**German Jordanian University**

**GJU-Network „Mechanical and Maintenance Engineering“**

**Network Meeting 2019**

**Hochschule RheinMain Rüsselsheim 04th – 05th July 2019**

**Minutes**

Attendees:

Prof. Dr.-Ing. Christian Glockner, Dean Faculty Engineering, Hochschule RheinMain

Prof. Dr. Ulrike Stadtmüller, Vice-Dean Faculty Engineering, Hochschule RheinMain

Prof. Dr. Sebastian Leibrecht, Faculty Engineering, Hochschule RheinMain

Prof. Dr. Christian Jochum, Faculty Engineering, Hochschule RheinMain

Dr. Safwan Altarazi, Dean School of Applied Technical Sciences (SATS), GJU

Dr. Sameer Al-Dahidi, Exchange Coordinator Mechanical and Maintenance Engineering, GJU

Dr. Saleem Ramadan, Exchange Coordinator Industrial Engineering, GJU

Stefanie Kirsch, Network Coordinator, GJU

Prof. Dr. Ralph Lindken, Hochschule Bochum

Prof. Dr. Bernd Waltersberger, Hochschule Offenburg

Dr.-Ing. Naser Al Natsheh, TU Braunschweig

Prof. Dr. Albrecht Nick, DHBW Karlsruhe

Prof. Dr.-Ing. Nabhan Khayata, Hochschule RheinMain Rüsselsheim

Prof. Dr.-Ing. Stefan Rusche, Hochschule RheinMain Rüsselsheim

Masud Abidy, student at Hochschule RheinMain Rüsselsheim

Mimoun Tahiri, student at Hochschule RheinMain Rüsselsheim

Excused

Prof. Dr. Jörg Wellnitz, Technische Hochschule Ingolstadt

Minutes

Stefanie Kirsch, Network Coordinator GJU

**Thursday 4th of July**

Prof. Dr.-Ing. Christian Glockner the Dean of the Faculty of Engineering at Hochschule RheinMain (HSRM) Rüsselsheim welcomed the participants of the network meeting and gave a quick overview about his university and his faculty. Prof. Dr. Ulrike Stadtmüller, the Vice Dean of the Faculty of Engineering at HSRM thanked the Jordanian professors Dr. Safwan Altarazi, Dr. Sameer Aldahidi and Dr. Saleem Ramadan for choosing Hochschule RheinMain (HSRM) Rüsselsheim as venue for the network meeting telling about her positive experience when she was visiting GJU for the first time in April 2019.

After the welcoming words of the host and organizer Prof. Sebastian Leibrecht from HSRM all participants of the network meeting introduced themselves.

Dr. Safwan Altarazi, Dean at the School of Applied Technical Sciences (SATS) gave a presentation (PPP attached) about GJU and the SATS Study Programs BSc Mechanical & Maintenance Engineering. At SATS the first Master program Engineering Management has just started and next year in October Eng. MSc System Engineering System Engineering will begin. Dr. Safwan also mentioned that the student numbers at the School of Applied Technical Sciences are rising. Therefore new partner universities must be acquired and existing partners are requested to accept more GJU students. Currently most of them are taking 2-3 students and in future a max. of 5 is possible. GJU students in Jordan usually take basic courses while in Germany electives can be taken with more specified courses. In Mechanical Engineering so far only 5 students extended their German Year and did their 3rd semester for graduation project in Germany while in Jordan the number of Incoming students from Germany and Europe at SATS reached 50 last semester. Further endeavours are being done towards a Dual studies program aiming to start in 2020. Only basic funding from industry is more complicated to achieve in Jordan but the laboratory at GJU is ready-made for research and setting up industry relations. A PhD program is planned in the future with research assistant’s support and labs for manufacturing and applied thermal engineering. Furthermore faculty exchange via Erasmus or GJU’s Train-the-Trainer program are most welcome as well as the Flying Faculty program where German professors can give intensive course or co-teaching at SATS. Preferably intensive courses should be offered in June/July, September or February. SATS application for German Accreditation will start at the end of 2020. Dr. Safwan Altarazi finished his presentation by advertising the Jordan Engineers Association JEA conference <http://www.jeaconf.org/isme> from November 11 - 13, 2019 in Amman. The network members were encouraged to register and participate in the conference. DAAD funding to cover flight and accommodation costs is available.

Prof. Dr.-Ing. Nabhan Khayata from Hochschule RheinMain Rüsselsheim asked about the relation between GJU and Jordan’s industry, implying to include them more into lectures and SATS study plans. Dr. Safwan mentioned the good relation with the Chamber of Commerce in Jordan being the main sponsor of the November conference. Compared to other universities in Jordan GJU is far ahead. Manufacturing companies in Jordan, mining, pharmaceuticals, electricals and textiles are the biggest industries. Most of them are transformation industry. Service sector is bit better, banking, health care, tourism hold about 10% of Jordan’s GDP.

Dr. Sameer Al-Dahidi, Exchange Coordinator for Mechanical and Maintenance Engineering at SATS gave a presentation (PPP attached) about his department explaining the study plan characteristics at his department. 15% of his students do their graduation projects in Germany. He also mentioned that he needs to increase the number of seats with the German partner universities. HS RheinMain is satisfied with its first student and after some experience they are willing to accept more and increase the number. SATS receives Flying Faculty professors on a regular basis, each semester 2 Flying Faculty come to teach at SATS while the lecture can be taught or given as workshop. It was generally encouraged to offer Flying Faculty lectures to SATS students in German or include technical language in the Power-Point presentations in German.

Prof. Dr. Sebastian Leibrecht from HS RheinMain gave a presentation (PPP attached) about HS RheinMain, a University of Applied Sciences with 150 partner universities and 80 of them being active. Engineering is the largest Department with its own campus in Rüsselsheim. In total there are 3500 students at the Faculty of Engineering with 33 degree programs, 50 labs and 4 research institutes. Mechanical engineering has 3 subdivisions namely Information Technology + Electrical Engineering, Physics, Environmental Engineering. In the Bachelor and Master program there are full and part time studies offered. With GJU Hochschule RheinMain had successfully applied at Erasmus + and received funding for one year to distribute to their faculty, e.g. for an interdisciplinary Engineering project with GJU via Erasmus staff and student Exchange. Within the general MoU with HSRM student exchange covers both Mechanical and Maintenance Engineering (MME) and Industrial Engineering (IE).

Prof. Dr. Christian Jochum from Faculty of Engineering from Hochschule RheinMain presented about Electrical Engineering. Different models were discussed such as Apprenticeship model before doing 5 years of Meister/Techniker. At university student get credited 30 CP for that if they continue with studies later, like part time Mechanical Engineering BA and MA. Twice a week, on Wednesday afternoon and on Saturday part-time students would take lectures besides their job. Prof. Jochum is interested in coming to Jordan with a group of students with own funding for joint projects, because GJU students have an international background and at least 20% of them will later be working in an international environment.

Dr. Safwan Altarazi explained the first Dual studies track at GJUs School of Management and Logistic Sciences (SMLS) as part of the summer semester - 12 weeks in industry with supervision by the professor and the company. The School of Applied Technical Sciences (SATS) will start Dual studies next academic year with several applied projects. So far GJU has signed agreements with 10 companies which is very promising.

Prof. Dr. Albrecht Nick, DHBW Karlsruhe (formerly known as Berufsakademie) has been teaching Cooperative Education since 1974. Duale Hochschule Baden-Wuerttemberg (DHBW) was founded by companies like Mercedes Benz. At DHBW Karlsruhe 3500 students have the same program at each location of all DHBWs, 70% of the modules are identical while 30% can be modified due to the industry around the located campus. DHBW has 9000 industry partners that are part of DHBW’s advisory board. Some of the companies even belong to DHBW. The partnering companies select the students and sign a contract with them for the duration of studies. Students are employees of these companies, they work and study half time. After graduation the students can move on, there is no obligation to stay with the company. The drop-out rate of students is very low. A Post-graduate Master costs 20.000 for 3 years. DHBW employs 700 full time professors and 9000 associate lectures from other universities or experts from industry. They are strong in education but recently opened up to more research activities and internationalization. Exporting their model of success is not easy, implementing DHBW’s system in Costa Rica took 10 years. The cooperation with GJU works well, student’s practical part is fine, only good language competence is recommended because all courses at DHBW are taught in German.

Prof. Dr. Ralph Lindken, HS Bochum gave a presentation (PPP attached) about his Department of Mechatronik & Maschinenbau. Hochschule Bochum is a long-term partner in Mechatronics with GJU. Prof. Lindken joined the Mechanical Engineering Network three years ago. His Faculty is the second biggest faculty after Business & Administration faculty. From a total number of 7650 students 1500 students study Mechatronics and Mechanical engineering at HS Bochum. In North-Rhine Westphalia Bochum alone has 5 Universities of Applied Science. Bochum is rising with IT companies settling in the area. Prof. Lindken proudly presented that HSB will have a geothermal research center soon and is very willing to cooperate closer with GJU in this field.

Dr. Naser Al Natsheh talked about his university TU Braunschweig and his experience as Flying Faculty at GJU and the School of Applied Technical Sciences. He gave qualified feedback on the competences and language skills of the students encouraging them to participate more in applied science courses and advising the professors to offer practical training in extra-curricula workshops to their students.

Prof. Sebastian Leibrecht from HS RheinMain also taught at GJU and shared his Erasmus+ Workshop at SATS with the participants. He was giving his lecture in English and German and the students were very interested, although they got no credits but a certificate, the participation was active and good. Prof. Leibrecht enjoyed traveling Jordan a lot and shared beautiful pictures of his sightseeing tour.

Prof. Dr. Bernd Waltersberger, Hochschule Offenburg as a new member in the network presented his university (PPP attached) with 4500 students, while Mechanical Engineering and Process Engineering is the biggest faculty with 40 English taught electives. Especially Dr. Saleem Ramadan from the SATS Department of Industrial Engineering highlighted the potential of further collaboration with HS Offenburg.

After Network Coordinator Stefanie Kirsch promoted several Exchange programs with GJU towards the network members such as Flying Faculty, Train the Trainer Staff Mobility Program and Student Group Mobilities through Erasmus Plus, Dr. Sameer Al Dahidi emphasized the opportunity for professors from German partner uiversities to join the Mechanical and Maintenance Engineering Department as a Flying Faculty this year (2019). One option would be Co-teaching, an opportunity in which a professor in Germany can come for a short period of time and teach part of a compulsory course offered to GJU students in the first semester of 2019/2020 (October 2019 –January 2020). The potential courses that will be available in that semester can be found in the study plan together with the descriptions that Dr. Sameer will share with the Syllabus of the course. Another way of collaboration is the Train the Trainer Staff Mobility Program where GJU staff/instructors/professors are sent to any of the GJU partner universities for work shadowing and further training. Teaching and Research assistants at SATS’ Mechanical and Maintenance Engineering Department are interested in having training/working period in one of the following topics:

* Finite element analysis (Ansys, Abaqus); Material and component testing [Material & Component Testing at HSRM]
* Industry 4.0 [Engineering 4.0 at HSRM]
* Energy efficiency; Fluid Mechanics; Machine design [Energy System Technology at HSRM]

Preferable periods are January/February 2020, June/July 2020, September 2020. Other time periods in 2020 might be considered as well.

It was furthermore discussed to enhance cooperation between GJU and its German partners/network members. Dr. Safwan and Dr. Sameer suggested research activities with SATS’s Mechanical and Maintenance Engineering Department in the following fields of interest:

* + CFD, Energy Efficiency, Low Carbon Buildings, Indoor Environment Quality, Cooling Towers (Dr. Rafat Al-Waked from GJU)
  + Micro Energy Harvesers, Photovoltaic Systems (Dr. Bashar Hammad from GJU)
  + Dynamics and Vibrations
  + Microflows, nanoflows, rarefied flows, CFD, Heat transfer in micro and nanogeometries, Renewable Energy (Dr. Wael Al-Kouz from GJU)
  + Artificial Intelligence, Optimization, Data Science, Prediction, Renewable Energy Systems, Prognostics and Health Management, Maintenance Management (Dr. Sameer Al-Dahidi and Dr. Ahmed Al-Muhtady from GJU)
  + Other research interested can be found by looking at the research interests of our faculty at <http://www.gju.edu.jo/content/faculty-directory-1094>
  + Any other advises of potential research topics in the fields of Mechanical and Maintenance Engineering are highly appreciated.

**Friday 5th of July**

The second day Mouawyha Al-Azzam, the first exchange student of SATS’s Mechanical Engineering at Hochschule RheinMain Rüsselsheim gave a presentation about his study semester telling that following lectures in German is very hard due to the fact that his knowledge of academic language/technical language in German is too weak, two courses of Fachsprache at GJU after German 6 is not enough. Fachsprache course should start much earlier as two semesters with only one class per week is not a proper preparation for attending lectures at any German universities. Also Flying Faculty professors should teach more in German. He was glad to take the exams in English at HS RheinMain and will transfer 20 ECTS back. He will prepare a list of suggested courses/electives for the next batch of 4th year students at SATS going to HS RheinMain and will share his experiences and advices with them, such as searching for a dorm six month in advance and making use of the internship platform at HSRM.

Dr. Safwan summarized the results of the network meeting.

With HS RheinMain the Memorandum of Understanding (MoU) includes 5 seats for all Departments at SATS, Industrial Engineering, Mechatronics and Mechanical and Maintenance Engineering. Dr. Saleem Ramadan asked for more, especially to deal with the rising number of students at his Department of Industrial Engineering. Prof. Sebastian Leibrecht will distribute 5 students to Industrial and Mechanical/Maintenance Engineering until the good experience with SATS students allows him to increase the total number of seats. With HS Bochum and HS Offenburg the MoUs will be extended towards Industrial Engineering. TU Braunschweig will sign a MoU with GJU to be a formally listed partner university. All network members are willing to promote a study semester abroad in Jordan towards their students and are highly interested in participating in the Study Group Mobility Program 2020 [www.gju.edu.jo/content/study-group-mobility-9804](http://www.gju.edu.jo/content/study-group-mobility-9804) in order to have more joint project and more German students at GJU campus.

Dr. Saleem Ramadan expressed his special interest in co-supervision for Master thesis and Master level courses as SATS has just established a new Master program. The network members are willing to support and also advised him to get in touch with the German industry partners when a SATS student decided to write the thesis with them.

Dr. Safwan confirmed to follow-up on Dual studies at SATS especially with HS Bochum and DHBW Karlsruhe. In conclusion he advertised again the Jordan Engineers Association JEA conference <http://www.jeaconf.org/isme> from November 11 - 13, 2019 in Amman.

Prof. Dr. Ralph Lindken from Hochschule Bochum agreed to continue as a Network head.

**The next network meeting will be held on 1st and 2nd of April 2020 at GJU in Amman.** GJU’s project office at HS Magdeburg-Stendal covers the flight costs of the network head and for all participants the accommodation in Amman, GJU takes care of the catering and transportation. It will be one joint SATS Network meeting at GJU involving all three Departments Mechatronics, Industrial Engineering and Mechanical Engineering.