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ENGINEERING

SCHOOL OF ENGINEERING

MOI UNIVERSITY

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STAFF EXCHANGE PROGRAMME AT MEKELLE UNIVERSITY

PERIOD : 20th April to 4th May 2019

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A handwritten signature in black ink, appearing to be 'JIM'.

Date: 28th May 2019

ACKNOWLEDGEMENT

I wish to acknowledge with much gratitude the funding received from ACE2- PTRE program at Moi University, which funded the staff exchange program. The support accorded to me by the ACE2-PTRE staff is hereby noted and appreciated. I am also grateful to the staff of Ethiopian Institute of Technology- Mekelle who assisted me in one way or another during the exchange program. Last but not least I acknowledge the co-operation offered by the Department of Manufacturing, Industrial and Textile Engineering, which allowed me to take time off to travel to Mekelle University.

ABSTRACT

The staff exchange program to Mekelle University, situated Tigray region of Northern Ethiopia was undertaken from 20th April to 5th May 2019. The staff at the Ethiopian Institute of Technology – Mekelle one of the ten institutes in Mekelle were the main host. The exchange program went on well and joint proposals and research teams were established, and are on going. The staff from Moi University was able to give lectures to post graduate students on research methods. The School of Engineering of Moi University and EIT-M of Mekelle University, established that it was possible to have a win-win relationship in staff and student exchange, which could lead to an MOU between the two Universities.

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1.0 INTRODUCTION

Mekelle University (MU) is located in Mekelle city in Tigray region of Northern Ethiopia and was established by the Ethiopian Government (Council of Ministers, Regulations No. 61/1999 of Article 3) in May 2000 by merging Mekelle Business college and Mekelle University college. At present MU hosts over 31,000 students in the regular, continuing education programme and summer, evening, distance education and in-service programmes in undergraduate and graduate programmes. Mekelle University has 7 colleges and 10 institutes. The colleges are as follows;

- College of Dryland Agriculture and Natural Resources
- College of Health sciences
- College of Veterinary
- College of Social Sciences and Languages (CSSL)
- College of Natural and Computational Sciences
- College of Business and Economics
- College of Law and Governance

The Institutes in Mekelle University, as shown below, cover wide areas of interest to Mekelle University as it aims to become a world class University;

- Ethiopian Institute of Technology- Mekelle
- Institute of Climate and Society
- Institute of Environment, Gender and Development Studies (IEGDS)
- Institute of Geo-information and Earth Observation Sciences (I-GEOS))
- Institute of Paleo-environment and Heritage Conservation
- Institute of Pedagogical Sciences
- Institute of Population Studies
- Institute of Water and Environment
- Institute of Mountain Research
- Institute of Energy

2.0 ETHIOPIAN INSTITUTE OF TECHNOLOGY –MEKELLE (EIT-M)

The Ethiopian institute of Technology- Mekelle (EIT-M) is one of the institutes in Mekelle University. The institute is headed by a Scientific director (Dr Hadush Giotom), who is the overall CEO of the institute. The post of Scientific Director is equivalent to the level of Vice President of the University.

Under the Scientific Director there are deputy scientific directors for various functions, which include academic, research and Development. I had a chance to work closely with the Deputy Scientific Director in charge of research Dr. Muluaem (Figure 1), in proposal writing.



Figure 1: Deputy Scientific Director for Research and Development

The Deputy Scientific Director for Academic affairs, has organized the academic functions into schools headed by deans. There are several schools as shown in Table , and 650 staff in EIT-M, where only 100 (15%) have PhD degrees. The institute has embarked on a special training program for master and PhD students. Currently there are over 200 staff member doing master and PhD programs in Mekelle University, Ethiopia and foreign countries (mostly Asia and Europe). The training of postgraduate students is

funded by the Ethiopian government and other donors, who include DAAD, SIDA and Intra-ACP mobility programs.

All schools are headed by deans, who have Head of Departments managing degree programs. The teaching staff are graded as shown in Table 2. All the Full professors and associate professor in EIT-M are expatriate staff, who are hired through a special fund from the central government to enable rapid and sustainable improvement of University education and research in Ethiopia. Normally fresh Ethiopian Master degree graduate are hired as lecturers, while PhD graduates are hired as Assistant Professor.

Table 1: Courses in EIT-M

School	Undergraduate programs	Master degree Programs	PhD Programs
Architecture and Urban Planning	Architecture Urban and Regional Planning Land and real property valuation	Urban planing Land and property valuation	Urban planing Land and property valuation
Civil Engineering	Civil Engineering Hydraulic and water resources Engineering Water Resources and Irrigation Engineering	Transport Engineering Water Resources Irrigation Engineering	Transport Engineering Water Resources Irrigation Engineering
Electrical and Computer Engineering	Electrical computer engineering Computer engineering electronics & communication engineering Industrial control engineering	Electrial Power Computer Engineering electronics & communication engineering Industrial control engineering	Electrical power communications engineering Industrial control engineering
Mechanical and industrial Engineering	Industrial Engineering Manufacturing Engineering Mechanical Engineering Textile Engineering	Mechanical Engineering Industrial and Manu. Eng.	Industrial Engineering Mechanical Engineering
Chemical Engineering	Biochemical engineering Environmental engineering Process engineering	Process Engineering Environmental Engineering Biochemical Engineering	Process Engineering Environmental Engineering

Ethiopians who have master degrees, in Engineering and have two years teaching experience and have published at least two journal papers can also be promoted to the post of Assistant Professors. This is similar to the practice in the school of engineering, where Master degree holders, with over 3 years teaching experience and over two published papers can be promoted to the post of senior Lecturer. For a staff member to promoted from the level of Assistant Professor, he/she needs to teach for at least 4 years and publish 4 journal papers. A similar criteria applies for promotion from Associate Professor to full professor.

Teaching at EIT-M adapts theoretical lecturers, demonstrations (see Figure 2) and practical work (Figure 3). Demonstrations for undergraduate students are facilitated by Teaching assistants who have one degree. During the demonstrations the students watch as the Teaching assistant demonstrates an experiment. The students do not do the

experiment. At the end of each demonstration, the students fill in demonstration sheets which ask questions about what was demonstrated. In this manner engineering concepts and principles are introduced to the students.

Table 2: Teaching Staff in Moi and Mekelle Universities

Rank	Mekelle University	Moi University
1	Professor	Professor
2	Associate Professor	Associate Professor
3	Assistant Professor	Senior Lecturer
4	Lecturer	Lecturer
5	Assistant Lecturer	Assistant Lecturer
6	Laboratory Demonstrator	Graduate Assistant



Figure 2: Student following a demonstration in the laboratory



Figure 3: Students carrying out individual or group practical work in the laboratory

During the staff exchange program, it was observed that the industrial Engineering workshop were neatly arranged and kept spotlessly clean (Figure 4). The mechanical laboratory were not as neat as the industrial engineering workshops (Figure 5)



Figure 4: orderliness in the Industrial and Manufacturing workshops



Figure 5: The state of the mechanical workshops at EIT-M

3.0 ACTIVITIES DURING THE STAFF EXCHANGE PROGRAM

The day to day activities for 14 days staff exchange program is given in Table 3.

Table 3: Day to day activities of the Staff Exchange program.

S/N	Date	Description
1	Saturday 20th April 2019	Travel from Eldoret to Mekelle
2	Sunday 21st April 2019	Morning : Meeting with Deputy Managing Director EIT-M the mani contact person (Axum Hotel)
3	Monday 22nd April 2019	Morning : Visit to EIT-M : Introduction to staff of Civil and Industrial Engineering
4	Tuesday 23rd April 2019	Meeting with Dr. Temesgen Berhanu of Manufacturing Engineering. Afternoon met with Scientific Director. Joint proposal team formed
5	Wednesday 24th April 2019	Morning: Meeting with Mr Hadush on the study of labor relations in textile factories. Afternoon : Meeting with Dr. Mulualem on proposal writing
6	Thursday 25th April 2019	Meeting: Proposal writing
7	Friday 26th April 2019	Research work on labor relations in textile factories in Ethiopia
8	Saturday 27th May 2019	working on reports
9	Sunday 28th April 2019	Proposal writing and Research work on labor relations in Ethiopia with Mr. Hadush
10	Monday 29th April 2019	Meeting : Meeting with Deputy managing Director of the institute. Afternoon: Proposal writing
11	Tuesday 30th April 2019	Morning: Proposal writing with Dr Mulualem and Mr Hadush
12	Wednesday 1st May 2019	Morning: Meeting : Deputy Scientific Director , Dr Mulualem to finalize of EU mobility proposal
13	Thursday 2nd May 2019	Visit to Maa Garments, Mekelle: University and Industrial relationships
14	Friday 3rd May 2019	Discussion and lecturer to MSc and PhD students on research methods
15	Saturday 4th May 2019	Travel from Mekelle to Eldoret

3.1 Joint Proposal writing-EU Mobility proposal

Discussion were initiated by the Scientific Director, who instructed the Deputy Scientific Director for Research and Development, Dr Mulualem to lead a team to respond to the 3rd EU intra-ACP call (3rd Call for proposals (EACEA/03/2019). The team composed of three members, Dr. Mulualem, Mr. Hadush Berhe and Prof Mwasiagi. The proposal writing team is currently working round the clock to beat the 12th June deadline. The team held 10 meetings in Mekelle and by 20th May;

- (i) The Title of the Proposal had been agreed on
- (ii) Technical partner from Europe had been identified
- (iii) The Lead applicant had been identified
- (iv) Co-applicants identified were from Kenya, Egypt, Zambia and Nigeria. This covered the minimum number of regions required for the call.
- (v) Forms to be filled by co-applicant were identified and instructions on how to fill the forms prepared and emailed to all partners

3.2 Joint Research work

The Department of Industrial Engineering, is carrying out a study of the industrial relations and working conditions for workers in textile and Garment factories in the

Tigray region. The principal research is Mr Hadush Berhe. This research work concentrated on the availability of labour in the Tigray region of Ethiopia. The research methodology involved several methods which included; face to face interviews, focus group discussions, field visits and observations and sample survey. The survey involved workers workers of Almeda Textile and Garment factory, Maa Garment and textile factory, Velocity Apparel and the DBL group as its population. During my staff exchange program in Mekelle University, I was inco-operated into the research work, where we reviewed the data collected. We also visited Maa Textile and Garment factory to interview some of the management staff. The results from this research work, will be compiled send to suitable journals for publication.

3.3 Areas of Collaboration

There were several suggestions on how EIT-M and school of Engineering can work together. It was suggested that staff and student exchange can be prioritized together with joint research, in the following areas;

- (i) The school of Mechanical and Industrial Engineering (EIT-M) research expressed interest in having staff and student exchange. They were particularly interested in the following courses which could be considered for credit transfer;
 - Industrial Innovation and Entrepreneurship (PhD)
 - Advanced Engineering Materials in Design and Society (PhD)
 - Advanced Composite Materials and Structures (PhD)
 - Advanced Lean Manufacturing 3
 - Industrial Forecasting Techniques and Simulation Modelling (PhD).
 - Renewable Energy for Sustainable Development (PhD)
 - Bioenergy Systems (PhD)
 - Composite Mechanics (MSc)
 - Mechanics of materials and Finite Elements Analysis (MSc)
 - Fibre Reinforced Composites (MSc)
 - Computer Aided Design and Manufacture (MSc)
 - Industrial and Manufacturing Systems (MSc)
 - Operations Management(MSc)
 - Marketing Management (MSc)
 - Industrial Finance (MSc)
 - Management of Technology (MSc)
 - Cleaner Production(MSc)
 - Industrial and Quality management (MSc)
 - Computing Techniques and Applications (MSc)
 - Engineering Materials (MSc)
 - Industrial Engineering Design (MSc)

- Advanced Thermodynamics (MSc)
 - Industrial Instrumentation and Control (MSc)
- (ii) EIT-M expressed interest to work with staff and students from the following programs;

Master of Science (Energy Engineering)
PhD (Energy Engineering)
Master of Science in Industrial Engineering
Master of Science in Production Engineering
Master of Science in Textile Engineering
Master of Science in Water Engineering
PhD (Material and Textile Engineering)
PhD (Industrial Engineering)

It was agreed that a follow up skype meeting to be held relevant departments in Moi University were contacted, and systems for collaboration established. EIT-M suggested a mechanism for signing of an MOU between Moi and Mekelle University be established so that the two institutions can work together.

3.4 Lecture to Postgraduate students

During my visit to Mekelle University I held discussions and lectures on Research methods. The area covered included how to write a journal paper. Issues about literature review, experimental procedures and results and discussions were covered. A total of 19 students attend the lecture. The areas covered included;

- Formation of teams, for paper writing
- General format of research papers
- How to differentiate material to be published and/or patented
- General format of literature review papers
- How to select a journal for a given research – Dos and Donts
- Characteristics of predatory journals and publishers
- Examples of responses to rejection of submitted papers
- Suggestions of how to increase publications (quality and quantity)

4.0 CONCLUSION

The staff exchange program at Mekelle University went on as planned, with special emphasis on Ethiopian Institute of Technology – Mekelle (EIT-M), which has over 10,000 students and 650 staff members. EIT-M is currently hosting over 450 master degree students and 50 PhD researchers in various fields of engineering. During the staff exchange program, concrete steps were taken to write a joint proposal for intra-Acp mobility. There were also joint research programs which involved the study of labor relations in textile and garment industries in Ethiopia, where the staff from Moi University was incorporated. During the staff exchange program, several areas for collaboration, which included student and staff exchange were proposed. Follow up mechanisms were set in place and it is hoped that Moi and Mekelle Universities should be able to sign an MOU in the near future. The Moi University staff also interacted with post graduate students