agricultural sciences, IAESTE (The **I**nternational **A**ssociation for the **E**xchange of **S**tudents for **T**echnical **E**xperience).

The Development of the Technical Higher Schools

The Industrialization required also a higher technical education and vocational training. So from the middle of the 18th century, - for example: Braunschweig 1745, Mining Academy Freiberg 1764, TH Darmstadt 1836, Chemnitz 1836 –they built up technical colleges and then higher schools, concentrated in the industrial regions. They became legally equalized with the universities by getting the right to graduate with the academic title Doktor-Ingenieur (Dr.-Ing.) These developed partly to Technical Universities (TU) after the second world war.

The Faculty of Engineering at the University of Rostock

Since the foundation the University of Rostock took very alternating development. Soon after beginning it was a international institution, going back to national and even to only local signification.

It recognized at first the important work of the physicists Albert Einstein and Max Planck. The University appreciated their pioneer knowledges with the award of the honory doctor in 1919.

In the early beginning of this century a lot of technical developments started in the district Mecklenburg-Vorpommern, the north-eastern part of Germany, where Rostock belongs to. This reacted surely at the University on the whole. At this time took place the preliminary attempts for flying by Otto Lilienthal (1848 - 1896) near the town Anklam in Mecklenburg-Vorpommern, about 130 km far from Rostock. Not so much later first steps to a plane carrier were done on a lake in Mecklenburg. Not far away from this place is situated directly on the coast the formerly fishery village Peenemünde, where about 50 years later the first rockets were starting under the leadership of Wernher von Braun (1912 - 1977).

In the town of Rostock itself settled the aeroplane industry, Heinkel and Arado. Hydroplanes were built, first plane starts were made from seaships by catapult (about 1927), the first yet powered plane was flying over Rostock (27. 8. 1939), constructed by the designer Hans-Joachim Pabst von Ohain, and the first catapult seat of a plane was proved here.

Ernst Heinkel (1880 - 1958) used a narrow cooperation with the University of Rostock, especially with the Department of Mathematics. He became honory doctor of the University at the beginning of the thirties.

Mecklenburg-Vorpommern had at all times a leading position in the field of shipbuilding. Important was the time of sailing ship navigation. One of the oldest higher schools for navigation was founded 1846 in Wustrow on the peninsula Fischland (fishland), 60 km far away from Rostock. For several years of the early nineties it was part of

the University of Rostock. The mutation from wooden seaships to ships of steel was possible to observe on the dockyards in Rostock. Here also was built one of the first steamers.

Another branch of the technical development in Mecklenburg-Vorpommern is the technique in the farming.

All that belongs to the environs of the University of Rostock.

1951 it was Rostocks University as a classical humanistic university at which at first in Germany was opening a faculty of engineering, and that with great success in inspiring the local industries, especially the shipbuilding and marine industry, the farming techniques and to strengthen the interdisciplinarity at the university itself, especially with the faculties of mathematics and natural sciences, agriculture, medicin and economics. This step to a faculty of engineering at a nontechnical university was a novelty and was executed at many German universities (about 20) in the meantime.

The Faculty of Engineering is one of eight faculties at the University of Rostock. The faculties are subdivided into departments:

- Faculty of Agricultural Sciences
 - Agricultural Ecology
 - Land Management and Use and Environmental Protection
- Faculty of Engineering
 - Civil Engineering
 - Electrical Engineering • Information Engineering
 - Mechanical Engineering and Shipbuilding
- Faculty of Law
- Faculty of Mathematics and Natural Sciences
 - Biology
 - Chemistry
 - Mathematics
 - Physics
- Medical Faculty
- Philosophical Faculty (Faculty of Arts)
 - Educational Sciences and Pedagogics
 - Sports Science
 - Science of History
 - Archaeological Sciences
 - Musicology
 - Philosophy
 - English and American Studies
 - German Linguistics
 - Romance Philologies
- Theological Faculty
- Faculty of Economic and Social Sciences.

The broadly spread branch spectrum gives the possibility of manifold interdisciplinary connexions in research and education. Most of them were initiated by being of the Faculty of Engineering as shall to be seen. New are courses of study in Biomechanics, Economic

Engineering, Economic Pedagogics, Economic Informatics, Medical Technique, Medical Informatics, Economic Mathematics, Media Sciences, Environmental Law.

Moreover there finds a lot of cooperation possibilities with institutions of research besides the university:

- Institute of Baltic Sea Research
- Institute of Atmosphere Physics
- Institute of Organic Katalyse
- Institute of Graphical Data Management
- Institute of Biology of Domestic Animals
- Institute of Management, Traffic and Tourism
- Institute of Bank Right and Bank Economy
- Institute of Economic and Social Ethics
- Institute of Demography.

More than 50 agreements of cooperation with universities abroad form a basis for the international cooperation. The University of Rostock belonged formerly to the territory of the German Democratic Republic (GDR) and was compulsorily orientated eastward under the last 40 years. Now after 1989 it were taken up earlier relations to universities in North and West Europe and new to universities in oversea. So the University of Rostock partly takes over a bridge function between East and West.

One of the most important tasks is to strengthen the mobility of students and staff, to raise up the number of students from abroad and to create new and more possibilities for studies and practice for outgoing students. Here we use the European programmes Erasmus, now Socrates, Leonardo da Vinci, the worldwide programme IAESTE and the German promoting organisation, DAAD (Deutscher Akademischer Austausch-Dienst that means German Academic Exchange Organisation).

The University of Rostock endeavours for introducing international study courses, for example Economic Informatics. International that means that more than 50 % of lectures are in English. This is the trend at universities above all in small countries in Europe where lectures especially in technical and natural sciences are presented partly in English partly in the native language. So the English language enters more and more the formerly place of lingua franca, latin, in the scientific plain and we are coming far extending back to a common language in sciences.

That requires offering possibilities of training languages for students and staff, above all in English and for incoming students occasionally in the language of the country. This task has at Rostocks University the Centre of Languages. To acknowledge the choosed study courses for students we use the ECTS (European Course Credit Transfer System). Together with information packages the preparation and absolving of study courses become transparent for students and coordinators.

As the economy has developed internationally so the technical education has to change to internationality and to common standards, that means internationally exchangeable

educational programmes, acknowledgment of examinations and graduates of other, even foreign higher schools and universities. Referring to the last point there are to be seen differences and difficulties between the graduating scale in Germany and the most other European countries. Just at time is going on an extensive discussion about the introduction of graduation in form of Bachelor and Master degree beside the usual Diplom-Ingenieur degree.

Conclusion

It is to recognize that there is a great movement not to separate the engineering education but to involve, to joint or to integrate it with other educational branches, to involve it in social, economic, ethical, lawful and linguistical connection. The motto of the University of Rostock, which is to be read above the portal of the mainbuilding: "Doctrina multiplex - veritas una", is noteworthy even today.

It is a demand of our time to open the universities by compatible educational programmes and graduating for incoming and outgoing students.

Science doesn't know borders!

In this sense I congratulate to the conference and wish successful progress.