

PIR MEHR ALI SHAH
ARID AGRICULTURE UNIVERSITY
RAWALPINDI



SELF ASSESSMENT REPORT 2014-2016

M.SC (HONS) AGRICULTURAL ENGINEERING

FACULTY OF AGRICULTURAL ENGINEERING & TECHNOLOGY

Program Team

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INTRODUCTION

The faculty of Agricultural Engineering and Technology was established at Pir Mehr Ali Shah Arid Agriculture University in 2013. The faculty is offering Ph.D, MSc. (Hons) and B.Sc Agricultural Engineering programs. The M.Sc (Hons) Agricultural Engineering programs by Faculty of Agricultural Engineering and Technology offers students the opportunity for study and research in fields of Farm Mechanization, Automation and Precision Agriculture; Land and Water Conservation Engineering; Renewable Energy; Farm Structures and Environmental Engineering; Food Engineering and Food Safety; Horticultural Engineering, and other related fields that can be used for improving or solving problems associated in agriculture of Pakistan using engineering techniques and knowledge. The educational objectives of this program are based on the intellectual and professional development of graduate students. This program is designed to produce graduates with the high level of training to contribute towards solving the problems in agriculture to attain maximum yield with minimum inputs.

CRITERION-1

PROGRAMME MISSION, OBJECTIVES AND OUTCOMES

Standard 1-1: The program must have documented measurable objectives that support institution mission statements.

VISION STATEMENT:

The Faculty of Agricultural Engineering & Technology was established in Potohar region to educate and impart train for adoption and promotion of mechanization, efficient utilization of water & energy sources at farm and value addition of farm products.

MISSION STATEMENT:

The mission of the MSc (Hons) program offered by Faculty of Agricultural Engineering & Technology is to deliver quality education and conduct advanced research in the field of farm machinery & precision engineering, land & water conservation engineering, horticulture engineering, food engineering, energy engineering and such other farms related areas to ensure scientific management, control and optimum use of the available resources to enhance the production and address the energy, water and food issues in effective way.

OBJECTIVES;

1. To provide sound knowledge and training in the field of Agricultural Engineering to produce educated and skilled graduates.
2. To identify and rectify the problems faced by the farmers and concerned industry regarding engineering related issues in agriculture sectors.
3. To conduct research in the various fields of agricultural engineering for enhancing agriculture production in Pakistan.
4. To establish linkage between agricultural industry and academia through research and development.

Main elements of strategic plan to achieve mission and objective;

- Development of a sound teaching/training system based on the experience and vision needed to provide a quality education
- Designing of curricula involving core subjects, elective subjects, specialized areas, internship programs and study tours.
- Training of the students how to apply engineering principles to agricultural mechanization, crop production, preservation and storage, farm and agricultural business management, irrigation, farm structures and rural electrification.
- Promote awareness of the importance of agricultural engineering disciplines in the economy.
- Establishment of computer lab with internet facility.
- Establishment of well-equipped specialized laboratories for the students and researchers.

- Publication of scientific papers, articles, books, manuals etc.
- Execution of research of research projects funded by the Universities and other agencies.
- Arranging field tours to realize the problems more significantly faced by the farmers related to agricultural engineering discipline.
- Manage or establish agricultural engineering enterprises.
- Integrate agricultural engineering activities within the farming enterprises.
- Promote environmental conservation by effecting sound practices and policies.
- Pursue careers in agricultural engineering and related disciplines.

Table 1: Program Objective Assessment

Sr. #	Objectives	How measured	When measured	Improvement identified	Improvement made
1	To provide sound knowledge and training in the field of Agricultural Engineering to produce educated and skilled graduates	Through examinations and students feedback	During and at the end of the semester	NA	NA
2	To identify and rectify the problems faced by the farmers and concerned industry regarding engineering related issues in agriculture sectors.	Field visits, literature review, through public and private reports	After completion of the course work and before starting the research	NA	NA
3	To conduct research in the various fields of agricultural engineering for enhancing agriculture production in Pakistan	Using different tools, experimental setup, data analyzing and guidelines of the supervisory committee	Synopsis/thesis defense, Oral exams, research publication	NA	NA
4	To establish linkage between agricultural industry and academia through research and development	Through MoU, research collaboration	Continuous process As per requirement	NA	NA

Standard 1-2: The program must have documented outcomes for graduating students. It must be documented that the outcomes support the program objectives and that graduating students are capable of performing these outcomes

PROGRAM LEARNING OUTCOMES

After completing their degree program, the students in Agricultural Engineering should possess the ability of:

1. Sound knowledge and understanding about their field of study
2. How to apply knowledge of agricultural engineering to solve problems
3. Design and conduct experiments, as well as to analyze and interpret data
4. Understand professional and ethical responsibility
5. Communication skills through presentations, oral discussions, review
6. Scientific writing and publication of research papers articles, etc.

Table 2: Program Objectives VS Program Outcomes

Programs Objectives	Program Outcomes					
	knowledge and understanding	Knowledge application	Experiment and Data Analyzing skill	Professional Ethics	Communication Skills	Scientific Writing
Education and Training	+++	++	++	++	++	+
Problem Identification	++	+	+	++	++	++
Research	++	++	++	++	+	+
Industrial Linkage	++	+	+	+	++	+

+ = Moderately satisfactory

++ = Satisfactory

+++ = Highly satisfactory.

PROGRAM ASSESSMENT RESULTS (Proformae 1 & 10)

There are following three faculty members who are teaching and supervising M.Sc (Hons) and Ph.D. Agricultural Engineering;

- | | |
|---------------------------------|----------------------------|
| 1. Prof. Dr. Muhammad Yasin | Faculty Incharge/Professor |
| 2. Prof. Dr. Rai Niaz Ahmed | Professor |
| 3. Prof. Dr. Jehangir Khan Sial | Professor (Visiting) |
| 4. Dr. Muhammad Umair | Assistant Professor |

These faculty members are involved in teaching different subjects and by providing guidance to the postgraduate students in their research as supervisor or as member of supervisory committee. These teachers were evaluated by the students at the end of each semester before the final exams according to the Performa 10 and the subject was evaluated according to Performa 1.

The evaluation of courses taught by different teachers in different semester and teacher evaluation by students are given below;

Table: 3 The subject taught in Fall-14

Fall-14			
Course no.	Credit hour	Title	Teacher
LWCE 707	3 (2–1)	Resource Conservation Engineering	Prof. Dr. J. K. Sial
LWCE 717	3 (2–1)	Climate Change and Water Resources	Dr. M. Umair
FMPE 706	3 (2–1)	Grain Preservation & Processing	Prof. Dr. M. Yasin

PROF. DR. M. YASIN

Course: Grain Preservation & Processing

PERFORMA-1

General Comments

The course was very importing regarding grain storage and its preservation. The instructor has great experience in this field and he taught this course very effectively. The students learnt useful knowledge and were satisfied with course objectives and contents.

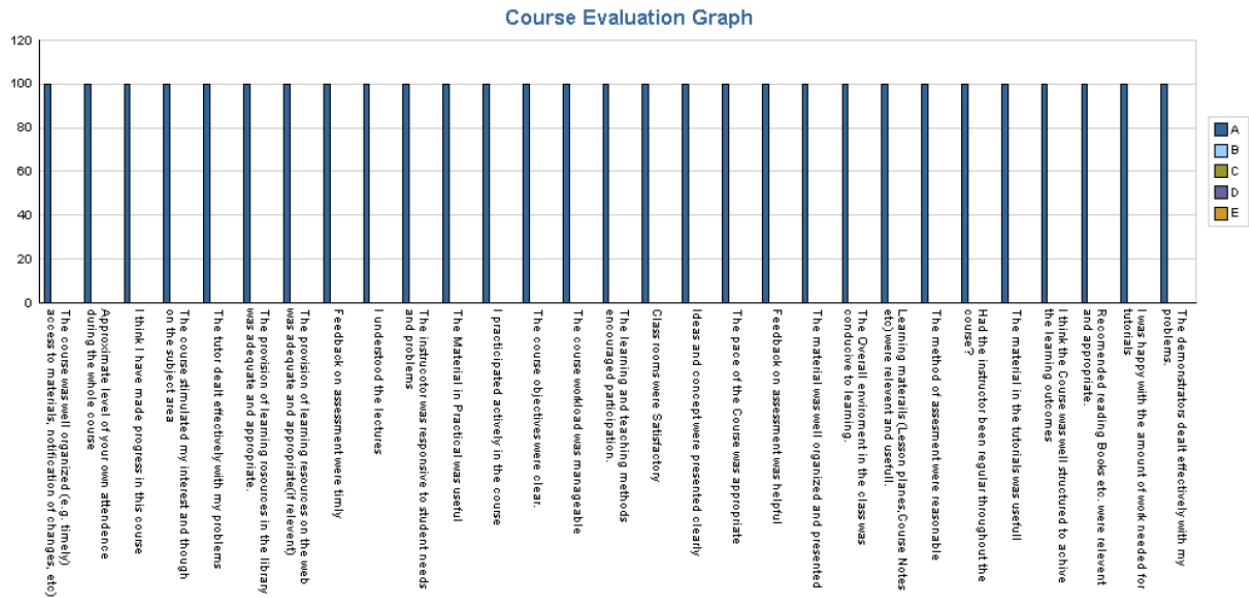


Fig: Course evaluation Grain Preservation & Processing, Fall-14

PERFORMA-10

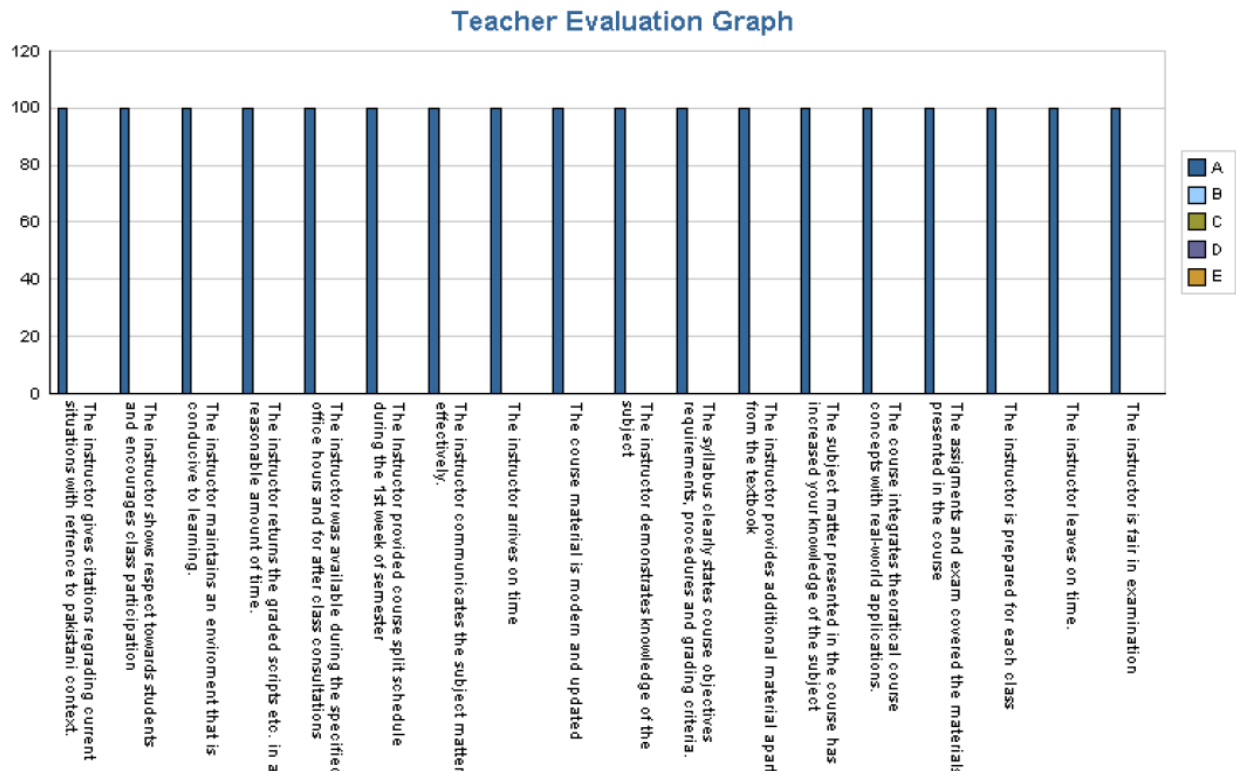


Fig: Teacher evaluation Grain Preservation & Processing, Fall-14

Comments

The graph shows that the teacher was dedicated and conveys the knowledge effectively. He was punctual, friendly and gives respect to the students.

PROF. DR. J. K. SIAL

Course: Resource Conservation Engineering

PERFORMA-1

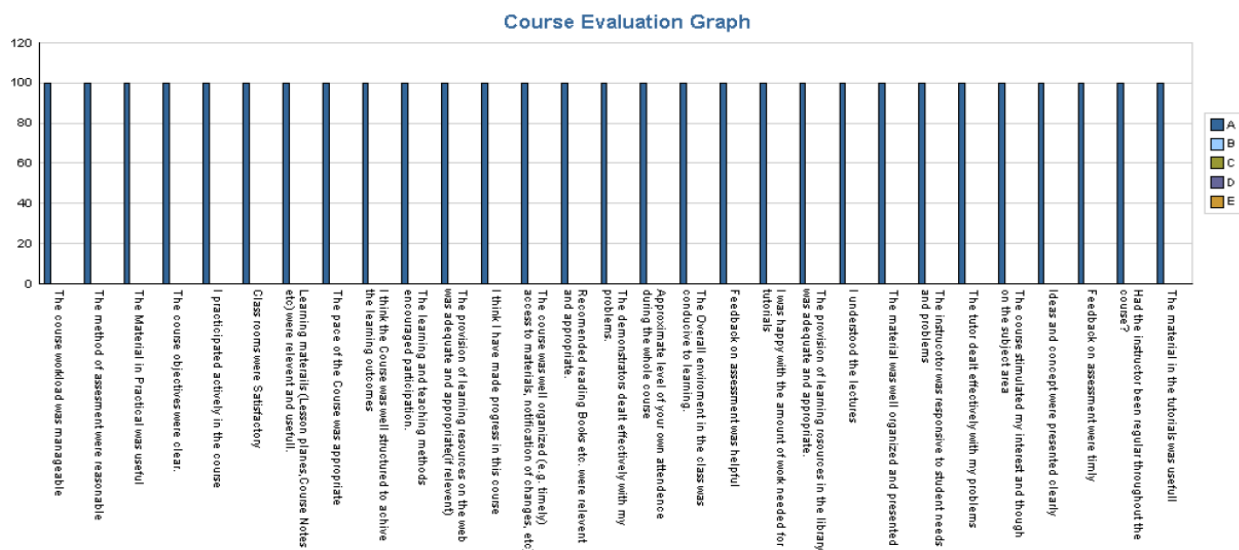


Fig: Course evaluation Resource Conservation Engineering, Fall-14

General Comments/Suggestions

The course was interesting and provides the useful knowledge about resource conservation engineering.

PERFORMA-10

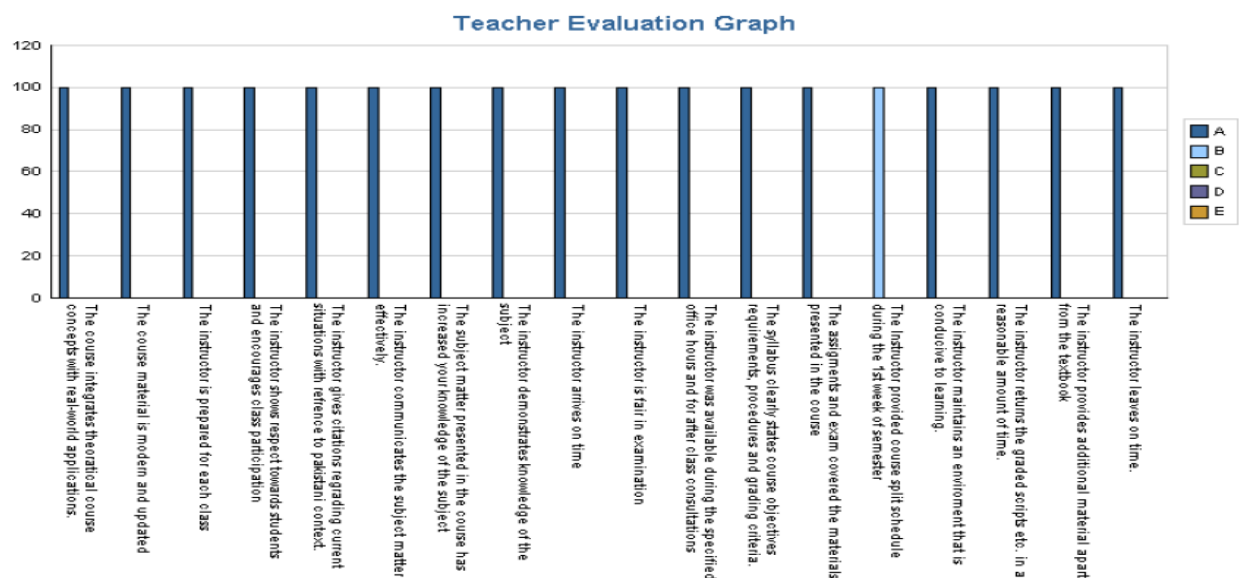


Fig: Teacher evaluation Resource Conservation Engineering, Fall-14

Comments

The graph shows that the teacher was dedicated and conveys the knowledge effectively. He was punctual, friendly and gives respect to the students. Students could not receive the course split schedule timely due to teacher busy schedule.

DR. M. UMAIR

**Course: Climate Change and Water Resources
PERFORMA-1**

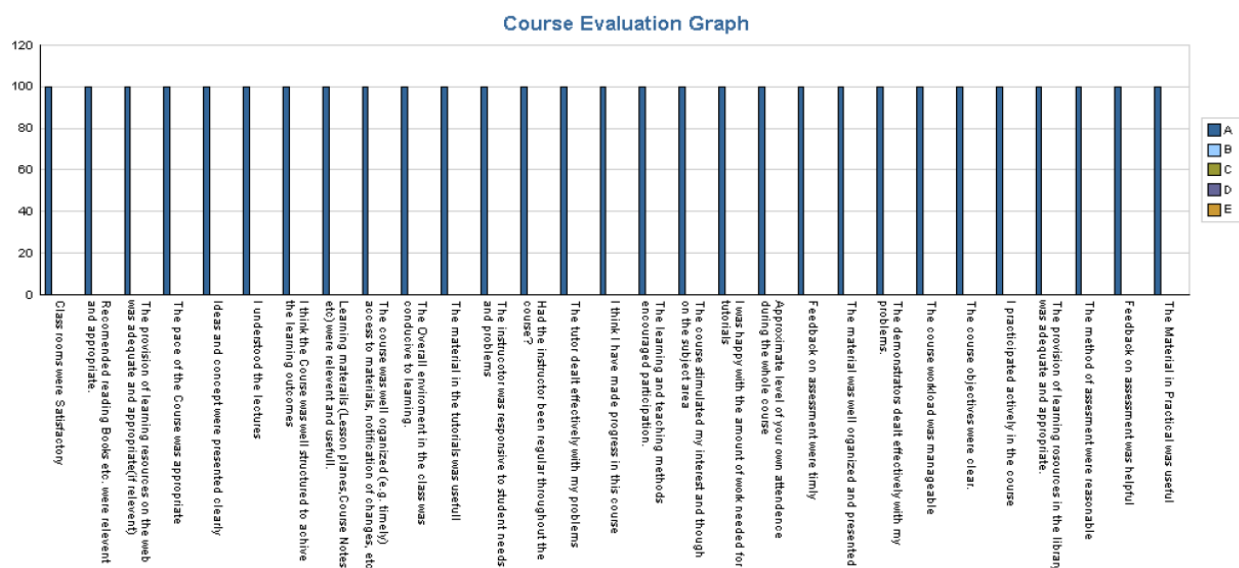


Fig: Course evaluation Climate Change and Water Resources, Fall-14

General Comments

The course was interesting and provides the useful knowledge about reasons for climate change and its impact on water resources. Students were satisfied with course contents and objectives.

PERFORMA-10

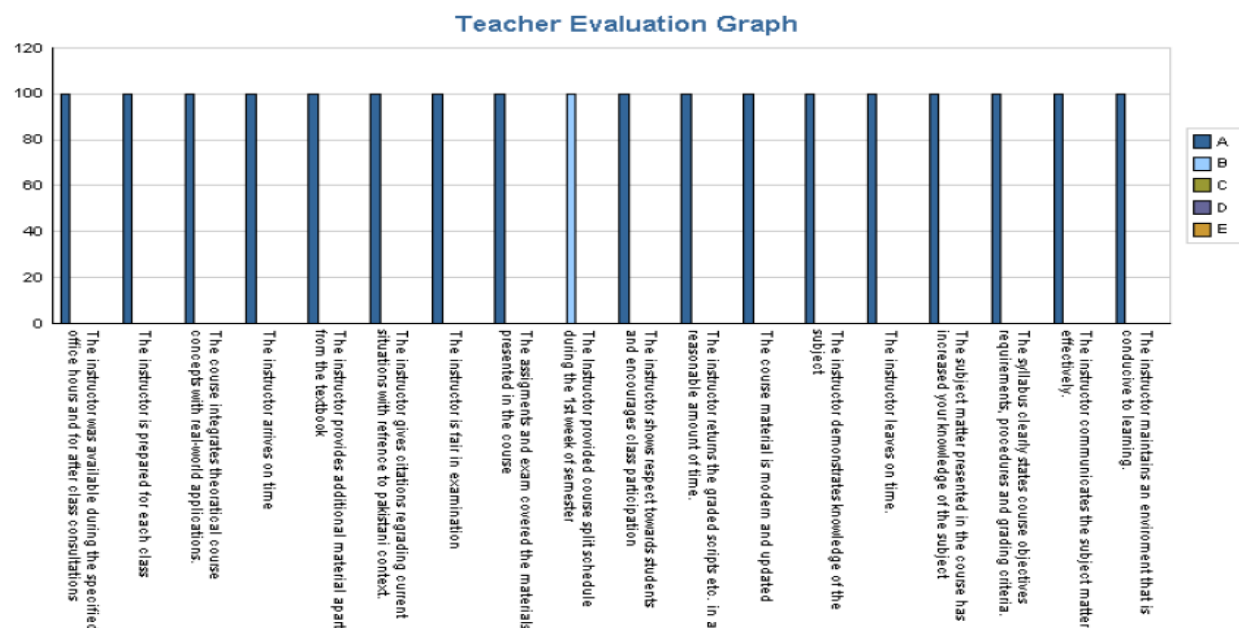


Fig: Teacher evaluation Climate Change and Water Resources, Fall-14

Comments

Teacher remained prepared, regular in the class and showed respect for the students. Moreover teacher was available all the time for guidance and marks the papers without any biasness.

Table: 4 The subject taught in Spring-15

Spring-15			
Course no.	Credit hour	Title	Teacher
FSEE 701	3 (2 – 1)	Parameters & Methods of Environmental Impact Assessment	Prof. Dr. J. K. Sial
FMPE 701	3 (2 – 1)	Advance Power & Machinery	Prof. Dr. M. Yasin
FMPE 703	3 (2 – 1)	Computer Modeling of Engineering Systems	Dr. M. Umair

PROF. DR. M. YASIN

Course: Advance Power & Machinery

PERFORMA-1

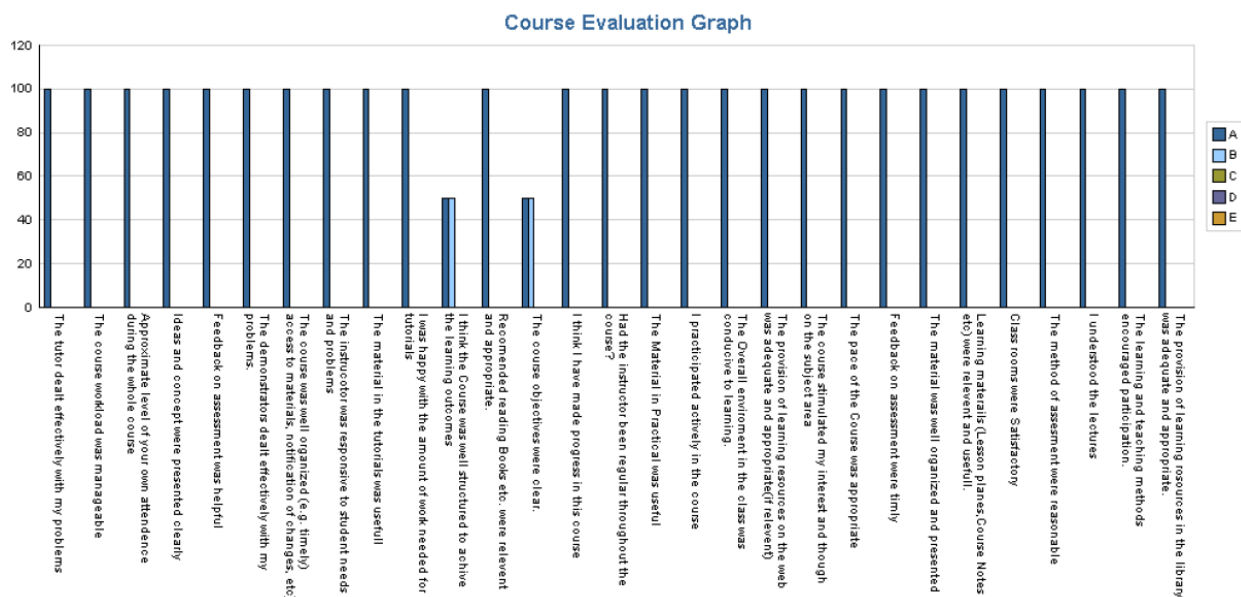


Fig: Course evaluation Advance Power & Machinery, Spring-15

General Comments

The course was very importing regarding mechanize farming. The instructor has great experience in this field and he taught this course very effectively. The students learnt useful knowledge and were satisfied with course objectives and contents.

PERFORMA-10

Comments

The graph shows that the teacher was dedicated and conveys the knowledge effectively. He was punctual, friendly and gives respect to the students.

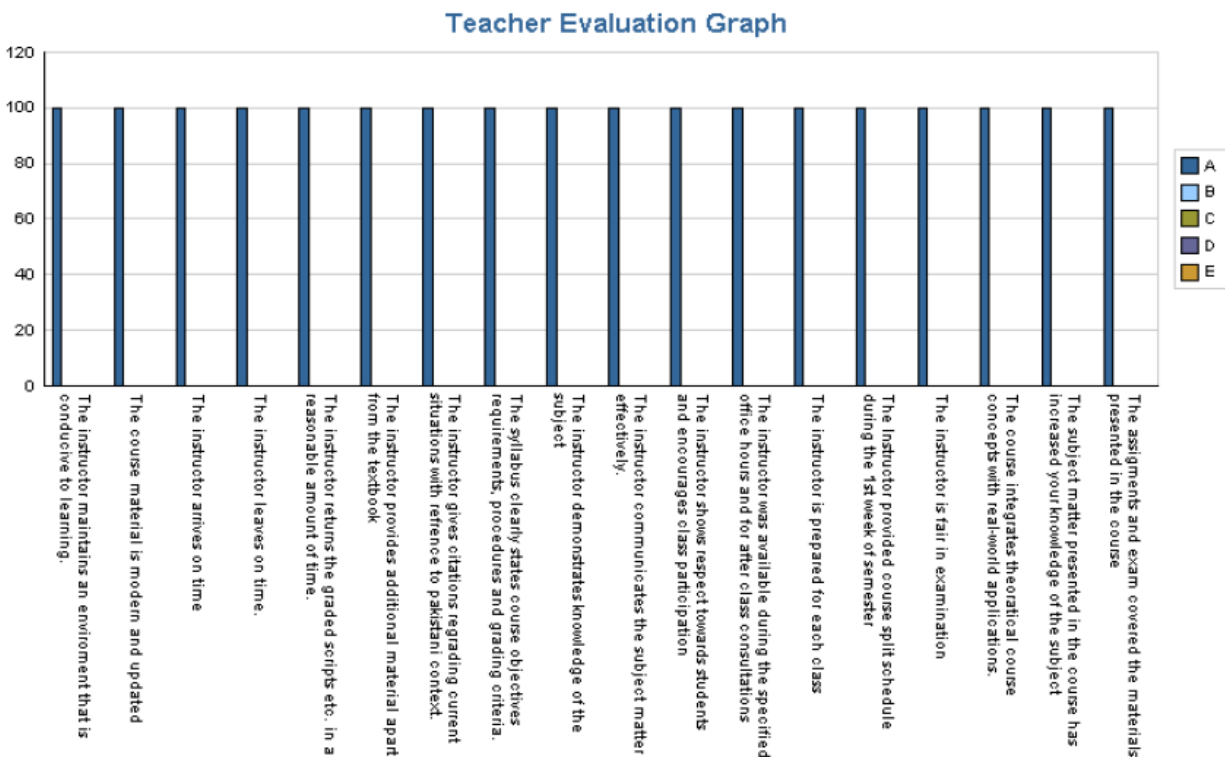


Fig: Teacher evaluation Advance Power & Machinery, Spring-15

PROF. DR. J. K. SIAL

Course: Parameters & Methods of Environmental Impact Assessment

PERFORMA-1

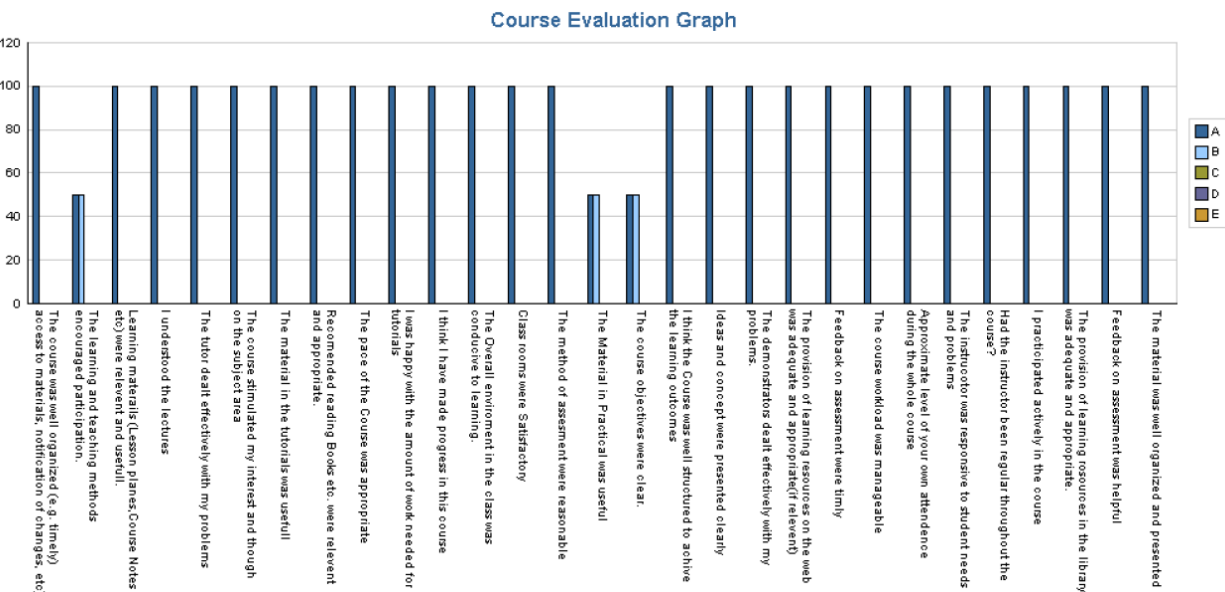


Fig: Course evaluation Parameters & Methods of Environmental Impact Assessment, Spring-15

General Comments

The course was very interesting and provides imported knowledge and useful information regarding environmental impact assessment methods and legislations.

PERFORMA-10

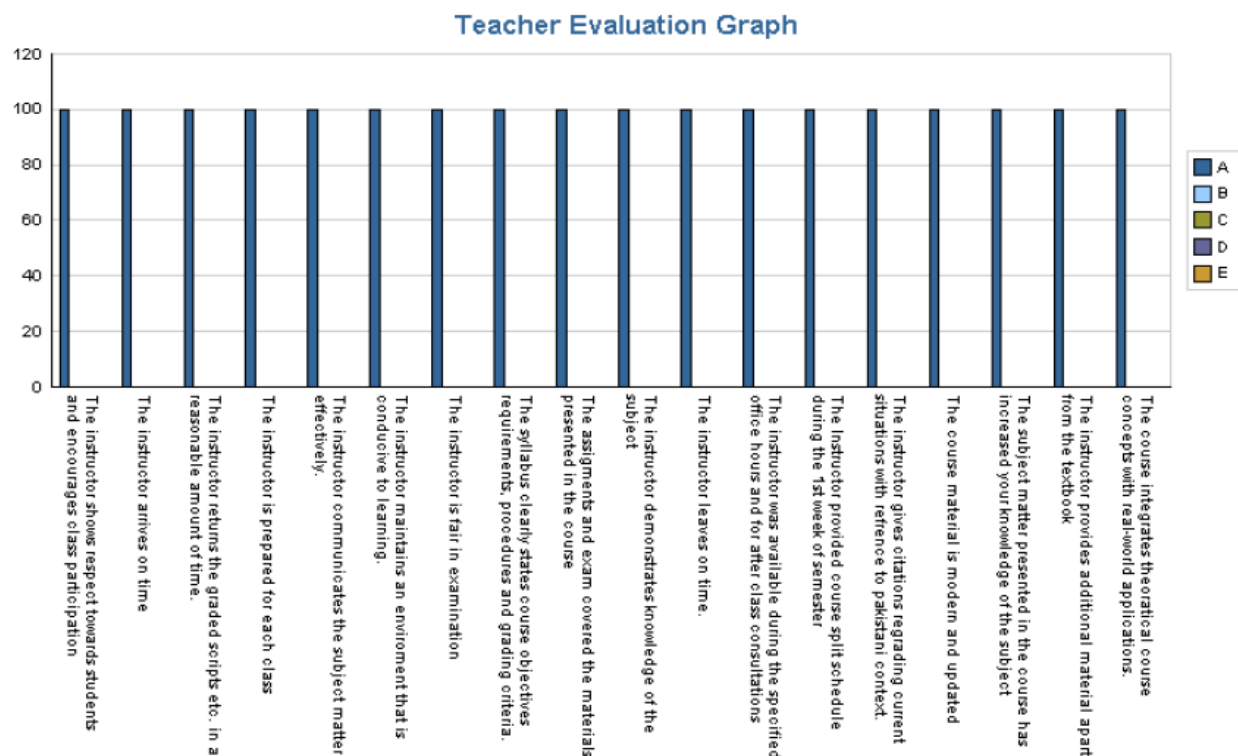


Fig: Teacher evaluation Parameters & Methods of Environmental Impact Assessment, Spring-15

Comments/suggestions

The teacher was dedicated and was able to teach this course in a good manner, with all attributes of preparation, communication skill, participation, including modern concepts, punctuality and behavior, etc.

DR. M. UMAIR

Course: Computer Modeling of Engineering Systems

PERFORMA-1

General Comments

The course was important in the sense of using advance computer technology in engineering application. It involves computer programing therefore it was little bit difficult for those students who were weak in computer simulation and programing. The students leant modern knowledge of simulation from this course.

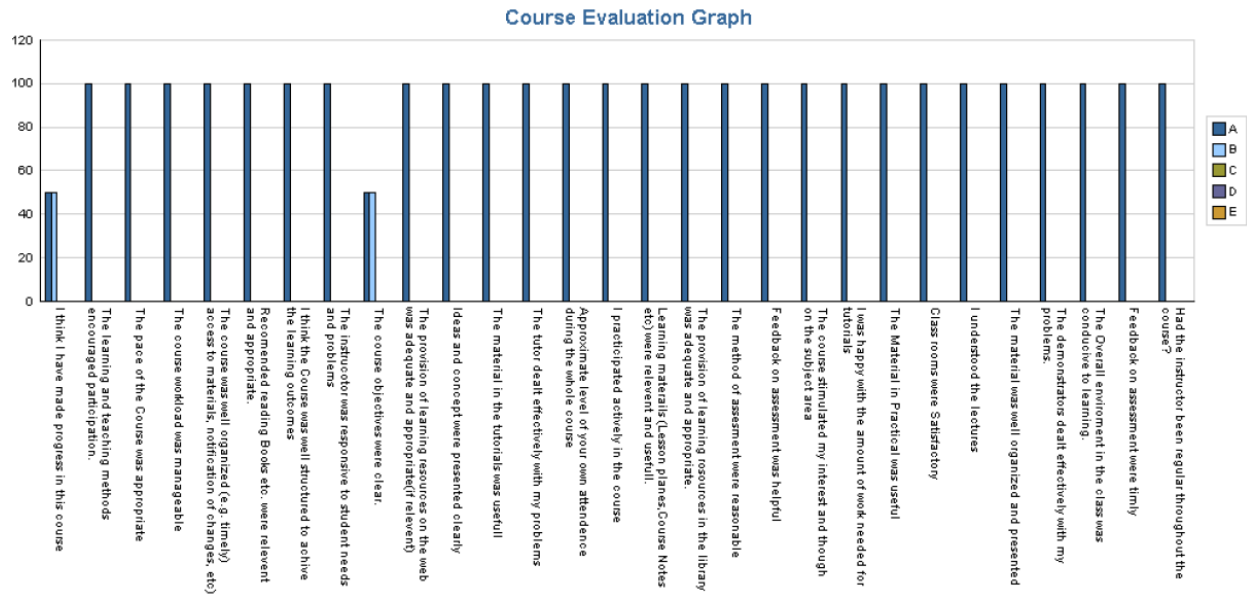


Fig: Course evaluation Computer Modeling of Engineering Systems, Spring-15

PERFORMA-10

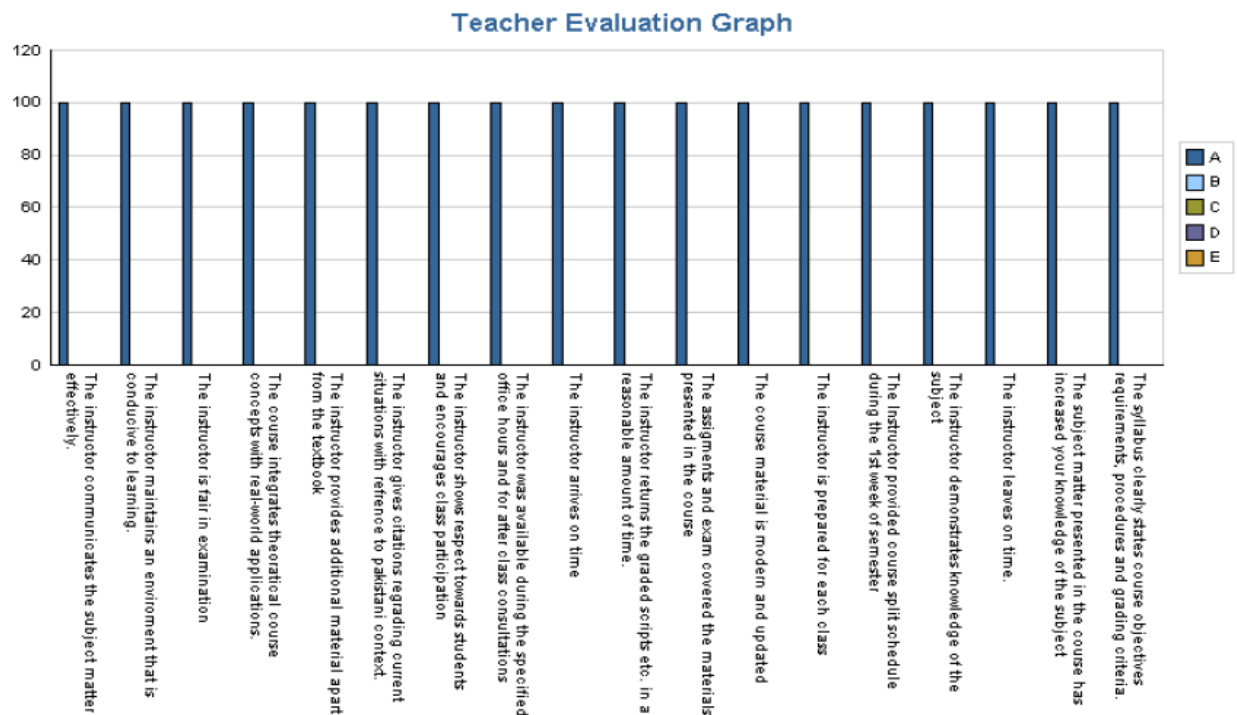


Fig: Teacher evaluation Computer Modeling of Engineering Systems, Spring-15

General Comments/Suggestions

The graph shows that the teacher was dedicated and was able to teach this course in a good manner, with all attributes of preparation, communication skill, participation, including modern concepts, punctuality and behavior, etc.

Table: 5 The subject taught in Fall-15

Fall-15			
Course no.	Credit hour	Title	Teacher
SEE-704	3 (2–1)	Energy & Environmental	Prof. Dr. J. K. Sial
FMPE-708	3 (2–1)	Harvesting Machinery	Prof. Dr. M. Yasin
LWCE-710	3 (3–0)	Surface Irrigation Modeling	Dr. M. Umair

PROF. DR. M. YASIN

Course: Harvesting Machinery

PERFORMA-1

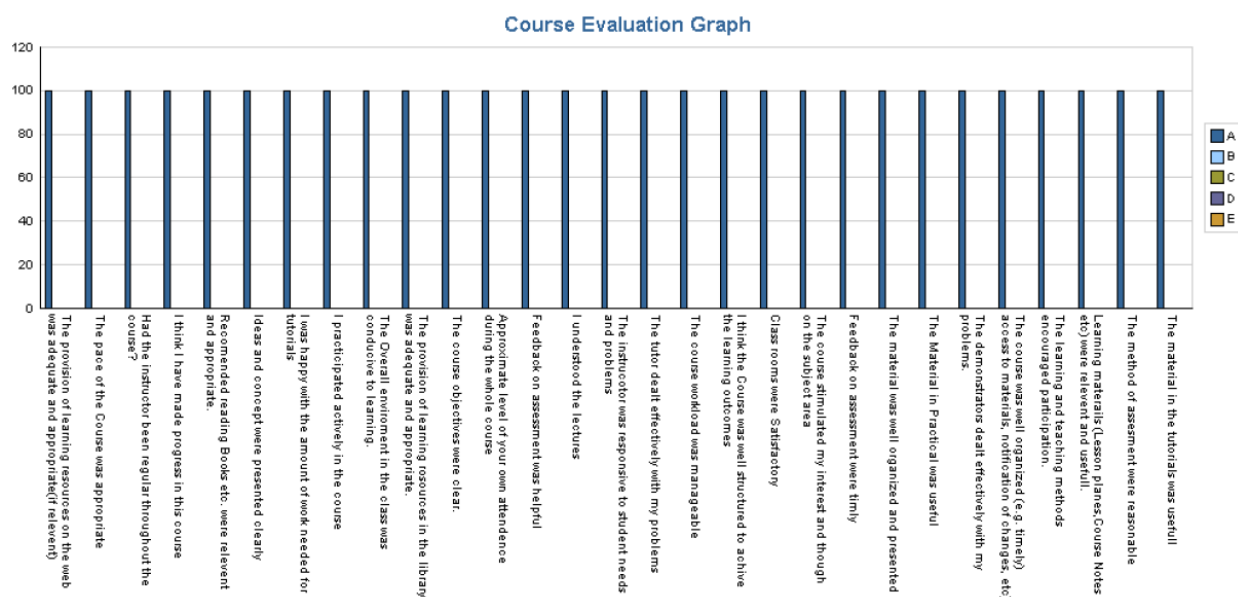


Fig: Course evaluation Harvesting Machinery, Fall-15

General Comments/Suggestions

The course was very importing regarding mechanize farming. The instructor has great experience in this field and he taught this course very effectively. The students learnt useful knowledge and were satisfied with course objectives and contents.

PERFORMA-10

General Comments/Suggestions

The graph shows that the teacher was dedicated and conveys the knowledge effectively. He was punctual, friendly and gives respect to the students.

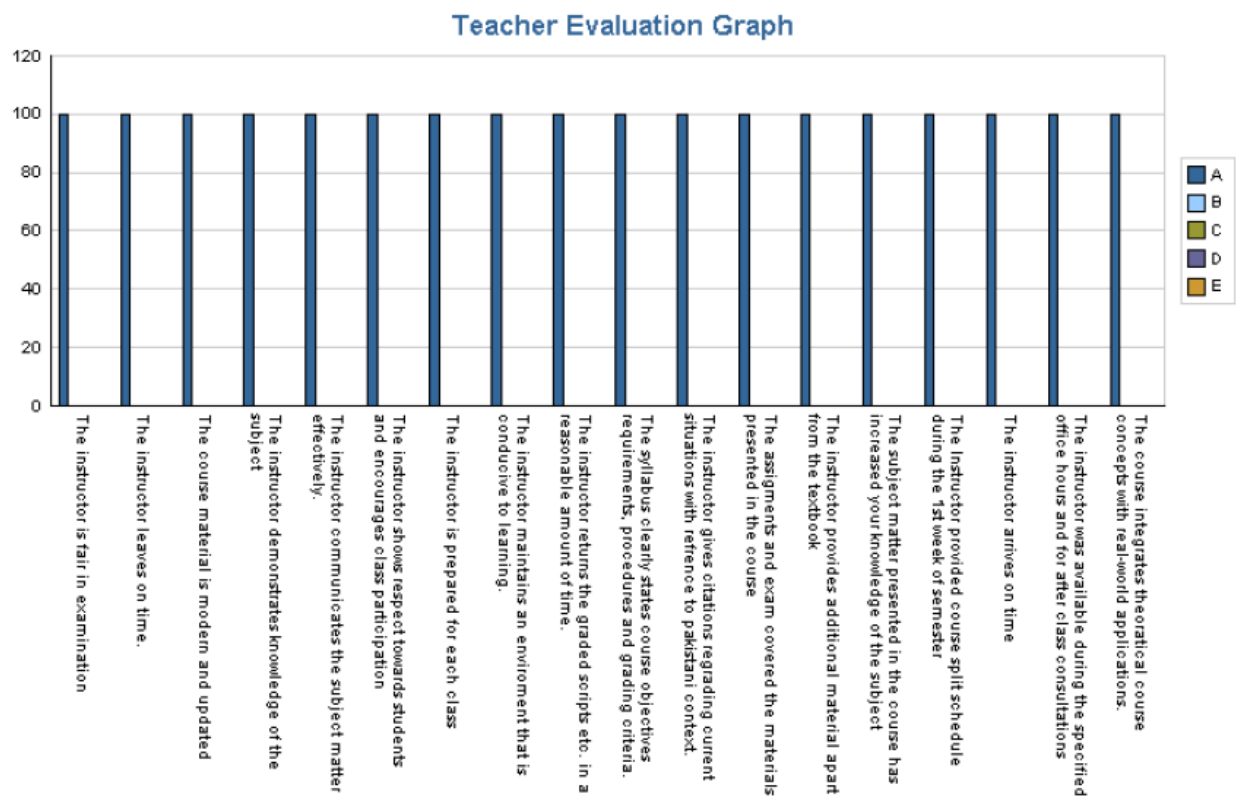


Fig: Teacher evaluation Harvesting Machinery, Fall-15

PROF. DR. J. K. SIAL

**Course: Energy & Environmental
Performa-1**

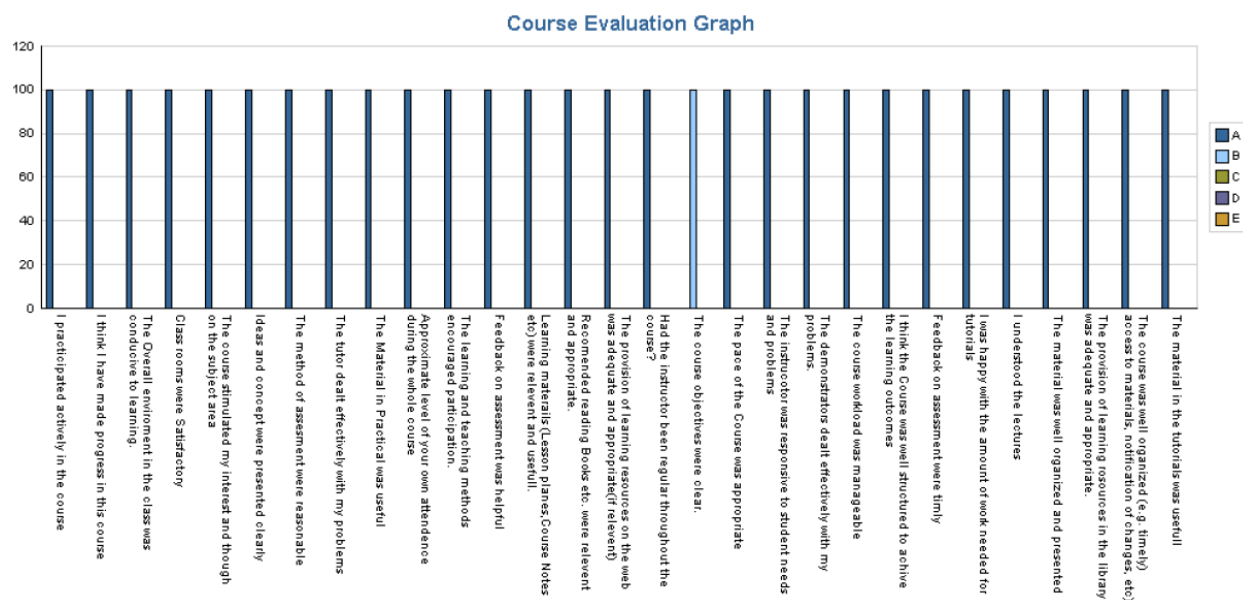


Fig: Course evaluation Energy & Environmental, Fall-15

General Comments/Suggestions

The course was interesting and provides the useful knowledge about relation between energy systems on environment.

PERFORMA-10

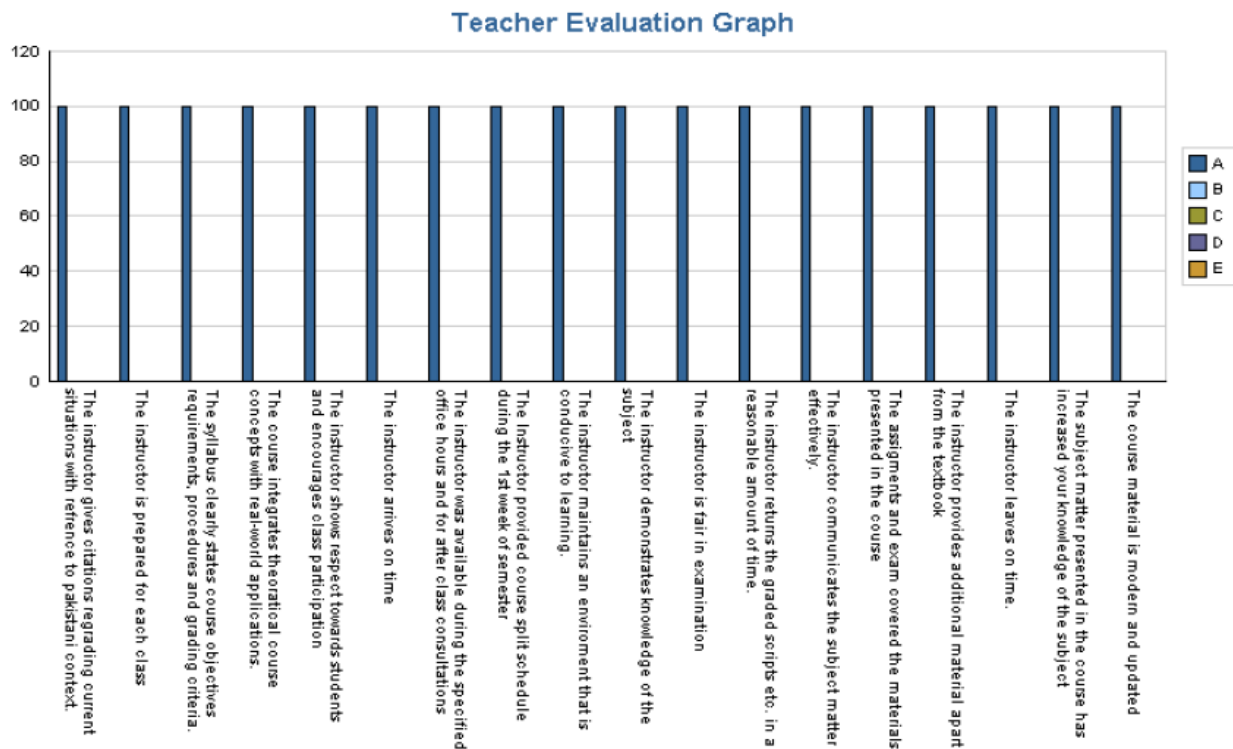


Fig: Teacher evaluation Energy & Environmental, Fall-15

General Comments/Suggestions

The graph shows that students were strongly satisfied with the teacher and are having view the teacher has demonstrated the knowledge very well.

DR. M. UMAIR

Course: Surface Irrigation Modeling

PERFORMA-1

The course *Surface Irrigation Modeling* was very useful subject but little bit tough because it involves computer programing. Through this course students realized the importance and application of simulation in engineering.

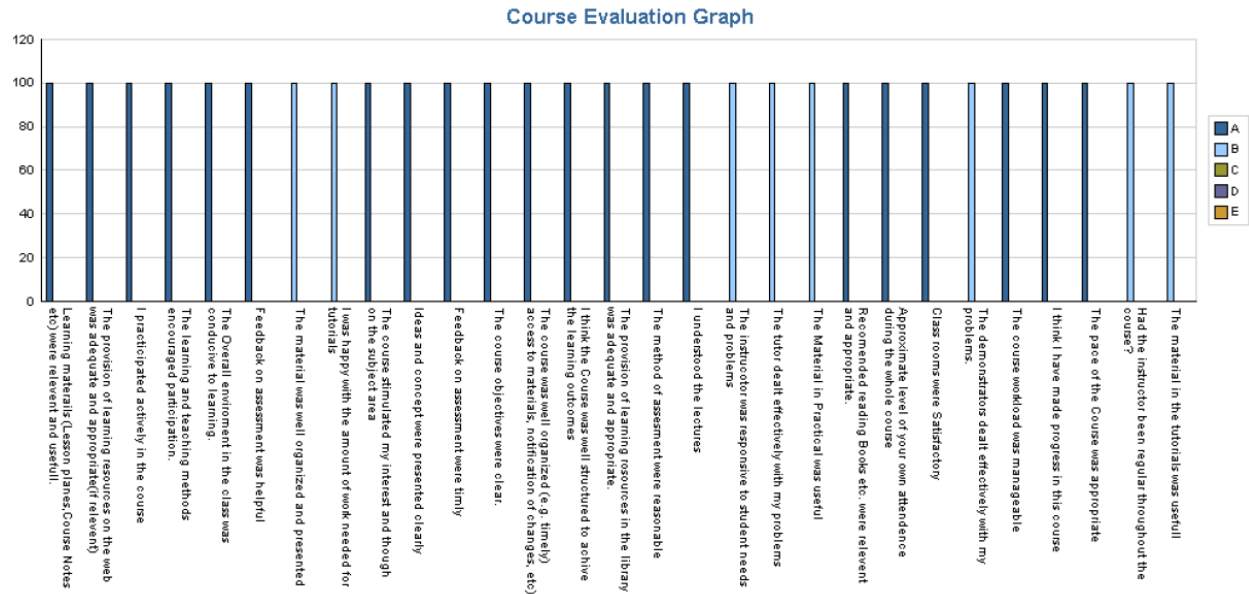


Fig: Course evaluation Surface Irrigation Modeling, Fall-15

PERFORMA-10

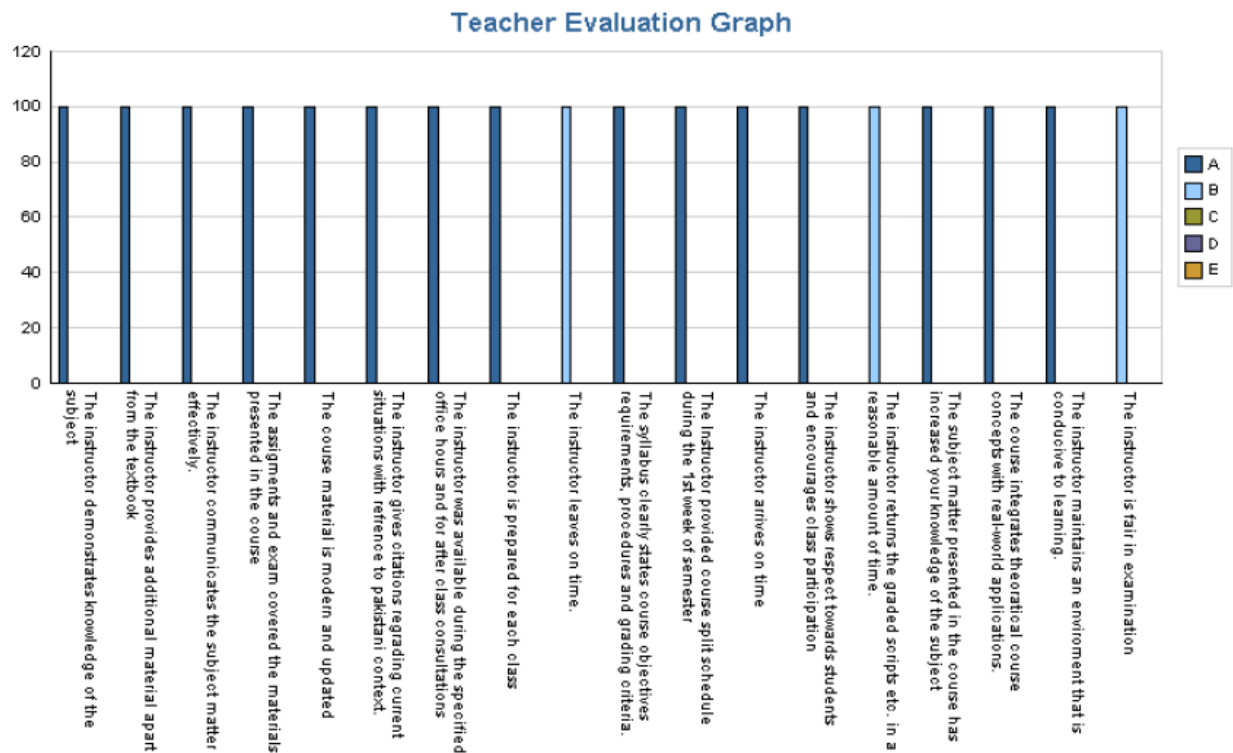


Fig: Teacher evaluation Surface Irrigation Modeling, Fall-15

General Comments

The graph shows that the teacher was dedicated and conveys the knowledge effectively. He was friendly and gives respect to the students. Sometimes teacher take extra time.

Table: 6 The subject taught in Spring-16

Spring-16			
Course no.	Credit hour	Title	Teacher
SEE-701	3 (2 – 1)	Parameters & Methods of Environmental Impact Assessment	Prof. Dr. J. K. Sial
FMPE-712	3 (2 – 1)	Renewable Energy Engineering	Dr. M. Umair
SEE-707	3 (2 – 1)	Farm Waste Disposal	Prof. Dr. J. K. Sial

PROF. DR. J. K. SIAL

Course: Parameters & Methods of Environmental Impact Assessment

PERFORMA-1

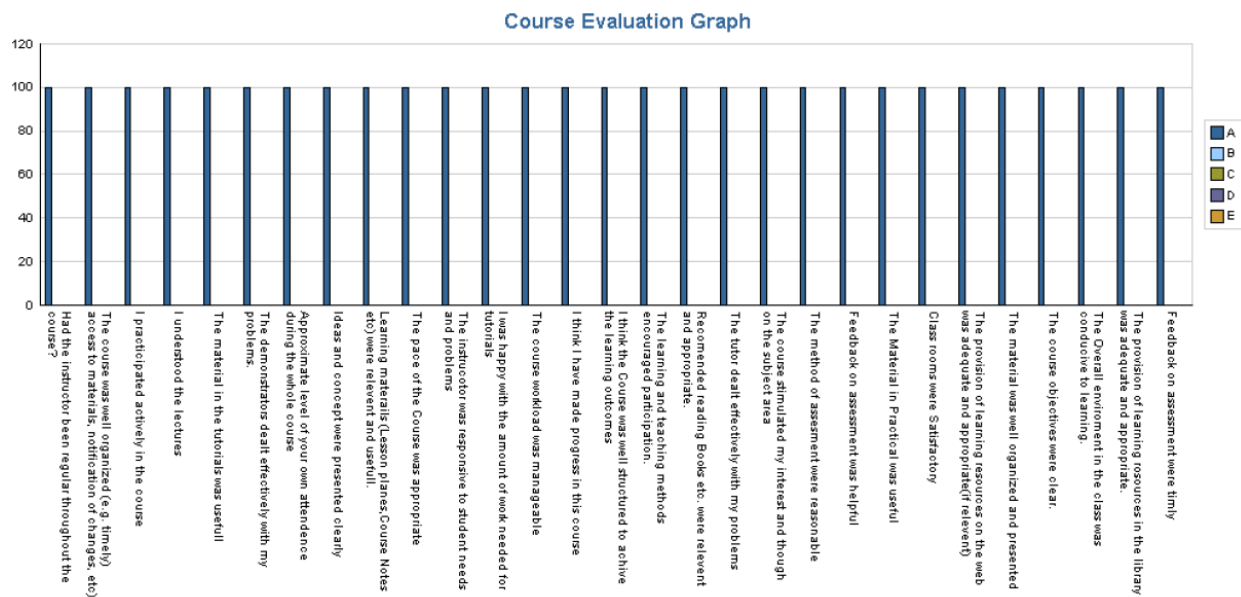


Fig: Course evaluation Parameters & Methods of Environmental Impact Assessment, Spring-16

The course *Parameters & Methods of Environmental Impact Assessment* was very informative and it provides very useful knowledge regarding environment impact and its assessment.

PERFORMA-10

General Comments

The graph shows that the teacher was dedicated and conveys the knowledge effectively. He was punctual, friendly and gives respect to the students.

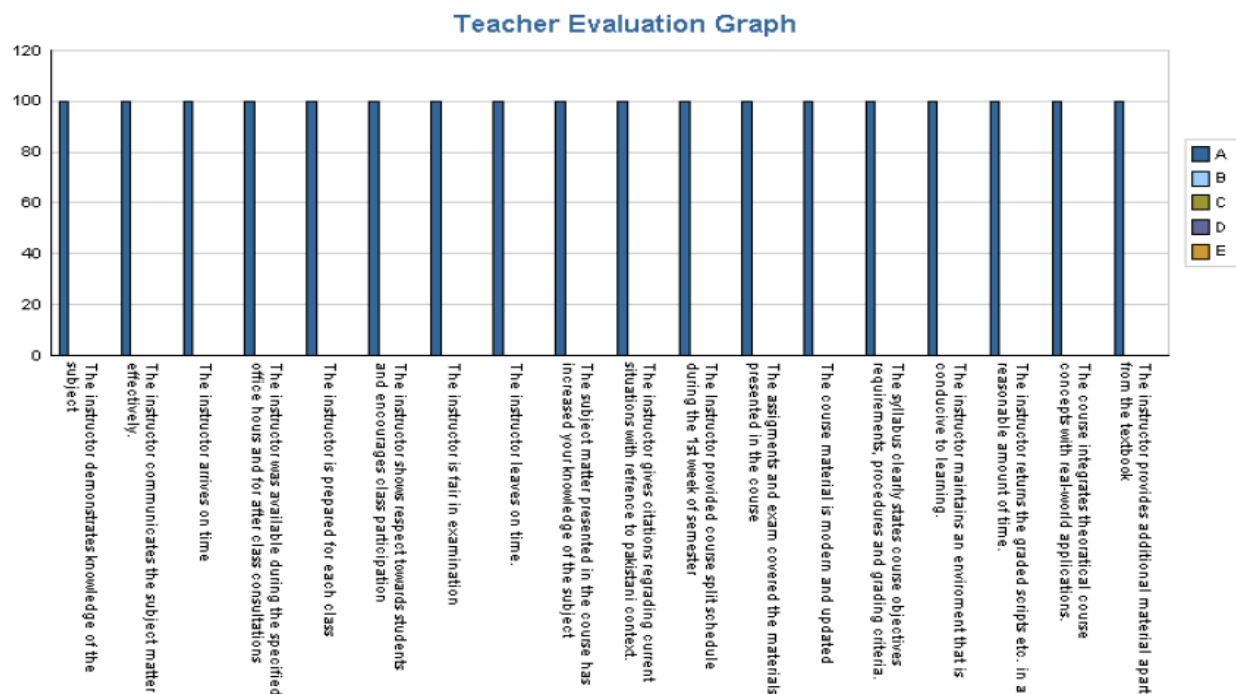


Fig: Teacher evaluation Parameters & Methods of Environmental Impact Assessment, Spring-16

PROF. DR. J. K. SIAL

Course: Farm Waste Disposal

PERFORMA-1

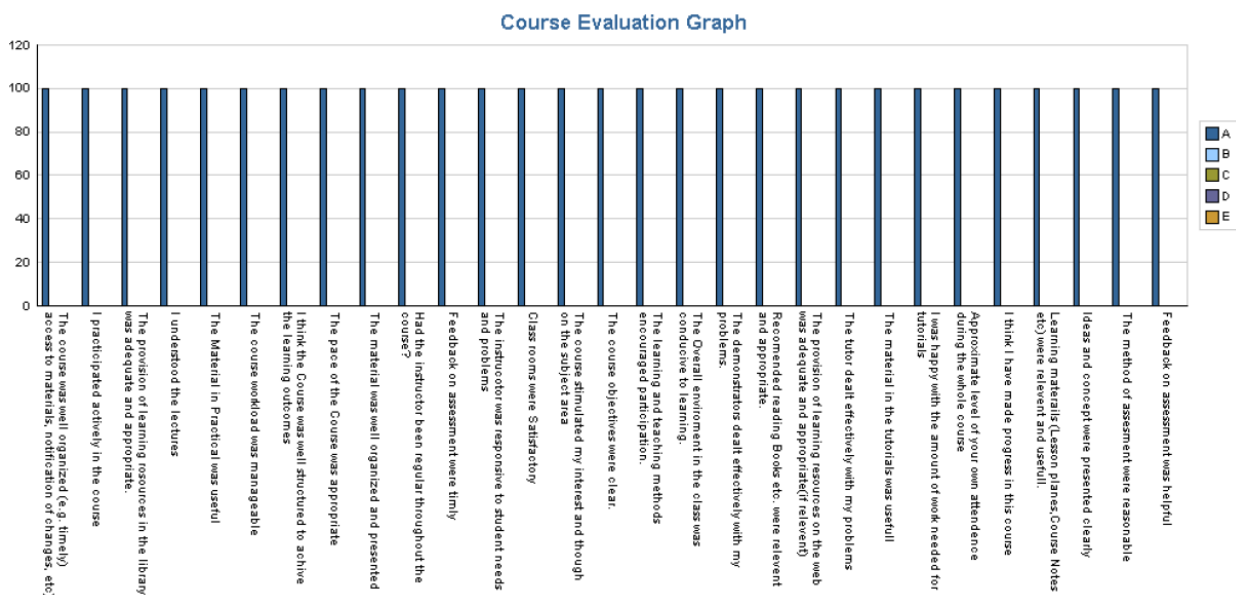


Fig: Course evaluation Farm Waste Disposal, Spring-16

Comments

The course Farm Waste Disposal was very interesting and instructor teaches it in effective way.

PERFORMA-10

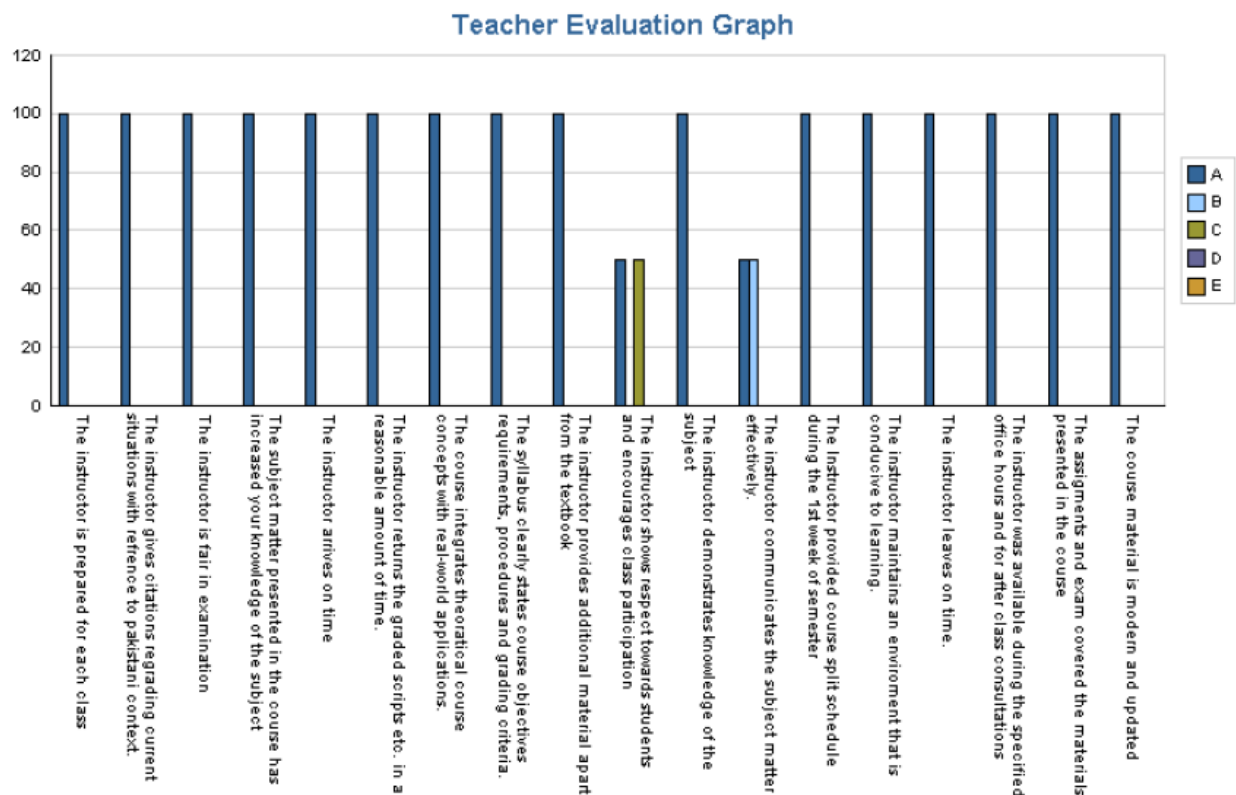


Fig: Teacher evaluation Farm Waste Disposal, Spring-16

General Comments

The graph shows that the teacher was dedicated and knowledge full.

DR. M. UMAIR

Course: Renewable Energy Engineering

PERFORMA-1

General Comments

The course Renewable Energy Engineering was comprehensive and informative. It was very helpful to design renewable energy system especially solar thermal systems. The students were very satisfied with the course.

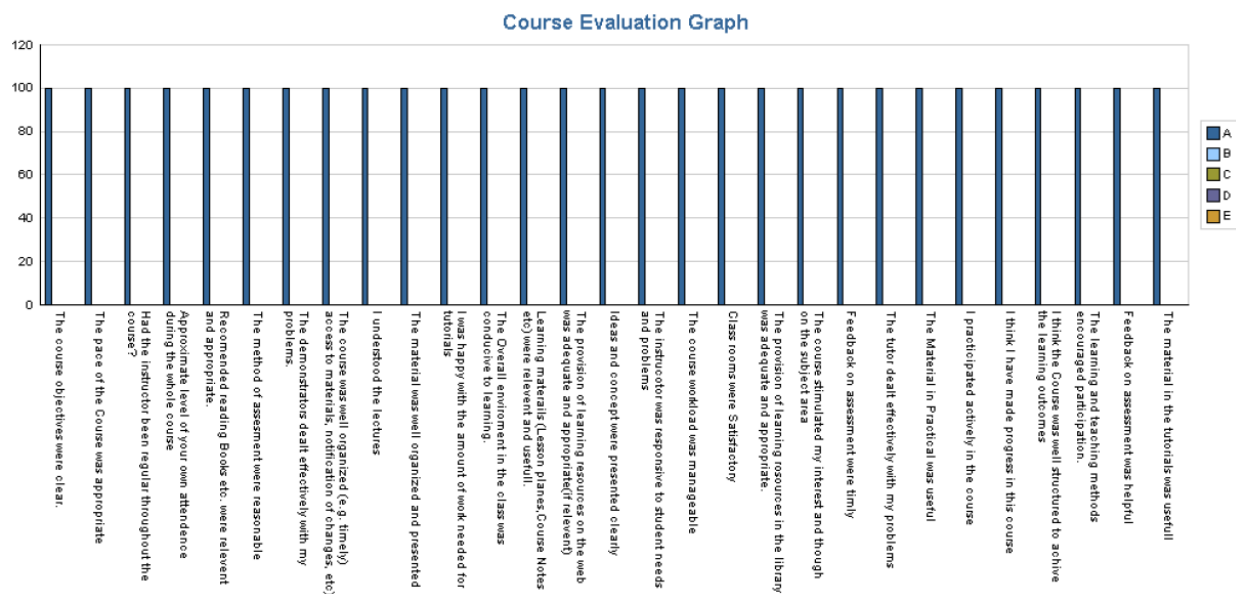


Fig: Course evaluation Renewable Energy Engineering, Spring-16

PERFORMA-10

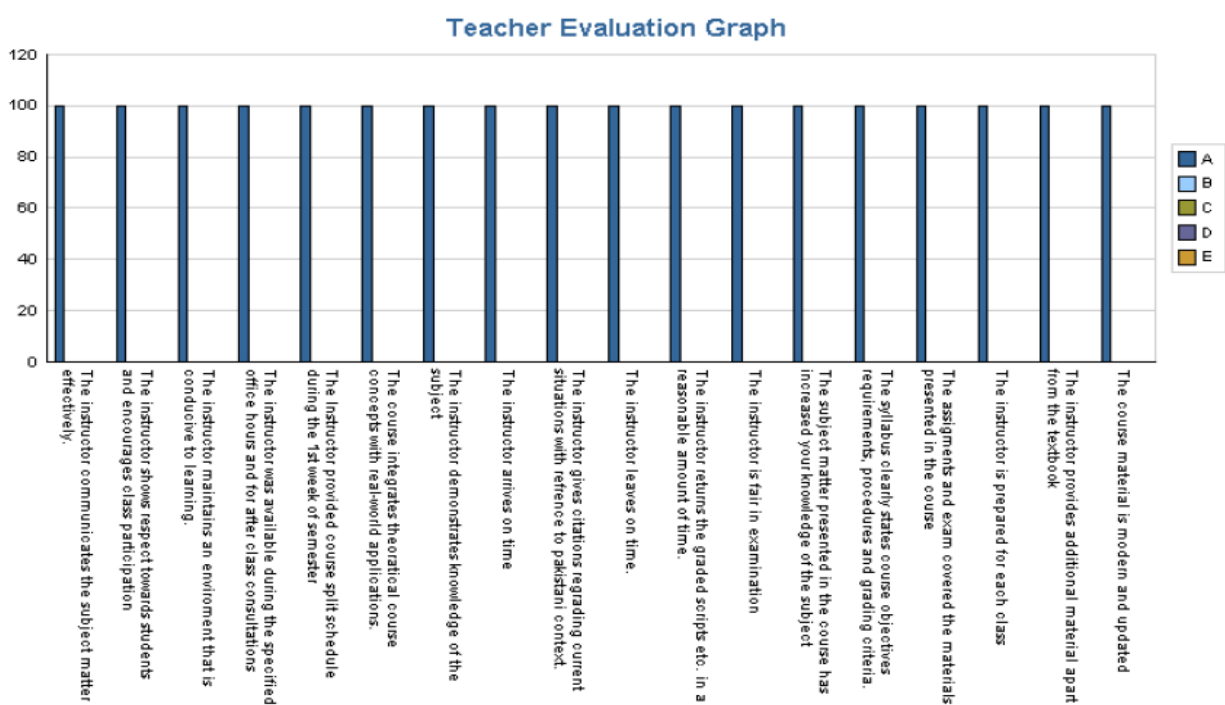


Fig: Teacher evaluation Renewable Energy Engineering, Spring-16

General Comments

The graph shows that the teacher was able to teach this course in a good manner, with all attributes of preparation, communication skill, participation, including modern concepts, punctuality and behavior, etc.

PERFORMA-2: Faculty course review report

Evaluation Questionnaire were filled by each faculty member regarding his course and then analyzed and presented in the table given below. The internal evaluation was done through with mid and final term examinations for all courses offered by department. It was observed from evaluation that the faculty is satisfied with curriculum. The filled Performa-2 are given in Annexure-A.

Table: 7 Course assessment evaluation based on performa 2

Course code	Credit value	Title	Class	Semester	Assessment Methods	No. of students	Grades					Course Instructor
							A	B	C	D	F	
LWCE 707	3 (2–1)	Resource Conservation Engineering	MSc (Hon) Agri Engg	Fall-14	Mid &Final Exams	13	2	5	3	0	3	Prof. Dr. J. K. Sial
LWCE 717	3 (2–1)	Climate Change and Water Resources	MSc (Hon) Agri Engg		Mid &Final Exams	13	5	7	1	0	0	Dr. M. Umair
FMPE 706	3 (2–1)	Grain Preservation & Processing	MSc (Hon) Agri Engg		Mid &Final Exams	13	2	4	1	0	6	Prof. Dr. M. Yasin
FSEE 701	3 (2 – 1)	Parameters & Methods of Environmental Impact Assessment	MSc (Hon) Agri Engg	Spring-15	Mid &Final Exams	6	3	3	0	0	0	Prof. Dr. J. K. Sial
FMPE 701	3 (2 – 1)	Advance Power & Machinery	MSc (Hon) Agri Engg		Mid &Final Exams	6	2	2	1	0	1	Prof. Dr. M. Yasin
FMPE 703	3 (2 – 1)	Computer Modeling of Engineering Systems	MSc (Hon) Agri Engg		Mid &Final Exams	6	0	3	0	3	0	Dr. M. Umair
SEE-704	3 (2–1)	Energy & Environmental	MSc (Hon) Agri Engg	Fall-15	Mid &Final Exams	9	1	8	0	0	0	Prof. Dr. J. K. Sial
FMPE-708	3 (2–1)	Harvesting Machinery	MSc (Hon) Agri Engg		Mid &Final Exams	10	0	2	6	1	1	Prof. Dr. M. Yasin
LWCE-710	3 (3–0)	Surface Irrigation Modeling	MSc (Hon) Agri Engg		Mid &Final Exams	10	4	2	4	0	0	Dr. M. Umair
SEE-701	3 (2 – 1)	Parameters & Methods of Environmental Impact Assessment	MSc (Hon) Agri Engg	Spring-16	Mid &Final Exams	4	1	3	0	0	0	Prof. Dr. J. K. Sial
FMPE-712	3 (2 – 1)	Renewable Energy Engineering	MSc (Hon) Agri Engg		Mid &Final Exams	4	2	2	0	0	0	Dr. M. Umair
SEE-707	3 (2 – 1)	Farm Waste Disposal	MSc (Hon) Agri Engg		Mid &Final Exams	4	2	2	0	0	0	Prof. Dr. J. K. Sial

Standard 1-3: The results of Program’s assessment and the extent to which they are used to improve the program must be documented.

The department has recently started regular assessment process and in future assessments results will be incorporated accordingly. Following are the strength and weaknesses identified.

Strengths of the Department

1. All faculty members for postgraduate programs is foreign qualified with great national and international experience of teaching, research, field and projects implementation in the field of Agricultural Engineering.
2. The department has won number of national and international research projects in the field of indigenous hydroponic agriculture, rain water harvesting, drip irrigation, biogas production, solar drying and wheat processing.
3. The faculty has won the largest project in the history of University with name “Strengthening Agricultural Engineering and Technology and Women Development”.
4. Initiatives taken by the Prof. Dr. Rai. Niaz Ahmed;
 - a. Design and Operation of Indigenous hydroponic Agriculture system
 - b. Rain water harvesting at campus and its efficient use through drip irrigation system.
 - c. Design of solid waste disposal plant utilizing solid waste generated at campus
 - d. Establishment of Faculty of Agricultural Engineering and Technology at PMAS-Arid Agriculture University, Rawalpindi.

Weakness Identified in Program

The faculty of Agricultural engineering is recently established, therefore, following weaknesses are identified at the moment;

1. The department has shortage of faculty members at the moment.
2. Limited lab. facilities
3. Limited Computer lab with internet facility.

Standard 1-4: The department must assess its overall performance periodically using quantifiable measures

Present Performance Measures for Research Activities

Faculty	Experience	Journal Publication	Conferences Publications	Projects	Ph.D/M.Sc. Supervising
Prof. Dr. Rai Niaz Ahmed	31 years	-	-	2	2
Prof. Dr. Muhammad Yasin	38 years	-	-	2	5
Prof. Dr. Jehangir Khan Sial	45 years	-	-	-	-
Dr. Muhammad Umair	6.5 years	7	2	1	4

PERFORMA-4: RESEARCH STUDENTS PROGRESS REVIEW

The evaluation Performa 4 was filled by MSc students. The filled Performa are given in Annexure-B.

PERFORMA-5: RESULTS OF FACULTY SURVEY

Evaluation Questionnaire (Performa-5) was filled by each faculty member on annual basis. Most of the faculty members reported that they are satisfied with the administrative support. The filled questionnaires are attached in Annexure-C

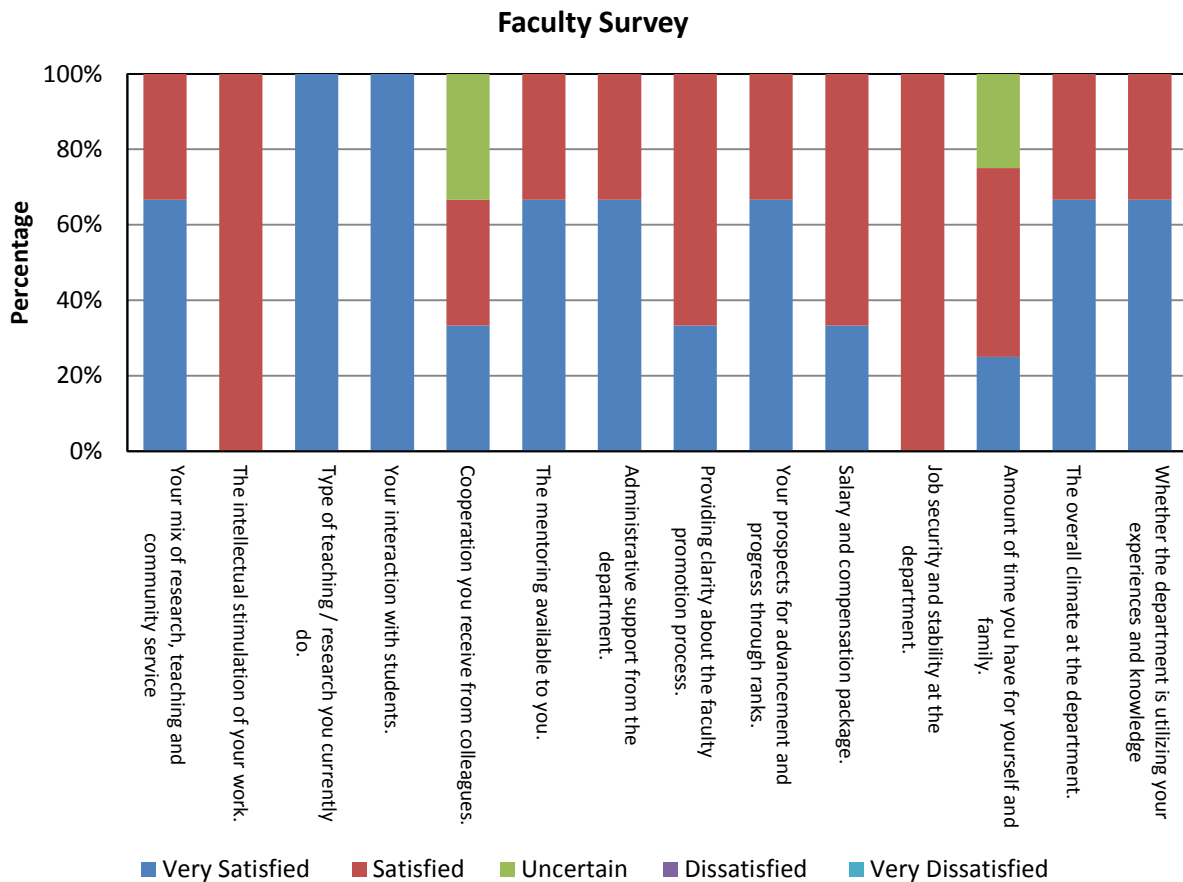


Fig. Faculty survey (results of Performa-5)

CRITERION 2

CURRICULUM DESIGN AND ORGANIZATION

Standard 2-1: The curriculum must be consistent and support the program's documented objectives.

Brief Introduction

The M.Sc (Hons) Agricultural Engineering programs by Faculty of Agricultural Engineering and Technology offers students the opportunity for study and research in many fields, including the following: Farm Mechanization, Automation and Precision Agriculture; Land and Water Conservation Engineering; Renewable Energy; Farm Structure and Environmental Engineering; Food Engineering and Food Safety; Horticultural Engineering. The educational objectives of this program are based on the intellectual and professional development of graduate students. This programs is designed to produce graduates with the high level of training, who are expected to contribute towards the goal of realizing the full potential of professionals in Agricultural Engineering and solving the problems in agriculture to attain maximum yield with minimum inputs.

Objectives

The general objectives of this program are to equip graduates with the high level of research training, which is essential for effective performance of research, teaching and management in agricultural industry. On completion of degree programs, graduates should be able to do the following in best way possible:

- Capable of applying engineering principles to agricultural mechanization, crop production, preservation and storage, farm and agricultural business management, irrigation, farm structures and rural electrification.
- Promote awareness of the importance of agricultural engineering disciplines in the economy.
- Manage or establish agricultural engineering enterprises.
- Integrate agricultural engineering activities within the farming enterprises.
- Pursue careers in agricultural engineering and related disciplines.

Entry requirement

M.Sc Agricultural Engineering (2 year)

As per requirements set by Pakistan Engineering council, the Faculty admits the candidates to M.Sc Agricultural Engineering programs with the following qualifications;

- i. Sixteen years of education with the last degree in B.Sc Agricultural/Mechanical/Civil/Electrical/Food/Energy/Water Resource Engineering.
- ii. The minimum CGPA should be 2.5 (out of 4.0 in the Semester System) in the last degree.

- iii. Entry test score conducted by the University with a minimum 60% will be required at the time of admission.

Duration of the Programs and Semester-wise worked load

M.Sc Agricultural Engineering

Duration

The minimum duration (residency) of M.Sc (Hons) Agricultural Engineering shall be 4 semesters and maximum duration shall be 6 semesters.

Course Workload

The requirements to be completed by each student for award of M.Sc (Hons) Agricultural Engineering degree shall be:-

- a) A minimum of 45 credits, and consisting of 35 credits of course work, and 10 credits of research thesis/dissertation based on approved research topic/project.
- b) A minimum cumulative grade point average (CGPA) of 2.5 will be required in the course work.

Minimum requirements for M.Sc (Hons) Agricultural Engineering Program are as follows:

- i. Sixteen years of education with the last degree in B.Sc Agricultural/Mechanical/Civil/Electrical/Food/Energy/Water Resource Engineering.
- ii. The minimum CGPA should be 2.5 (out of 4.0 in the Semester System) in the last degree.

Admission Authority:-

- i. The admission to the course may be made by the Director Advanced Studies on the recommendations of the Admission Committee constituted by the Competent Authority.
- ii. The Admission Committee shall consider the applications for admission and formulate its recommendations according to the prescribed formula approved by the Academic Council and submit to the Director Advanced Studies.

Minimum Requirements for the Award of M.Sc (Hons) Agricultural Engineering:-

- (i) The minimum duration (residency) of M.Sc (Hons) Agricultural Engineering shall be 4 semesters and maximum duration shall be 6 semesters.
- (ii) The requirements to be completed by each student for award of M.Sc (Hons) Agricultural Engineering degree shall be:-
 - c) A minimum of 45 credits, and consisting of 35 credits of course work, and 10 credits of research thesis/dissertation based on approved research topic/project.

- d) A minimum cumulative grade point average (CGPA) of 2.5 will be required in the course work.

Course of Study:-

- (i) The students will pursue the scheme of study as approved/amended by the Academic Council from time to time.
- (ii) All students are required to submit their Synopsis before the start of the 3rd semester.

Compulsory Courses:

“Statistics” will be compulsory for M.Sc (Hons) Agricultural Engineering Students.

Supervisory Committee: -

- (i) Each student enrolled will have a supervisory committee to advise him/her in his/her program of studies and research.
- (ii) The supervisory committee will be constituted and submitted along with the title to the directors before mid-term examination of 2nd semester.
- (iii) The committee and the research title will be approved by the respective Dean of the Faculty and notified by the Director Advance Studies.
- (iv) The Supervisory Committee shall consist of at least three faculty members (the Supervisor, one faculty member from the major field of study and another member from any other allied subject/department). In addition a co-supervisor can be appointed if necessitated by any lack of expertise at the institute.
- (v) One of the faculty member from the major field of study will be designated as Chairperson of the Supervisory Committee.

Academic Standing:-

- (i) Cumulative Grade Point Average
 - a) Maximum cumulative grade point average: 4.00
 - b) Minimum cumulative grade point average for obtaining M.Sc (Hons) Agricultural Engineering: 2.50
- (ii) To remain on the roll of the university a student shall be required to attain the following minimum CGPA in each semester.

Semester CGPA

1 st Semester	1.50
2 nd Semester	1.75
3 rd Semester	2.00
4 th Semester	2.50

Note: An academic year includes Fall and Spring Semesters only.

- (iii) A student will be required to repeat courses failed in a previous semester at the first available opportunity provided that the maximum work load including the courses being repeated does not exceed the normal work load.
- (iv) A student, who obtains CGPA of 2.00 or above but less than 2.50, upon the completion of entire approved course work, may be allowed to repeat the courses of the previous semesters in which he/she had obtained the lowest grades, in order to improve the CGPA so as to obtain the minimum of 2.50 within the maximum time allowed for award of degree, failing which he/she shall cease to be on the roll.

Dissertation/Thesis:-

- (i) A student shall be entitled to submit thesis for examination after he/she has passed all the final examinations in the approved courses and comprehensive examination provided he/she has also fulfilled the minimum residency requirements.
- (ii) The thesis shall be prepared and presented in the manner laid down in the instructions approved by the Advanced Studies and Research Board.
- (iii) The unbound thesis shall be referred to the examiners for evaluation duly certified by the Supervisory Committee that the contents and form of the thesis are satisfactory for submission.
- (iv) The hard bound copies of corrected/modified final version of the thesis shall have to be submitted as defined in the university rules/regulation.

Evaluation:-

- (i) The thesis shall be evaluated by a Board of examiners comprising of the members of the supervisory committee and an external member appointed in accordance with the university rules and regulations.
- (ii) At least three members of the Board of Examiners, of whom one must be the external examiner, for the purpose of evaluating the thesis, must hold a viva-voce examination.
- (iii) The date, time, and venue of examination must be notified at least one week before the examination and the faculty and students interested to participate in the oral presentation may be allowed. The notification to this effect may be made by the Dean/chair person with intimation to the Director Advanced Studies, Controller of Examinations, Quality Enhancement Cell, and any other relevant office/department.
- (iv) The controller of examination shall get the thesis evaluated within three months after the date of its submission/resubmission in his office. Any delay beyond three months must be brought to the notice of the Vice Chancellor.
- (v) The thesis shall be evaluated by the Board of Examiners on Pass and Fail basis, which shall not be counted towards the calculation of CGPA.

- (vi) All the members of Supervisory Committee present shall sign the thesis after the viva-voce examination after making necessary corrections and incorporating therein any suggestions by the Board of Examiners.
- (vii) All the members of the Board of Examiners present shall sign the result sheet prescribed for this purpose at the end of the examination. The supervisor will submit the results to the Director of Advanced Studies and Controller of Examination within 24 hours.
- (viii) In case of disagreement among the examiners regarding the acceptance of the thesis, it shall be referred to another external examiner appointed by the Vice Chancellor whose decision shall be final.

LIST OF PROPOSED POST GRADUATE COURSES

DEPARTMENT OF LAND & WATER CONSERVATION ENGINEERING		
Course No.	Course Title	C. Hours.
LWCE -701	Computational Methods in Water Resources Engineering	3(3-0)
LWCE-702	Advance open Channel Hydraulics	3(2-1)
LWCE-703	Advanced Hydrology	3(2-1)
LWCE-704	Advanced Groundwater Hydrology	3(2-1)
LWCE-705	Groundwater Modeling	3(2-1)
LWCE-706	Advanced Drainage Engineering	3(2-1)
LWCE-707	Resource Conservation Engineering	3(3-0)
LWCE-708	Planning and Design of Irrigation Systems	3(2-1)
LWCE-709	Irrigation Scheduling	3(2-1)
LWCE-710	Surface Irrigation Modeling	3(3-0)
LWCE -711	System analysis of Integrated water resources Engineering	3(2-1)
LWCE -712	Spate Irrigation Practices and Management	3(2-1)
LWCE -713	Design of Hydraulics structures	3(3-0)
LWCE-714	Water Quality Management	3(2-1)
LWCE-715	River Engineering	3(3-0)
LWCE -716	Water Resources Management	3(3-0)
LWCE-717	Climate Change and Water Resources	3(2-1)
LWCE-718	Watershed Management	3(2-1)
AET -719	Special Problems	1(1-0)
AET -720	Seminar	1(1-0)

DEPARTMENT OF FARM STRUCTURES AND ENVIRONMENTAL ENGINEERING
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Course No.	Course Title	Credit hours
SEE-701	Parameters and Methods of Environmental Impact Assessment	3(2-1)
SEE -702	Contamination Transport in Soils	3(2-1)
SEE -703	Design of Water Supply and Sewage	3(2-1)
SEE -704	Energy and Environment	3(2-1)
SEE -705	Environmental Control in Farm Structures and Landscaping	3(2-1)
SEE -706	Environmental Health Engineering	3(2-1)
SEE -707	Farm Waste Disposal	3(2-1)
SEE -708	Geo Environment	3(2-1)
SEE -709	Land Surveying	3(2-1)
SEE -710	Machine and Environment	2(2-0)
SEE -711	Air and Noise Pollution Control	3(3-0)
SEE -712	Theory and Design of Structures	3(2-1)
SEE -713	Wastewater Engineering	3(2-1)
AET -719	Special Problem	1(1-0)
AET -720	Seminar	1(1-0)

DEPARTMENT OF FARM MACHINERY & PRECISION ENGINEERING		
Course No.	Course Title	C. Hours.
FMPE -701	Advanced Power and Machinery	3(2-1)
FMPE-702	Agricultural Storage Engineering	3(2-1)
FMPE-703	Computer Modeling of Engineering Systems	3(2-1)
FMPE-704	Experimental Stress Analysis	3(2-1)
FMPE-705	Farm Machinery and Environment	3(2-1)
FMPE-706	Grain Preservation and Processing	3(2-1)
FMPE-707	Hydraulic Control Systems	3(2-1)
FMPE-708	Harvesting Machinery	3(2-1)
FMPE-709	Instrumentation and Machine Automation	3(2-1)
FMPE-710	Operations Research	3(2-1)
FMPE -711	Product Design and Development	3(2-1)
FMPE-712	Renewable Energy Engineering	3(2-1)
FMPE -713	Finite Element Analysis	3(2-1)
FMPE-714	Tillage and Traction Dynamics	3(2-1)
FMPE-715	Theory of Manufacturing Processes	3(2-1)
FMPE-716	Advanced Engineering Mathematics	3(3-0)
AET -719	Special Problems	1(1-0)
AET -720	Seminar	1(1-0)

Table: Courses Taught during the semesters Versus Outcome

Groups	Program Outcomes					
	knowledge and understanding	Knowledge application	Experiment and Data Analyzing skill	Professional Ethics	Communication Skills	Scientific Writing
SEE-701, SEE-704, SEE-707, LWCE 707	++++	++	+++	++	+++	+++
FMPE-708, FMPE - 701	++++	+++	+++	++	++	+++
FMPE-703 LWCE-710, FMPE-712, LWCE 717	++++	++++	++++	+++	+++	++++

+ = Relevant

++ = Relevant & satisfactory

+++ = Very relevant & Very satisfactory

++++ = Highly relevant & Highly satisfactory

- The curriculum fits very well and satisfies the core requirements for the program, as specified the respective accreditation body.
- The curriculum satisfied the general arts and professional and other discipline required for the program according to demands and requirements set by the Higher Education Commission.

Standard 2-2: Theoretical backgrounds, problem analysis and solution design must be stressed within the program's core material.

Element	Course	Course name
Theoretical Background	LWCE-707	Resource Conservation Engineering
	LWCE-717	Climate Change and Water Resources
	FMPE-705	Farm Machinery and Environment
	FMPE-707	Hydraulic Control Systems
	FMPE-708	Harvesting Machinery
	FMPE-709	Instrumentation and Machine Automation
	FMPE-715	Theory of Manufacturing Processes
	SEE -704	Energy and Environment
	SEE -705	Environmental Control in Farm Structures and Landscaping
	SEE -712	Theory and Design of Structures

Problem Analysis	LWCE-705	Groundwater Modeling
	LWCE-710	Surface Irrigation Modeling
	LWCE -712	Spate Irrigation Practices and Management
	FMPE -701	Advanced Power and Machinery
	FMPE-702	Agricultural Storage Engineering
	FMPE-703	Computer Modeling of Engineering Systems
	FMPE-704	Experimental Stress Analysis
	FMPE-710	Operations Research
	FMPE -713	Finite Element Analysis
	FMPE-714	Tillage and Traction Dynamics
	FMPE-716	Advanced Engineering Mathematics
	SEE-701	Parameters and Methods of Environmental Impact Assessment
	SEE -702	Contamination Transport in Soils
Solution Design	LWCE-702	Advance Open Channel Hydraulics
	LWCE-703	Advanced Hydrology
	LWCE-704	Advanced Groundwater Hydrology
	LWCE-706	Advanced Drainage Engineering
	LWCE-708	Planning and Design of Irrigation Systems
	LWCE-709	Irrigation Secluding
	LWCE -713	Design of Hydraulics structures
	LWCE-714	Water Quality Management
	LWCE -716	Water Resources Management
	LWCE-718	Watershed Management
	FMPE-706	Grain Preservation and Processing
	FMPE-712	Renewable Energy Engineering
	SEE -703	Design of Water Supply and Sewage
	SEE -709	Land Surveying
	SEE -710	Machine and Environment
	SEE -711	Air and Noise Pollution Control

Standard 2.4: The curriculum must satisfy general education of arts, professional and other discipline requirement of the program

Not applicable

Standard 2.5: Information technology component of the curriculum must be integrated throughout the program:

The students are given assignments where necessary to solve the engineering problems using advanced computer technologies

Standard- 2.7: Oral and written communication skills of the student must be developed and applied in the program.

- One seminars and one special problem each one credit hour are compulsory at the Post-graduate level.
- Assignments are given to students on specific titles (part of the course) which are presented orally and are submitted as written report, to increase their oral and written communication skills.
- Project presentations and Competitions are held to improve communication skills and presentation abilities.
- Regular research meeting are scheduled and research progress of post graduate students are evaluated in form of presentation and reports.

CRITERION 3

LABORATORIES AND COMPUTER FACILITIES

Standard-3.1: Laboratory manuals/documentation/instructions for experiments must be available and easily accessible to faculty and students

Labs are under constructions, and lab manual are being prepared.

Standard-3.2: There must be support personal for instruction and maintaining the laboratories.

Lab engineers are appointed for that purposes.

Standard-3.3: The University computing infrastructure and facilities must be adequate to support program's objectives.

Internet facilities should be available to postgraduate students

CRITERION 4

STUDENT SUPPORT AND ADVISING

Directorate of Students Affairs of the University organizes support programs, cultural activities for students and guides them in case of any problem. The university staff provides information regarding admission, scholarships, career opportunities, etc. The university arranges orientation programme for new students and guided tours to various departments.

Standard-4.1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner

- Courses are taught as per strategy and guidance provided by HEC and PEC.
- Subject courses are offered as per scheme of study of the department after approval of Academic Council of the university. Courses are offered by faculty trained in the relevant subject and as per their availability.
- Elective courses and minor courses are offered as per policy of HEC, PEC and University.

Standard-4.2: Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants.

- Courses are structured and decided among the faculty members in the departmental board of study meeting.
- Courses to be offered are decided before the commencement of semester
- The faculty members interact frequently among themselves and with students.
- Emphasis is given on effective interaction between the students and between students and teachers.
- Students are encouraged to ask question, give comments and take part in the discussions in the class.

Standard-4.3: Guidance on how to complete the program must be available to all students and access to qualified advising must be available to make course decisions and career choices.

- Students are informed about program requirements through office of chairperson of the department and through personal communication of teachers with them.
- The counseling of students is continuous process and students are free to contact relevant teachers whenever they face any professional problem.
- Students are also facilitated for interaction with faculties/scientists in other universities and research organizations whenever they need and there is open option for the students to get membership of professional societies.

CRITERION 5

PROCESS CONTROL

Standard-5.1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

- The process of admission is well established and followed as per rules and criterion set by University both for undergraduate and post graduate programs.
- Admission criteria is revised every year before the announcement of admissions

Admission requirements

M.Sc Agricultural Engineering (2 year)

As per requirements set by Pakistan Engineering council, the Faculty admits the candidates to M.Sc Agricultural Engineering programs with the following qualifications;

- i. Sixteen years of education with the last degree in B.Sc Agricultural/Mechanical/Civil/Electrical/Food/Energy/Water Resource Engineering.
- ii. The minimum CGPA should be 2.5 (out of 4.0 in the Semester System) in the last degree.
- iii. Entry test score conducted by the University with a minimum 60% will be required at the time of admission.

Standard-5.2: The process by which students are registered in the program and monitoring of students progress to ensure timely completion of the program must be documented. This process must be periodically evaluated to ensure that it is meeting its objectives

- Registration of students is done once every year at the time of admission through a well-managed comprised system called “Campus Management System (CMS)”.
- Students are evaluated through Mid, Final and Practical exams and through written assignments and oral presentations.
- Students are evaluated through the result of each course for each semester. If the students fulfill the criteria of the University (a specific CGPA after each semester) they are promoted to the next semester.
- In general, the students are registered on competition bases keeping in view the academic and research standards.

Standard-5.3: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institution mission statement. These processes must be periodically evaluated to ensure that it is meeting with its objectives

- The University follows the recruitment policy and rules recommended by HEC and PEC.

- Posts are advertised in national newspapers and university website, and applicants are short-listed on the basis of experience, qualification, publications and other qualities / activities as fixed by the University.
- The candidates are interviewed by the University Selection Board and principal and alternate candidates are selected.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Induction of new candidates depends upon the number of approved vacancies.
- Inductions are being done on Tenure Track System (TTS) as well as on BPS.
- HEC also supports appointment of highly qualified members as foreign faculty professor, national professors and deposes them in various departments.

Standard 5-4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives

- Periodical update of curriculum is done depending upon the requirements, innovations and new knowledge generated.
- Books related to various filed of agricultural engineering are available in University library where documentation, photocopying and internet facilities are also available. The faculty library is under construction, where all the curriculum and helping books will be available with internet faculty.
- Students are provided class notes, photocopies of slides/transparencies and soft copies of helping materials as well.
- All efforts are made to impart the course material and knowledge to meet the objectives of the curriculum.

Standard 5-5: The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

- The evaluation is conducted according to the examination system of the University which is clearly documented.
- The evaluation procedure consists of quizzes, mid and final examinations, practical, assignments and reports, oral and technical presentations.
- The controller of examinations announces the date regarding commencement of examination and other relevant information. After each semester, the controller office notifies results of the students.

- The minimum pass marks for each course is 40% for Master of Philosophy degree in theory and practical, separately.
- In theory, weightage to each component of examination is as prescribed here under:

Mid Examination	30%
Assignments	10%
Final Examination	60%

- Grade points are as follows

Marks Obtained	Grade	Grade point	Remarks
80-100 %	A	4	Excellent
65-79 %	B	3	Good
50-64 %	C	2	Satisfactory
50-40 %	D	1	Pass
Below 40 %	F	0	Fail

- Gold medals are awarded to the students who secure highest marks.
- Degrees are awarded to the students on the convocation that is held every year

CRITERION 6

FACULTY

6-1: There must be enough full time faculty who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.

Currently there are four faculty members available for M.Sc (Hons) programs. All these faculty members are foreign Ph.D with great experience of teaching, research and field.

Standard 6-2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place. Effective Programs for Faculty Development

- In each semester mixed courses are offered according to work load of faculty members
- Division of students for supervision is made on the basis of faculty expertise and research interests
- One faculty in on leave for Ph.D under faculty development program.
- Faculty members attended workshops/seminars outside and within university
- Library and internet facilities are available for scholarly work and academics improvement
- Support for attending conferences can lead to enhancement of research initiatives at the university.
- There is university-funded program, which provides financial support for research projects by the young faculty members and almost all faculty members heading some research projects.
- Faculty program is evaluated as per requirement or when needed.
- Faculty members are provided with different academic, research and training facilities as per availability in the university system.

Standard 6-3: All faculty members should be motivated and have job satisfaction to excel in their profession.

- The young faculty is mobilized by timely back up and appreciation by the senior faculty members. Avenues for research funding are provided through university research fund.
- Motivation and encouragement are among the main tools for the better performance of the faculty team members. Faculty members are contented by the initiatives undertaken

by the management in this regard. Formal and informal coaching by the senior faculty members, different entertainment events, field visits and excursions etc play a vital role in motivating the young faculty members.

Name	PROFESSOR DR RAI NIAZ AHMAD Fathers' name: Rai Muhammad Amin Date of Birth: May 22, 1958 
Personal	
Experience	Academic Experience: 31 years Administrative Experiences: Vice Chancellor, PMAS-Arid Agriculture University, Rawalpindi (2013 – Contd.) Experiences at UAF in Recent Past: • Dean, Faculty of Agri. Engineering & Technology (2009 – 2013.) • Director, Water Management Research Centre (2003 – 2013.) • Principal Officer, Engineering & Construction Dept. (2007 –2013) • Principal Officer, Repair Cell (Vehicles) (2011-2013) • Chairman, Structures & Environment Engineering Dept. (2011 - 2013) • Chairman, Fiber & Textile Engineering Dept. (2007 –2013) • Chairman Dept. of Irrigation & Drainage 2 years • Principal Officer Estate Management Dept. (2005 to 2009) • Deputy Director Students Affairs 3 years • Associate Hall Warden 3months • Superintendent, Student Hostels 3 years • Assistant Superintendent, Hostels 6 years International Experiences (Academics) • Post Doc Scholar at Arid Land Research Centre, Tottori University (Japan) (1997 to 1998) • Post Doc Scholar at Centre for South East Asian Studies, Kyoto University (Japan) (1996 to 1997) • Post Doc Scholar at Iowa State University (USA) (1987 to 1991) Management Experiences • Principal Officer Estate Management Dept., UAF (2005 to 2009) • Convener Golden Jubilee Festival Exhibition Committee (2011 to 2012) • Convener National Conference on Setting Standards for the 21st Century for Pakistan: HEC organized event 2011 • Leader UAF Delegation visiting Australia under Aus. Leadership Award 2010 • Member School Board, UAF 4 years • Convener various Standing Committees for University Development projects at main campus as well as sub campuses 4 years • Member UAF Campus Committee 5 years • Member several other Management Committees on different occasions organized at UAF

Honor and Awards	• Recipient of President’s Medal for Technology-2009 • Recipient of International Commission on Irrigation and Drainage (ICID) “WATSAVE Award-2009 of Technology” in New Dehli, India alongwith cash award of US\$ 2000/- • Recipient of 12th Star Award 2002 (South Asia Publications) • Recipient of “The Reverend P.T. Taiganides Award” as an Outstanding Graduate Student in Agricultural Engineering at Iowa State University, Ames Iowa, USA with cash award of US\$ 100/- • Recipient of “Research Assistantship” at Iowa State University, Ames Iowa. • JSPS (Japanese Society for the Promotion of Science) Research Fellow for Post-Doctoral studies (1996 to 1998). First Pakistani who won the JSPS fellowship on <u>Open Competition Basis</u>. • Australian Leadership Award Fellowship (ALA-F) 2010 • Merit scholarship holder during B.Sc. Agri. Engineering				
Memberships	Membership of Learned Societies • Member, American Society of Agricultural Engineering (ASAE) • Member, Asian Association of Agricultural Engineers (AAAE) • Member, Japanese Society of Irrigation, Drainage and Reclamation Engineers. • Member, Pakistan Engineering Council (PEC) • Member Pakistan Society of Agri. Engineers (PSAE) • Member, Delta-Sigma-Gamma, ISU, USA • Member, The Institution of Engineers, Pakistan (IEP) • Member, Faisalabad Foundry Owners Trade Group Membership of Editorial / Review Boards of National Journals • Member, Editorial Board of Pakistan Journal of Water Resources, PCWRWR-Islamabad • Member, Editorial Board of Journal of Engineering and Applied Sciences, N.W.F.P, Peshawar University • Member, Editorial Board of Zari Digest, University of Agriculture, Faisalabad • Member, Editorial Board of Journal of Sindh Agriculture University Tandojam, Sindh				
Graduate Students Postdocs Undergraduate Students	• M.Sc. Students 30 students • Ph.D. Students (1 completed 3 students in-progress)				
Research Grants and Contracts	<i>Sr. #</i>	<i>Project title</i>	<i>Budget (Rs. Million)</i>	Management responsibility	<i>Status</i>
	1	Optimizing canal and groundwater	88.3	National Project	On-going

		management; ACIAR funded project Collaborators: CSU-Australia, UAF, PIDA, PID		Co-coordinator	Jan 2008– July 2013
	2	On-Farm Research & Development Component of Rehabilitating LCC System; JICA-Japan funded project	75.5	Project Director	On going Jan 2007- Mar 2012 (Revised PC-1 for another 3 years period has been approved by CDWP)
	3	Watershed Rehabilitation and Irrigation Improvement in Pakistan: Demonstration and Dissemination of Improved Irrigation Technologies to Help Rural Farmers-Central Punjab Component; USDA funded project	46.0	Project Director	On-going Oct 2011- Sep 2014
	4	Improving Irrigation Water Use in the Punjab Province of Pakistan by Raising Flexibility and Integrating Surface and Groundwater Resources; German- DAAD funded project. Collaborators: ZEF-Bon University Germany, UAF, PIDA	14.4	Principal Investigator	On-going Jan 2012- Dec 2014
	5	Design and Development of Biogas Plants at UAF	5.7	Principal Investigator	On-going Oct-2012- Dec-2013
	5	Resource Conservation Technologies- Rice Wheat Consortium (RWC) for the Indo-Gangetic Plains; CIMMYT project	0.5	Principal Investigator, UAF part	Completed
	6	Developing Guidelines for Improving Water Use Efficiency and Testing of Locally Developed Water Soluble Fertilizers under Drip Irrigation System for Various Crops; PARB funded	31.0	Project Manager	On-going Feb 2012- Feb 2015

		project			
	7	Operation and Management of Drip Irrigation System at PARS; UAF funded project	3.9	Principal Investigator	On-going July 2010- June 2013
	8	Drip Irrigation System for Fruit Orchards and Row Crops for Research and Demonstration Purpose; UAF funded project	16.0	Principal Investigator	On-going July 2011- June 2014
	9	Development of Low Cost Drip Irrigation Spares; UAF funded project	0.4	Principal Investigator	On-going July 2011- June 2012
	10	Development of Modified Multi-Crop Bed Planter; UAF funded project	0.3	Principal Investigator	On-going July 2011- June 2012
	11	Dissemination of Raised Bed Technology to Address Water Shortages in Irrigated Areas; UAF funded project	2.0	Principal Investigator	Completed
	12	Testing and Adoption of Improved Raised Bed Technology to Enhance Crop and Water Productivity; HEC funded project	1.7	Principal Investigator	Completed
	13	Management Aspects of Surface and Groundwater Resources for Irrigated Areas; ALP-PARC funded project	2.5	Principal Investigator	Completed
	14	Controlled Drainage for Crop Production and Water Quality Enhancement; PSF funded project	0.6	Principal Investigator	Completed
	15	Development and Testing of Solar Saline Water Evaporator; UAF funded project	0.1	Principal Investigator	Completed
	16	Comparison of Irrigation Systems for Water Use Efficiency; UAF funded project	0.1	Principal Investigator	Completed
	17	Riverine Areas Development Project; UAF funded project	0.05	Principal Investigator	Completed

	18	Studies for Evaluation of Drainage Water Reuse Options for Operation of Tile Drainage Projects in Pakistan- Lysimeter studies	1.0	Principal Investigator	Completed
	19	Integrated Land and Water Management Project; NARC-PARC funded project	1.0	Principal Investigator	Completed
	20	Feasibility of Using ICI Sludge as a Substitute of Organic Fertilizer; ICI funded project	0.4	Principal Investigator	Completed
	21	Development of Low Cost Spraying Machine for Orchards; funded by local industry	0.05	Principal Investigator	Completed
	22	Use of Drainage Water for Crops on Normal and Salt-affected soils without Disturbing Biosphere Equilibrium; IWASRI funded project	1.5	Principal Investigator	Completed
	23	Pilot Area of Real Life Project (Engineering Component); PARC funded project	4.5	Principal Investigator	Completed
	24	Drainage Model for Crop Production Enhancement and Water Quality Investigation; PSF funded project	0.7	Principal Investigator	Completed
Other Research or Creative Accomplishments	• Four-Row Wheat Bed Planting Machine (ICID Award winning development) • Six-row Wheat Bed Planting Machine • Maize and Cotton Bed Planter • Solar Operated Indigenous Mini-tubewell • Ring Automatic Irrigation System for Orchards • Solar Operated Drip & Raingun Systems • Drip Irrigation Mobile Power Unit • Set of Lysimeters “A Physical Drainage Model” • Orchard Spraying Machine. • Solar Saline Water Evaporator with Solar Track System • Clay Porous Cup System for the collection of soil water samples • Installation of Raingun Sprinklers System in the experimental area of I&D Dept. and WMRC • Installation of High Efficiency Irrigation Systems at the Experimental area of WMRC				

Name	PROF. DR. MUHAMMAD YASIN Fathers' Name: CH. NOOR MUHAMMAD Date of Birth: 16th June, 1952 Domicile: Sheikhpura, Punjab 
Personal	Professor/Incharge Faculty of Agricultural Engineering & Technology, PMAS Arid Agriculture University, Rawalpindi, Pakistan Address (Postal): Faculty of Agricultural Engineering & Technology, PMAS Arid Agriculture University, Rawalpindi, Pakistan Address (Permanent): Chak No 16/69 P.O Syedwala Teh & Dist Nankana Sahib. Cell: +92 333 6104565 E-Mail: myasindga@gmail.com
Experience	❖ Director General Agriculture (Field) (2008 to 2012) Field Wing of Agriculture Department, Government of the Punjab ❖ Director AMRI (2002 to 2008) Agricultural Mechanization Research Institute (AMRI), Government of the Punjab ❖ Agricultural Engineer (Research) (1978 to 2002) AMRI, Government of the Punjab ❖ Lecturer (1978-1978) Faculty of Agri. Engineering & Technology, University of Agricultural, Faisalabad ❖ Research Assistant (1981-1982) Agricultural Engineering Department, University of Nebraska, Lincoln, USA ❖ Research Assistant (1988-1991) Biological Systems Engineering Department, University of Nebraska, Lincoln, USA SPECIAL WORK EXPERIENCE (Consultant/Advisor/HOD/Chairman) ❖ Worked as Head of Department (Director General, Agricultural Engineering (Field Wing) and Director AMRI) for 11 years w.e.f. from 2002 to to-date. ❖ Performed the functions / duties of Management of Technical, Administrative and Financial matters of staff (5500 Nos.) and exercised all the administrative and financial powers.

	❖ Acted as advisor / consultant to Board of Studies Faculty of Agricultural Engineering, University of Agriculture Faisalabad as detailed below; • Member Board of Studies, Deptt. of Structures & Environmental Engineering, University of Agriculture, Faisalabad (1997 to 1999) • Member Board of Studies, Department Farm Machinery & Power, University of Agriculture, Faisalabad (2000 to 2003) • Faculty Board Member, Faculty of Agricultural Engineering & Technology, University of Agriculture, Faisalabad (2005 to to-date) ❖ Member Departmental Standardization Committee for procurement of machinery and equipment for Agriculture Department, Government of the Punjab. ❖ Worked as Advisor / Convenor for Testing & Evaluation of different Machinery & Equipment of Punjab and Federal Government. ❖ Advisor for Pakistan Agricultural Machinery Industry and Manufacturers Associations (PAMIMA), Faisalabad (2008 to date) ❖ Advisor for Foundry & Engineering Industry Group, Faisalabad (2008 to date) ❖ Technical Services to Tractor Manufacturing Industries such as Millat & Al-Ghazi Ltd. Co. (2002 to date) ❖ Provided Industrial Extension Services for Agriculture Machinery Design, Fabrication, Evaluation & Promotion (2002 to date)
Honor and Awards	❖ Received Widaman Trust Distinguished Award-1989-90, Lincoln, Nebraska USA ❖ Received Widaman Trust Distinguished Award-1990-91, Lincoln, Nebraska USA ❖ Best Paper Award-PSAE (Pakistan Society of Agricultural Engineering) 1985, Pakistan ❖ Best Paper Award-PSAE (Pakistan Society of Agricultural Engineering) 1986, Pakistan ❖ Cash Award by Engineering Development Board (EDB), 2006-Pakistan ❖ Letter of appreciation for Development of improved Saw-Gin, Machine by EDB, 2005-Pakistan ❖ Letter of appreciation by Pakistan Standards Institution, 1987, Pakistan ❖ Letter of appreciation by Secretary Agriculture-1988, Punjab, Pakistan
	❖ Executive Body Member of Pakistan Engineering Council (2011-13) ❖ Vice President PSAE (2010 to continue) ❖ General Secretary PSAE (2005 to 2010)

Memberships	❖ Editor for PSAE Annual Journal (2000 to 2006) ❖ Member Pakistan Engineering Council -Accreditation committee for B.Sc. Agri. Engineering / M.Sc. Agri. Engineering Course Evaluation Committee ❖ Member National Curriculum Revision Committee in Agricultural Engineering constituted by Higher Education Commission (HEC) Islamabad ❖ Editor / Member Board of Editors of Journal of Agriculture Research, Government of the Punjab ❖ Auditor for Pakistan Society of Agricultural Engineers (PSAE) (1984 to 1985)																			
Graduate Students Postdocs Undergraduate Students	<table><tr><td>Sr #</td><td>Year</td><td>Degree</td><td>Name</td></tr><tr><td>1</td><td>2015</td><td>M.Sc (Hons) Agricultural Engineering</td><td>Tariq Maqsood</td></tr><tr><td></td><td></td><td></td><td></td></tr></table>					Sr #	Year	Degree	Name	1	2015	M.Sc (Hons) Agricultural Engineering	Tariq Maqsood							
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Publications																				
Research Grants and Contracts	<table><tr><th>Sr #</th><th>Date</th><th>Title</th><th>Agency/Organization</th><th>Total Award Amount (Rupees)</th></tr><tr><td>1</td><td>Oct, 2015-Sep. 2016</td><td>Small Size Portable Biogas Plant for Household</td><td>ORIC, PMAS-Arid Agriculture University, Rawalpindi</td><td>175,000</td></tr><tr><td>2</td><td>Oct, 2015-Sep. 2016</td><td>Efficient and Low Cost Household Biogas Plant</td><td>ORIC, PMAS-Arid Agriculture University, Rawalpindi</td><td>400,000</td></tr></table>					Sr #	Date	Title	Agency/Organization	Total Award Amount (Rupees)	1	Oct, 2015-Sep. 2016	Small Size Portable Biogas Plant for Household	ORIC, PMAS-Arid Agriculture University, Rawalpindi	175,000	2	Oct, 2015-Sep. 2016	Efficient and Low Cost Household Biogas Plant	ORIC, PMAS-Arid Agriculture University, Rawalpindi	400,000
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Other Research or Creative Accomplishments	The following machines / technologies were developed and adopted by the local manufacturers / industries for mass production and distribution to farmers; ❖ Biogas plants (Small, Medium and Commercial Size)																			

Name	PROF. DR. JEHANGIR KHAN SIAL 
Personal	Faculty of Agricultural Engineering and Technology PMAS-Arid Agriculture University Rawalpindi. Phone; +51-9062104 Cell: 0300-7994060 Fax: +51-9290160
Experience	• 36 years (Teaching, Research and Administration) • Chairman Department (9 years) • Director Research (3-¹/₂ years) • Dean Faculty of Agri. Engg. & Tech. • Member Syndicate • Member Academic Council, Advanced Studies and Research Board, and Senate
Honor and Awards	• Awarded Merit Scholarship throughout university studies. • Awarded Canadian Council Scholarship for M.Sc. Studies at Alberta Canada. • Awarded Central Overseas Scholarship (Pak) for Ph.D. Studies at Iowa, USA. • Awarded “Honor Shield” at the International Agro-envirom Symposium-2000 by Governor of Tekirdag, Turkey. • Awarded “Environmentalist of the Year 2002 Award” along with a shield and a cash prize of Rs. 5000/- by Mascon Associates, Lahore. • Awarded Gold Medal by International Water Center Charles Sturt University Wagga, Wagga NSW, Australia
Memberships	• Life Member Pakistan Society of Agricultural Engineers. • Life Member Pakistan Engineering Council. • Member Institution of Engineers, Pakistan. • Life Member Society for the Advancement of Agricultural Sciences. • Member International Energy Foundation, Canada. • Member Gamma-Sigma-Delta: The Honor Society of Agriculture, USA.
Graduate Students Postdocs Undergraduate Students	1. M.Sc. (18 students) 2. Ph.D. (2 students)

Name	DR. MUHAMMAD UMAIR Fathers' Name: Sher Muhammad Date of Birth: 15 Feb 1983 Domicile: Punjab (Khanpur, district Rahimyar Khan) 
Personal	Address (Postal): Faculty of Agricultural Engineering & Technology, PMAS Arid Agriculture University, Rawalpindi, Pakistan Address (Permanent): H # B-IV 728/B, Doaba Colony, Khanpur, Distt. Rahimyar Khan Cell: +92 333 0375157 E-Mail: umairkpr@uaar.edu.pk
Experience	- Working as Assistant Professor (BPS-19) in the Faculty of Agricultural Engineering and Technology, PMAS-Arid Agriculture University, Rawalpindi, since 28 August 2014. Three years teaching experience as Lecturer in the Faculty of Agricultural Engineering and Technology, University of Agriculture, Faisalabad. (22-09-2005 to 15-09-2008) Subject experience: - Engineering Drawing - Engineering Statics and Engineering Dynamics - Strength of Materials Researcher at Tokyo University of Agriculture and Technology (April 2011 to March 2012) and (April 2014 to August 2014) Assistant Superintendent Sir Syed Hall, University of Agriculture, Faisalabad (2007-2008) Supervisor Faculty Computer Lab., UAF. (2007) Incharge Engineering Mechanics Lab., UAF. (2006-2008) Member of NVM (National Volunteer Movement). Visit the earthquake affected areas of Pakistan (8th of October 2005) as a volunteer, analyst and as a member of a project on "Disaster within a Disaster". - Work as a volunteer after earthquake in Japan 2011 and visited different places in Tohoku area with Muslim and Japanese welfare organizations. - Volunteer in charge of the Muslim community in the Tokyo University of Agriculture and Technology, Japan. - Volunteer in charge of Engineers Blood Foundation at University of Agriculture, Faisalabad.

Honor and Awards	• First position in B.Sc Agricultural Engineering (Gold Medalist) • Gold Medal from S.M.Elahi Organization in B.Sc Agricultural Engineering • University Merit Scholarships throughout the B.Sc Agri. Engineering • Al-Noor Scholarship throughout the B.Sc Agri. Engineering • MEXT scholarship from Japan Government for Master program in Japan • MEXT scholarship from Japan Government for Ph.D program in Japan
Memberships	• Pakistan Engineering Council AGRI/2502
Brief Statements of Research Interest	Solar Adsorption Refrigeration System with CPC Collectors Solar adsorption refrigeration is promising technology, especially in the remote areas and in the developing countries because it is directly driven by solar energy without involving electricity and moving parts like pumps. Therefore, it is technologically possible and socially feasible in the areas where electricity is not enough, but solar energy is rather easy to obtain. Pakistan has great potential for practical implementation of such technology because ALLAH has given us the abundance of solar energy that can be used efficiently for cooling purpose as well. Keeping in view the current energy crises in Pakistan, this research will open new horizons as an alternative source for cooling and refrigeration purposes using only God gifted solar energy and environment friendly working pairs (like silica-gel/water).
Publications	1. M. Umair, A. Akisawa, and Y. Ueda, Performance Evaluation of a Solar Adsorption Refrigeration System with a Wing Type Compound Parabolic Concentrator, <i>Energies</i>, Vol. 7, No. 3, pp. 1448–1466, Mar. 2014. IF (2.077). 2. M. Umair, A. Akisawa, and Y. Ueda, Simulation Study of Continuous Solar Adsorption Refrigeration System Driven by Compound Parabolic Concentrator, <i>The Open Renewable Energy Journal</i>, Vol. 1, No. 1, pp. 1–12, May 2014. 3. M. Umair, Achmad Faisal Dwiputro, I Gusti Agung Bagus Wirajati, Y. Ueda, and A. Akisawa, Design and Investigation of Heat Transfer in a New Adsorbent Bed with CPC for Solar Adsorption Refrigeration Systems, <i>Heat Transfer Engineering</i>, Accepted on February 9, 2015. (IF =0.898). 4. I.G.A.B. Wirajati, M. Umair, K. Enoki, Y. Ueda, and A. Akisawa, Three-stage Adsorption Cycle with Three-beds Adsorption Chiller, <i>Trans. of the JSRAE</i>, Advanced published date: September 30, 2014. 5. A. Sattar, C. Arslan, C. Ji, K. Chen, A. Nasir, H. Fang, and M. Umair,

	“Optimizing the physical parameters for bio-hydrogen production from food waste co-digested with mixed consortia of clostridium,” <i>Journal of Renewable and Sustainable Energy</i>, vol. 8, no. 1, p. 013107, Jan. 2016. (IF =0.904) 6. A. Sattar, C. Arslan, C. Ji, S. Sattar, M. Umair, S. Sattar, and M. Z. Bakht, “Quantification of temperature effect on batch production of bio-hydrogen from rice crop wastes in an anaerobic bio reactor,” <i>International Journal of Hydrogen Energy</i>, vol. 41, no. 26, pp. 11050–11061, Jul. 2016. (IF =3.205) 7. M. Sher, M. Mansoor, N. Latif, Z. Islam, Amanullah, and M. Umair, “Impact Assesment of Soil Amendments on Soil Capping Mungbean Production Using Central Pivot Irrigation System in Clayey Soils,” <i>Pakistan Journal of Agricultural Research</i>, accepted: April 18, 2016. CONFERENCES AND PROCEEDINGS 8. A. Faisal, M. Umair, K. Enoki, Y. Ueda, and A. Akisawa, “Analysis of Heat Transfer in Adsorbent Bed combined with compound parabolic concentrator,” presented at the The 20th Conference of Japan Society of Mechanical Engineering Kanto Region, Tokyo University of Agriculture and Technology, Tokyo, Japan, 2014. 9. I.G.A.B. Wirajati, M. Umair, K. Enoki, Y. Ueda, and A. Akisawa, “Three Stage Adsorption Cycle with Three Adsorption Beds”, presented at 2014 JSRAE Annual Conference, Saga University (Honjo Campus, Saga Prefecture), Japan, 2014 September 10-13.												
Research Grants and Contracts	<table><tr><th>Sr #</th><th>Date</th><th>Title</th><th>Agency/Organization</th><th>Total Award Amount</th><th>Remarks</th></tr><tr><td>1</td><td>Oct, 2015-Sep. 2016</td><td>Design and Development of Portable Solar Dryer for Fruits and Vegetables</td><td>ORIC, PMAS-Arid Agriculture University, Rawalpindi</td><td>250,000 Rupees</td><td>Funded and in Progress</td></tr></table>	Sr #	Date	Title	Agency/Organization	Total Award Amount	Remarks	1	Oct, 2015-Sep. 2016	Design and Development of Portable Solar Dryer for Fruits and Vegetables	ORIC, PMAS-Arid Agriculture University, Rawalpindi	250,000 Rupees	Funded and in Progress
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CRITERION 7

INSTITUTIONAL FACILITIES

Standard- 7.1: The institution must have the infrastructure to support new trends in learning such as e-learning:

The faculty building is under construction that will include all the facilities necessary and required by HEC and PEC. However, currently students use the University main library where the facility of internet, e-library and access to read and download the scientific publications is available that is very helpful for the high quality education and producing research of international standard.

Standard- 7.2: The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel

The University central library has limited number of books, journals and periodicals related to Agricultural Engineering. The main library is equipped with the facility of internet and e-library but it does not have space capacity as per number of students in the University and there is no catalogue system for searching the books and other reading materials. Department itself is developing its own library with up-to-date infrastructure, facilities and with the availability of recommended and relevant books.

Standard- 7.3: Class-rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities

- The faculty is using the infrastructure of other faculty as its own building is under construction. Currently, the class rooms are equipped with CCTV cameras and multimedia facility for effective teaching.
- The numbers of classrooms are not enough with respect to number of students.
- Similarly, at present the department has shortage of laboratories and present labs facilities are not adequate.
- The temporary computer lab is not equipped with internet and printing facility.
- All the faculty members are provided offices but there is no internet facility because of that they are facing problem in research, teaching and other office matters as well.
- The faculty dean office is not adequate according to the requirement and working environment.

CRITERION 8

INSTITUTIONAL SUPPORT

The university administration has been striving to strengthen and up-gradation of all the departments, and establishing new Faculties and Institutes. The university is also trying to attract highly qualified faculty members. The university is also hiring on Tenure Track System (TTS) which would be helpful in pooling up better human resources as faculty members.

Standard 8-1: There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars

The faculty has sufficient financial resources for infrastructure, Labs and Libraries and hiring new competent faculty members. However, as whole there are no attractive packages or facilities for faculty member on university level for example

- There is no proper maintenance/ documentation and investment of GPF deducted from salary. Similarly no benefit/ welfare from BF deduction available to faculty.
- Very meager benefit for faculty children's education at university level is available.
- The University has very limited residential facilities for faculty members at university campus and majority of faculty members remain in waiting list for a long time.
- There is no facility for schooling for employees children. The university can collaborate with DPS (Division Public School) for specific seats for University faculty members at subsidize fees.

Standard 8-2: There must be an adequate number of high quality graduate students, research assistants and Ph.D. students.

The intake of B.Sc. (Hons) and M.Sc (Hons) students is once in a year. However Ph.D. students are enrolled in each semester. A strict merit policy is applied during admission that comprises of entry test and interview.

Standard- 8.3: Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities.

Although administration provides adequate financial resources, yet there is need to increase budget to carry out advance level research.

ANNEXURE-A

PERFORMA-2

FACULTY COURSE REVIEW REPORT

ANNEXURE-B

PERFORMA-4

RESEARCH STUDENTS PROGRESS REVIEW

ANNEXURE-C

PERFORMA-5

FACULTY SURVEY