PIR MEHR ALI SHAH
ARID AGRICULTUREUNIVERSITY
RAWALPINDI

DEPARTMENT OF BIOCHEMISTRY

B.S Degree Program

Self Assessment Report
(2012-2014)

Program Self Assessment Team

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CONTENTS

Introduction

The discipline of Biochemistry in PMAS-AAUR was initially introduced under the umbrella of the Department of Biological Sciences in 1998 and as a separate Department in 2003. Different ongoing degree programs in Biochemistry are; Ph.D, M.Phil, M.Sc. and BS initiated in 2001, 1998, 2006 and 2011 respectively. The program of Biochemistry is designed to provide necessary skills and knowledge in applying biochemical and molecular approaches for solution of problems related to health, agriculture, environment and biotechnology.

The Department of Biochemistry has the privilege to recruit highly qualifiedand competent faculty with doctorate/post doctoral experience from reputable International Universities/Institutes. There are eight regular faculty members having specialization in the field of Biochemistry, Environmental Biochemistry, Molecular Biology, Biotechnology, Protein Chemistry and Enzymology. Presently the department has a total enrollment of strength of 412 students in different degree programs.

The curriculum of Biochemistry is designed based on international standards with highly competitive and advanced courses. The courses offered provide students an extensive exposure of Biochemistry, Molecular Biology and Biotechnologywithupdates on future challenges.With the latest development in the field of Biochemistry, Molecular Biology and Biotechnology, the Department regularly updates its curriculum by keeping in view the recent advances in Biochemistry. As a result the Department has established good repute in a very short period of time. Under Biochemistry discipline, the department is not only conducting its own degree programs but also offering compulsory taught courses to various departments in FoS, FC&FS and FV&AS at BS, M.Sc, MS, M.Phil and PhD levels. Under Biochemistry discipline a total of 872 graduates have been produced till 2014 including 742 M.Sc, 108 M.Phil and 22 PhDs.

All Biochemistry faculty members are HEC approved supervisors for Indigenous Ph.D. programme. Under this program 11 PhD scholars have successfully completed their degrees while 24 are at various stages of their research work. Besides faculty members have earned 20 personal research grants from various funding agencies of which 9 research projects are already completed, 11 are ongoing while 11 are submitted/under review. The faculty has 483 publications including 380 full length research publications in impact factored journals, 200 other publication and 3 books. The total impact factor of the Biochemistry faculty is 486.

Along with regular academic activities, the Department of Biochemistry has the tradition to conduct scientific conferences/workshops/symposia/seminars to train young scientists with modern techniques in Biochemistry, Molecular Biology and Biotechnology. Uptill now the department has organized 3 conferences and 13 workshops/seminars. To strengthen the academic and research activities, Biochemistry faculty has established active international scientific collaborations with University of California Davis (USA), Iowa State University (USA), University of Michigan (USA), Fayetteville State University (USA), Reading University (UK), University of Waterloo (Canada), McMaster University (Canada), University of Salzburg (Austria), Uppsala University (Sweden), Ghazi University (Turkey), Institute of Agra Technik Potsdam (Germany), Denmark Technical University (Denmark), University of Bologna (Italy). The Department has developed active collaborations with large number of National Universities and Research Institutes.

SECTION 1:

Components of Self-assessment Process:

This Self-assessment Report has been prepared on the basis of following eight criteria as described in Self-assessment Manual.

Criterion-1: Program Mission, Objectives and Outcomes

Mission Statement of BSBiochemistry:
To produce intellectual, highly committed, and diverse scientific manpower

Standard 1-1: Documented Measurable Objectives

Following objective are set for the BS-Biochemistry program

1. To carry out teaching up-to the latest concepts and internationally set standards
2. To provide hands-on experimental/laboratory based training
3. Tobuild strong scientific foundation with skills for scientific careers

Expected Outcomes

1. Highly competent BS Biochemistry graduates in the field of Biochemistry
2. Graduates capable of applying the gained knowledge of Biochemistry in practical fields and research activities.
3. Well trained graduates with high employment opportunities.

Main Elements of Strategic Plan to Achieve Mission and Objectives

1. Setting up of well-equipped specialized laboratories depending on the available resources.
2. Development of a sound teaching systemfor the award of degrees based on the experience and vision gathered from world reviews, literature, innovations, proceedings, and symposia etc
3. Designing and constantly updating the curricula involving core subjects, elective subjects and specialized areas and study tours.

TABLE-1: PROGRAM OBJECTIVES ASSSESSMENT

S. #	Objective	How Measured	When Measured	Improvement Identified	Improvement made
1	To carry out teaching up-to the latest concepts and internationally set standards	On the basis of evaluation by students.	It is a continuous process as per requirement	Course Contents	Course contents time to time and more audio visuals aids are being improved
2	To provide hands-on experimental/laboratory based training	On the basis of evaluation by students, alumni survey and employers survey	At the end of semester and after completion of degrees	Regular update curriculum	Revision of curriculum as per requirement. Scheme of Studies revised from time to time
3	To build strong scientific foundation with skills for scientific careers	During routine exchange of various discussins, alumni survey and employers survey	At the time of seminars and presentations and after completion of degrees	Presentations and write up skill	Presentations, seminars, communication skill development

TABLE-2 STANDARD 1-2: OBJECTIVES *VS* OUTCOMES

	Objectives			
	Sr. No.	**1**	**2**	**3**
	1	+ + +	++	++
	2	+++	+++	+++
Outcomes	**3**	++	+++	+++

Key: ++ = Relevant

+++ = Highly Relevant

The program outcomes are fully supportive to program objectives mentioned above. Outcomes are based on actual details obtained from department documents.

PROGRAM ASSESSMENT RESULTS

It is important for student progress to be consistently evaluated and reported in relation to curricular outcomes. Information derived from the fair assessment and evaluation of students provides valuable information on the student success in relation to curriculum expectations and identifies areas of strength and challenges at the student, department and university level. At the same time, it is also important to get the feedback from the students in form of course/instructor assessment. These assessment via Performa no 1 and 10 (as per PMAS-AAUR rules) serves as an overarching framework that provides a way to structure, evaluate, and improve the learning experience of our students across all programs being offered by Department of Biochemistry.

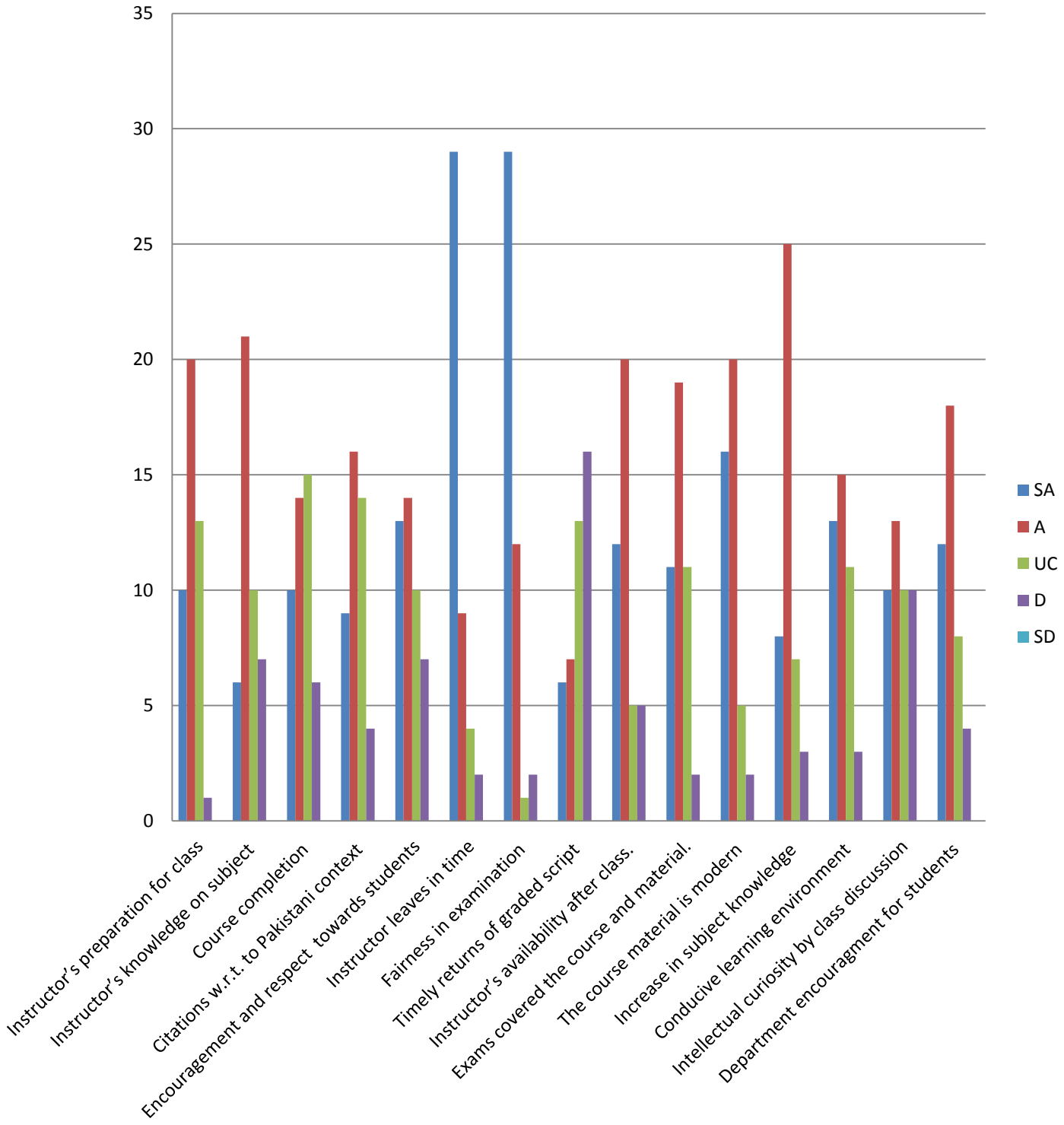
The 4th SAR for B.S programme assessment is divided into four sections;

1. Assessment results of Fall, 2012
2. Assessment results of Spring, 2013
3. Assessment results of Fall, 2013
4. Assessment results of Spring, 2014

Each assessment covers a semester and is further divided into two sections, which deals with Performa no 1 and 10, respectively.

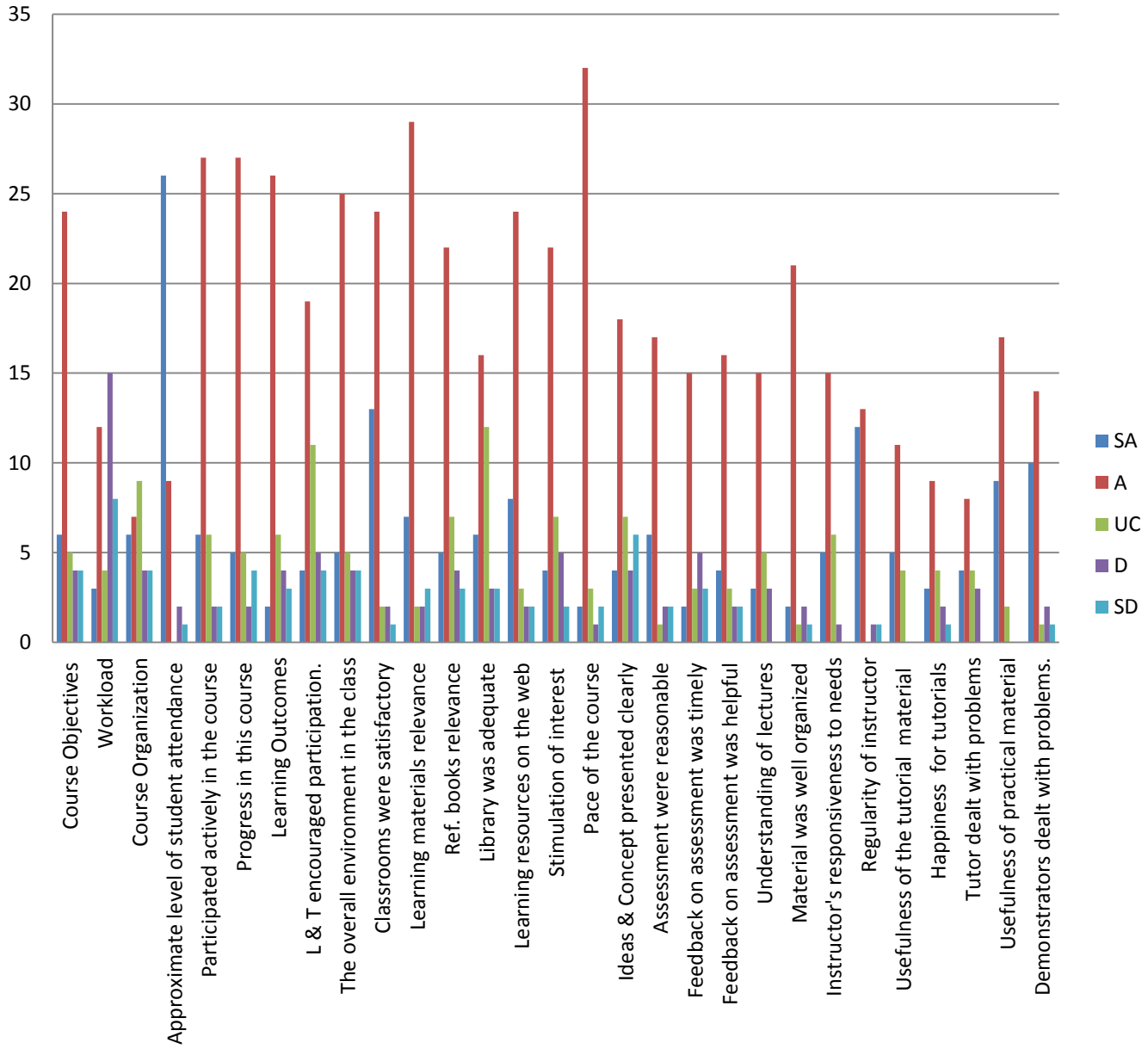
Teachers Evaluation Fall Semester 2012

The teachers were evaluated by the students at the end of the semester in accordance with Proforma-10. In the graph teachers are represented as 1and 2etcinstead of mentioning their names. Results and performance of individual teachers will follow.



BCH-302. Teacher 1. According to the students, the instructor was fair in examination and leaves the class in time.

Results of Performa 1 (Fall 2012)



BCH-302. (Teacher 1). According to students, the learning material was relevant to the course and pace of course was excellent.

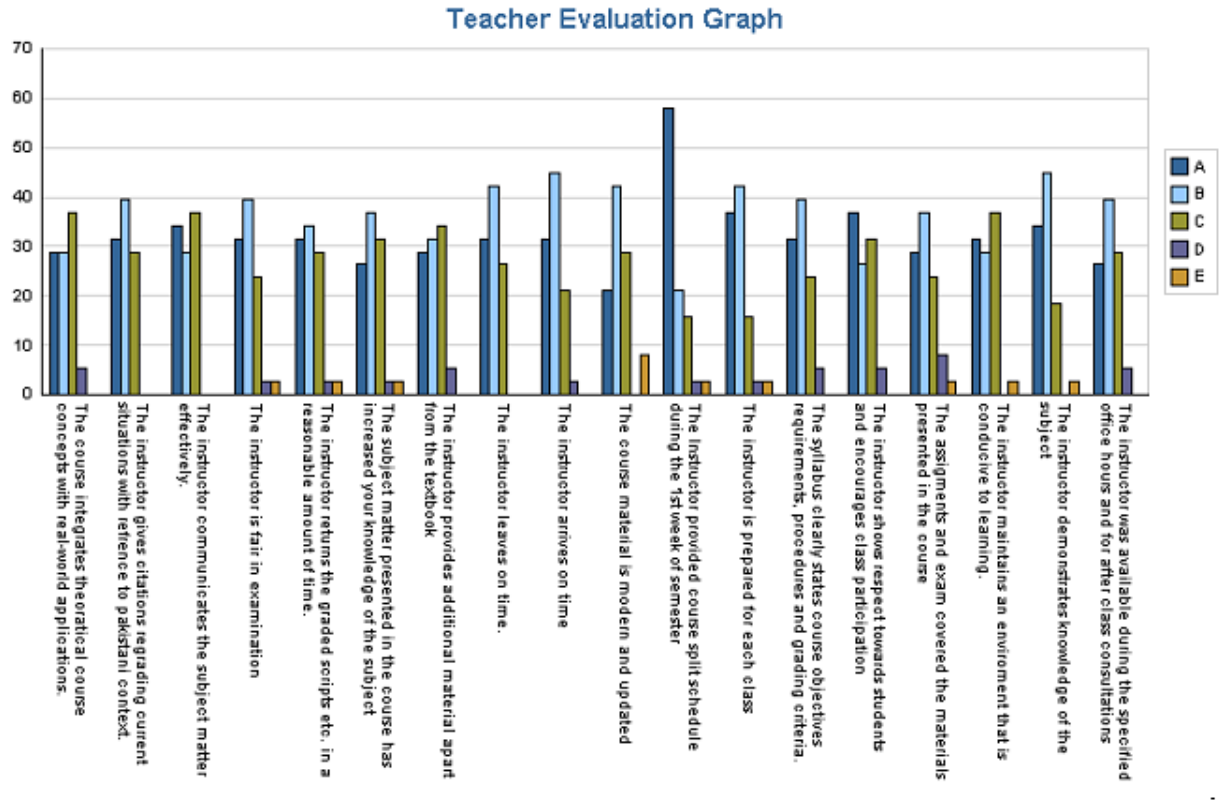
Program Assessment Results:

Teachers Evaluation Spring Semester 2013

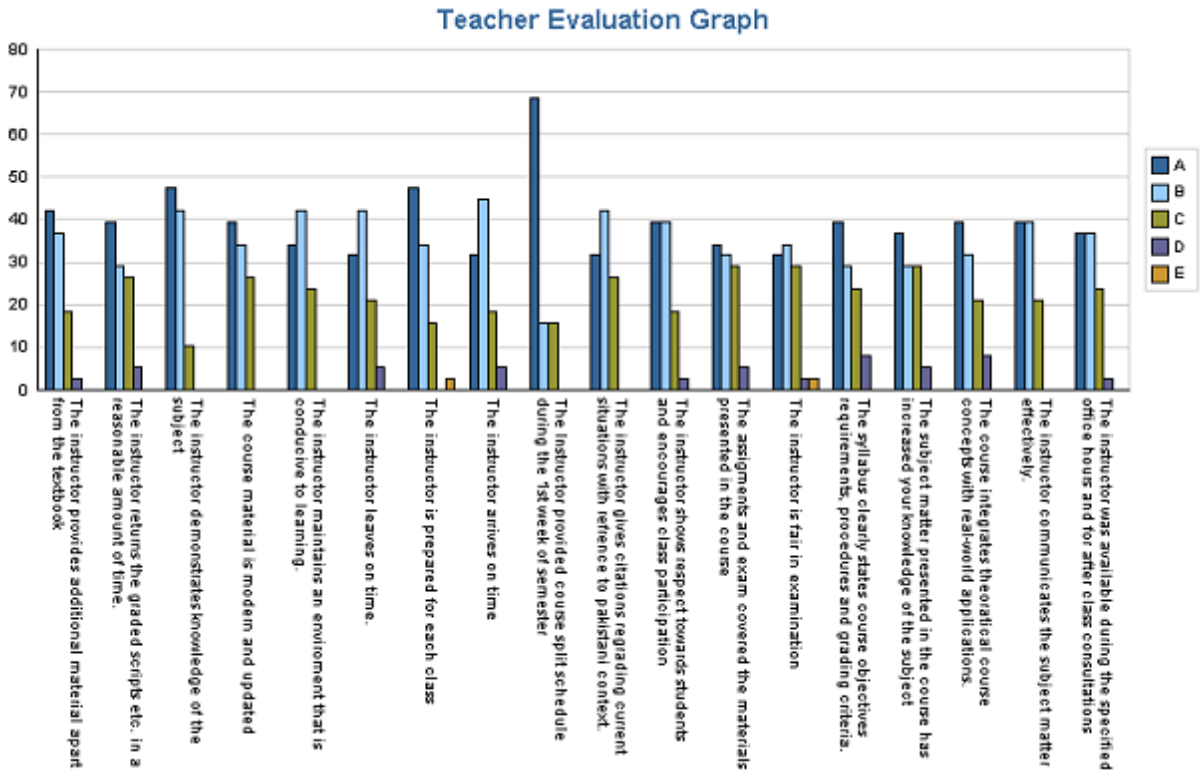
Overall Results of Performa 10 of Teacher 1, 2, 3, 4 and 5

According to the overall results majority of the students pointed out that the strongest point of the teacher is that the teacher provided the course split schedule during the 1st week of the semester.

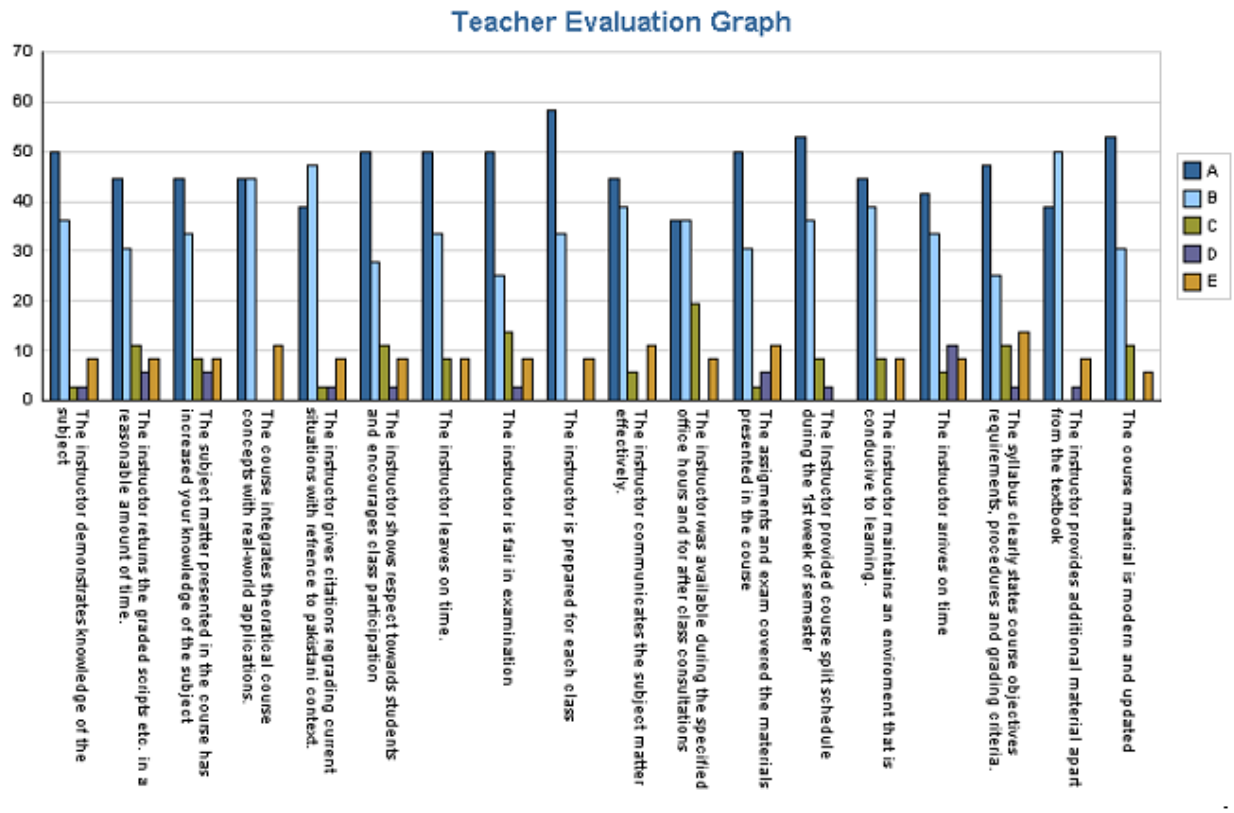
Results of Performa 10 (Spring 2013)



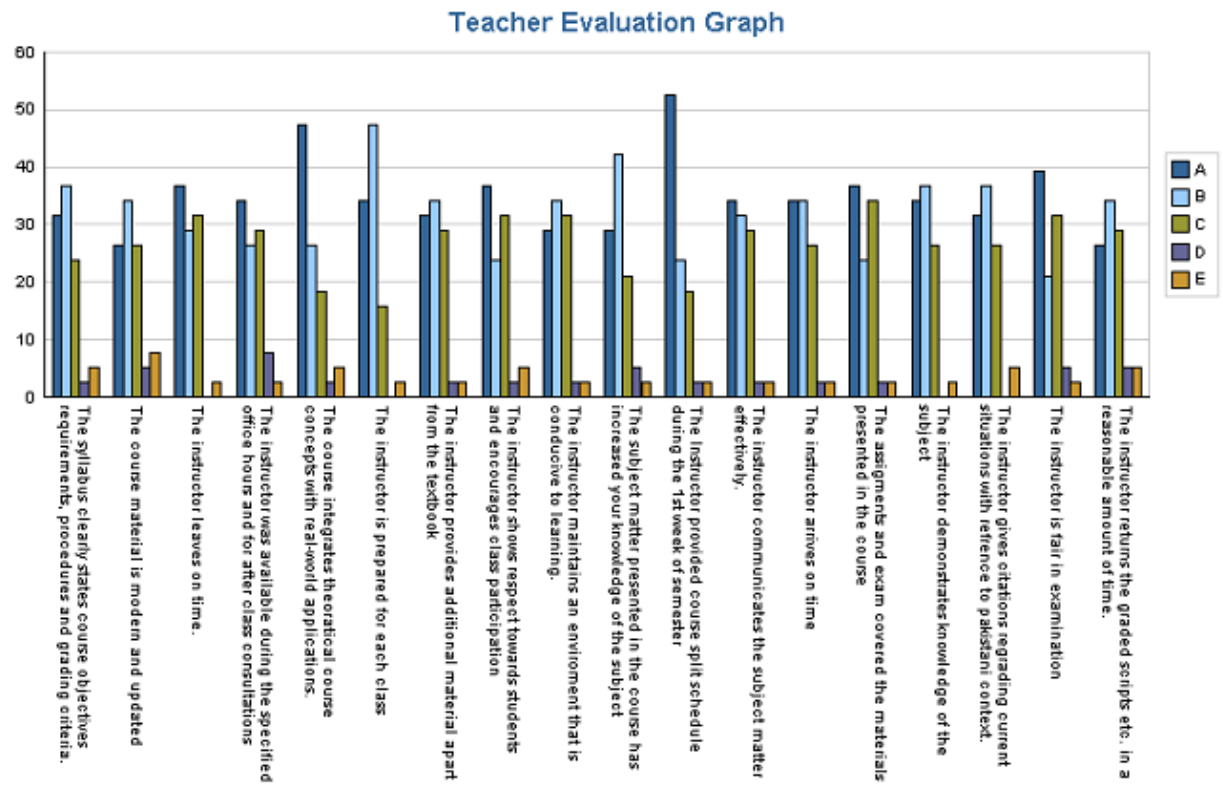
BCH-409 Teacher 1. According to the students the strongest point of the teacher is that the teacher provided the course split schedule during the 1st week of the semester.



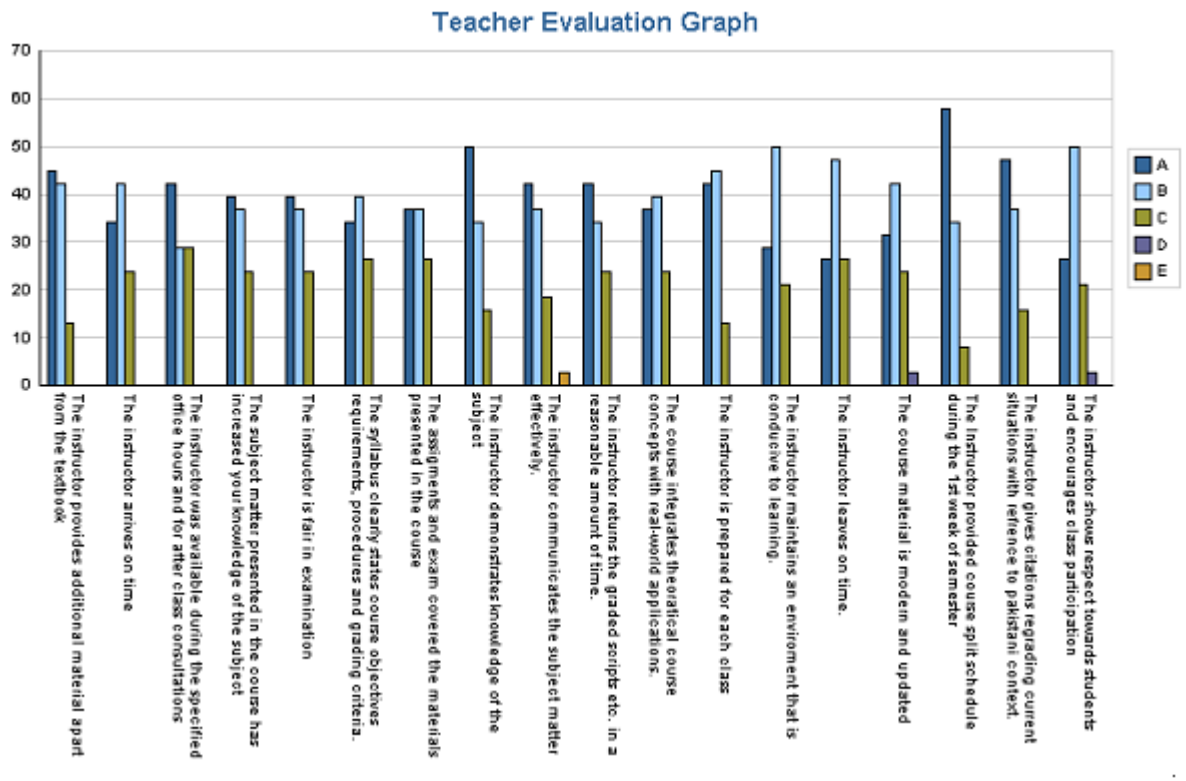
BCH-407 Teacher 2. According to the students the strongest point of the teacher is that the teacher provided the course split schedule during the 1st week of the semester.



BCH-304 Teacher 3. According to the students the strongest point of the teacher is that the teacher is always well prepared for the class.

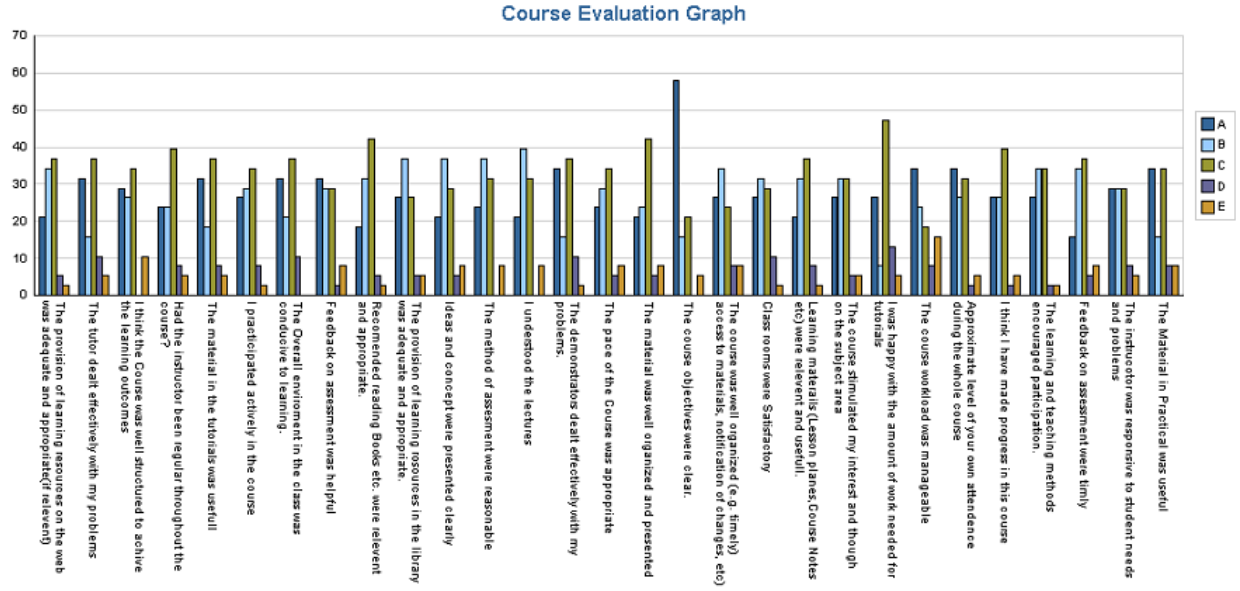


BCH-406 Teacher 4. According to the students the strongest point of the teacher is that the teacher provided the course split schedule during the 1st week of the semester.

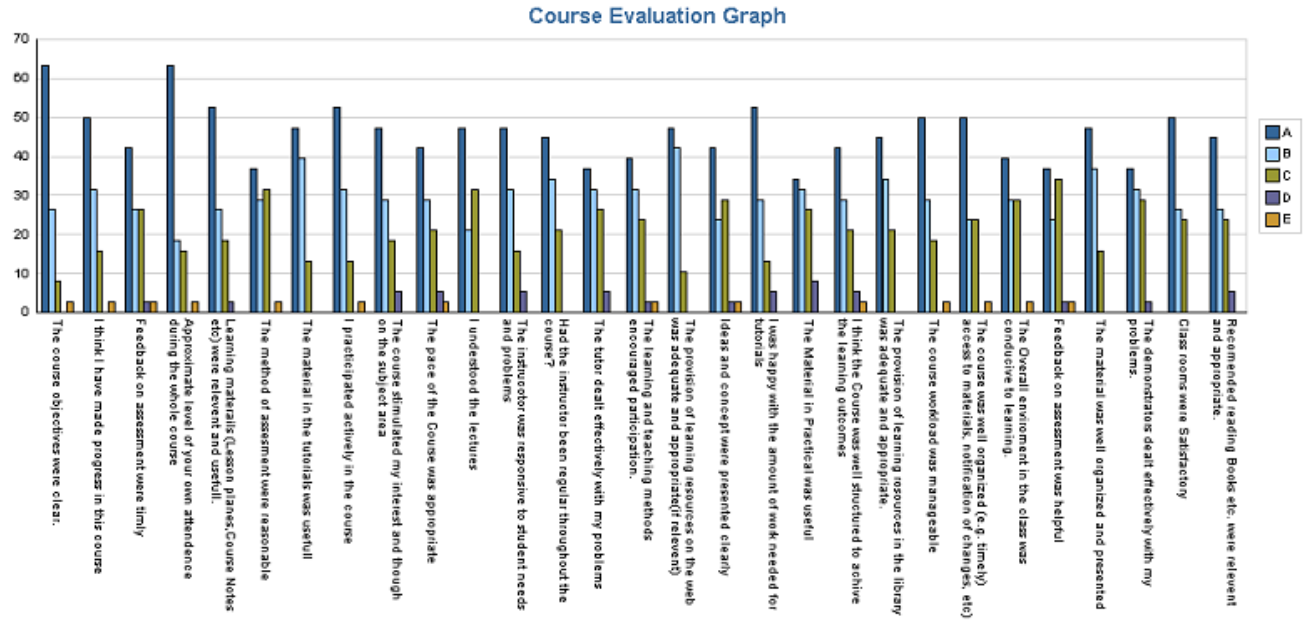


BCH-408 Teacher 5. According to the students the strongest point of the teacher is that the teacher provided the course split schedule during the 1st week of the semester.

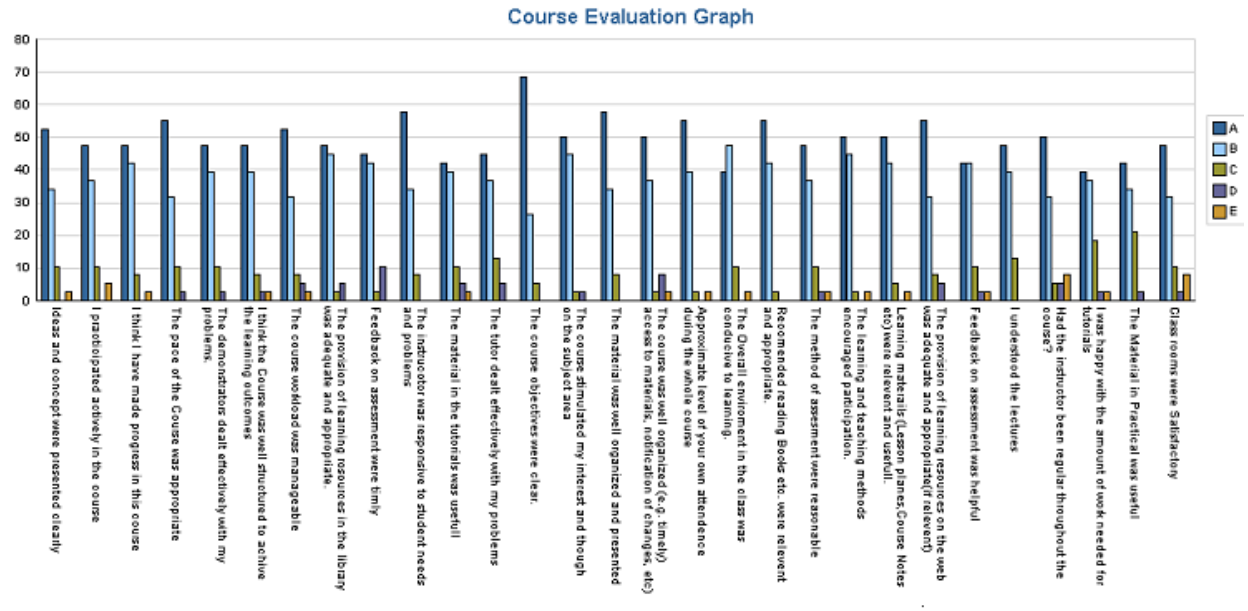
Results of Performa 1 (Spring 2013)



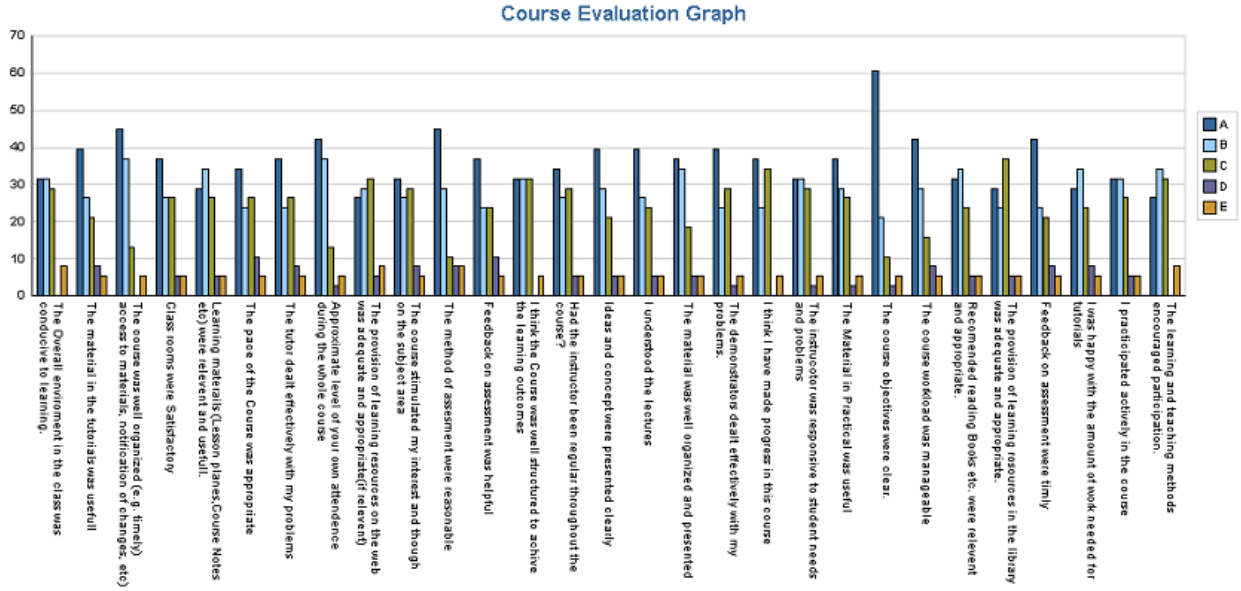
BCH-409. Teacher 1. According to the students the best thing about the course was that its objectives were clear.



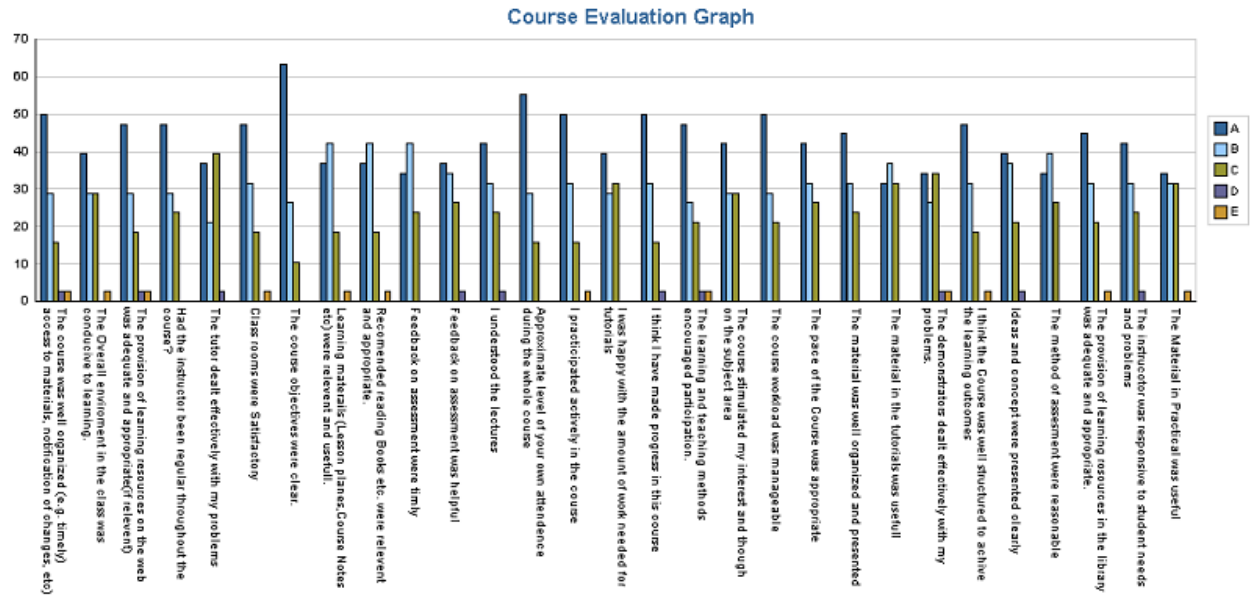
BCH-407. Teacher 2. According to the students the best thing about the course was that the course objectives were clear.



BCH-304. Teacher 3. According to the students the best thing about the course was that the course objectives were clear.



BCH-406. Teacher 4. According to the students the best thing about the course was that the course objectives were clear.



BCH-408. Teacher 5. According to the students the best thing about the course was that the course objectives were clear.

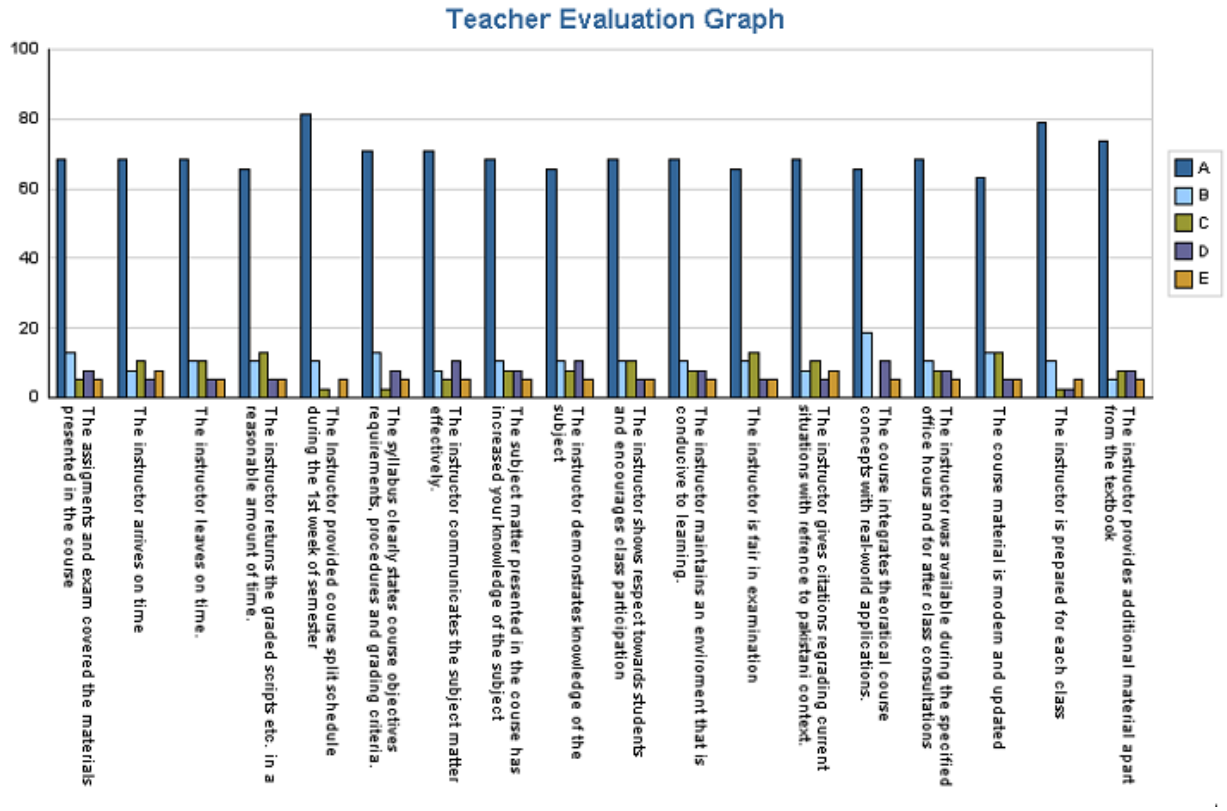
Program Assessment Results:

Teachers Evaluation Fall Semester 2013

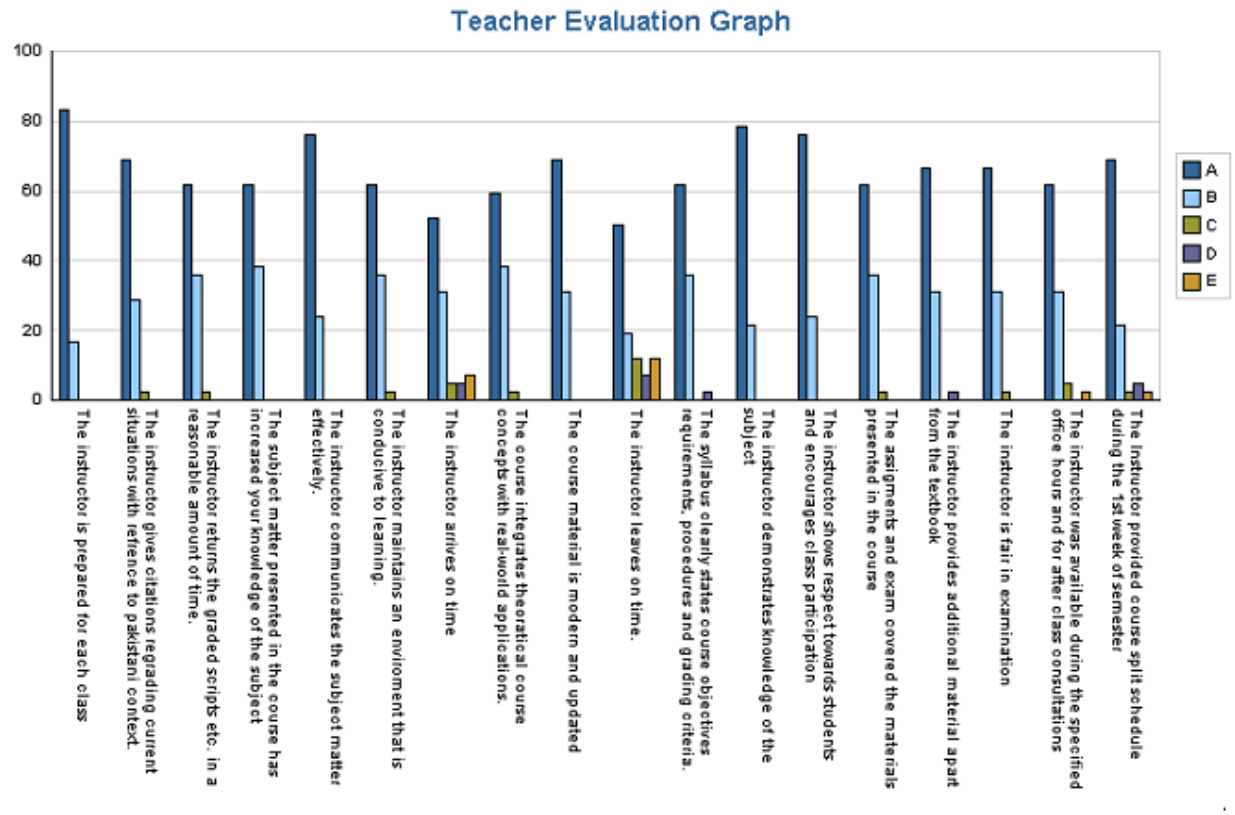
Overall Results of Performa 10 of Teacher 1, 2 and 3

According to the overall results majority of the students pointed out that the strongest point of the teacher is that the teacher provided the course split schedule during the 1st week of the semester.

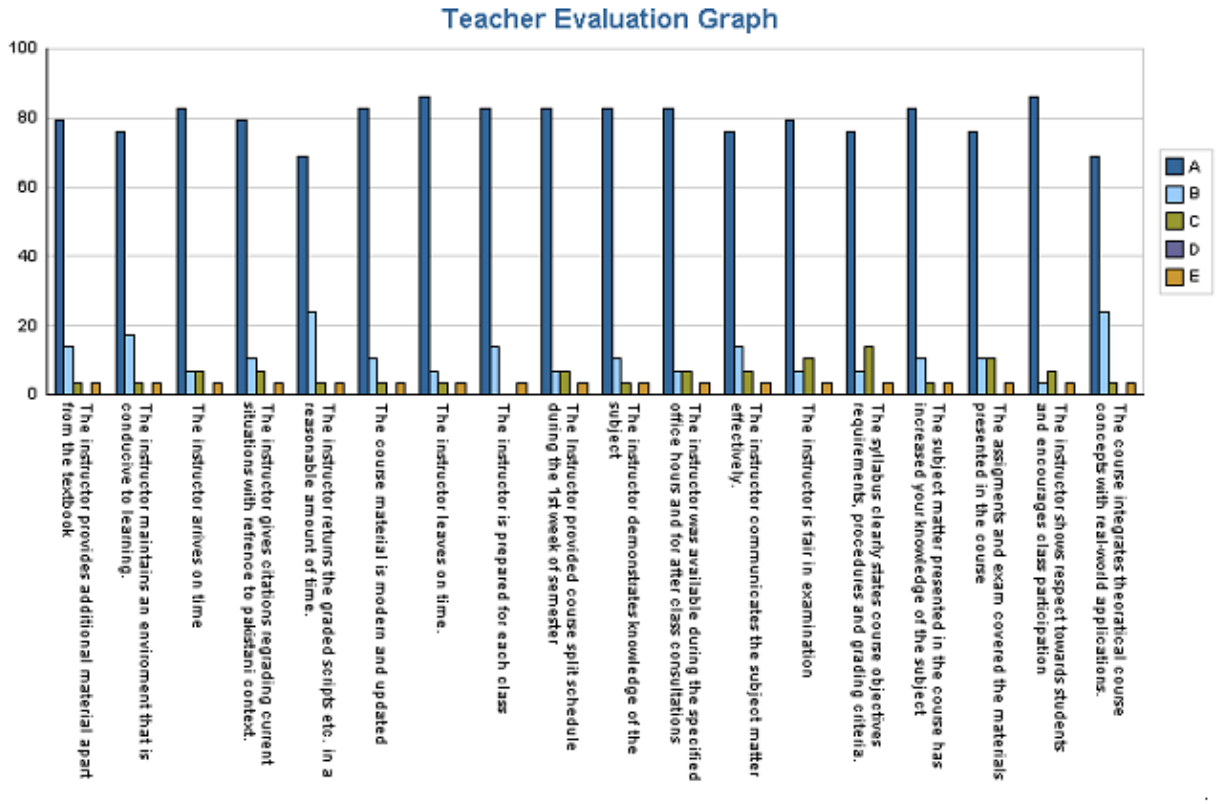
Results of Performa 10 (Fall 2013)



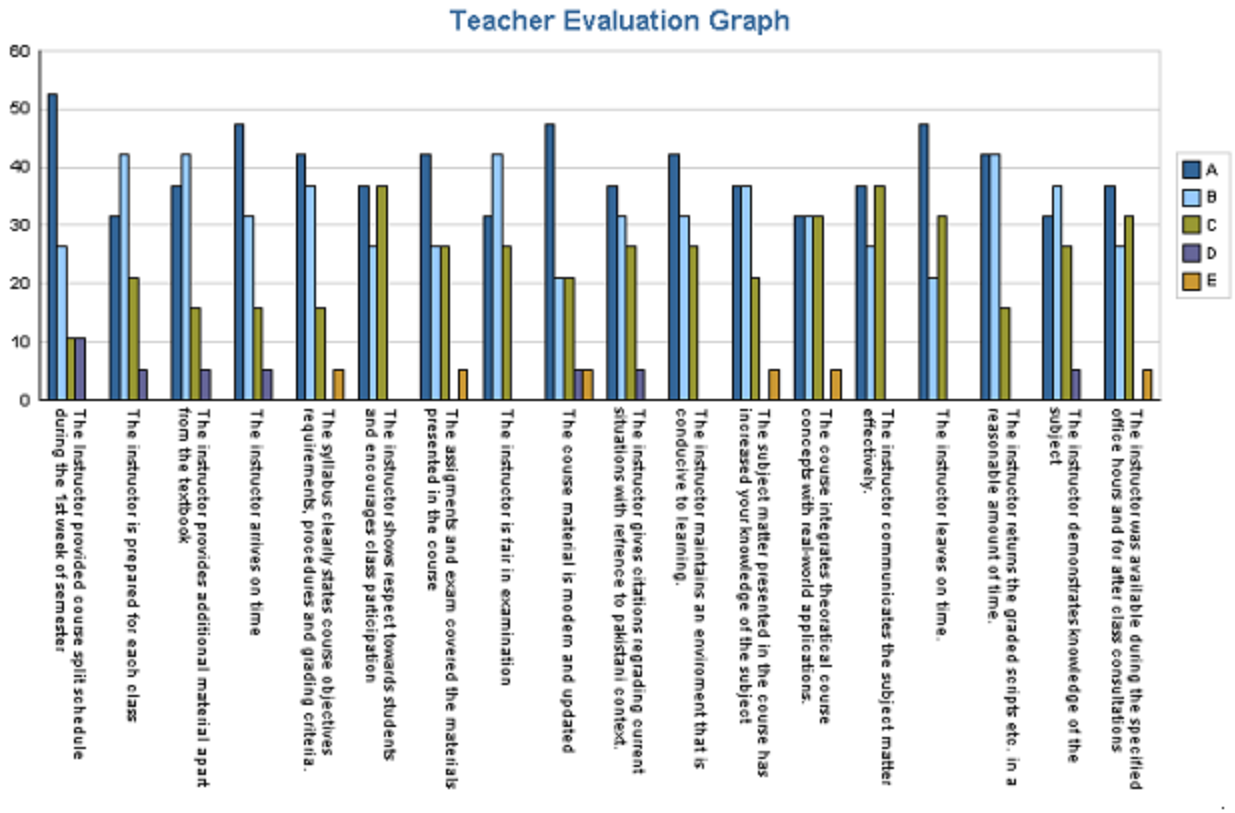
BCH-401. Teacher 1. According to the students the best thing about the teacher was that the teacher provided the course split schedule during the 1st week of the semester.



BCH-301. Teacher 2 (M). According to the students the best thing about the teacher was that the teacher was always well prepared for the class.

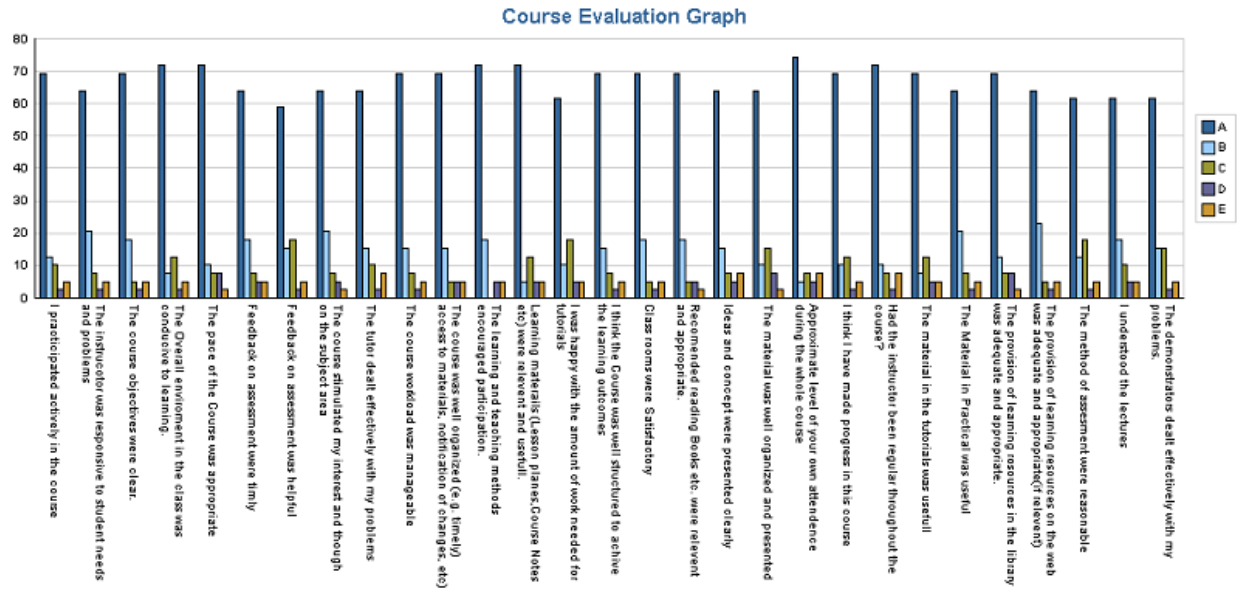


BCH-301. Teacher 2 (E). According to the students the best thing about the teacher was that the teacher shows respect towards the students and encourages class participation.

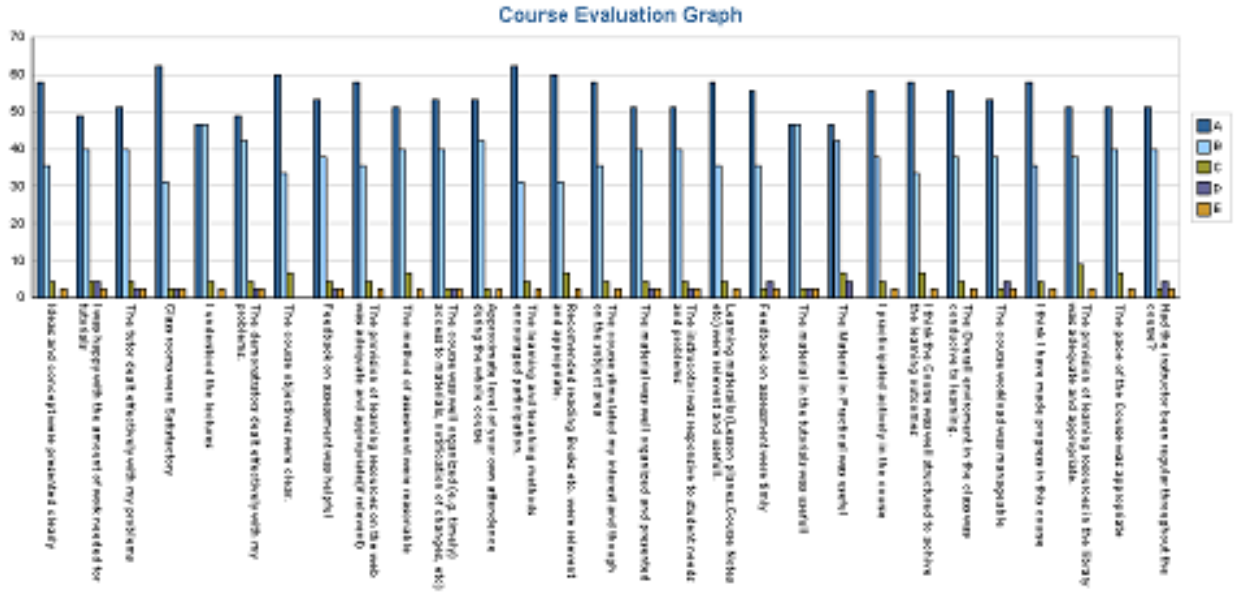


BCH-503. Teacher 3. According to the students the best thing about the teacher was that the teacher provided the course split schedule during the 1st week of the semester.

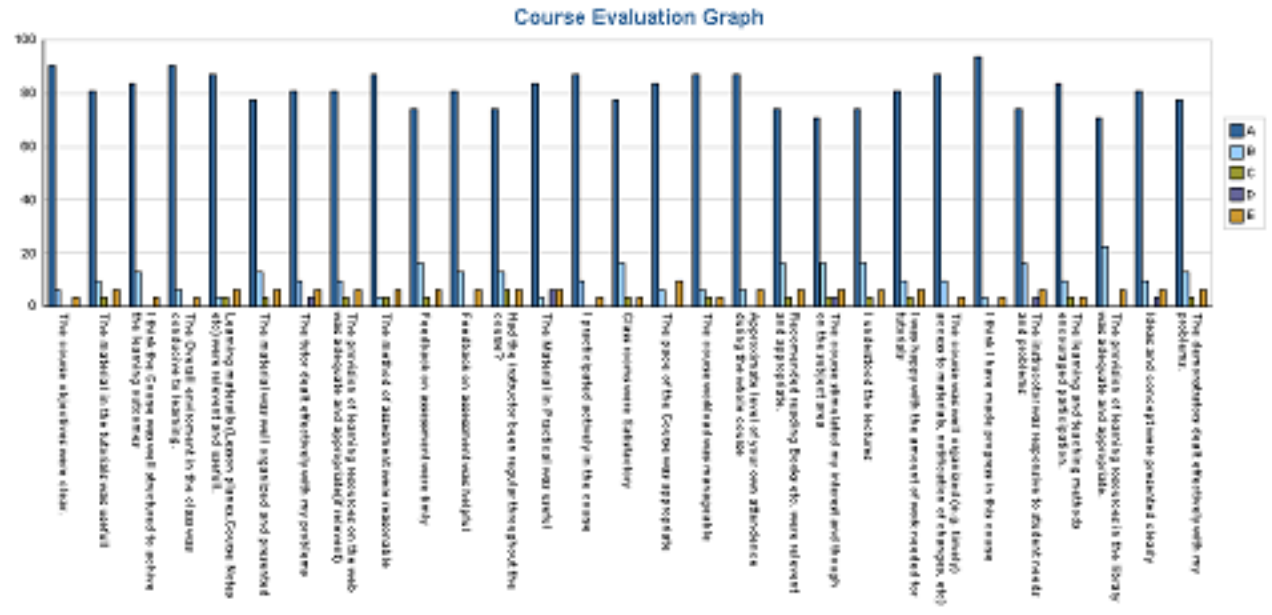
Results of Performa 1 (Fall 2013)



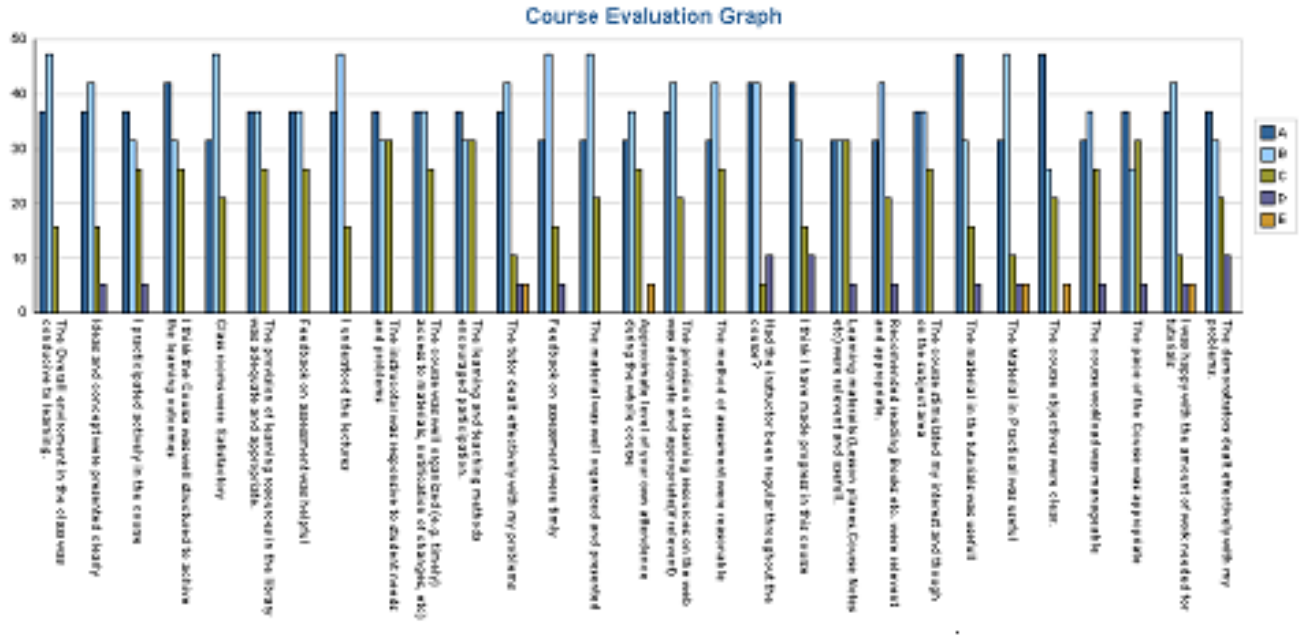
BCH-401. Teacher 1. According to the students the best thing about the course was that there is always an appropriate level of attendance in the class during the semester.



BCH-301. Teacher 2 (M). According to the students the best thing about the course was the learning and teaching methods encouraged the students towards the course.



BCH-301. Teacher 2 (E). According to the students the best thing about the course was that the course objectives were clear.



BCH-503. Teacher 3. According to the students the best thing about the course was that the course objectives were clear.

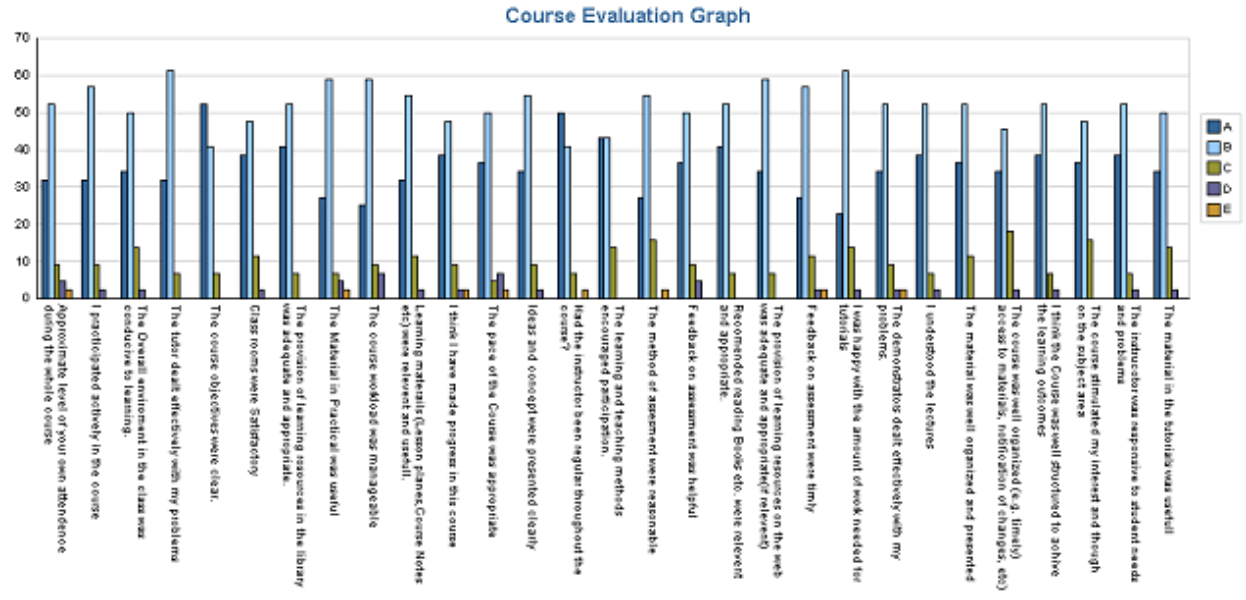
Program Assessment Results:

Teachers Evaluation Spring Semester 2014

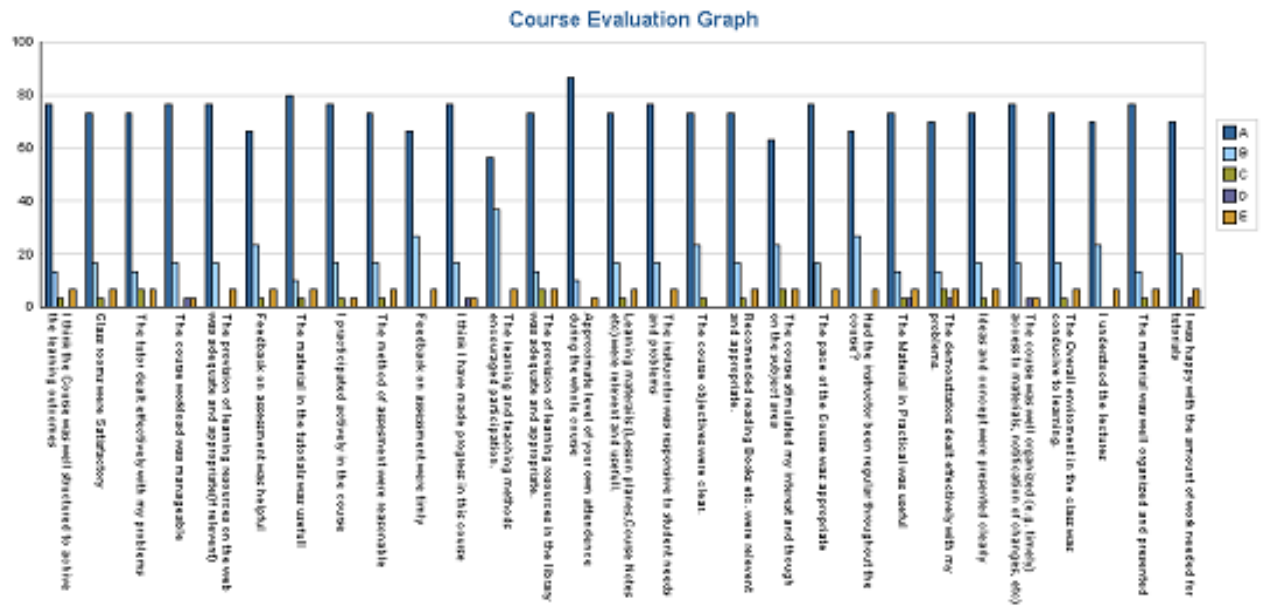
Overall Results of Performa 1 of Teacher 1

The students had different view about different courses. Most of the students mentioned that the the tutor dealt effectively with our problems, the materials in the tutorials was useful, provision of learning resources in the library were adequate and appropriate etc.

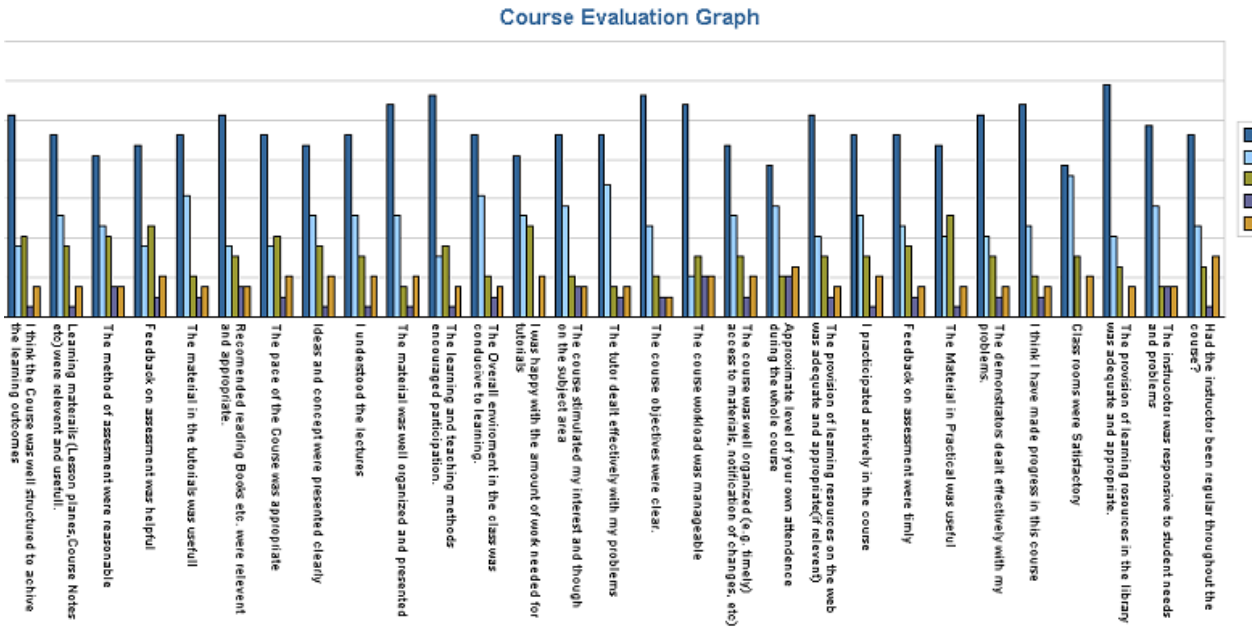
Results of Performa 1(Spring 2014)



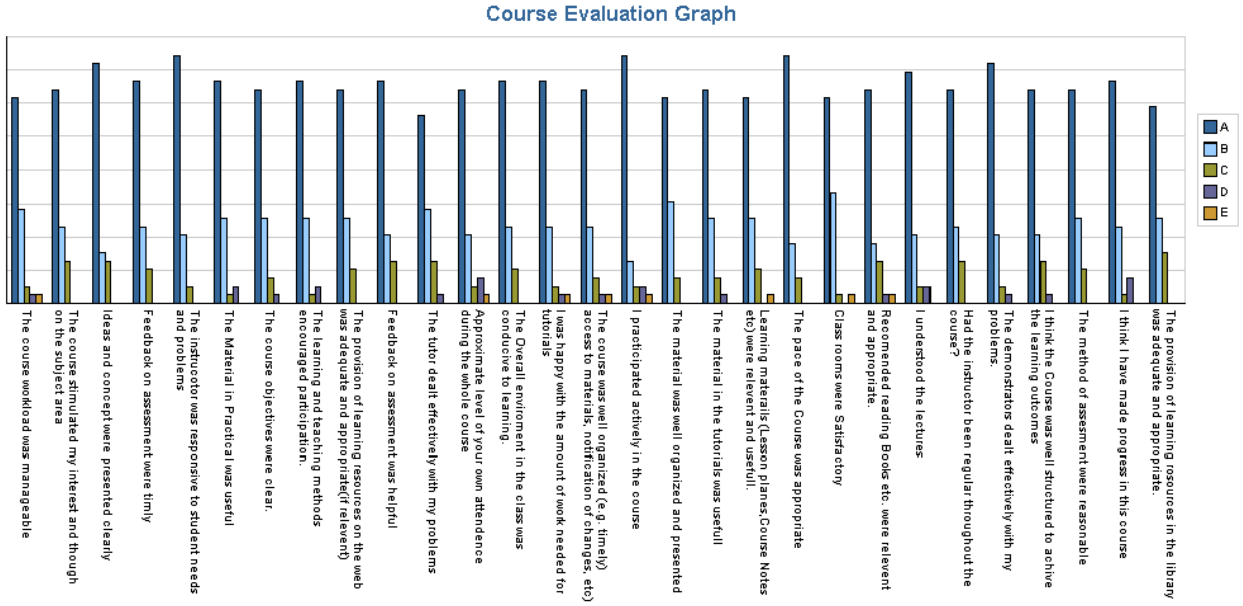
BCH-304. (M) (Teacher 1). According to students, the tutor dealt effectively with our problems.



BCH-304. (E). According to students, the material in the tutorials was useful.

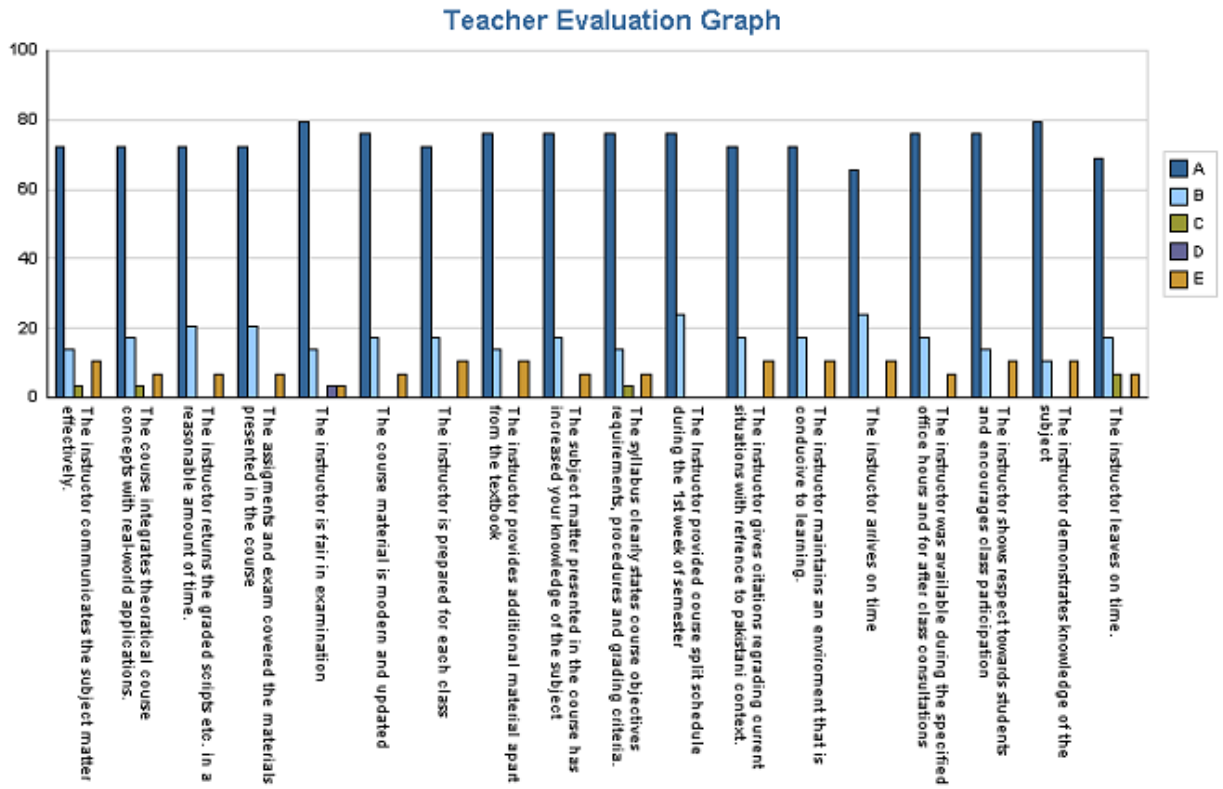


BCH-409. (Teacher 1). According to students, the provision of learning resources in the library was adequate and appropriate.

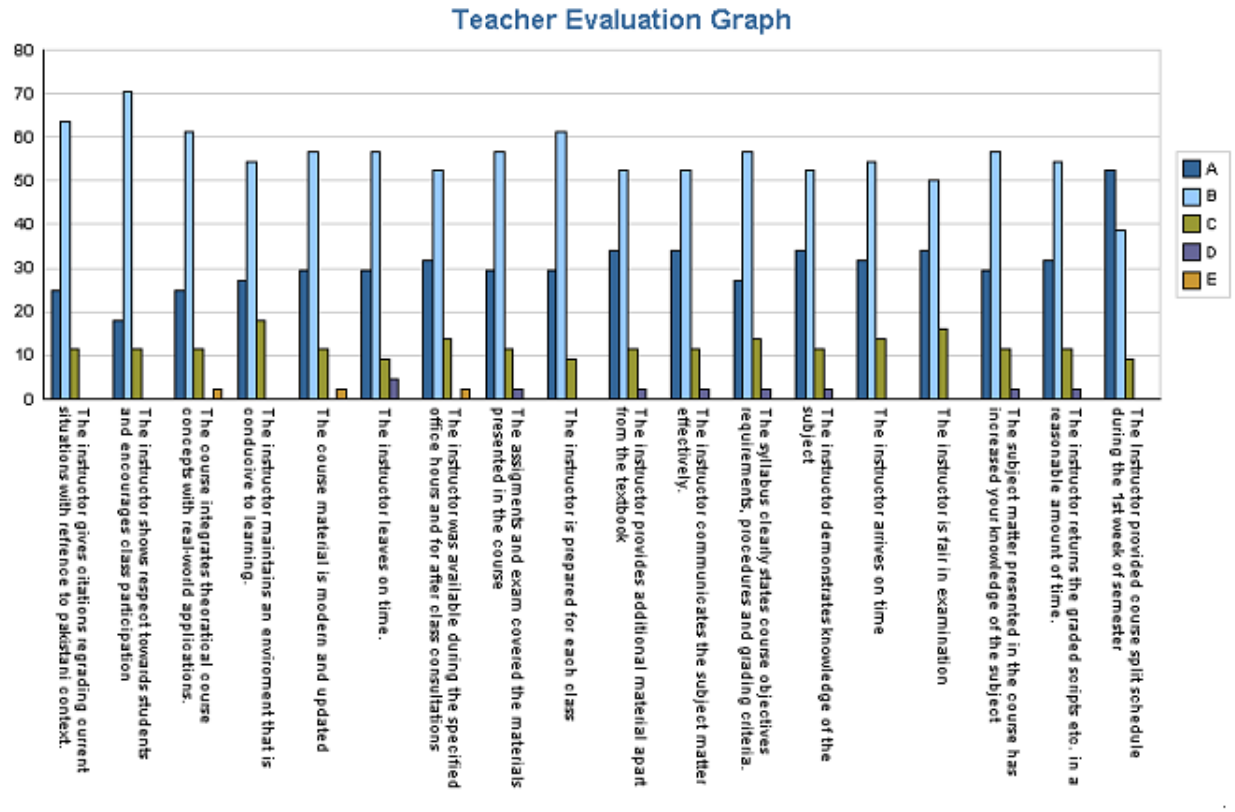


BCH 507. (Teacher 1). According to the students, the pace of the course was appropriate.

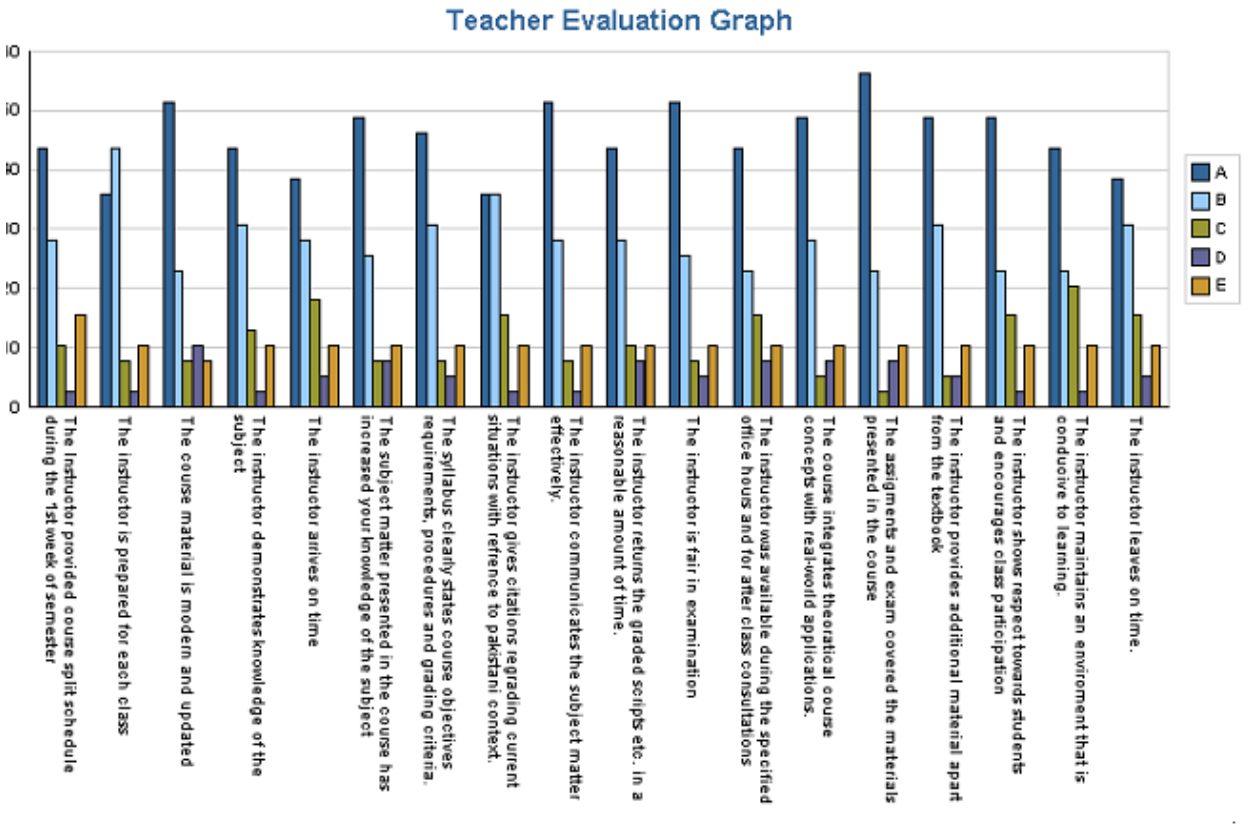
Results of Performa 10 (Spring 2014)



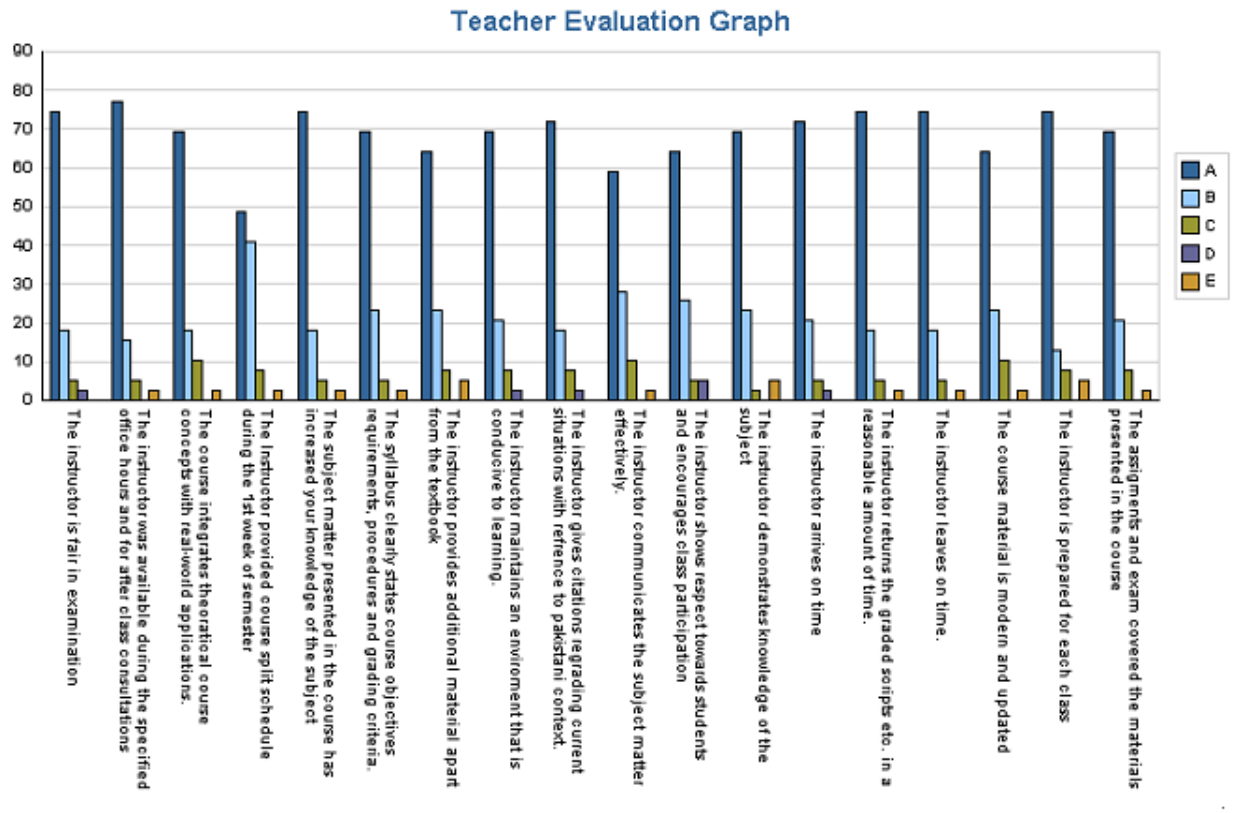
BCH – 304 (E) According to students, the instructor demonstrated the knowledge of the subject.



BCH-304 (M)According to students, the instructor shows respect towards students and encourages class participation.



BCH-409. (Teacher 1)According to students, the course material was advanced and updated.



BCH-507 (M).The instructor was available during the specified office hours and for after class consultations.

Skills and Capabilities Reflected in Performance as Biochemistry:

Students developed ability to apply both theoretical and practical knowledge of Biochemistry. This ability will help them to work as professional biochemists in various fields of life, to build confidence and communicate effectively in writing, oral and demonstration by using modern tools, techniques and skills for their profession, to formulate and design the experiments/project and to work effectively in a team, to manage different problems and imbibe ability to recognize future needs in the field of Biochemistry which will also contribute in the development of nation.

Standard 1-3

Strength of the Department:
The department of Biochemistry hasstate of the art, fully equipped laboratories with latest instruments/chemicals including Multiplex, PCR thermocyclers, DNA nanodrops, RT-PCR, Biolastics, HPLC, Fermenters, Plant tissue culture chambers etc. However, the main strength of the department is its highly qualified and skilled faculty, with full acquaintance of their respective subjects including plant, animal/human, environmental biotechnology and general biochemistry which covers all aspects of Biochemistry, Molecular Biology and Biotechnology. All of the faculty members have foreign research experience. They have successfully completed many National/International research projects and are remarkably active in the academic and research fields.

Weakness Identified in the Program:
Although the faculty and laboratories are outstanding for the production of quality graduates but they are not suffiecient. The Department of Biochemistry has not been upgraded to Unversity Institute of Biochemistry and Biotechnology (UIBB) yet and so there is shortage of regular faculty members. The existing faculty is over-burdened due to their heavy workload in teaching and related departmental duties. Another important issue is lack of full time qualified technicisans/supporting staff. Therefore, scientific research activtieies(both personal research projects as well as student theses projects) are being handicapped. Besides, access to scientific literature has also been inconsistent due to regular problems in internet. Above all, the department is under extensive financial constraints due to limited annual budget compared to the seven dgree programs being offered with increasing student enrollments.

Major Future Improvement Plans:

- Initiation of M.Phil and PhD Biotechnology andBS Microbiology programs.
- Strengthening graduate, post graduate and postdoctoral programmes in Biochemistry, Biotechnology and Bioinformatics.
- Up-gradation of research by integrating biochemistry, biotechnology and bioinformatics into existing traditional systems.
- To emphasize biochemical and molecular approaches for*in vitro* techniques in plant and animal biotechnology.
- Developing human resource for highly advanced fields of biochemistry, biotechnology and bioinformatics to play a crucial role in national development.

TABLE-3: QUANTITATIVE ASSESSMENT OF THE DEPARTMENT
(Last three years)

Sr. #	Particular	No.	Remarks
i	M.Sc.	157	M.Sc. Graduates from the Department are working in public as well as private sector in research, teaching, diagnostics, pharmaceuticals, chemical and equipment supplies. Many ex-students have joined M.Phil. and Ph.D. programs in PMAS-AAUR, QAU, PU & UAF etc.
ii	M.Phil.	102	Working in public as well as private sector in research, teaching, diagnostics, pharmaceuticals, chemical and equipment supplies or pursuing PhD.
iii	Ph.D.	11	In employment
iv	Post-Doc fellowship by faculty Short Term Training	5 3	USA, UK, Sweden and Canada
v	Students: Faculty ratio	25:1	
vi	Technical : No Technical ratio	2:8	

Faculty

Table-3.1: Faculty Distribution in Biochemistry

Name	Position	Qualification	Specialization
Dr. S.M.Saqlan Naqvi	Professor	Ph.D., Post-Doc	Molecular Biology/ Biotechnology
Dr. M.Gulfraz	Professor	Ph. D. Post-Doc	Biochemisry/Natural Product Chemistry
Dr. GhazalaKakub Raja	Associate Professor	Ph. D. Post-Doc	Biochemistry/ Molecular Biology
Dr.M.JavaidAsad	Assistant Professor	Ph. D, Post-Doc	Industrial/Fermentation Biotechnology
Dr. M.Sheeraz Ahmad	Assistant Professor	Ph. D, Post-Doc	Biochemistry/Plant Biotechnology
Dr.Feroza H. Watoo	Assistant Professor	Ph. D., Post-Doc	Biochemistry
Dr. AzraKhanum	Professor/ Research Consultant	Ph. D., Post-Doc	Biochemistry/Biotechnology
Dr. Pakeeza A. Shaiq	Assistant Professor	Ph.D.	Human Molecular genetics

Standard 1-4

TABLE- 4.1: PRESENT PERFORMANCE MEASURES FOR RESEARCH ACTIVITIES

Faculty	Journal Publications (National & International) (Year 2012-2014)	Conference Publications (Proceedings/ Abstract) (Year 2012-2014)	On-going Projects (Year 2012-2014)
Prof. Dr. S.M. Saqlan Naqvi	12	06	2
Prof. Dr. M.Gulfraz	30	05	02
Dr. GhazalaKaukab Raja	11	07	02
Dr.M.JavaidAsad	08	02	-
Dr. M.Sheeraz Ahmad	07	04	1
Dr. Feroza H. Wattoo	08	02	-
Dr. Pakeeza A. Shaiq	06	02	1
Total	**82**	**28**	**08**

The department is well established and its distinguishing feature is the availability of all expertise (Molecular Biology, Plant Biotechnology, Environment Biotechnology and Enzymology).

The Department is providing following community Services:

To enhance the quality and quantity of scientific trainings, the Department has organized the workshops and seminars. The basic aim is also to provide a forum for knowledge/information exchange between academic disciplines and raising general awareness about Biochemistry and Biotechnology. Under guidance of the Worthy Vice Chancellor, the department has established state of the art laboratory for food and water testing.

Faculty Satisfaction Regarding the Administrative Services:

- The department maintains a ratio of 25:1 and 2:8 for the student: teacher and technical: non-technical staffrespectively.
- Administrative meetings (departmental, university, academic council, and syndicate) are attended and when required. Generally two meetings of academic council are held per year. Board of studies of the department meets quarterly.
- Quick office disposal; no complaint pertaining to delay has ever been received from authorities.
- Proper records of individuals, students and their theses are maintained.

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION
Degree Title: B.S (Biochemistry)

Intent:
Curriculum design and update is regularly initiated by the faculty members of the Department. After approval from Departmental Board of Studies comprised of senior faculty members and subject specialist from other faculties or from other Universities or research Institutions. The approved curriculum is then sent to Board of Faculty, headed by the Dean Faculty of Sciences. This Board consist senior faculty members from all the Departments of the faculty and subject specialists. Finally the curriculum is presented before the Academic Council which is comprised of the Professor, Associate Professor, Faculty Representatives and very senior subject specialists.

Definition of Credit Hour:
A student must complete a definite number of credit hours. One credit hour is one hour theory lecture or two hours laboratory (practical) per week. One credit hour carries 20 marks. A semester is of 18 weeks.

Presently following degrees are offered by the Department:

Credit Hours					
Degrees	**Min. Course Hrs**	**Thesis**	**Duration (in Semesters)**		**Passing CGPA**
			Min	**Max**	
B.S (without thesis)	130	-	8	10	2.50

Pre-requisites

Minimum Academic Requirements:
A person holding F.Sc premedical or equivalent degree from any recognized institute with at least second division or overall 45 % marks is eligible to get admission.

The admission to the University is on merit which is determined by the percentage of last degree.

Degree Requirements:

Degrees are awarded after completing the required number of credit hours (courses). Minimum Grade Point Average for obtaining the degree in 2.50. To remain on the roll of the university, a student shall be required to maintain the following minimum GPA/CGPA in each semester

Semester	CGPA
1st	0.75
2nd	1.00
3rd	1.25
4th	1.50
5th	1.75
6th	2.00
7th	2.25
8th	2.50

Examination & Weight-age:

a) Theory

In course work, student's evaluation is done by mid-term examination, assignments/quizzes and final examination. A student, who misses the mid-term examination, is not allowed a make-up examination and is awarded zero marks in that examination. In case a student does not appear in the final examination of a course, he shall be deemed to have failed in that course. In theory, weightage to each component of examination is as prescribed here under:

Mid Examination 30%
Assignments 10%
Final Examination 60%

b) Practical

For practical examination (if applicable) 100% weightage is given to practical as scored final examination

Eligibility for Examination:

A student is eligible to sit for the examination provided that he/she has attended not less than 75% of the classes in theory and practical, separately.

The minimum pass marks for each course are 40 % for BS.

Standard 2.1: Assessment of the Biochemistry Curriculum

Based on the assessment of curriculum, the curriculum fulfills and satisfies the core requirements for the program, as specified by the respective accreditation body and HEC.

Standard 2-2: Theoretical backgrounds, problem analysis, solution design given as under

Meeting Standard 2-2: Percentage of Elements in Courses

Elements	Courses
Theory only	BCH-409, BCH-410, BCH-505, BCH-506, BCH-508, BCH-509, BCH-510, BCH-606, BCH-607
Theory + Practical	BCH-301, BCH-302, BCH-303, BCH-304, BCH-401, BCH-402, BCH-403,BCH-404, BCH-405, BCH-406, BCH-407, BCH-408

Standard 2-3: The curriculum satisfied the core requirements for the programs as specified by HEC

Standard 2-4: The curriculum satisfied the core requirements for the programs as specified by HEC

Standard 2-5: The curriculum satisfied the core requirements for the programs as specified by HEC

Standard 2-6: Information technology components of the curriculum has been applied by offering a different course like Experimental Design and Computer Applications,

Standard 2-7: Enhancing Oral and Written Communication Skills of the students

- Seminars in BS. Carrying one credit hour iscompulsory.
- Students are assigned to present generally the recent status/ status on various global and local issues/problems.
- Assignments are given to the students on specific titles (part of the course) which are submitted as written report, to increase their writing skills.

C**riterion 3: Laboratories and Computer Facilities**

There are twoGeneral and one computer laboratories in the department for B.S. program;

1. Biochemistry and Molecular Biology Lab I
2. Biochemistry and Molecular Biology Lab II
3. Bioinformatics Lab

The facilities and shortcomings of these laboratories are listed as under;

- Location: UIBB Building, ground Floor and Second Floor
- Objectives: Laboratories are used for conducting practical experimentsrelated to their introductory and major courses.
- Safety Regulations: Fire extinguishers and first aid kits are available as well as a Medical Dispensary for such incidents is maintained in the University.

Standard 3-1: Laboratory Manuals:

Laboratory manuals for each subject are available. The departmental library hasall the relevant books. However, teachers also have their own books to prepare the relevant practicals.

Standard 3-2: Support/Laboratory Personal for Maintenance of Laboratory

Two Lab Assistantsare available to maintain laboratory, equipments, glassware, chemicals, materials etc. Three laboratory attendants assist the students in practicals, cleaning and washing.

Standard 3-3:

Computing Infrastructure and Facilities

- **Computing facilities support*:***Most of the faculty members and the post graduate students have computer facility available.
- **Shortcoming in computing infrastructure:**Wireless internet facilities should be available to all faculty members and postgraduate students in class rooms and laboratories.
- **Safety Arrangements:There are proper safety arrangements and security plan is available in case of emergency**. In newly constructed UIBB building; there is no emergency exits for the labs and fire safety system is not available.

Criterion 4: Student Support and Advising

Our University organizes support programs for students and provides information regarding admission, scholarship schemes etc. Department in its own capacity arranges orientation and guided tours of the department. Director Students Affairs also arranges various cultural activities and solves the students' problems.

Standard 4-1: Frequency of Courses

- Courses are taught as per policy at the University/Academic Council.
- Elective courses are offered as per policy of HEC and the University.

- For post graduate programs, a variety of courses are offered according to demand of the profession.

Standard 4-2: Structure of the Courses

To ensure effective interaction between students, faculty and teaching assistants, at the time of course formulation both theoretical and practical aspects are focused. Theoretical problems are explained and assignments are also given to the students whereas practical are carried out in the labs. Study tours to various research organizations are also organized to keep them update on the latest developments in the area and to stimulate them for discussion through teacher/ student interaction.

Standard 4.3: Guidance to the students

Several steps have been taken to provide students guidance such as:

- Students are informed about the program requirement through the office of the head of the department.
- Through the personal communication of the teachers with the students.
- In case of some problem Director Student Affairs appointed by the university, helps the students. Students can interact with the teachers/scientist in universities or research organization whenever they needed and there is an open option for the students to get the membership in the professional societies.
- Realizing the need for exploring job opportunities for the university graduates, Directorate of Student Resource Center has been established.

Criterion 5: Process Control

It includes students admission, students registration and faculty recruitment activities which are dealt by various statutory bodies and the university administration.

Standard 5.1: Program Admission Criteria

- The process of admission is well established and followed as per rules and criteria set by HEC and the University. For this purpose an advertisement is published in the National News Papers and university website by the Registrar Office.
- Admission criteria for B.S in Biochemistry isF.Sc premedical or equivalent.
- Admission criteria are revised whenever needed.

Standard 5.2: Process of Registration

- The student file, after completion of the admission process, is forwarded to the Registrar Office for proper registration in the specific program and the registration number is issued to the student.
- Students are evaluated through Mid, Final and Practical exams and through Assignments.

- Registration is done for one time for each degree but evaluation is done through the result of each semester. Only those students who fulfill the criteria of the University, 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: Recruiting Process for Faculty

Recruitment policy followed by the University is recommended by HEC. Induction of all posts is done as per rule:

- Vacant and newly created positions are advertised in the national newspapers, applications are received by the Registrar office and call letters are issued to the short-listed candidates on the basis of experience, qualification, publications and other qualities/activities as determined by the University.
- The candidates are interviewed by the University Selection Board and Vice Chancellor 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.
- Standards set by HEC are followed.
- Tenure Track System (TTS) recommended by HEC has been adopted by the University.
- HEC also supports appointment of highly qualified members as foreign faculty Professors, National Professors and deputes them in concerned departments of the University.

Standard 5.4: Teaching and Delivery of Course Material

- To provide high quality teaching, department periodically revises the curriculum depending upon requirements, innovations and new technology.
- With the emergence of new fields, new courses are introduced, and included in the curriculum.
- Students usually buy cheap Asian editions of books published in advanced countries. These books are also available in the University library, where modest documentation, copying and internet facilities are available.
- Almost all the lectures are supplemented by multimedia, overheads, slides and animations.
- All efforts are made that the courses and knowledge imparted meet the objectives and outcome. The progress is regularly reviewed in the staff meetings.

Standard 5.5: Completion of Program Requirements

- The controller of examinations announces the dates of commencement of examination. After each semester, the controller office notifies the results of the students. The evaluation procedure consists of quizzes, mid and final examinations, practicals, assignments/reports, oral and technical presentations. The minimum pass marks for each course is 40% for undergraduate and Master degree.
- 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
40-49 %	D	1	Pass
Below 40 %	F	0	Fail

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

CRITERION 6: FACULTY

Standard 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

At present there are Four Lecturers (on Contract), Two Assistant Professors, Two Associate Professors and Two Professors in the Department of Biochemistry who are teaching in different degree programs. There is a need of highly qualified Faculty members to share the burden of teaching and research.

Table 7: FACULTY DISTRIBUTION BY PROGRAM AREAS IN BIOCHEMISTRY

Program area of specialization	Number of faculty members in each area
Plant Biotechnology	3
Animal Biotechnology	3

Enzyme Biotechnology	2
General Biochemistry	2

Standard 6-2: The interests and qualifications of all faculty member must be sufficient to teach all courses, plan, modify and update courses and curricula.

The interest of all Faculty members is not sufficient to meet the requirement of all the courses taught to the M.Sc program.

Standard 6-3: 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

- At present all faculty member (except for lecturers, on contract) in BiochemistryarePh.D degree holders in relevant discipline. •All lecturer are M.Philand two out of three are completing their PhD degrees.

Standard 6-4: The majority of the faculty must hold a Ph.D in the Discipline

- At present all faculty membersarePh.Ds except for three lecturers (under UIBB contract).

Standard 6-5: Faculty members dedicate sufficient to research to remain current in their discipline

•All members are dedicated to research and supervising M.Phil and PhD research students and conducting their research projects.

Standard 6-6: Their mechanisms in place for Faculty development

- Yes, there is a mechanism in place for Faculty development.

Standard 6-7: 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. Results of faculty survey employing Proforma-5 are summarized in graphical representations. The results showed satisfaction of the teachers over most of the parameters.

Criterion 7: Institutional Facilities

The institution must have the infrastructure to support new trends in learning such as e-learning including digital publications, library, video conference room and journals etc.

- The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel.
- These aspects need to be strengthened in number and space.
- Class rooms must be air conditioned and adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities**.**

Standard 7-1: Infrastructure:

The faculty has access to E-library which is very helpful for the high quality learning/education and access to scientific publications. The internet facility is also available to faculty members on campus which further strengthens scientific acitivities. However the department has the following shortcomings/problems:

- The Internet services are provided by the university; however the speed of internet is slow. Most of the faculty members have access to telephones which are also connected with the internet.
- Breach of power intermittently, due to which research and academic work both are suffered, however university has provided quite a reasonable back-up by local generator
- Drinking water facility is adequate for staff and students.
- Untrained supporting staff.
- Insufficient budget to meet with routine administrative and academic activities.
- Washrooms are inadequate for students and staff. In addition cleanliness of washrooms is not taken care of adequately.

Standard 7-2: Library Facilities:
The University Central Library has wide range of books; however journals and periodicals are limited. Department itself owns a small librarywith up-to-date editions of relevant books.

Standard 7.3: Class Room and Faculty Offices
Currently the class rooms are enough and multimedia are available for the lecture halls. Lecture rooms are not air conditioned, due to which teachers and students face difficulty in summer. Practical lab space is adequate however not enough for increasing number of students, this affects the quality of teaching. Faculty offices are available and provided to regular faculty members as well as to contract and IPFPs faculty members.

Criterion 8: Institutional Support

The institutional support is provided by the university however budget provision is insufficient.

- There must be sufficient support &financial resources to attract and retain high quality faculty and provide them means for to maintain competence as teachers and scholars.
- The department at present avails all the human resources.

The university administration has been struggling hard to strengthen all the departments, up-gradation of departments and establishing new faculties and Institutes.

Support and Financial Resources

- At present department is having a very meager financial resource to maintain its present needs. The main support for departmental research activities has been earned through individual research grants won by faculty and indigenous scholarships by a few students. There is a dire need for increasing the financial resources allocated to the department to strengthen academic and research activities.

Standard 8-2: High Quality Graduate Students and Research Scholars

Students are admitted in B.Sonce in a year. A strict merit policy is applied for admissions. A detail of the students enrolled during the past years is given in the following Table.

TABLE-8: ENROLLMENT IN B.S. PROGRAMS FROM 2012-14

Degree Program	Year-Wise Enrollments		
	2012	2013	2014
B.S	48	85	111

Standard 8-3: Financial Resources

Total budget of the department for the financial year 2012-14 is only Rs. 50,000/- year which only fulfills basic departmental needs. However, with the introduction of new degree programs along with increase in the number of students, department is under huge pressure to provide chemicals for basic laboratories as well as for research students, regular repair/ maintenance of infrastructure &equipments and books/journals/periodicals for the department library.

Summary

This Self Assessment Report (SAR) is for BS Biochemistry program and contains eight sections. The first section outlines the program mission and objectives. Section-2 provides information about the curriculum development. Section-3 enlists the laboratories and other relevant information. The last four sections provide information about student support, process control, faculty characteristics, institutional facilities and support provided by the university.

The program mission, objectives and outcomes are assessed and strategic plans are presented to achieve the targeted goals, which are again measurable through definite standards. Programme outcomes appeared to be highly relevant. The results of proforma no. 10 during the year 2012-14 show the scores of evaluation by students for all teaching faculty of the Department of Biochemistry. While the results of proforma no.1 presents the scores evaluation by the students for all courses offered by the Department of Biochemistry during 2012-14 session. The overall analysis, based on proformas no. 1 & 10, clearly highlights that students were satisfied with the contents of all taught courses, teaching material of courses offered by the department as well as by the teaching abilities of course instructors.

The process of admission for BS degree program is well established and followed as per rules and criteria set by HEC and the University. For this purpose an advertisement is published in the National News Papers by the Registrar Office. There are set rules by the university as well as HECregarding admission, registration, recruiting policy, courses and delivery of material, academic requirements, performance and grading which are properly followed.

The curriculum of B.S Biochemistry fully satisfies the core requirements for the programme as specified by the HEC. The information technology component of the curriculum has been applied by offering non-conventional courses likeIntroduction to Computingas well as a compulsory applied nature course Bioinformatics. Curriculum design and update is regularly initiated by the faculty members of the Department. After approval from Departmental Board of Studies comprised of senior faculty members and subject specialist from other Universities or research Institutions. The curriculum is then approved by the Board of Faculty, comprising Dean Faculty of Sciences, chairpersons and senior faculty members from all the Departments of the faculty and subject specialists. Finally the curriculum is presented before the Academic Council which is comprised of the Vice Chancellor, Registrar, Deans/Directors, Professors, Associate Professors, Faculty Representatives and very senior subject specialists.

The institutional facilities were measured through Criterion 3; infrastructure and facilities, class rooms, faculty offices, computing faculty support, short comings in computing infrastructure and safety arrangements are highlighted. The infrastructure of the Department of Biochemistry is adequate for running B.S. degree program. The department is upgraded to University Institute of Biochemistry & Biotechnology. The class rooms and laboratories in UIBB building are reasonably equipped with adequate facilities.

CONCLUSIONS

Following points are being considered based on the assessment of B.S Biochemistry program;

1 Computers and internet facilities are available to all regular faculty members to boost the level of research and teaching. However not all undergraduate students could avail the same facility which needs to be addressed.

2 The faculty survey reveals that infrastructure still needs some up gradations like; air-conditioners in under-graduate level class rooms, general labs and some of the research labs

3 One of the major focuses in faculty and students survey was cleanliness of overall building and washrooms; regular repair and maintenance of building/everyday use items.

4 The strength of existing faculty is far less as compared to the number of degree programs being offered and a large number of under-graduate and post-graduate level students.

5 In order to keep faculty member updated with latest research tools/techniques and to initiate/maintain productive scientific collaborations, regular foreign trainings are to be arranged.

6 The annual budget for the department needs to be increased for the smooth conduct of academic and research activities.

7 The weakest point noted is the lack of quality time a faculty has for his/her personal research and family activities.

8 The UIBB is an isolated building with class-rooms, general laboratories and research laboratories holding sophisticated equipments as well as accommodating huge number of students along with faculty and staff. Thus there is dire need for the appointment of a security guard to ensure its safety.

9 Professional and behavioral training of the administrative and supporting staff for efficient handling of official activities.

ANNEXTURE I

Results of Performa No. 2: Results of Faculty Course Review Report

According to the result of the proforma No. 2, most of the faculty members pointed out that the assessment methodology set for theoretical courses is sufficient to evaluate the learning of students for a specified course. The criterion consists of multiple methods including regular discussions during lectures, hands-on practicals during lab sessions, thought provoking questions for assignments & quizzes, objective type paper pattern for mid-term, final and practical exams. Most of the teachers have consensus that the courses are up to date and set per HEC criteria, however course contents are regularly revised/updated when needed and new editions of books included.

Department	Biochemistry
Faculty	Sciences
Courses	Described earlier in SAR Assessment method As per University rules and regulations
Distribution of Grades/Marks	As per University rules and regulations
Overview/Evaluation (course Co-coordinator's comments)	Satisfied
Students (course evaluation survey)	Satisfied
External Examiner	NA
Student/Staff Consultative committee	N/A
Curriculum	In accordance with HEC guidelines
Assessment	Course objectives well defined and well achieved
Enhancement	Proposed changes in earlier course review report incorporated
Future changes	New and modern practical approaches may be incorporated if possible

RESULT OF FACULTY COURSE REVIEW

Course Code	Course Title	Credit Hour	Assessment Method/ Exam	No. of Students	Comment on curriculum	Any changes for course in future	Semester	%Grade						Course Instructors
								A	B	C	D	F	No grade	
BCH-302	Introduction to Biochemistry	3(2-2	Mid = 12 Assignment =4 Practical = 20 Final = 24	86	Appropriate	Prescribed books be made more accessible	Fall 2013	5	35	25	10	4	7	Prof. Dr. S. M. Saqlan Naqvi
BCH-406	Tissue and Cell Culture	3(2-2)	Mid = 12 Assignment =4 Practical = 20 Final = 24	40	Appropriate	Prescribed books be made more accessible.	Spring 2013	14	20	5	1	0	0	Prof. Dr. S. M. Saqlan Naqvi
BCH-409	Biomembranes	2(2-0)	Mid = 12 Assignment = 4 Final = 24	40	Curriculum designed according to HEC approved guidelines	N/A	Spring 2013	5	26	9	0	0	0	Dr. Ghazala Kaukab
BCH-201	Molecular Biology	2(2-0)	Mid = 12 Assignment =4 Final = 24	1	N/A	N/A	Fall 2013	1	0	0	1	0	0	Dr. Ghazala Kaukab
BCH-201	Molecular Biology	3(2-2	Mid = 12 Assignment =4 Final = 24	67	N/A	N/A	Fall 2013	1	24	55	12	6	2	Dr. Ghazala Kaukab
BCH-408	Plant Biochemistry	3(2-2)	Mid = 12 Assignment =4 Practical = 20 Final = 24	17	Course contents are as per HEC criteria	some biochemical methods of extraction of phytochemicals should be more emphasized next time	Spring 13	17	13	1	0	0	2	Dr. M. Sheeraz Ahmad

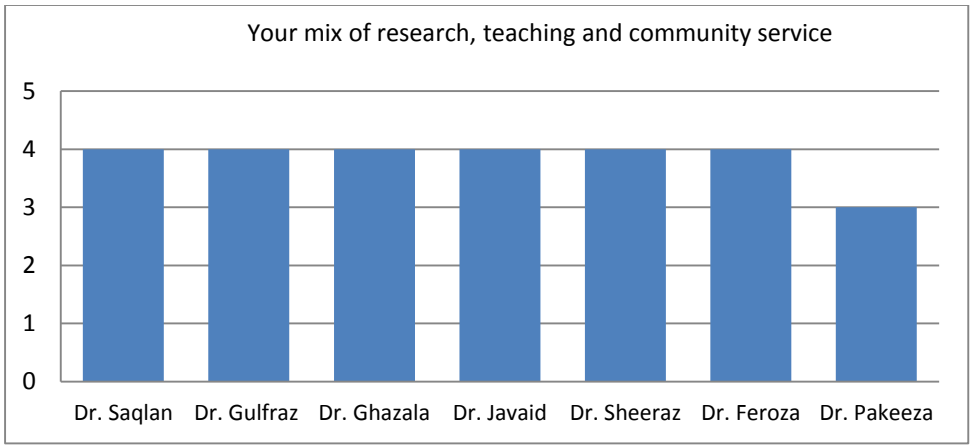
Course Code	Course Title	Credit Hour	Assessment Method/ Exam	No. of Students	Comment on curriculum	Any changes for course in future	Semester	%Grade						Course Instructors
								A	B	C	D	F	No grade	
BCH-503	Biosafety and Bioethics	2(2-0)	Mid = 12 Assignment = 4 Final = 24	40	Curriculum is as per HEC criteria	NIL	Fall-13	27	10	3	0	0	0	Dr. M. Sheeraz Ahmad
BCH-304	Carbohydrates	4(3-2)	Mid = 18 Assignment =6 Practical = 20 Final = 36	43	The course is up to date and in accordance with the HEC guidelines	The assessment methodology is sufficient to check whether the students had learned enough or not as we use multiple methods (objective paper pattern, thought provoking questions for assignments and discussions at the end of lectures about the topic to make sure students learned the real essence of the topic or not	Spring 2013	5	20	16	1	0	1	Dr. Pakeeza Arzoo Shaiq
BCH-304	Carbohydrates	4(3-2)	Mid = 18 Assignment =6 Practical = 20 Final = 36	78	The course objectives are clear and are possible to achieve in term. It is in accordance with the HEC guidelines	The assessment methodology is satisfactory and provides good insight about learning outcomes	Spring 2014	18	46	24	3	9	0	Dr. Pakeeza Arzoo Shaiq

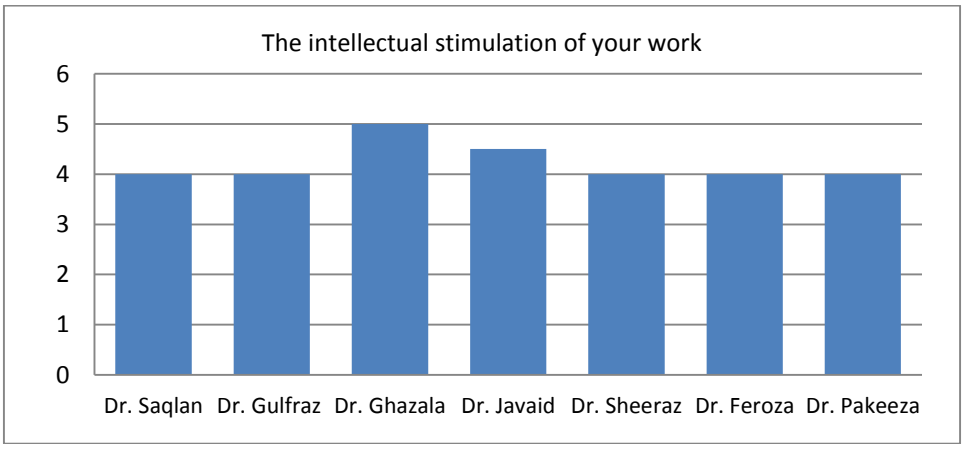
Course Code	Course Title	Credit Hour	Assessment Method/ Exam	No. of Students	Comment on curriculum	Any changes for course in future	Semester	%Grade						Course Instructors
								A	B	C	D	F	No grade	
BCH-409	BIOMEMBRANES	2(2-0)	Mid = 12 Assignment = 4 Final = 24	6	The course was highly appropriate for the intended learning outcomes and showed compliance with HEC approved guidelines	highly effective	Spring 2014	6	10	14	5	1	0	Dr. Pakeeza Arzoo Shaiq
BCH-507	GENETIC ENGINEERING	3(2-2)	Mid = 12 Assignment =4 Practical = 20 Final = 24	41	The course was highly appropriate for the intended learning outcomes and showed compliance with HEC approved guidelines	highly effective	Spring 2014	41	11	22	6	0	2	Dr. Pakeeza Arzoo Shaiq

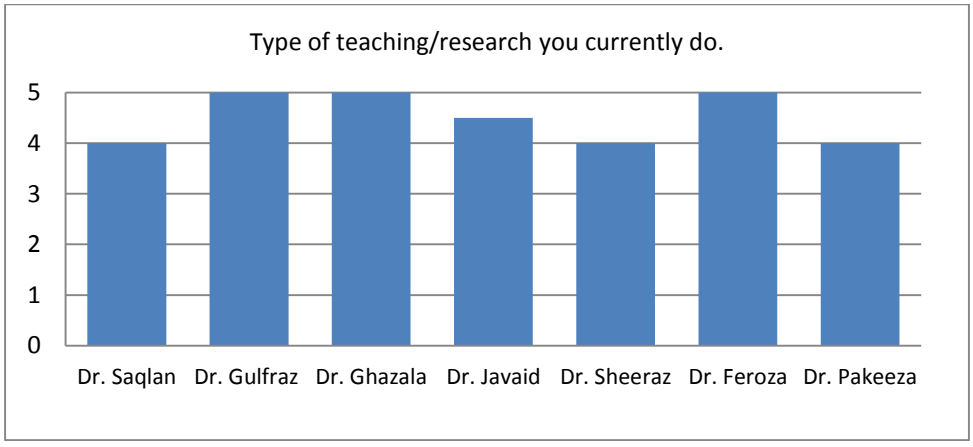
Annex-II

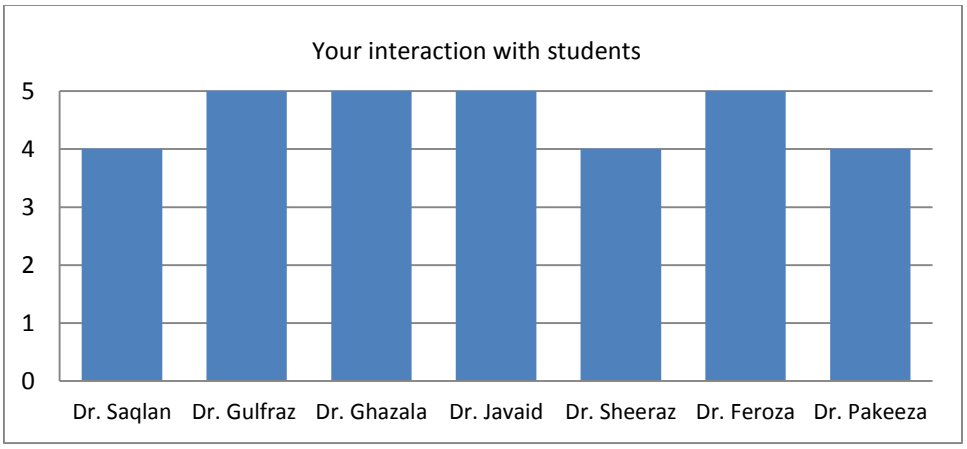
Proforma No. 5: Results of Faculty Survey

According to proforma 5 of Faculty Survey regarding the satisfaction of the Faculty, the weakest aspect is the amount of time teachers find to interact with their families.








Your interaction with students
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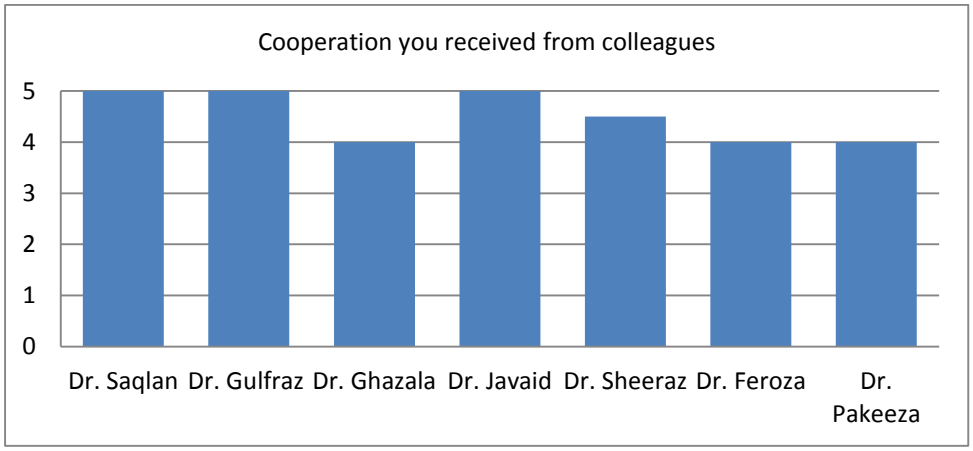
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Cooperation you received from colleagues
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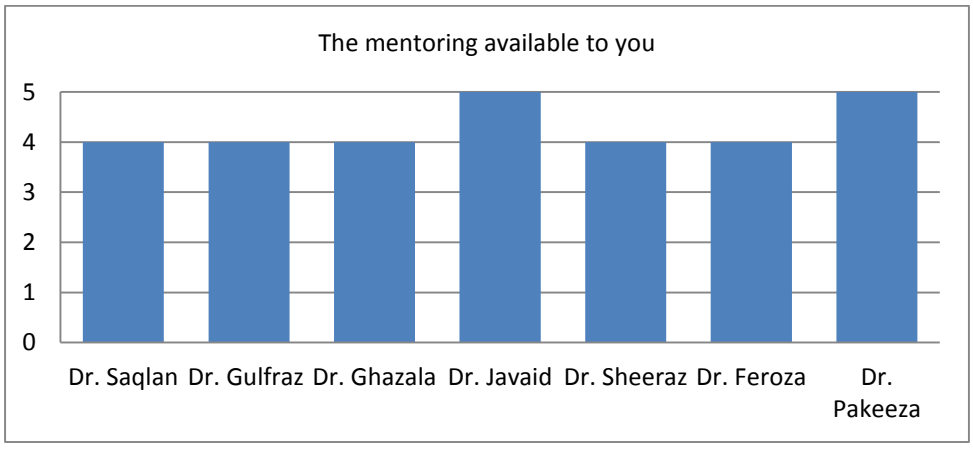
The mentoring available to you
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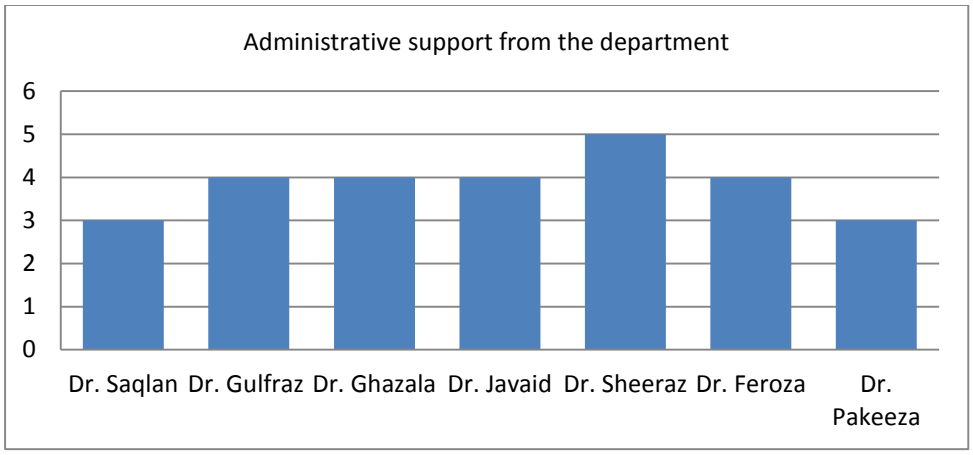
Administrative support from the department
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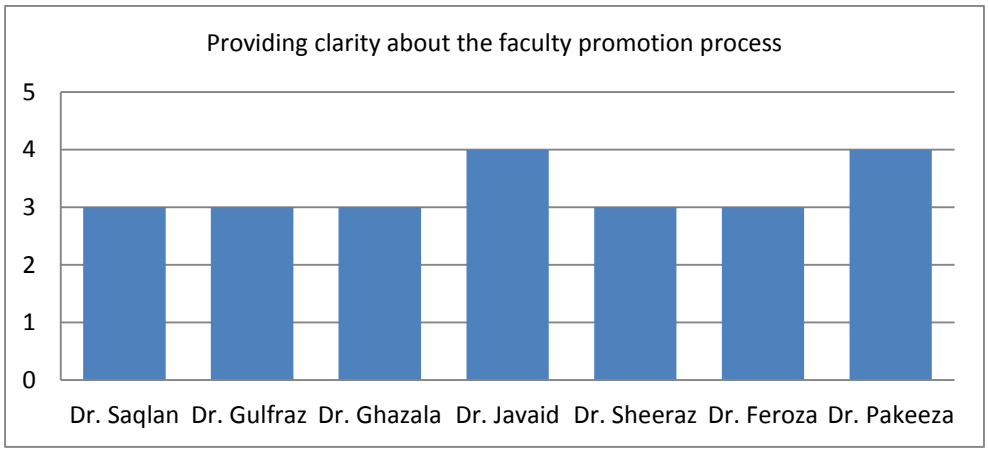
Providing clarity about the faculty promotion process
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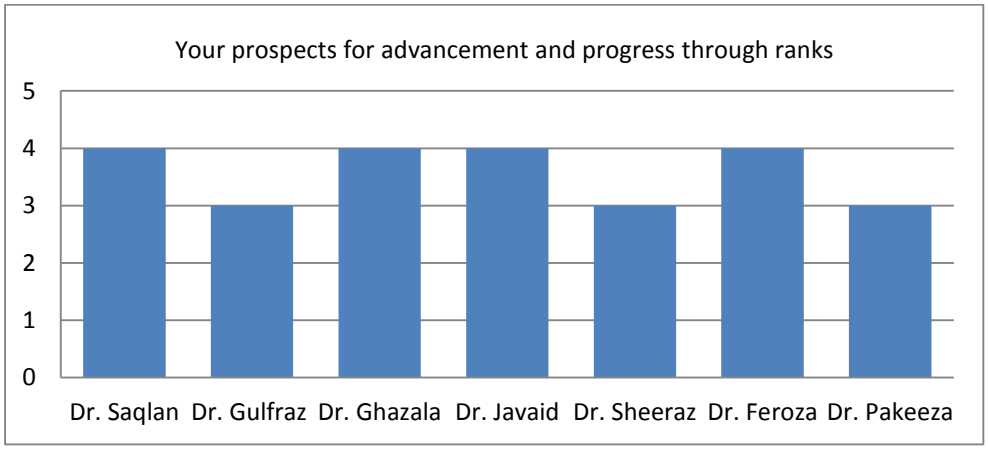
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Your prospects for advancement and progress through ranks
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Dr. Sheeraz
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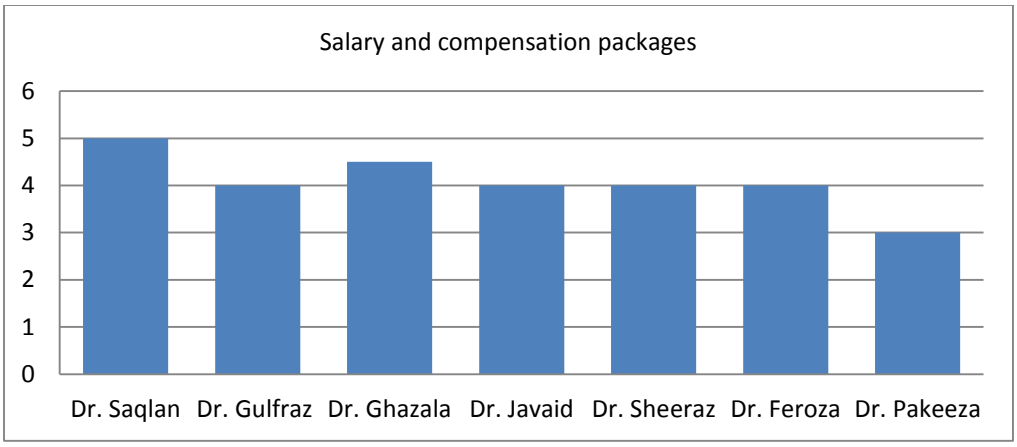
Dr. Pakeeza


Salary and compensation packages
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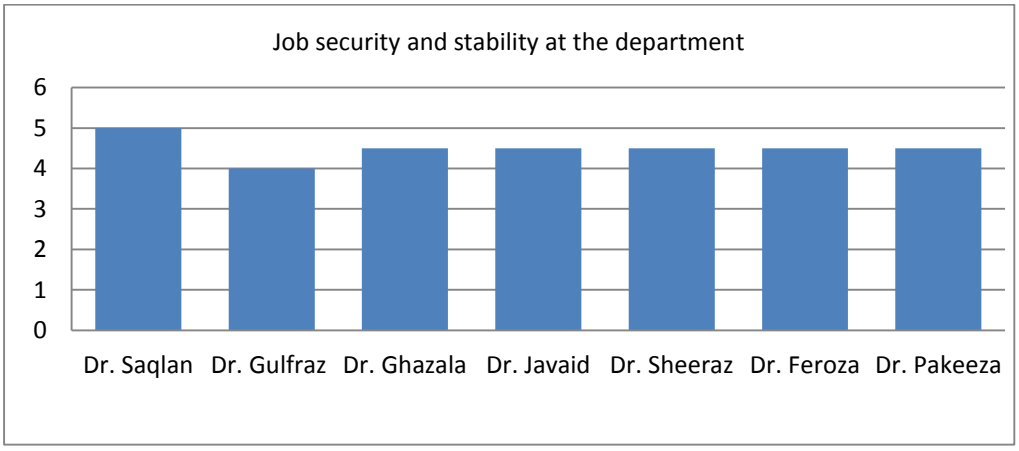
Job security and stability at the department
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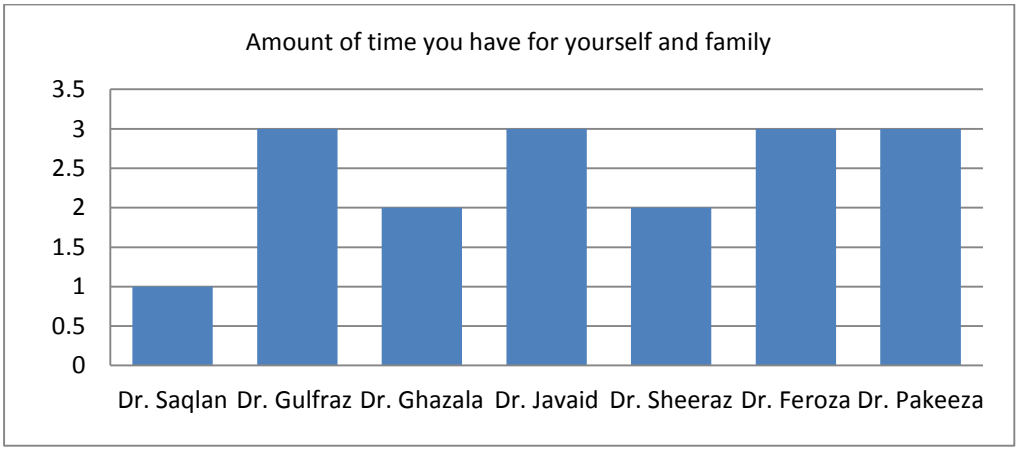
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Amount of time you have for yourself and family
3.5
3
2.5
2
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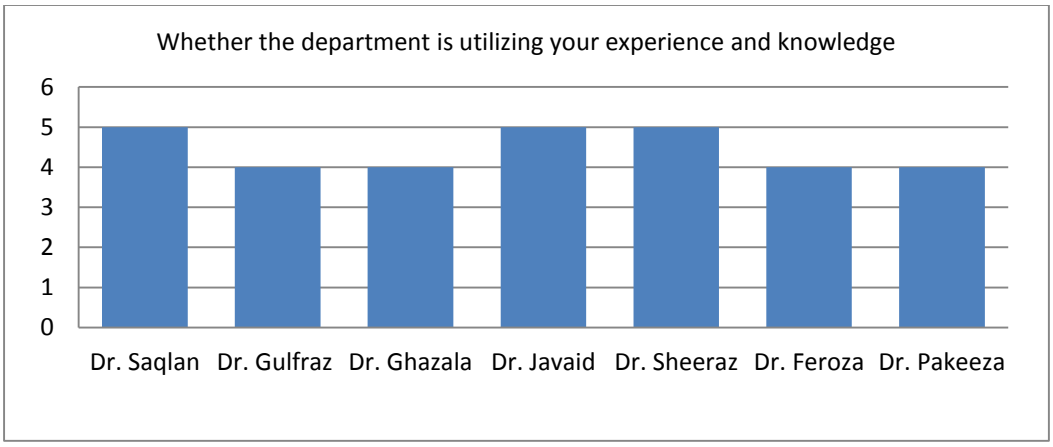
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


Whether the department is utilizing your experience and knowledge
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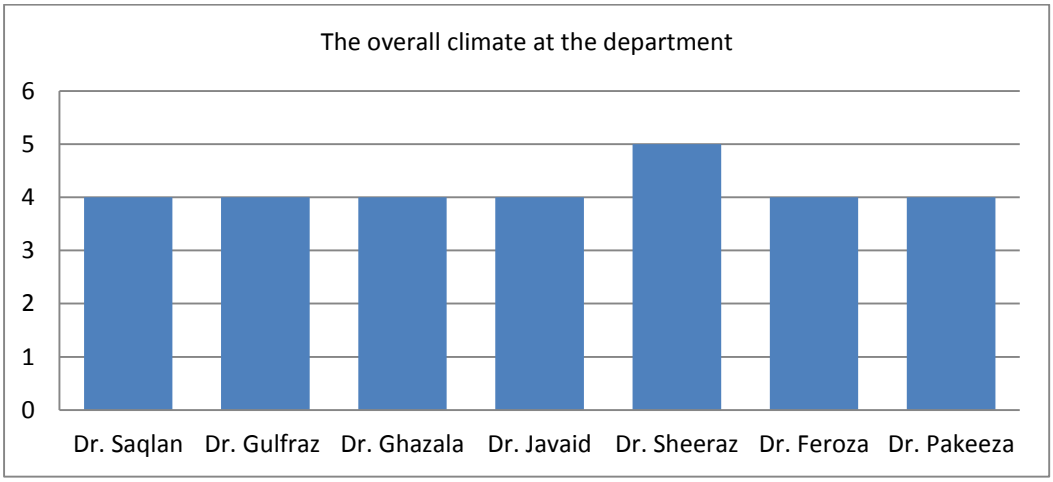
Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza


The overall climate at the department
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Dr. Saqlan
Dr. Gulfraz
Dr. Ghazala
Dr. Javaid
Dr. Sheeraz
Dr. Feroza
Dr. Pakeeza

ANNEXURE III:

RESULTS OF GRADUATING STUDENTS SURVEY

BS Biochemistry programe was intiated in 2011 and none of the badge of BS has been graduated yet.

Proforma 7:ALUMNI SURVEY RESULTS:

BS Biochemistry programe was intiated in 2011 and none of the badge of BS has been graduated yet.

Annex-IV

Faculty Resume

Name	Prof. Dr. S. M. Saqlan Naqvi
Designation	Professor/ Dean Sciences
Research Interest	RESEARCH INTERESTS Tissue culture for genetic transformation Cloning of genes, cDNAs and regulatory elements and their application in agriculture/food industry. Construction of transgenic plants for for improved agricultural productivity. Bioinformatics &Nanobiotechnology; applications, teaching and tools development
Publication	Latest Publications

1. P. Anwar, A. Bendini, M. Gulfraz, R. Qureshi, E Valli, G. di Lecce, S.M.S. Naqvi. T.G. Toschi. (2013). Characterization of wild olive (Oleaferruginea) oils from Pakistan. Food. Res. Int., 54(2):1965-1971.

2. T. Mahmood, R. Aslam, S. Rehman, S.M.S. Naqvi. (2013). Molecular markers assisted genetic characterization of different salt tolerant plant species. J. Anim. Plant Sci., 23 (5): 1441-1447

3. F. Shamim, G.N. Johnson, S.M. Saqlan Naqvi, A. Waheed. (2013). Higher antioxidant capacity protects photosynthetic activities as revealed by Chl a fluorescence in drought tolerant tomato genotypes. Pak. J. Bot., 45(5): 1631-42 http://www.pakbs.org/pjbot/PDFs/45(5)/22.pdf

4. I. Rehman, F. Deeba, M. IrfanulHaque, S. M. Saqlan Naqvi (2013). Inhibition of sesame seedling growth by Xanthomonascampestrispv. Sesami culture secretions. J. Anim. Plant Sci., 23 (4):1207-1210. http://www.thejaps.org.pk/docs/v-23-4/39.pdf

5. F. Khan, T. Sultana, F. Deeba, S.M.S. Naqvi. (2013). Dynamics of mRNA of glycine-rich RNA-binding protein during wounding, cold and salt stresses in Nicotianatabacum. Pak. J. Bot., 45(SI): 297-300. http://www.pakbs.org/pjbot/PDFs/45(S1)/39.pdf

6. T. Mahmood, T. Yasmin, M.I. Haque and S.M.S. Naqvi. (2013). Characterization of a rice germin-like protein gene promoter. Genet. Mol. Res., 12 (1): 360-369. DOI: 10.4238/2013.February.7.6 http://www.geneticsmr.com//year2013/vol12-1/pdf/gmr2097.pdf

7. H.Ahmed, M.R. Khan, R.P.-Fontan, C.L. Sandez, I. Mustafa, A. Ghani, M. Hussain, S. Asif, A. Ahmad, S.M.S. Naqvi, M. Qayyum. (2013). Prevalence of Bovine

Hypodermosis in Water Buffalo (Bubalusbubalis) from Jhelum District, Pakistan. KafkasUniv Vet FakDerg., 19(1): 79-84. DOI: 10.9775/kvfd.2012.7227

8. S.K.B. Naqvi, M.S. Ahmad, C.A. Rauf and S.M.S. Naqvi. (2013). Amplification and Sequencing of Internal Transcribed Regions 1& 2, and 5.8s rDNA from Local Isolates of Fusarium Species. Pak. J. Bot., 45(SI): 301-307. http://www.pakbs.org/pjbot/PDFs/45(S1)/40.pdf

9. S.M.S. Naqvi, I. Batool, M.U. Farooq, F. Deeba, M.Z. Hyder, T. Mahmood. (2013). Seed grain polyphenol oxidase activities in wheat (Triticumaestivum L.). Pak. J. Bot., 45(2): 407-410. http://www.pakbs.org/pjbot/PDFs/45(2)/08.pdf

10. M. Naeem, I. Naveed, S.M.S. Naqvi, and T. Mahmood. (2013) Standardization of tissue culture conditions and estimation of freescavenging activity in viola odorata L. Pak. J. Bot., 45(1):197-202. http://www.pakbs.org/pjbot/PDFs/45(1)/27.pdf

11. F. Munir, S.M.S. Naqvi, Tariq Mahmood. (2013). In vitro and in silico characterization of Solanumlycopersicum wound inducible proteinase inhibitor-II gene. Turk J Biol., 37: 1:10. http://journals.tubitak.gov.tr/biology/issues/biy-13-37-1/biy-37-1-1-1111-23.pdf

12. Batool,S.,M.J.Asad,S.M.S.Naqvi,R.T.Mahmood,A.Guffar,M.Gulfraz andS.H.Hadri.2013.Production and partial purification of pectin lyase by Aspergillusniger grown on orange peels.Afr.J.Microbiol.Res.7(13): 1144-1149. (J.Impact Factor: 0.539)

Name	Prof. Dr. Muhammad Gulfraz
Designation	Professor/ Chairman
Research Interest	Natural Product Chemistry Isolation Purification and analysis of active ingredients for drug discoveries Fermentation Biotechnology Production of Bioethanol and Biodiesel from agriculture waste and plant sources

Publications (Latest 10)

1. Hinagul , Mushtaq, Nabila sarwar, Saima Khalid Abbasi, Muhammad Shaeerz Ahmad and Muhammad Gulfraz.2014. Phytochemical analysis and biological activities of Diospyros lotus L. fruit extracts. Int. J. Pharmaceutical chemistry J. DOI 10.7439. 04 (03). Impact factor 0.4

2. I.Hayat, A. Ahmad, A. Ahmed S. Skhail and M. Gulfraz.2014. Exploring the potential of red kidney beans (Phaseolus Vulgaris L.) to develop protein based product for food application. The Journal of Animal and plant Science,24 (3).pp 860 -868. Impact factor 0.3

3. Abdul Rehman, Muhammad Gulfraz , GhazalaKaukab Raja, Muhammad InamulHaq and Zahid Anwar.2014. A Comprehensive Approach to Utilize an Agricultural Pea peel (Pisum 2 sativum) Waste as a Potential Source for Bio-ethanol Production. Romanian Journal of Biotechnology Letter (Accepted).

4. SajidMehmood, M.Gulfraz,M.S. Tahir,M.S.Rehman, T.Aqil and T. Mehmood. 2014. Statistical screening and selection of sweet sorghum varieties for Bio ethanol production.Pak.J.Bot 46(3)1115-1120. Impact factor 0.9

5. Dawood Ahmad, M.Gulfraz, M.Shareez Ahmad, habibaNazir, Hinagul and Saira Asif.2014. Protective action of Taraxacumofficinale on CCL4 induced hepato toxicity in rats. African Journal of Pharmacology 8(30)pp.775-780. Impact factor 0.5

6. Muhammad Gulfraz, Muammad Imran, SobiaKhadam, Dawood Ahmed, Muhammad J. Asad, Kashis S. Abassi, Muhammad Irfan and Sajid Mehmood.2014. A comparative study of antimicrobial and antioxidant activities of garlic (Allium sativum L.) extracts in various localities of Pakistan. African Journal of plant Sciences vol.8 Impact factor 0.5

7. Atif Kamal, KhansaQamar, Muhammad Gulfraz, Muhammad Asad

Anwar, RiffatNaseem Malik. 2014. PAH exposure and oxidative stress indicators of human cohorts exposed to traffic pollution in Lahore city (Pakistan). Chemosphere. 120 (2015)59-67.Impact factor 3.5

8. Zahid Anwar, Muhammad Gulfraz and Muhammad Irshad. 2014. Agro-Industrial lignocellulosic biomass a key to unlock the future bioenergy : A brief review. J Radiation Research and applied Sciences, pp 1-11. Impact factor 0.5

9. Dawood Ahmad, M.Gulfraz, M.Shareez Ahmad, Rahmatullah, M. Tahir and Pervez.2013. Cytoprotective potential of methanolic leaves extract on Taraxacumofficinale on CCl4 induce Rates. Pensee Journal. 75:11Nove.2013.), pp. 749-757. Impact factor 0.05

10. Pervez Anwar, Alessandra Bendini, Muhammad Gulfraz, Rahmatullah Qureshi, Enrico Valli, Giuseppe Di Lecee, S.M. Saqlan Naqvi and TulliaGallna Toschi.2014. Characterizaton of wild olive (Oleaferruginea) oils from Pakistan. Food Research International, 54:1965-1971.Impact factor 3.5

11. M.Gulfraz, Dawood Ahmad, M.Shareez Ahmad, Rahmatullah, M. Tahir Raja , Nyla Jabeen and KashiSarfraz Abbasi.2013. Effect of leaf extracts of Taraxacumofficinale on CCl4 induce Hypatotoxicity in rats. Pakistan Journal of Pharmaceutical Sciences.27(4) 825-829. Impact factor 0.9

12. HumairaShaheen, RahmatullahQuershi, AbidaAkram, M.Gulfraz and Daniel Potter.2013. A Preliminary Floristic Checklist of Thal Desert Punjab, Pakistan.Pak.J.Bot. 46(1):2-7. Impact factor 0.9

13. Mirza Imran Shahzad, Imran Hamayun Khan, Paul A. Luciw, Muhammad Gulfraz and AzraKhanum. 2013. Cloning, Expression and Genetic Immunization Studies of Mycobacterium tuberculosis Gene esat6. Pakistan J. Zool., vol. 45(3) Impact factor 0.5

14. Sidra Batool, M. Javaid Asad, S. M. SaqlanNaqvi, Raja TahirMahmood, A. Guffar, M. Gulfraz and Saqib H. Hadri.2013.Production and partialpurification of pectinlyaseby Aspergillus niger grownonorange peles. African Journal of Microbiology Research Vol. 7(13), pp. 1144-1149. Impact factor 0.54

15. Gul Rahim, Rahmatullah Qureshi, M. Arshad and Muhammad Gulfraz.2013. Phytochemical Analysis and Antioxidant Properties of Teucriumstocksianum Flower from Malakand Division, Pakistan. International journal of agriculture & biology. 15 (2): 377–381 Impact factor 0.6

16. Umara Afzal, Muhammad Gulfraz, ShahzadHussain, FarnazMalik,SadafMaqsood, Imam Shah and Sidra Mahmood.2013. Hepatoprotective effects of Justiciaadhatoda L. against carbon tetrachloride (CCl4) induced liver injury in Swiss albino mice. African Journal of Pharmacy and Pharmacology Vol. 7(1), pp. 8-14.Impact factor 0.869

17. Sadiq Noor Khan, Stefan Niemann,MuhammadGulfraz,MazharQayyum,SaimaSiddiqi,Zahid , Sharif Mirza, SabiraTahsin,MinaEbrahimi-Rad and Azra Khanum.2013. Molecular Characterization of Multidrug-Resistant Isolates of
18. Mycobacterium tuberculosis from Patients in Punjab, Pakistan. Pak. J. Zool.45(1),pp.93-100. Impact factor 0.5

19. HafeezUllah, Feroza Hamid Wattoo , Muhammad Hamid SarwarWattoo, Muhammad Gulfraz, Syed Ahmad Tirmizi, Sadia Ata, Abdul Wadood.2012. Synthesis, spectroscopic characterization and antibacterial activities of three Schiff bases derived from dehydroacetic acid with various substituted anilines. Turkish Journal of Biochemistry. 37 (4): 386–391.Impact factor 0.3

20. AbidMahmood, GhazalaKaukabRaja,TariqMahmood,MuhammadGulfraz and Azra Khanum.2012. Isolation and Characterization of antimicrobial activity conferring components from seed of bitter ground (Momordicacharanita).Medicinal Plant Research 64(4),566-573.Impact factor 0.6

21. Muhammad Imran, Muhammad Javaidasad Muhammad Gulfraz, Rahmatullah Qureshi, HinaGul, NazishManzoor and Arshad Nawaz Ch. 2012.Hyper production of glucoamylase by aspergillusniger through solid state fermentation. Pak Bot.44(6):2103-2110. Impact factor 0.9

22. MehmoodaMunazir, Rahmatullah Qureshi1, Muhammad Arshad and Muhammad Gulfraz.2012. Antibacterial activity of root and fruit extracts of leptadeniapyrotechnica (asclepiadaceae) from Pakistan. Pak. J. Bot., 44(4): 1209-1213. Impact factor,0.94

23. AbdusSattar Tariq, Zahid Akram1, GhulamShabbir, Muhammad Gulfraz, Khalid Saifullah Khan, Muhammad Shahid Iqbal1 and Talat Mahmood.2012. Character association and inheritance studies of different sorghum genotypes for fodder yield and quality under irrigated and rainfed conditions. Afri. J. Biot Vol. 11(38), pp. 9189-9195. Impact factor 0.57

24. Muhammad Irshad, Zahid Anwar, Muhammad Gulfraz , Hamama Islam Butt,
25. Amir Ejaz, and Haq Nawaz.2012. Purification and characterization of α-amylase from Ganodermatsuage growing in waste bread medium. Afri. J. Biotech. Vol. 11(33), pp. 8288-8294. Impact factor 0.57

26. Zahid Anwar, Muhammad Gulfraz, Muhammad Imran, Muhammad JavaidAsad, Aftab Iqbal Shafi, Pervaz Anwar and RehmatullahQuershi. 2012. Optimization of Dilute acid pretreatment using response surface methodology for bioethanol production from Cellulosic Biomass of rice polish. Pak. J.Bot.,44(1):169-176. Impact factor 0.94

27. HumairaShaheen, Rahmatullah Qureshi, AbidaAkram and Muhammad Gulfraz.2012. Some important medicinal flora of NoorpurThalKhushab, Pakistan. Archives Des Sciences. Vol 65 (2); 57-73 Impact factor 0.7

28. Shahzad, M.I., Khan,I.H., Luciw, P.A., Gulfraz, M and Khanum, A. 2012. Cloning expression and genetic immunization studies of Mycobacterium tuberculosis gene esat 6.PJZ, Vol(44). Impact factor 0.338

29. Zahid Anwar, Muhammad Gulfraz, M. JavaidAsad, Muhammad Imran, ZahidAkramSajid Mehmood2, Abdul Rehman1, Pervez Anwar1 and Alia Sadiq.2012 Bioethanol productions from rice polish by optimization of dilute acid pretreatment and enzymatic hydrolysis. African J. Biot.Vol(4),pp.992-998. Impact factor 0.57

30. Farzana S, Kiran SK, Asif A, Anwar A, M.Gulfraz and Feroza HW.2012. Development and Optimization of sweet cream butter from buffuloes at cottage scale .African J .Biot. Vol (75),pp.17265-17274 . Impact factor 0.57

31. Gul R, Rahmatullah Q, Gulfraz M, M. Arshad and Sahib R.2012. Preliminary phytochemical screening and ehtnomedicinal uses of Teucriumstocksianum from MalakandDivision..J. Med.plantsRes.vol 6(5),pp.704-707. Impact factor 0.5

32. Sajida Zafar,Anwaar Ahmed, Riaz Ahmad, Muhammad Atif Randhawa, Muhammad Gulfraz, Asif Ahmad, and Farzana Siddique.2012Chemical residues of some pyrethroid insecticides in egg plant and okra fruits: effect of processing and chemical solutions. J. Chem. Soc. Pak 34(5) 1169-1174.Impact factor 1.10

Name	Dr. GhazalaKaukab Raja
Destination	Associate Professor
Research Interest	Exercise Biochemistry, Metabolism, Genetic polymorphism

Publications

1. Philip E Stuart, TrilokrajTejasvi, Pakeeza A Shaiq, PreyaKullavanijaya, RaheelQamar, Ghazala K Raja, Yanming Li, John J Voorhees, Gonçalo R Abecasis, James T Elder and Rajan P Nair (2014). A Single SNP Surrogate for Genotyping HLA-C*06:02 in Diverse Populations. J Invest Dermatol. doi:10.1038/jid.2014.517

2. Ghazala K. Raja, Mark A. Sarzynski, Peter T. Katzmarzyk, William D. Johnson, YourkaTchoukalova, Steven R. Smith, Claude Bouchard. (2014) Commonality versus specificity among adiposity traits in normal-weight adults. Int J Obes (Lond). 38(5):719-23. doi: 10.1038/ijo.2013.153. Epub 2013 Aug 16.

3. IffatTahira, Muhammad Saqlain, AbidMahmood, NafeesaQudsiaHanif, GhazalaKaukab Raja. (2014) Study of β-Lactoglobulin Milk Protein Variants in Buffalo. Pakistan J. Zool. 46(2): 549-552

4. P.A. Shaiq,P.E. Stuart, A. Latif, C. Schmotzer, A.H. Kazmi, M.S. Khan, M. Azam, T. Tejasvi, J.J. Voorhees, G.K. Raja, J.T. Elder, R. Qamar, R.P. Nair. (2013) Genetic Associations of Psoriasis in a Pakistani Population. British J. Dermatol. 169(2):406-11. doi: 10.1111/bjd.12313.

5. P. A. Akram, A. Klausegger, A. Latif, J. W. Bauer, R. Qamar and G. K. Raja.(2012) Missense Mutation in LAMA3 Associated with HerlitzJunctionalEpidermolysisBullosa in a Pakistani Family.Pak. J. Zool. 44(6): 1697-1702

6. ShahidMahmoodBaig;DureSabih;KashifRahim;AyshaAzhar;Muhammad Tariq; Muhammad SajidHussain; Syed Muhammad Saqlan Naqvi; GhazalaKaukabRaja;TahirNaeem Khan; Muhammad Jameel;ZahraIram; Samiya Noor; Usman RazaBaig; JavedAnver Qureshi; ShehlaAnjumBaig; SyedaMarriamBakhtiar. (2012). β-Thalsssemia in Pakistan: a pilot program on prenatal diagnosis in Multan. J. Pedia. Hematol and Oncol.39: 90-92

7. Pakeeza A. Shaiq, Alfred Klausegger, FawadMuzaffar, Johann W. Bauer, Muhammad I. Khan, AzraKhanum, RaheelQamar and Ghazala K. Raja. (2012). Founder mutation c.676insC in three unrelated kindler syndrome families belonging to a particular clan from Pakistan. J. Dermatol. 39: 1-2

Name	Dr. Muhammad JavaidAsad
Destination	Associate Professor
Research Interest	Fermentation process development Bioconversion of lignocellulosic biomass and production of amylases, cellulases and lignases, single cell protein, organic acids and other industrial products. Biocatalysis: Enzyme kinetics, purification, characterization, enzyme engineering, immobilization and industrial application of microbial enzymes; Liquid and solid waste management. Bioremediation of textile dyes and industrial effluents by white rot fungi, Biodiesel, Bioenergy and Nutrition.

Publications

1. Mehboob, N., M. J. Asad, M. Asgher, M. Gulfraz, T. Mukhtar and R. T. Mehmood. 2014. Exploring Thermophilic Cellulolytic Enzyme Production Potential of Aspergillus fumigates by the Solid-State Fermentation of Wheat Straw. Appl. Biochem. Biotechnol.DOI 10.1007/s12010-014-0796-3.

2. Amin, Noor., R. T. Raja, M. J. Asad, M. Zafar and A. M. Raja. 2014. Evaluating Urea and Creatinine Levels in Chronic Renal Failure Pre and PostDialysis:AProspectiveStudy.http://www.researchpub.org/journal/jcvd/jcvd.html

3. Mahmood,R.T.,M.J.Asad,N.Mehboob,M.Mushtaq,M.Gulfraz,M.Asgher,N.M.Minhas and S.H.Hadri.2013.Production,purification and characterization of Exoglucanase by Aspergillus fumigates .Appl. Biochem. Biotechnol.170:895–908(DOI 10.1007/s12010-013-0227-(J.Impact Factor:1.943)

4. Batool,S.,M.J.Asad,S.M.S.Naqvi,R.T.Mahmood,A.Guffar,M.Gulfraz andS.H.Hadri.2013.Production and partial purification of pectin lyase by Aspergillusniger grown on orange peels.Afr.J.Microbiol.Res.7(13): 1144-1149. (J.Impact Factor: 0.539)

5. Ata, S., F. H. Wattoo, M. Feroz, M. H. S. Wattoo, S. A. Tirmizi and M. J. Asad. 2013.Analytical investigation of selected pesticide residues from fruits and vegetables by an improved extraction method using reverse phase high performance liquid chromatography. Ethiop. J. Envion. Studies Manag.6 (4):342-347.

6. Asgher, M., Iqbal, H.M.N.andM.J.Asad.2012.Kinetic characterization of purified laccase produced from Trametesversicolor IBL-04 in solid state bio-processing of corncobs. BioResoueces, 7(1):1171-1188. (J. Impact Factor: 1.418).

7. Anwar, Z., M. Gulfraz, M. Imran, M. J. Asad, A. I. Shafi, P. Anwar and R.U.Quershi.2012.Optimization of dilute acid pretreatment using response surface methodology for bioethanol production from cellulosic biomass of rice polish. Pak. J. Bot., 44(1): 169-176. (J. Impact Factor: 0.836).

8. Anwar,Z.,M.Gulfraz,M.J.Asad,M.Imran,Z.Akram,S.Mehmood,A.Rehman,P.Anwar and A.Sadiq.2012.Bioethanol production from rice polish by optimization of dilute acid pretreatment and enzymatic hydrolysis.Afri.J.Biotechnol., 11 (4):992-998. (J. Impact Factor: 0.573).

9. Raza,A.,N.Zaman,B.G.Arshad,M.J.Asad,H.Aziz,S.N.Qureshi and J.Irfan.2012.Mutations in ISDR may be linked to HighVIREMIA and Virus Resistance toIFN-Alpha-2b But Responsiveto PEG-IFN-Alpha-2a. Int. J Sci. Emerging Tec., 4(3):153-158.

10. N.Mehboob.,M.J.Asad,M.Asghar,M.Gulfraz and R. T. Mahmood. 2012. Cellulaseproduction by Aspergillusfumigatus cultured on wheat straw waste.Bioprocess J.,11(3):38-43

11. Imran, M., M. J. Asad, S. H. Hadri and S. Mehmood. 2012. Production and industrial applications of laccase enzyme.J.Cell.Mol.Biol.,10(1):1-11

12. Mehmood.K.,F.H.Watoo,M.H.S.Watoo,M.Imran,M.J.Asad,S.A.Tirmizi and A.Wadood.2012. Spectrophotometric estimation of cobalt with ninhydrin.Saudi J. Biol. Sci.:19: 247–250

Name	Dr. M. Sheeraz Ahmed
Designation	Assistant Professor
Research Interest	Biochemistry, Plant Biotechnology.

Publications

1. Gulfraz, Muhammad; Ahamd, Dawood; Ahmad, Muhammad Sheeraz; Qureshi, Rehmatullah; Mahmood, Raja Tahir; Jabeen, Nyla; Abbasi, KashifSarfraz.Effect of leaf extracts of Taraxacumofficinale on CCl4 induced Hepatotoxicity in rats, in vivo study. Pakistan Journal of Pharmaceutical Sciences; 2014, 27(4), 825-829. Impact Factor: 0.95
2. MukhtiarHussain, Zia-Ur-Rehman, M Sheeraz Ahmad, Muhammad Altaf, Helen Stoeckli-Evans, Saqib Ali: Structural and biological studies of new monomeric, tetrameric, and polymeric organotin(IV) esters of 3-(benzo[d][1,3]dioxol-4-yl)propanoic acid. Journal of Coordination Chemistry, 2013. 66(5), 868 –880. Impact Factor: 2.224
3. KanwalBatool, M. Sheeraz v Ahmad, Ch. Abdul Rauf, S.M. Saqlan Naqvi. Amplification and sequencing of internal transcribed regions 1,2, and 5.8 S RNA from local isolates of Fusarium species. Pakistan Journal of Botany, 2013, 45 (SI), 301-307. Impact Factor: 1.207
4. M Sheeraz Ahmad, S M Saqlan Naqvi, SajidaMushtaq, FarzanaRamzan, Abdul Sami, Salma Batool, Ihsan-ul-Haq and BushraMirza: Phytochemical and biological evaluation of Polygonumamplexicaule rhizome extract, Canadian Journal of Pure and Applied Sciences, 2013, 7(3): 2303-2314.
5. Ihsan-ul-Haq, NazifUllah, GulnazBibi, SemabKanwal, Muhammad Sheeraz Ahmad, BushraMirza: Antioxidant and anticancer activities and phytochemical analysis of Euphorbia wallichii root extract and its fractions. Iran. J. Pharm. Res. 2012, 11 (1): 241-249. Impact Factor: 0.51

Name	Dr. Feroza Hamid Wattoo
Desgination	Assistant Professor
Research Interest	• To express and purify therapeutics using gene cloning techniques or isolate, purify antimicrobial peptide (s) against mammalian pathogens from vegetables like pea, keralaetc using conventional techniques • Development of Vaccine and Diagnostic method for tuberculosis • To understand signal transduction mechanisms in eukaryotic cell • To understand mechanism leads normal cell to become abnormal cell

Publications

(1) S. Ata, F.H. Wattoo, M. Ahmed, M.H.S.Wattoo, S. A. Tirmizi, A. Wadood. "A method optimization study for atomic absorption spectrophotometric determination of total zinc in insulin using direct aspiration technique." 2014 Apr doi:10.1016/j.ajme.2014.03.004. (ISI Indexed Journal).

(2) Krueger LA, Beitz DC, Onda K, Osman M, O'Neil MR, Lei S, Wattoo FH, Stuart RL, Tyler HD, Nonnecke B. "Effects of D-α-tocopherol and dietary energy on growth and health of preruminant dairy calves". J Dairy Sci. (2014) : S0022-0302(14)00237-9. doi: 10.3168/jds.2013-7315. (ISI Indexed Journal, JCR-2012 Impact factor 2.566).

(3) S.Ata, F.H. Wattoo, I Qasim, M.H.S Wattoo, "Monitoring of anthropogenic influences on underground and surface water quality of Indus River at district Mianwali-Pakistan"., Turk J Biochem 3(1): 9–13,2013.(ISI Indexed Journal, JCR-2012 Impact factor 0.211).

(4) S.Ata, F.H. Wattoo, MominaFeroz, M.H.S Wattoo, S.A Tirmizi, M.J Asad, "Analytical investigation of selected pesticide residues from fruits and vegetables by an improved extraction method using reverse phase high performance liquid chromatography", Ethiopian Journal of Environmental Studies and Management 6(4), 342-347, 2013 (ISI Indexed Journal).

(5) K.Mahmood, F.H.Wattoo, M.H.S.Wattoo, M.Imran, M.J.Asad, S.A.Tirmizi, "Spectrophotometeric Estimation of Cobalt with Ninhydrin" Saudi J. Biol. Sci.: 19(2):247–250, 2012. (ISI Indexed Journal, Sciencedirect). doi:10.1016/j.sjbs.2012.01.001)

(6) M. H.S Wattoo, A. Quddos , A. Wadood, M. B. Khan , F.H.Wattoo, S.A. Tirmizi, K.Mahmood, "Synthesis, characterization and impregnation of lead sulphide semiconductor nanoparticle on polymer matrix" J.SaudiChem Soc. 16: 257-261, 2012. (ISI Indexed Journal; JCR-2012 Impact Factor 1.288).

(7) S.Ata, F.H.Wattoo, L.R.Sidra, M.H.S.Wattoo, S.A.Tirmizi Imran Din andI. U. Mohsin, "Biosorptive removal of lead and cadmium ions from aqueous solution: The use of carrot residues as low cost non-conventional adsorbent" :Turk J

Biochem. 37(3): 272-279, 2012.(ISI Indexed Journal, JCR-2012 Impact factor 0.211).

(8) HafeezUllah, F.H.Wattoo, M.H.S.Wattoo, M.Gulfraz, S.A.Trimzi, S. Ata and A.Wadood."Synthesis, spectroscopic characterization and antibacterial activities of Schiff bases derived from dehydroacetic acid with various substituted anilines", Turk J Biochem. 37(4): 386-391, (2012). (ISI Indexed Journal, JCR-2012 Impact factor 0.211).

Name	Dr. PakeezaArzooShaiq
Designation	Assistant Professor
Research Interest	Human Genetics

Publications

1. Pakeeza A. Shaiq, Alfred Klausegger, FawadMuzaffar, Johann W. Bauer, Muhammad I. Khan, AzraKhanum, RaheelQamar, Ghazala K. Raja (2012). Founder mutation c.676insC in three unrelated Kindler syndrome families belonging to a particular clan from Pakistan. J. Dermatol.39(7):640-1.

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Name	Dr. Sadia Saeed
Designation	Assistant Professor
Research Interest	i. Molecular Biology ii. Epigenetic iii. Human Immune System

Publications

1. Saeed S, Quintin J, Kerstens HH, Rao NA, Aghajanirefah A, Matarese F, Cheng SC, Ratter J, Berentsen K, van der Ent MA, Sharifi N, Janssen-Megens EM, TerHuurne M, Mandoli A, van Schaik T, Ng A, Burden F, Downes K, Frontini M, Kumar V, Giamarellos-Bourboulis EJ, Ouwehand WH, van der Meer JW, Joosten LA, Wijmenga C, Martens JH, Xavier RJ, Logie C, Netea MG, Stunnenberg HG. Epigenetic programming of monocyte-to-macrophage differentiation and trained innate immunity.Science. 2014 Sep 26;345(6204):1251086. doi: 10.1126/science.1251086

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