UNIVERSITY OF KARACHI

Self-Assessment Report

Department of Genetics
University of Karachi

Submitted to

Quality Enhancement Cell
University of Karachi

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INTRODUCTION

Recognizing Genetics as an important and emerging field, Department of Genetics was established in 1969 at University of Karachi with directive to conduct teaching and research on diverse aspects of Genetics.

The department accommodates about 70 M.Sc. and 25 M.Phil./Ph.D. students and has four research laboratories that hold the necessary basic equipment for conducting research in different areas like Human Molecular Genetics, Microbial Genetics, and Plant Genetics etc. A screen house and experimental field is also available for carrying out plant breeding research. Recently a small poultry house has been set up to conduct research on chickens in near future.

A HEC-funded development project of Rs. 1.5 million for strengthening facilities at department was also implemented in 2015. The project involved upgrading of some teaching and research laboratory equipment, and procuring glassware, chemicals, books and some consumables.

The Department offers 30 M.Sc. and 20 postgraduate 12 M.Phil. and 6 Ph.D. courses in order to fulfill the extensive schemes of study, supported by latest text books and research publications to meet the requirements of these degrees.

The departmental Seminar Library holds a rich collection of more than 1000 books that cover various areas of Genetics. Furthermore, students are taught and encouraged to use online resources to obtain review papers related to their courses as additional readings.

This Self-Assessment Report (SAR) is based on eight criteria. The first criterion outlines the program mission and objectives. Criterion 2 provides information about the curriculum development. Criterion 3 enlists the laboratories and other relevant information. The fourth criterion is pertinent to the information about students' support and advising. Criteria 5 to 8 provide information about process control, faculty characteristics and departmental facilities and support available.

Obaid Yusuf Khan, *Ph.D*
Chairman
Department of Genetics
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CRITERION-1

PROGRAMME MISSION, OBJECTIVES AND OUTCOMES

Criterion-1: Programme Mission, Objectives and Outcomes

Departmental Mission

The Department of Genetics represents an interdisciplinary group of graduate and post-graduate students that focus on research opportunities in plant, animal, microbial and human genetics. The **mission** of the Department is to cultivate an environment in which Genetics as core science, can serve as basis for the creative development of human resources to benefit the individual, the broader society, as well as the environment as a whole. To achieve this and develop Genetics as corner-stone of biological science at the University of Karachi, we aim to deliver quality research, creative teaching and outstanding and responsible service delivery to our community and environment.

Programme Mission (M.Sc.)

The **mission** established is to develop human resources comprising professionals with excellence in Genetics, both at the graduate and postgraduate levels, to work in the public or private sectors in teaching and research in the science of Genetics.

1. The mission to teach, educate, form professionals and develop quality research that impact the society in Pakistan and abroad.
2. Supporting the next generation of geneticists by providing active mentoring, networking opportunities, and support to attract the brightest scientific minds to the field and enable them to pursue successful careers as geneticists.
3. Advocating continued support of genetics research by advocating for support of discovery research and promoting the value of genetics research.

Standard 1-1: The Programme must have documented measurable objectives that support college and Institution mission statements.

Programme Objectives (M.Sc)

1. Graduates will be critical thinkers with the ability to reflect upon scientific knowledge and continue to expand upon this knowledge throughout their careers.
2. Graduates able to employ appropriate experimental design and methodology to solve problems in biology.
3. Graduates able to describe the societal place of biology as a science, and appropriately communicate and apply underlying principles biology to current issues.

Table: Programme Objectives Assessment

S. No.	Objectives	How Measured	When Measured	Improvement Identified	Improvement Made
1.	Graduates will be critical thinkers with the ability to reflect upon scientific knowledge and continue to expand upon this knowledge throughout their careers.	By taking quizzes	Throughout the semester	Students use various scientific instruments to make measurements in the lab and field. Students able to reason analytically.	
2.	Graduates able to employ appropriate experimental design and methodology to solve problems in biology.	By giving different assignments and projects	Throughout the semester	Students are able to critically analyze the primary literature. Students able to reason analytically. Students employ appropriate experimental design and methodology.	
3.	Graduates able to describe the societal place of biology as a science, and appropriately communicate and apply underlying principles biology to current issues.	Group discussions and oral presentations In scientific seminars	Throughout the semester	Students discuss relevant research during Seminar (GENET. 627 and GENET. 634), and appropriate biology courses.	

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

PROGRAMME OUTCOMES

Genetics graduate programs may touch of areas as diverse as molecular and behavioral genetics, biochemistry, cell and developmental biology, and population dynamics.

They are designed to prepare professionals to work with DNA and genomes, especially through the application of bioinformatics.

Those with genomics degrees work in research centers, counsel patients through genetic counseling programs about their rights and options related to the use of genetic information, and provide public and private healthcare.

Genetics masters programs may provide rigorous instruction in modern biology with a special emphasis on genetics.

Students might establish a solid foundation in basic genetic principles, as well as research practices.

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

a) Strengths and Weaknesses of the Programme

i) Strengths:

The courses of Genetics shows strength in producing research on a variety of topics associated with basic and applied genetics.

ii) Weaknesses

- The research outputs needs to be improved and strengthen.
- New and updated computers with internet facilities are required for research students in the department computer lab.

b) Future Development Plans

- Research labs need to be upgraded to keep pace with the trend of high-throughput methods that are becoming more prevalent in Genetics research.
- Commencement of the 4-year B.S. program. Designing of courses is at an advanced stage.

Standard 1-4: The department must assess its overall performance periodically.

a) Student Enrolment

S. No	Year	M.Sc. Degree			
1	2013	54	62	116	
2	2014	57	54	111	
3	2015	65	57	122	
4	2016	31	65	96	
5	2017	48	31	79	

b) Student/Faculty Ratio

79:11

c) i) Time for M.Sc.

Minimum 2 Years

ii) Time for M.S

Minimum 2 Years

iii) Time for Ph.D

Minimum 3 Years

d) The average student grade point (CGPA)

Does not apply.

e) Student/Faculty Satisfaction

Survey results are enclosed

CRITERION-2

CURRICULUM DESIGN AND ORGANIZATION

Criterion-2 Curriculum Design and Organization

Programme of Studies offered

Year / Semester wise Scheme of Studies of M.Sc. Programme

1st Year (Semester I) M.Sc. Previous

S. No	Course Code	Course Title
1	Genet. 526	Classical Genetics
2	Genet. 527	Cytogenetics
3	Genet. 528	Cellular Physiology and Biochemistry
4	Genet. 529	Molecular Genetics
5	Genet. 530	Elements of Biometry

1st Year (Semester II) M.Sc. Previous

S. No	Course Code	Course Title
1	Genet. 531	Microbial Genetics
2	Genet. 532	Principles of Plant Breeding
3	Genet. 533	Poultry Breeding
4	Genet. 534	Human Genetics
5	Genet. 535	Advanced Biometry

2nd Year (Semester III) M.Sc. Final

S. No	Course Code	Course Title
1	Genet. 625	Quantitative Genetics
2	Genet. 626	Developmental Genetics
3	Genet. 627	Seminar
4	Genet. 628	Evolution
5	Genet. 629	Clinical Genetics
6	Genet. 630	Experimental Design
7	Genet. 631	Behavioral Genetics
8	Genet. 640	Literature Review
9	Genet. 650	Thesis
10	Genet. 651	Molecular Biology of Nucleic Acid

2nd Year (Semester IV) M.Sc. Final

S. No	Course Code	Course Title
1	Genet. 632	Genetic Engineering
2	Genet. 633	Advances in Evolution
3	Genet. 634	Paper Presentation
4	Genet. 635	Advanced Plant Breeding
5	Genet. 636	Immunogenetics
6	Genet. 637	Animal Breeding
7	Genet. 639	Research Techniques
8	Genet. 645	Research Project
9	Genet. 650	Thesis
10	Genet. 654	Genome Analysis

Standard 2-1: The Curriculum must be consistent and support the programme's documented objectives

The following table manifests how the programme content (Courses) meets the Programme Objectives.

M.Sc. Programme

Courses	**Programme's Objectives**			
	1	**2**	**3**	**4**
Major Courses	526, 527, 528, 529, 530	531, 532, 533, 534, 535	625, 626, 627	632
Elective Courses			628, 629, 630, 631, 640, 651	633, 634, 635, 636, 639, 645, 654
Practical (Field and Lab)	526, 527, 528, 529, 530	531, 532, 533, 534, 535	625, 628, 629, 630, 651	632, 635, 639
Thesis/Dissertation			Yes	Yes

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

The following table indicates the elements covered in core courses:

Elements	**Courses**
i) Theoretical Background	626, 631, 633, 636, 654
ii) Problem Analysis	526, 527, 530, 625, 534, 535, 629, 630, 654, 651 Thesis/Dissertation
iii) Solution Design	629, 534

Standard 2-3: The curriculum must satisfy the core requirements for the programme, as specified by the respective accreditation body.

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Standard 2-4: The curriculum must satisfy the major requirements for the programme, as specified by the respective accreditation body/council.

The department follow university and HEC requirement for degree programme as approved by academic council, competent authority and statuary body.

2-5: The curriculum must satisfy the general education, arts and other discipline requirements for the Programme as specified by the accreditation body.

Not applicable

Standard 2-6: Information technology component of the curriculum must be integrated throughout the programme.

M.Sc. students are introduced to Bioinformatics and using databases of information available on Genetics in the fourth semester course of Research Techniques (639).

Standard 2-7: Oral and written communication skills of the student must be developed and applied in the programme.

A compulsory course GENET-627 is offers in third semester of M.Sc. students that trains them in presentation of research papers.

CRITERION-3

LABORATORY AND COMPUTING FACILITIES

CITERION-3: Laboratory and Computing Facilities

Laboratory Facilities

Four laboratories are used by students and faculty for research studies including: human genetics, microbial genetics, chicken genetics and plant genetics studies.

Research work for the graduate and post-graduate students

- Adequacy for instructions: Laboratories meet the requirements in terms of equipment, chemicals, furniture and general facilities.
- Major apparatus: Major equipment available in the labs include: microscopes, deep freezers, refrigerators, pH meters, electric balances, incubators, slides, glass ware, centrifuge machine, spectrophotometer and thermo cycler.
- Safety regulations: First aid kit are available in all labs.

Computer Facilities

The department has one computer lab with 10 PCs with internet facility for the research students. These are quite inadequate to meet the departments' requirement. The internet facility is available in teachers' offices.

Internet Facility

Internet facility and a connection with main communication network of the university are available.

Standard 3-1: Laboratory manuals/ documentation instruction for experiments must be available and readily accessible to faculty and students

Books and manuals owned by individual faculty are used by the students. A number of books and manuals have been prepared in the department.

Standard 3-2: There must be adequate support personnel for instruction and maintaining the laboratories.

Laboratories are maintained by one senior lab assistant, three lab assistants and three lab attendants who assist the students in research studies, practical, cleaning and washing, etc. Students are instructed for lab work by respective faculty members.

Standard 3-3: The University computing infrastructure and facilities must be adequate to support programme's objectives

i) Computing Facilities

The department has computer facility for students. They can access the digital library services. However, there is not enough computers to facilitate the students must need improvement of this aspect.

ii) Multimedia

The Department of Genetics has two multimedia and two overhead projectors.

iii) Website

The university website http://www.uok.edu.pk has a link on the Department of Genetics

iv) Internet

Internet facility and a connection with main communication network of the university are available.

CRITERION-4

STUDENT SUPPORT AND ADVISING

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. Students can easily contact with the department students' advisor and share their problems and guidance. The university staff provides information regarding admission, scholarships, career opportunities, etc.

Standard 4-1: Courses must have been offered with sufficient frequency and number for students to complete the programme in a timely manner.

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 university policy.
- Subject courses are offered as per scheme of study of the department after approval of Academic Council of the university. Courses are offered by trained faculty in the relevant subject and as per their availability.

Programme	Classes per Week	Practical Classes per Week	Research Guidance
M.Sc.	10	8	3
M.Phil. leading to Ph.D.	6	-	-

Standard 4-2: Course in the major 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 and the faculty members interact frequently among themselves and with students.
- Students are encouraged to ask question, give comments and take part in the discussions in the class.
- Emphasis is given on effective interaction between the students and teachers.

Standard 4-3: Guidance on how to complete the programme must be available to all students and access to academic 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

Criterion-5: Process Control

Standard 5-1: The process by which students are admitted to the programme 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 for graduate students (M.Sc.)
- Admission criteria for M.Sc. Program: Fourteen years of education related to science field/subject.
- Students are evaluated through Final exams and through written assignments and oral presentations. The examination held at the end of each semester. M.Sc. degree programme comprises of four semesters. Each year has two semesters. It will carry 100 marks. The examination passing marks i.e. a student for each course number obtains a minimum of 45% marks in the examination including prerequisite course. Courses with 3+0 credit hours shall have one passing head. Courses with 2+1 shall have two passing heads students shall have to pass both the passing heads.
- The students passing at least 8 out of 10 courses in an academic year would be promoted to next year higher class whereas students failing in more than 3 courses in a year shall not be eligible for promotion to the next higher class.
- Those students who could not take examinations in a particular semester due to short of attendance shall have to fulfill attendance requirement of that semester by repeating it.

Standard 5-2: The process by which students are registered in the programme and monitoring of students' progress to ensure timely completion of the programme must be documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

Enrolment of M.Sc. students is done once every year at the time of admission. When a student is admitted for each degree, he/she is evaluated through the result of each course for each semester. If the students fulfill the criteria of the University they are promoted to the next semester.

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 institutional 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.

- 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 appear to test and interviewed by the University Selection Board.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Appointments of new candidate depends upon the number of approved posts.
- Tenure Track System (TTS) has also been introduced by the University which is a good incentive for retaining highly qualified faculty members.
- HEC also supports appointment of highly qualified members as foreign faculty professor, national professors and deputes them in various departments.

Faculty Recruitment / Retaining Policy

They are upgraded as they develop their academic skills.

Appointments / Promotions Procedure:

It is as per University Code Book**.**

Basic Pay Scale (BPS)

BPS 17

BPS 18

BPS 19

BPS 20

a. Lecturer (BPS- 18):

Minimum Qualification

- Masters' degree (First Class) or equivalent degree awarded after 16 years of education in the relevant field with no 3rd division in the academic carrier from HEC recognized University.
- Condition of 3rd division shall not be applicable in the qualification of appointment as lecturer provided that the candidate holds a higher degree viz. M.Phil./Ph.D. or equivalent degree with no more than one 3rd division in entire academic carrier.
- Masters' degree (Second Class) but holding higher degree i.e. M.Phil./Ph.D. or equivalent degree with 18 years of education may be considered.

b. Assistant Professor (BPS- 19):

Minimum Qualification

- Ph.D. in the relevant field from HEC recognized University. No experience required.
  OR
- Masters' degree (Foreign) or M.Phil. Or equivalent degree awarded after 18 years of education as

determined by the HEC in the relevant field from a HEC recognized university/Institution.

- 4 years teaching/research or professional experience in a recognized university or post-graduate institution in the relevant field in a national or international organization.

c. Associate Professor (BPS- 20)

Minimum Qualification

Ph.D. in the relevant field

Experience

10 years teaching/research experience in HEC recognized university or a post-graduate institution or professional experience in the relevant field in a national or international organization.

Minimum Number of Publications

10 research publications in internationally abstracted journals recognized by HEC/BASR, University of Karachi.

d. Professor (BPS-21)

Minimum Qualification

Ph.D. in the relevant field.

Experience

15 years teaching/research experience in HEC recognized university or a post-graduate institution or professional experience in the relevant field in a national or international organization.

Minimum Number of Publications

15 research publications (with at least 5 publications in the last 5 years) in internationally abstracted journals recognized by HEC/BASR, University of Karachi.

Bases for Appointments / Promotions

Four main areas where a candidate is evaluated:

- Teaching
- Research
- Service
- Personal Qualities

Selection Criteria for Appointments on TTS

All faculty members in any discipline are eligible to apply for appointment provided they fulfill the following minimum eligibility conditions.

a. Assistant Professor

Minimum Qualification

Ph.D. degree from a recognized University with excellent communication/presentation skills.

b. Associate Professor

Minimum Qualification

Ph.D. degree from a HEC recognized University.

Experience

6 years Post-Ph.D. or minimum of 4 years of post-Ph.D. experience along with at least 6 years of experience prior to the Ph.D. (The experience to be counted is to be of teaching/research in a recognized University or a post-graduate Institution or professional experience in the relevant field in a National or International Organization).

Minimum Number of Publications

10 research publications (with at least 4 publications in the past 5 years) in journals recognized for the purpose of appointment on Tenure Track by the HEC i.e. research papers published in Journal that fall under the category W (Impact Factor) Journals.

TRP Recommendations

The applicant must have been recommended by at least two neutral foreign experts of TRP, in clear context of Tenure Track or Tenure appointment.

c. Professor

Minimum Qualification

Ph.D. degree in a relevant field from a HEC recognized University.

Experience

11 years Post-Ph.D. or minimum of 7 years of post-Ph.D. experience along with at least 12 years of experience prior to the Ph.D. (The experience to be counted is to be of teaching/research in a recognized University or a post-graduate Institution or professional experience in the relevant field in a National or International Organization).

Minimum Number of Publications

15 research publications (with at least 5 publications in the past 5 years) in journals recognized for the purpose of appointment on Tenure Track by the HEC i.e. research papers published in Journal that fall under the category W (Impact Factor) Journals.

TRP Recommendations

The applicant must have been recommended by at least two neutral foreign experts of TRP, in clear context of Tenure Track or Tenure appointment.

Faculty Evaluation Process

University rules are followed.

Standard 5-4: The process and procedure 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.

- New courses are developed and included in the curriculum when need arises.
- Books on various aspects of genetics are available in the department library and in University library where documentation, photocopying and internet facilities are also available. .
- Students also take notes during the lectures and photocopies of slides is also provided in addition to printed material.
- 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 programme must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

In the examination system of the University, the following are clearly mentioned;

- The evaluation procedure consists of final examination, assignments, reports and oral presentations.
- The controller of examinations announces the dates of examinations. After each semester, the controller office notifies results of the exams.
- The minimum passing marks for each course is 45 %for M.Sc. graduates.
- The department ensures that the graduates are punctual and fulfill the attendance requirement i.e. 75%.
- Gold medals are awarded to the students who secure highest cumulative marks in each department. Degrees are awarded to the students in the convocation which is held every year.

CRITERION-6

FACULTY

Criterion-6 Faculty

There must be enough full time faculty who are committed to the Masters programme to provide adequate coverage of the programme 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.

Standard 6-1: There must be enough full time faculty who are committed to the programme to provide adequate coverage of the programme areas / courses with continuity and stability. The interest of all faculty members must be sufficient to teach all courses, plan, modify and update courses. The majority must hold a Ph.D. degree in the discipline.

Currently, there are eleven full time faculty members out of which nine are Ph.D. and one M.Phil. in genetics. The fields of specialization of faculty members include: human molecular genetics, microbial genetics and plant molecular genetics. All are qualified to teach Masters courses.

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 programmes for faculty development must be in place.

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.

- In each semester courses are offered according to work load of faculty members
- Division of students for supervision is made on the basis of faculty expertise/research interests.

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

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 to them through university research programme. There are programs and processes in place to attract good faculty members.

CRITERION-7

INSTITUTIONAL FACILITIES

Criterion-7 Institutional Facilities

Departmental facilities, including library, computer lab, class rooms and offices are adequate enough to support the objectives of the program.

Standard 7-1: The Institution must have the infrastructure to support new trends in learning such as E-learning.

a) Departmental library and Internet Facility

Department seminar library are open for all the students with specified timings. There are lot of books with different fields of genetics. For M.Sc. research students with computer and internet facility is desired to make working/research/ study environment conducive for higher learning.

b) Main Library

Faculty members and students of the department are allowed to use the main library. The main library provides the following services:

i. Course books
ii. Digital library having access to research journals and E-books

c) Offices

There are two administrative offices in the department with computer and internet facility

d) Class Rooms

There are two classrooms for Masters' programme in the department which possesses proper teaching facilities such as multimedia projector and overhead projector.

Standard 7-2: The library must possess on up-to-date technical collection relevant to the programme and must be adequately staffed with professional personnel.

Department seminar library are open for all the students with specified timings. There are lot of books with different fields of genetics. Current editions of latest books are required.

Standard 7-3: Class rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibility.

Classrooms

There are two classrooms in the department which possesses proper teaching facilities such as multimedia projector and overhead projector. Lack of number of class rooms with special reference for M.Phil./Ph.D.

Faculty Offices

The Department of Genetics has an adequate space to accommodate its faculty and administrative staff.

CRITERION-8

INSTITUTIONAL SUPPORT

Criterion-8 Institutional Support

The university administration is making all possible efforts for strengthening the existing departments by attracting highly qualified faculty and by getting financial support through R&D Project. One such project of Rs.1.5 million was awarded by HEC for strengthening of the Department.

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 teacher and scholars.

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. Financial support is too low to meet expenses of the department and only Rs. 1 million were allocated, expenses including student research, chemicals.

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

There must be an adequate number of high quality graduate students, research assistants and Ph.D. students. The admission of M.Sc., M.Phil. and Ph.D. students is held once a year. A strict merit policy is applied for admission and aptitude test is required for M.Phil. and Ph.D.

Degree Programme	**Years**		
	2012	**2013**	**2014**
B.S	-	-	-
M.S	12	17	22
Ph.D	2	3	4
Research/ Teaching Assistants	2	2	2

Student/Faculty Ratio (for the last three years)

Graduate students and faculty ratio in 2013-2016

Year	No. of Faculty	No. of Students	Ratio
2013	12	116	12:116
2014	12	133	12:133
2015	11	154	11:154

Standard 8-3: Financial resources must be provided to acquire and maintain library holding, laboratories and computing facilities.

An amount of about Rs. 1 million per annum (applicable from 2016) is considered sufficient to meet the needs of the department which is too low to maintain and run the departmental business.

Faculty CVs

CURRICULUM VITAE

OBAID YUSUF KHAN, Ph.D.
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Pakistan

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RESEARCH INTERESTS

Genetic Polymorphism in Genes Associated with Human Disease; Phylogenetics; Pharmacogenetics; DNA barcoding.

RESEARCH PROJECTS

- Genomics and Phylogenetics of Hepatitis D Virus.
- Genetic Polymorphism in Hepatitis C Virus Genome.
- Genetic Polymorphism of Thiopurine S-Methyltransrerase (TPMT) Gene in Pakistani Population.
- DNA Barcoding of Fish Species from Northern Arabian Sea.

RESEARCH TRAINING AND EXPERIENCE

December 2004 to May 2005: Postdoctoral Research at Department of Pharmacology, Creigthon University, Omaha, NE, USA.

September 2002 to November 2004: Postdoctoral Research at CUMC Cancer Center, Creigthon University, Omaha, NE, USA.

May 2002 to August 2002: Postdoctoral Research at Dept. of Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX, USA.

November 1998 to May 2002: Research at Centre for Molecular Genetics University of Karachi, Pakistan

September 1993 – May 1998: Ph.D. project at Division for Molecular Genetics Institute for Biological and Life Sciences, University of Glasgow, Scotland, U.K.

RESEARCH PROJECTS COMPLETED

Molecular Characterization and Genetics of Natural Polymer Production by Marine Bacteria from the Arabian Sea. The study was designed to discover bacterial strains producing longer-chain or novel Polyhydroxyalkanoate (PHA) polymers, which may have better commercial applications as biodegradable plastic. The project executed in 2001 and was funded by a 1-year grant of **US$ 11,750** from International Foundation of Science, Sweden.

RESEARCH PROJECTS IN PROGRESS

Whole Genome Sequencing and Phylogenetics of Hepatitis D Virus from Karachi. The project is based on whole genome sequencing of the virus isolated from Karachi and its surrounding areas and performing phylogenetic analysis to gain a better understanding of evolution of this virus in our region. The project (beginning January 2017) is being funded by the Higher Education Commission (HEC) National Research Program for Universities (NRPU) for Rs. 2.3 million spanning two years.

MOLECULAR BIOLOGY SKILLS

Genomic DNA extraction from tail biopsies and genotype screening of transgenic mice using PCR.

Protein-protein Interaction assays using GST pull down and Immunoprecipitation techniques.

Steroid receptor coactivation assays using cotransfection and luciferase assay.

Basic microbiological techniques for handling standard bacterial strains; culturing/maintaining of lactic acid and several environmental bacteria in various media and their identification.

Techniques of bacterial genetics such as conjugation, transformation, isolation of plasmids DNA, curing of plasmids; Genetic characterization of bacteria viz. Screening for plasmid-borne resistance phenotypes; Screening of lactobacilli for bacteriocin production.

Basic Molecular biology techniques viz. Plasmid and bacterial DNA extraction: restriction digest and analysis of bacterial DNA.

Subcloning of DNA fragments into plasmid vectors and associated standard molecular biology techniques.

Purification of plasmid DNA for transfection using CsCl/EtBr density centrifugation technique

PCR, RT-PCR, designing of primers for PCR, subcloning of PCR generated fragments, generation of cDNA using RT-PCR and cDNA subcloning; Epitope tagging of proteins at the DNA level using PCR subcloning.

Site-directed mutagenesis techniques using PCR and DNA subcloning

Total RNA extraction from cultured animal cells and animal tissues; Southern and Northern blot analysis

Manual (Sanger's method) DNA sequencing of plasmid DNA and PCR fragments using cycle sequencing.

Maintenance and preservation of established cell lines in culture, using standard and specialized cell culture methods.

Primary cell culture of neonatal rat cardiocytes.

Plasmid DNA transfection into cultured cells using calcium phosphate and liposome-mediated methods.

Construction of recombinant adenoviral vectors, isolation and screening of recombinant vectors, viral plaque purification, viral DNA extraction and restriction pattern analysis, amplification and purification of adenovirus using CsCl density gradient, titration and concentration determination of purified adenoviruses.

Handling of retrovirus producing cell lines Isolation of vectors from retrovirus producer cell lines Expression analysis of retroviral vectors carrying reporter genes.

Gene expression analysis using reporter gene assays such as beta-galactosidase, CAT and Luciferase, and *in vitro* expression analysis of recombinant adenovirus vectors.

Immunocytochemistry of cells in culture and Western blot analysis, for expression analysis of recombinant adenoviral vectors.

Advanced Bioinformatics skills in doing DNA and Protein sequence analysis online, and using software such as MEGA, for phylogenetic analysis.

EMPLOYMENT

Permanent faculty member at the Department of Genetics, University of Karachi, Karachi, Pakistan, since December 1988.

CURRENT POSITION

Associate Professor, Department of Genetics, since January 2001.

HEC-Approved Research Supervisor.

Lecturing postgraduate (M.Sc.) students in courses of genetics viz; Molecular Genetics, Human Genetics, Developmental Genetics, Advances in Evolution.

Lecturing M.Phil. students in courses viz; Eukaryotic Gene Expression, Human Molecular Genetics, Cell Biology and Topics in Genetics.

Designing and conducted laboratory work for postgraduate (M.Sc.) students of Molecular Genetics, Human Genetics and Quantitative Genetics.

Mentored one Ph.D. student Dr. Shadab Perveen. Thesis Title: Study of Genetic Variants of Hepatitis Delta Virus Strains in Pakistan. Ph.D. completed in June 2013.

Supervising four M.Phil./Ph.D. Research students.

EDUCATION

1993 – 1998; University of Glasgow, Glasgow, Scotland, U.K., Ph.D. in Molecular Genetics

1985 – 1988; University of Karachi, Karachi, Pakistan, M.Sc. in Genetics

1981 – 1984; D.J. Sind Govt. Science College (University of Karachi), Karachi., B.Sc. in Biology (Chemistry, Zoology, Microbiology)

MEMBERSHIPS

Member Board of Faculty of Science, University of Karachi.

Member Academic Council, University of Karachi.

Member, Board of Studies, Department of Genetics.

Member of the Higher Education Commission (HEC) curriculum development committee for Genetics 2012.

RESEARCH PUBLICATIONS

Ansari M. A., Imtiaz S., Shoeb E., Badar U. and Khan O. Y. 2014. Determination of Antibiotic and Metal Resistance Patterns in Bacteria Isolated from Potable Water from Karachi, Pakistan. International Journal of Advanced Research 2(1):333-341.

Fatima S., Khan O. Y. and Azhar A. 2013. Comparative analysis of lipid levels between coronary heart disease patients and normal healthy subjects. Pakistan Journal of Biochemistry and Molecular Biology 46(3):89-91.

Perveen S., Nasir I., Shahid S.M., Azhar A., Khan O.Y. 2012. Phylogenetic analysis of HDV isolates from HBsAg positive patients in Karachi, Pakistan. Virology Journal, Vol:9 pp:162-170. [DOI: 10.1186/1743-422X-9-162]

Dhananjayan S.C., Ramamoorthy S., Khan O.Y., Ismail A., Sun J., Slingerland J., O'Malley B.W. and Nawaz Z. 2006. WW domain binding protein-2, an E6-associated protein interacting protein, acts as a coactivator of estrogen and progesterone receptors. Molecular Endocrinology 20(10):2343-54. [DOI: 10.1210/me.2005-0533]

Cao X., Qin J., Xie Y., Khan O., Dowd F., Scofield M., Lin M.F., and Tu Y. 2006. Regulator of G-protein signaling 2 (RGS2) inhibits androgen-independent activation of androgen receptor in prostate cancer cells. Oncogene 25(26): p. 3719-3734. [DOI: 10.1038/sj.onc.1209408]

Khan O.Y., Fu G., Ismail A., Srinivasan S., Cao X., Tu Y., Lu S., and Nawaz Z. 2006. Multifunction Steroid Receptor Coactivator, E6-Associated Protein, Is Involved in Development of the Prostate Gland. Molecular Endocrinology 20(3): p. 544-559. [DOI: 10.1210/me.2005-0110]

Khan O.Y., Nawaz Z. Nuclear hormone receptor co-regulators. 2003. Current Opinions in Drug Discovery and Development. 6(5): p. 692-701. [PMID: 14579519]

Ahmed N., Jamil N., Khan O.Y., Yasmeen S., Haq Z., Ahmed V.U., and Rahman A.U. 2000. Commercially important products from Marine bacteria: Marine Biotechnology. In Proceedings of National ONR Symposium on Arabian Sea as a Resource of Biological Diversity. V. U. Ahmed (ed) pp. 104-114.

Naz N., Samad R., Ahmed N. and Khan O.Y. 1997. Isolation and Characterization of indigenous Lactobacillus strains. Karachi University Journal of Science. 25 (1): p. 87-95.

Jameel R., Ahmed N., Khan O.Y. and Azim M. 1996. Biodegradation of Basudin (an organophosphate pesticide by indigenous bacteria. Karachi University Journal of Science. 24(1): 109-116.

Ahmed N., R. Amir and Khan O.Y. 1995. Genetic characters of *Marinococcus* species isolated from mangrove soils. In Proceedings of the Pak-U.S. Conference on Arabian Sea: Living Marine Resources and the Environment.

Khan O.Y., Naz N., Ahmed N. and Qureshi F.M. 1995. Genetic characterization of indigenous Lactobacillus strains isolated from food sources. In: Biotechnology for Environment and Agriculture (Ahmed, N., Ishaq, M., Khan, O. Y. and Sarwar, F. (Eds.). Karachi University Press. p. 343-352.

Raihan S., Sarwar F., Azim M., Khan O.Y. and N. Ahmed. 1995. Isolation, Characterization and Assessment of Metal Accumulation of Bacterial Isolates From Industrial Waste. In Ahmed, N., M. Ishaq, O. Y. Khan, and F. Sarwar (eds), Biotechnology for Environment and Agriculture, University Press, Karachi, pp. 143-152.

Naz N., Khan O.Y., Warner P.J. and N. Ahmed. Plasmid profiles and bacteriocin production of indigenous Lactobacillus strains. In Recent Advances in Biochemical Research in Pakistan, Qasim, R., S. N. Husnain M. Ishaq and A. Azhar (Eds.), Karachi University Press, Karachi, 1994, 253-264.

Ahmed N., Afzal A. and Khan O.Y. 1993. Involvement of plasmid in polysaccharide biosynthesis by *Klebisella pneumoniae*. Karachi University Journal of Science. 21(1&2): 181-188.

BOOKS

Industrial and Environmental Biotechnology. Editors: Nuzhat Ahmed, Fouad M. Qureshi, and Obaid Y. Khan. 2001. Horizon Scientific Press, U.K. [ISBN-13: 978-1898486305]

Biotechnology for Environment and Agriculture. Editors: Ahmed, N., M. Ishaq Khan O.Y. and F. Sarwar. 1995. Karachi University Press, Karachi.

REVIEWER FOR JOURNALS / AGENCIES

Annals of Saudi Medicine
Journal of Pakistan Medical Association
Journal of College of Physicians and Surgeons
Pakistan Science Foundation

LINKS https://www.researchgate.net/profile/Obaid_Khan5
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Date of Birth: October11, 1965

Nationality: Pakistani

CNIC # 42201 0673251-9

Teaching Experience:

- University of Karachi, Pakistan

Professor March 2014 to date

Lecturing M.Sc. and MS students in the Department of Genetics, and supervising students various PhD, M.Phil. and M.Sc. research projects.

Associate Professor October 2009 to March 2014

Lecturing M.Sc. and MS students in the Department of Genetics, and supervising students various PhD, M.Phil. and M.Sc. research projects.

Assistant Professor October 1995 to October 2009

Lectured M.Sc. and MS students in the Department of Genetics, and supervised students various M.Phil.and M.Sc. research projects.

- Liaquat National Hospital and Medical College
  School of Diagnostic Laboratory Sciences. Karachi, Pakistan

Visiting Faculty 2006 to date
Lecturing Medical and medical technology students of the school. Also involved in collaborative research with the Biochemistry Department of the college.

- University of York, UK

Demonstrator 2000-2003
Worked as a Demonstrator in the courses held for 1st and 2nd year undergraduate students.

- California State University, Los Angeles, USA.

Teaching Associate 1992-1993
Taught undergraduate students in the labs of courses Human Anatomy & Physiology, Molecular Biology etc.

Education and Research experience:

- ***University of Kent, UK***

Post-Doctoral Research Associate 2004 -2006
Worked as a Molecular Biologist in Professor Geeves lab on* Dictyostelium *Myosins.
The project involved mutating, cloning and expressing different Myosin protein genes in *Dictyostelium*. Kinetic analyses of the proteins were than done in the lab by various methods such as stopped flow, pressure jump, flash photolysis etc. This is one of the leading labs in the world on kinetic studies on muscle proteins.

- ***University of York, UK***

Ph.D 2000-03
Thesis title: Genetic analysis of thin filament regulation in *Drosophila melanogaster*. The research project was conducted under the supervision of Professor Sparrow and was mainly focused on the study of a troponin T mutant of a muscle protein in *Drosophila* known as up^1 and a suppressor mutant of TnI mutation hdp^2. The project was aimed to study the affects of the mutations on different muscle types of the flies in order to understand the regulation of muscle contraction.

- ***The Aga Khan University Hospital, Karachi Pakistan***

Senior Research Assistant 1993-95
Conducted research work on RFLP of *Mycobacteria* in the Department of Microbiology. This project was supported by European Economic Committee for Medicine.

- ***California State University, Los Angeles, USA.***

Research Assistant, for Post Baccalaureate Certificate in Biotechnology, 1992-93

Worked as a Research Assistant for the certificate and MS degree on the project of cloning and expression of Sendai virus hemagglutinin-neuraminidase gene in baby hamster kidney cells.

Master of Science in Biology (MS), 1992-93

Courses: Molecular genetics, general virology, microbial genetics, genetic engineering laboratory, gene manipulation etc.

- **University of Karachi, Pakistan**

Master of Science in Genetics (M.Sc.), 1986-89.

Courses: Human genetics, clinical genetics, cytogenetics, immunogenetics, genetic engineering, principles of plant breeding, poultry breeding etc.

Research work: Study of resistance in bacteria against the fungicide 'Neocidol'.

Bachelor of Science, 1986.

Courses: Microbiology, Biochemistry, and Chemistry.

Industrial Experience:

- ***Abbott Lab (Pvt) Ltd. Pakistan.***

Supervisor 1990-92

Worked as a supervisor in Production Department. Dealt with quality and production control and worked on projects like the survey of antibiotic resistance in bacteria.

Award:

International fee waiver award recipient at CSULA 1992-93

Society memberships:

Member Alliance For the Prudent Use Of Antibiotics (APUA) USA.
President Microbiology Society, Islamia Science College, Karachi 1985-86
Vice President Microbiology Society, Islamia Science College, Karachi 1984-85
Founder member Islamia Science College Old Students Association.

Extra-curricular activities:

Captain staff cricket team, University of Kent 2004-06
Vice-Captain cricket team, Department of Biology, University of York 2002-03
Captain cricket team, Department of Genetics, University of Karachi 1988-89

Publications:

1. **Sadaf, S.,** Ansari**, M.A. (2016). Role of ALAD isoforms in anemia and correlation of blood lead level with hemoglobin concentration in automobile paint workers of Karachi, Pakistan.** ***Int. J. Biol. Biotech*****. 13(2), 163-169**

2. **Shoeb, E., Ahmed, N., Akhter, J., Badar, U.,** Ansari**, M.A. (2015). Screening and characterization of biosurfactant-producing bacteria isolated from the Arabian Sea coast of Karachi.** ***Turk. J. Biol*****. 39(2):210-216**

3. Alam, J.M., Baig, J.A., Matinuddin, S., **Ansari**, M.A. (2015). Comparative study on analytical precision of iron profile on conventional hitachi 912 and modular cobas 6000 c501 systems. *Int. J. Chem. Pharmaceutic. Sc*. 6(1):1-5

4. Ansari**, M.A., Imtiaz, S., Shoeb, E., Badar, U., Khan, O.Y. (2014). Determination of Antibiotic and Metal Resistance Patterns in Bacteria Isolated from Potable Water from Karachi, Pakistan.** ***Int. J. Adv. Res*****. 2 (1), 333-341**

5. Alam, J.M., Farooqui, S.I., Hussain, A., Mahmood, S.R., Naheed, S., **Ansari**, M.A. (2013) Significance of Lactate Estimation in Debilitated Myopathies and Treatment Programs. *Pak. J. Rehabil*. 2(1), 4-8

6. Alam, J.M., Sherwani, S. K., Farooqui, S., Mahmood, S.R., **Ansari,** M.A., Bashir, A. (2013). Comparitive analysis of correlation among Creatine kinase (CK), Aldolase and M.yoglobin (Mb) concentrations in patients suffering from Myopathies. *Int. J. Adv. Res*. 1 (6), 133-139

7. Shoeb, E., Badar, U., Akhter, J., Shams, H., Sultana, M., **Ansar**i, M.A. (2012). Horizontal gene transfer of stress resistance genes through plasmid transport. *World J Microbiol. Biotechnol*. 28, 1021-1025

8. Shoeb, E., Badar, U., Akhter, J., Ansari, F.A., Waqar, M., **Ansar**i, M.A. (2012). Screening of surfactant producing bacterial strains isolated from soil samples of an automobile workshop. *Kar. Uni. J. Sc.* 40, 31-36

9. Badar U., Shoeb E., Daredia K., Shawar D., Akhtar J., **Ansari** M.A. (2012). Screening and Characterization of Luminescent Bacterial Strain. *J. Basic & Appl. Sc*. 8, 602-606

10. Alam, J.M., Islam, Z., Sherwani, S. K., Asghar, S.S., Mahmood, S.R., Sultana, I., **Ansari,** M.A. (2012). Determination of Hyperlactatemia and Acidosis in adult patients with cardiac diseases and dysfunctions. *FUUAST J. Biol*. 2 (2), 49-54

11. Alam, J.M., Sherwani, S. K., Ahmad, A., Hussain, A., Ali, H., Sultana, I., **Ansari,** M.A. (2012). Assessment and correlation of serum biochemical parameters and parathyroid hormone in selected adult population suffering from various stages of kidney diseases (CKD). *FUUAST J. Biol*. 2 (1), 13-17

12. Alam, J.M., Mahmood, S.R., Hussain, A., Shaheen, R., Ishrat, I.A., Arif, M., Sultana, I., **Ansari,** M.A. (2011). Diagnostic importance of tumor markers, neuron specific enolase (NSE), carcino-embryonic antigen (CEA) and cancer antigen(CA 15-3), in serum and pleural effusions of patients with malignant pulmonary diseases. *Int. J. Biol. Biotech*. 8 (1), 71-78

13. Alam, J.M., Baig, J. A., Hussain, A., Mahmood, S.R., Sultana, I., **Ansari,** M.A. (2011). Evaluation of neuron specific enolase (NSE) levels in children with bacterial and viral memingitis. *Int. J. Biol. Biotech*. 8 (1), 65-70

14. Alam, J.M., Hussain, A., Islam, Z., Mahmood, **Ansari,** M.A. (2011). Comparative analysis of vitamin B12 levels and effects of its deficiency in selected adult population diagnosed with various clinical conditions. *J. Baqai Med. Univ*. 14 (2), 3-8

15. Alam, J.M., Baig, J.A., **Ansari,** M.A., Naheed, S., Kazmi, T., Shaheen, R., Sultana, I., Jamall, S. (2010). Assesment of abnormalities in lipoprotein components in hyperlipidemic, diabetic and non-diabetic patients. *Pak. J. Biochem. Mol. Bio*l. 43(4), 195-199

16. Alam, J.M., Baig, J.A., Mahmood, S.R., Asghar, S.S., **Ansari,** M.A., Jamall, S. (2010). Diagnostic utility of neuron specific enolase (NSE) in serum and pleural fluids from patients with lung cancer and tuberculosis. . *Pak. J. Biochem. Mol. Bio*l. 43(3), 131-134

17. Baig, J. A., Alam, J.M., **Ansari,** M.A., Hussain, A., Naheed, S., Shaheen, R., Sultana, I. (2010). Evaluation of NT pro BNP of diagnostic significance in patients with chronic kidney diseases. *Pak. J. Biochem. Mol. Bio*l. 43(2), 99-104

18. Alam, J.M., Hussain, A., Mahmood, S.R., Asghar, S.S., Ali. I.I., Sultana, I., **Ansari,** M.A.(2010).Evaluation of carcino-embryonic antigen (CEA) and diagnostic significance in adult patients suffering from colorectal carcinoma (CRC) and GIT malignancies. *J. Baqai Med. Univ*. 13 (2), 3-10

19. Alam, J.M., Baig, J.A., Mahmood, S.R., Asghar, S.S., Ashraf, F., Sultana, I., **Ansari,** M.A.(2010). Estimation of total Biolavailable and free testosterone levels in various age groups of men. *J. Baqai Med. Univ*. 13 (2), 11-18

20. **Ansari,** M.A., Nongthomba, U., Cummins, M., and Sparrow, J. 2007. A mutation in the Tropomysin gene is possibly responsible for suppressing the effects of Troponin-I mutation in the *Drosophila melanogaster* muscles. *Int. J. Biol. Biotech*. 4 (4), 317-330

21. **Ansari**, M.A., Nongthomba, U., and Sparrow, J. 2007. Phenotypic affects of Troponin-T mutation *up*^{1} on *Drosophila melanogaster* behaviour. *Int. J. Biol. Biotech*. 4 (2-3), 227-230

22. ***** Nongthomba, U., **Ansari**, M., Thimmaiya, D., Stark, M., and Sparoow, J.C. 2007. Aberrant splicing of alternative exon in the *Drosophila* troponin-T gene affects flight muscle development. *Genetics.* 177, 295-306

23. ***** Clark, R., **Ansari**, M.A., Dash, S., Geeves, M.A. and Coluccio, M. 2005. Loop 1 of transducer region in mammalian class 1 myosin, Myo1b, modulates actin affinity, ATPase activity and nucleotide access. *J. Biol Chem.* 280, 30935-30942

24. Nongthomba, U., Clark, S., Cummins, M., **Ansari**, M., Stark, M. and Sparrow, J. 2004. Troponin I is required for myofibrillogenesis and sarcomere formation in *Drosophila* flight muscle. *J. Cell Sci*. 117, 1795-1805

25. Ali, N.I., Siddiqui. I.A., Zaki, M.J. and **Ansari**, M.A. 2001. Variations Between Strains of Pseudomonas Bacterium: Effects on Root-Infecting Fungi. *Pak. J. Biol. Sci*. 4 (1), 17-19

26. **Ansari**, M.A. and McQueen, N. L. 2000. Functional Studies of the Sendai Virus HN Gene Product in BHK-21 Cells. *Pak. J. Biol. Sci*. 3 (9), 1506-1508

27. **Ansari**, M.A. and McQueen, N. L. 1999. Expression of Sendai virus HN Gene in BHK-21 Cell Line. *Pak. J. Biol. Sci*. 2 (4), 1283-128

***** Joint first author of the paper

Dr. Simeen Mansoor
Department of Genetics
University of Karachi
Karachi 75270
Simeenm@uok.edu.pk

Education:

Ph. D. 2011(Genetics) Title: Alteration of proteins and enzymes during temperature stress in mung bean *(Vigna radiata)*

M.Sc. 1989**. First Class Third Position.** Department of Genetics, University of Karachi also completed a research thesis on, **" Temporal and spatial expression of soluble and wall bound enzymes in mung bean *(vigna radiata)."***

B. Sc. 1985. **First Class.** University of Karachi, Karachi. Took courses of Microbiology Biochemistry and Chemistry.

H.SC. 1982. **Second Class (58%)**. Board of Intermediate Education, Karachi. Took courses of Physics, Chemistry and Biology.

S.S.C. 1980. **Second Class (55%).** Board of Secondary Education, Karachi. Took courses of Maths, Physics, Chemistry and Biology.

Teaching:

Associate Professor, in the Department of Genetics since 10.03.2014 till to date. Offered courses of Experimental Design, Immunogenetics, Topics in Genetics, Technologies in Genetics, Protein structure, function and analysis.

Assistant Professor, in the Department of Genetics since 26.03.01 till 09.03.14. Offered courses of Cytogenetics, Advanced Biometry, Experimental Design, Human Genetics, Principles of Plant Breeding, Advanced plant Breeding, Topics in Genetics, conducted Seminars.

Lecturer in the Department of Genetics**.** 30.10.95 till 2001. Offered courses of Microbial Genetics, Clinical Genetics, Immunogenetics, Developmental Genetics, and Research techniques. Cytogenetics

Cooperative Teacher: July 1989-1995**.** Conducted labs of Cytogenetics, Microbial Genetics, Molecular Genetics, Cell Physiology and Biochemistry, Classical Genetics, Poultry Breeding and Genetics, Human Genetics, Quantitative Genetics, Experimental Design, Research Technique, Clinical Genetics, Evolution, Principles of Plant Breeding and Advanced Plant Breeding

Research experience:

Ph.D (Genetics,2011), entitled "Alteration of proteins and enzymes during temperature stress in mung bean (*Vigna radiata)"* submitted to the University of Karachi

in partial fulfillment of the requirement for the degree of Philosophy of science in Genetics.

M.Sc thesis entitled "Analysis of soluble and wall bound isozymes during various phases of development in *Vigna radiata* (mung bean)" , submitted to the University of Karachi in partial fulfillment of the requirement for the degree of masters of science in Genetics.

Research supervised:

MS/Ph.D Thesis supervising entitled "Alleviation of salt stress through exogenous application of heat shock and phytohormones on various mung bean genotypes" (Enrolled in 2013).

MS/Ph.D Thesis supervising entitled "Genotoxicity of cadmium and alleviation of Cd toxicity by certain hormones and chemicals on mung bean (*Vigna radiata*) genotypes" (Enrolled in 2011).

MSc.Literature review entitled "Genotoxic effect of heavy metals in living Organisms" during 2017.

M.Sc Project supervised entitled "Morpho-biochemical effect of salinity on medicinal plants of Gilgit Baltistan" during 2016.

MSc. Literature review entitled "Medicinal plants of Gilgit-Baltistan" during 2016.

M.Sc Project supervised entitled "Morpho-biochemical effect of salinity on oil seed plants" during 2016

MSc. Literature review entitled "Genetics and importance of oil seeds" during 2016.

M.Sc Project supervised entitled "Calcium alleviates Cd stress in mung bean seedlings" during 2014

MSc. Literature review entitled "assessment of abiotic stresses on mung bean and other organisms" during 2014.

M.Sc Project supervised entitled " Effect of aqueous onion extract on growth and antioxidant enzymes activities in mung bean seedlings under cadmium stress" during 2014.

MSc. Literature review entitled "Genetics and benefits of spices on human health" during 2014.

M.Sc Project supervised entitled " Effect of baking powder on growth and antioxidant enzymes activities in mung bean seedlings" during 2014.

MSc. Literature review entitled " Harmful effects of food preservatives and food colors on living organisms" during 2014.

M.Sc Project supervised entitled "Accumulation of MDA and Proline, activity of antioxidant

enzymes in mung bean treated with industrial waste water during 2012.

M.Sc Project supervised entitled “Effect of mobile phone radiations on Mung bean and Wheat Seedlings” during 2010.

Project supervised entitled “Effect of heavy metal stress on Mung bean (*Vigna radiata*) Seedlings” during 2010.

Project supervised entitled “Effect of Salicylic acid on heat stress on Mung bean (*Vigna radiata*) seedlings” during 2009.

Project supervised entitled “Effect of salicylic acid on salt stress in mung bean (*Vigna radiata*)” during 2008

Literature review entitled “Effect of different types of environmental stresses on plant” during 2008

Project supervised entitled “Cytotoxic and genotoxic effects of commonly used food colors on the root tip cells of onion (Allium cepa)” during 2008.

Literature review entitled “Genotoxic effect of different types of pollutions" during 2008.

Project supervised entitled “Cytotoxic effect of industrial waste water on onion root tips” during 2004.

Project supervised entitled “Cytotoxic effect of various plant extracts on wheat root tips” during 2004.

Literature review entitled "the effect of plant extracts on plants, human being and animals" during 2004.

Project supervised entitled “Effect of sodium chloride on intravarietal plant performance of mung bean (*Vigna radiata*)” during 2004.

Literature review entitled “Biochemical and physiological and morphological response of plants under salt stress" during 2004.

Project supervised entitled “Biochemical analysis of proteins and Enzymes under stress conditions in mung bean (*Vigna radiata*) seedlings” during 1997.

Workshop/courses/symposia:

Poster presented in the “ International conference on Agricultural and Food Science and 7th International conference on Biotechnology and Bioengineering”, held in Virtual University Lahore, Pakistan, during 25th till 28th October , entitled ‘ Genotoxic effect of baking soda on mung bean (Vigna radiate) seedlings”. Abstract No. PBS-56, page No 27

Attended training workshop on “ Research tools and techniques; SPSS and Research Methodology” , jointly organized by Pakistan Scientific and Technological Information Centre (PASTIC),

Pakistan Science Foundation (PSF) and Jinnah Sindh Medical University (JSMU) on May 22-24, 2017, at PASTIC Reginal office, Karachi. Pakistan.

Attended " National Research Training course on modern techniques in biotechnology" at Nuclear Institute For Biotechnology and Genetic Engineering, Faisalabad, Pakistan, during 18-22nd April 2016.

Poster presented in the "4th International conference on Environmental Horizon- ICEH-2016', held in University of Karachi, Pakistan during 8th till 10th January 2016, entitled ' Amelioration of salt stress in Mung Bean (*Vigna radiate.* L) Seedlings by the application of salicylic acid' Abstract No. PBS-02, page No 167

Poster presented in the "4th International conference on Environmental Horizon- ICEH-2016', held in University of Karachi, Pakistan during 8th till 10th January 2016, entitled ' Alleviation of oxidative stress by the pretreatment of phytohormones in Mung Bean (Vigna radiate L) Seedlings. Abstract No PBS-06, page No. 171

Poster presented in the "Plant and Animal Genome Conference XXIV", held in Town and Country Resort Hotel, San Diego during 9th till 13th January 2016, entitled 'Induction of Thermotolerance through Heat Acclimation and Phytohormones in Mung Bean Seedlings'

Poster presented in the ' 4th International Conference on Environmental Horizon", jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 8-10 January 2016, entitled "Alleviation of oxidative stress by the pretreatment of phytohormonesin mung bean (Vigna radiate(L.) seedlings"

Poster presented in the ' 4th International Conference on Environmental Horizon", jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 8-10 January 2016, entitled " Amelioration of salt stress in mung bean (Vigna radiate) L. seedlings by the application of salicylic acid"

Oral presentation in "3rd International Conference on Environmental Horizon", jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 9-11 January 2015, entitled "Role of Gibberellic acid on Alleviating temperature stress and changes in acid phosphatase activity in mung bean seedlings".

Poster presented in the "3rd International Conference on Environmental Horizon", jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 9-11 January 2015, entitled" Effect of aqueous onion extract on growth and antioxidant enzymes activities in mung bean seedlings under cadmium stress"

Poster presented in the "3rd International Conference on Environmental Horizon", jointly organized by Department of Chemistry and International Center for Chemical and Biological sciences (ICCCS), University of Karachi on 9-11 January 2015, entitled" Calcium alleviates cadmium stress in mung bean seedlings"

Oral presentation in "International conference on Emerging Trends in Scientific Research" held in Pearl International Hotel, Kuala Lumpur during 15th and 16th March 2014 entitled

"Morpho-biochemical evaluation of mung bean under textile industrial wastewater stress and alleviation of stree by exogenous application of calcium"

Oral presentation in "2nd International Conference on Environmental Horizon, Greening The Blues" jointly organized by Department of Chemistry and International Center for Chemical Science (ICCCS) on 1st-3rd January 2014 , entitled "Cytotoxic evaluation of some commonly used food colours using onion (*Allium cepa*) root tips".

Attended "29 Postgraduate training course on " The use of Nuclear and other Techniques in Food and agricultural Research" at Nuclear institute For Food and Agriculture (NIFA), Peshawar during 16-27th September, 2013.

Attended "Hands on training workshop on biological data basis and research tools in bioinformatics" at Baqai Institute of Information Technology, Baqai Medical University, held on June 2-3, 2012

Attended "Hands on Modern techniques in research on Abiotic Stress tolerance in plants" from September 05-09, 2011 at Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad.

Attended the Staff development course under the scheme of Natural Academy of Higher Education , held from December 12- January 7, 2006.

Attended a workshop on Real Time PCR held on August 15, 2005 in the Department of Genetics, University of Karachi.

Attended a work shop on Cephid Smart Cycler (A real time PCR) held on July 6, 2005 in the department of Genetics, University of Karachi

Poster presented in the 'International Conference on Environmental Horizon' jointly organized by Department of Chemistry and International Center for Chemical Science (ICCCS) from 19-21 December 2005, entitled "Genotoxic effect of waste water from different industries of Karachi on *Allium cepa"*

Attended the international workshop on "Human Genome Diversity" from 9-14th October 2000 at Biomedical and Genetic Engineering Division (B &GED) Dr. A.Q Khan Research laboratories, Islamabad in Collaboration with International Center for Genetic Engineering and Biotechnology, Trieste, Italy.

Attended the 27th postgraduate training course on nuclear and other advance techniques in agricultural and biological research , held at Nuclear Institute of Agricultural and Biology (NIAB), Faisalabad from 8-19th November 1999.

Poster presented in the 6th International Symposium on protein structure function relation ship from 5-7th February 1999, entitled " Wall bound Invertases in young, mature and senescent tissues of mung bean" , organized by HEJ research institute of Chemistry, University of Karachi.

Poster presented in the 6th International Symposium on protein structure function relation ship from 5-7th February 1999, entitled " Synthesis of heat shock protein due to temperature

stress in mung bean seedlings" , organized by HEJ research institute of Chemistry, University of Karachi.

Participated in the workshop of scientific writing in the department of Genetics, from 16- 19th June 1997

Honors and activities:

Chair a session in "International conference on Emerging Trends in Scientific Research" held in Pearl International Hotel, Kuala Lumpur during 15th and 16th March 2014

HEC Approved Research Supervisor.

Member of **MS admission committee** in the department of Genetics from 2011 till 2013

Member of **Departmental admission committee** during 1991-1993, 2008 and 2010

Student Advisor in the Dept of Genetics since October 2009 till to date**.**

Participated in the **revision of courses** offered in the Department of Genetics.

Maintaining the **Minutes of Staff Meeting** of department of Genetics.

Nominated for the preparation of **Semester and Examination time tables.**

Receiving research grant from **Dean Faculty of Science** since 1997 till to date.

Member of **Board of Studies** in Genetics from 1995 till 2004.

Member of **Board of Faculty of Science** from 1995 till 2003.

Incharge **Departmental tabulator** from 2000 to 2006, and from 2014

Member **organizing committee of workshop** on "Science in mass media" from July 7-9, 2005 held in the department of Genetics.

Member **organizing committee of workshop** on "Techniques in molecular Genetics" sponsored by UNDP/ TOKTEN from April 10-16, 1999, in the department of Genetics, University of Karachi.

Life time member of Pakistan Botanical Society.

Received a certificate by University of Karachi for participating in **Technofare** 1987.

Worked as a **Social Secretary of Biochemical society**, Govt. Islamia Science college, Karachi.

Received a medal for the **best student of biochemistry** from Biochemical society, Govt. Islamia Science College Karachi.

Received a merit certificate for obtaining **first division in B.Sc** from Govt. Islamia Science College, Karachi.

List of Publications:

1. Mansoor, S., F.N. Naqvi and T. Salimullah. 1997. Temporal and special expression of peroxidases in mung bean (*Vigna radiata*). Karachi University Journal of Science. 25(1): 131-139.

2. Mansoor, S and F.N. Naqvi. 2000. Changes in the wall bound invertase activity in young and mature tissues of mung bean (*Vigna radiata*). Pakistan Journal of Biological Sciences. 3:1550-1552.

3. Mansoor, S and F.N. Naqvi. 2000. Analysis of soluble and wall bound acid phosphatase during various phases of development in mung bean(*Vigna radiata*). Pakistan Journal of Biological Sciences.3:2206-2207.

4 . Mansoor, S., F.N. Naqvi and T. Salimullah.2002. Soluble forms of invertase in mung bean (*Vigna radiata*) during germination and developmental stages of various tissues. Pakistan Journal of Biological Sciences.5: 1063-1066.

5. Mansoor, S., F.N. Naqvi.2011.Heat stress and acquisition of thermotolerance in mung bean (*Vigna radiata* (L.) Wilczek)**.** International Journal of Biology and Biotechnology. (2): 281-286

6. Mansoor, S., F.N. Naqvi.2011.Effect of GA_3 pretreatments on thermotolerance in mung bean (*Vigna radiata* (L.) Wilczek). International Journal of Biology and Biotechnology. (2):287-293.

7. Afzal, M., S. Mansoor. 2012. Effect of mobile phone radiations on morphological and biochemical parameters of mung bean (Vigna radiata) and wheat (Triticum aestivum) seedlings. Asian Journal of Agricultural Science. 4(2): 149-152

8. Shakeel, S., S. Mansoor. 2012. Pretreatment effect of salicylic acid on protein and hydrolytic enzymes in salt stressed mung bean seedlings. Asian Journal of Agricultural Science. 4(2): 122-125

9. Shakeel,S., S. Mansoor. 2012. Salicylic acid prevents the damaging action of salt in mung bean [(Vigna radiata L.) Wilczek] seedlings. Pakistan Journal of Botany.44(2):559-562

10. Mansoor, S., F.N. Naqvi. 2012. Effect of gibberrelic acid on a- amylase activity in heat stressed mung bean (*Vigna radiate L*) seedlings. African Journal of Biotechnology. 11(52):11414-11419

11. Mansoor, S., S. Khan. 2012. Induction of thermotolerance through salicylic acid in mung bean (Vigna radiata) seedlings. . Int.J. Biol.Biotech., 9(3): 267-271

12. Mansoor, S., A.I. Baig. 2012. Effect of textile industrial waste water on growth, proteins, lipid peroxidation and proline in mung bean seedlings. Int.J. Biol.Biotech., 9(4): 373-377

13. Mansoor, S., F.N. Naqvi. 2013. Isoamylase profile of mung bean seedlings treated

with high temperature and gibberellic acid. African Journal of Biotechnology. 12(13):1495-1499.

14. Mansoor, S., F.N. Naqvi. 2013. Effect of heat stress on lipid peroxidation and antioxidant enzymes in mung bean (*Vigna radiata L*) seedlings. African Journal of Biotechnology.12(21):3196-3203.

15. Hassan, M., S. Mansoor. 2014. Oxidative stress and antioxidant defense mechanism in mung bean seedlings after Cadmium and Lead treatments.Turkish Journal of Agriculture and Forestry. 38: 55-61

16. Mansoor S., A. Seher. 2014. Genotoxic evaluation of industrial and kitchen wastewater using *Allium cepa* assay. Int.J. Biol.Biotech., 11(2-3): 255-260

17. Mansoor S., A.I Baig. 2014. Morpho-biochemical evaluation of mung bean under textile industrial wastewater stress and alleviation of stress by exogenous application of calcium. Proceeding Book of ICETSR, Hand book on Emerging Trends in Scientific Research. Malaysia. 285-296.

Nadia Khan
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Education:

2013-2015 Post doctorate in Wheat Molecular Genetics**,** Department of Crop Molecular Biology, Institute of Crop Science, Chinese Academy of Agriculture Sciences Chinese Academy of Agricultural Sciences (CAAS) Beijing, China.
Thesis title: Genetic dissection of stem water soluble carbohydrates and agronomic traits in wheat under different water regimes
Supervision: Prof. Dr. Rui-Lian Jing

2003-2010 Ph.D in Wheat Agronomy and Biochemical Characterization, Department of Genetics, University of Karachi, Pakistan
Thesis title: Morpho-biochemical characterization of wheat genotypes under abiotic stress
Supervision: Prof. Dr. Farzana N.Naqvi

2000-2001 Master's in Genetics, Department of Genetics, University of Karachi, Pakistan

Work Experience:

2011-to date **Assistant Professor**, Department of Genetics, University of Karachi, Pakistan
Taught courses and conducted labs of M.Sc.
Courses: Advanced Plant Breeding, Cellular Physiology and Biochemistry, Clinical Genetics, Developmental Genetics, Elements of Biometry, Experimental design, Principles of Plant Breeding, Seminar Presentation
Research supervision of M.Sc and M.Phil/Ph.D students

2009-2011 **Teaching Assistant**, Department of Genetics, University of Karachi, Pakistan

List of Publications:

- **Khan Nadia**, Xiao-ping Chang and Ruilian Jing. 2017. Genetic dissection of stem water-soluble carbohydrates and agronomic traits in wheat under different water regimes. Journal of Agriculture Science 9(3):42 doi:http://dx.doi.org/10.5539 [IF: 1.103]

- Li Qian, Wang Jing-yi, **Khan Nadia**, Chang Xiao-ping, Liu Hui-min and Jing Ruilian. 2016. Polymorphism and association analysis of a drought-resistant gene *TaLTP-s* in wheat. Journal of Integrative Agriculture 15 (6):1198-1206 [IF: 0.833].

- **Nadia Khan** and Farzana N.N. 2014. Antioxidant enzymes and protein profiles in wheat seedlings under abiotic stress. AJRC. 2(12):155-167.

- Hadeesa Naz and **Nadia Khan**. 2014. Role of Abscisic Acid and Water Stress on the Activities of Antioxidant Enzymes in Wheat. Current Res. J. Biol. Sci. 6(4): 168-172.

- **Nadia Khan** and Farzana N. Naqvi. 2013. Agro-biochemical traits of wheat genotypes under irrigated and non-irrigated conditions. Cereal Research Communication. 2:1-12 [IF: 0.607].

- **Nadia Khan**.2013. Changes in the Antioxidant Enzymes activity of wheat seedlings under Abscisic acid (ABA) and water stress. Int. J. Biol. Biotech. 10(1):79-82

- **Khan, N** and F. N. Naqvi. 2012. Genetic characterization of wheat under water stress. LAP Lambert Publication ISBN 978-3-8473-3776-8.

- **N. Khan** and F.N. Naqvi.2012. Correlation and Path Coefficient Analysis in Wheat Genotypes under Irrigated and Non-Irrigated Conditions. Asian Journal of Agricultural Sciences. 4(5):346-351.

- **Khan, N** and F. N. Naqvi. 2012. Alterations in reducing sugar in *Triticum aestivum* under irrigated and non-irrigated condition. African Journal of Biotechnology. 11(21): 4849-4852.

- **Khan, N** and F. N. Naqvi. 2011. Effect of water stress in bread wheat hexaploids. Current Research Journal of Biological Sciences. 3: 487-498.

- **Khan, N** and F. N. Naqvi. 2011. Heritability of Morphological Traits in Bread Wheat Advanced Lines Under Irrigated and Non-Irrigated Conditions. Asian Journal of Agricultural Sciences. 3: 215-222.

- **Khan, N** and F. N. Naqvi. 2010. Effect of water stress on lipid peroxidation and antioxidant enzymes in local bread wheat hexaploids. Journal of Food, Agriculture and Environment. 8: 521-526.

- Mohsin, T., **N. Khan** and F.N. Naqvi. 2009. Heritability, phenotypic correlation and path coefficient studies for some agronomic characters in synthetic elite lines of wheat. Journal of Food, Agriculture and Environment. 7: 278-282.

- Mohsin, T., **N. Khan** and F.N. Naqvi. 2006. Effect of exogenous plant growth regulators on embryonic development of *vigna radiata* (mung bean): differential expression of amylase in immature & mature embryos cultured *in vitro*. Pakistan Journal of Biological Sciences.9: 160-163.

Research Presentations:

- **Nadia Khan**, Xiao-ping Chang and Ruilian Jing. 2017. Genetic dissection of stem water-soluble carbohydrates and agronomic traits in wheat under different water regimes poster presented in IDV Conference held during 21-25 Feb at Hyderabad, India.

- Simeen, M., Sarwat, A and **Nadia, K**. 2016. Induction of thermo tolerance through heat acclimation and phytohormones in mung bean seedlings poster presented in Plant and Animal Genome XXIV on Jan 9-13. San Diego, CA, USA.

- **N. Khan.** 2013. Antioxidant enzymes and protein profiles in wheat seedlings by dehydration stress, hydrogen peroxide and abscisic acid poster presented in International Conference on Inter Drought-IV held on Sept 2-6, 2013 Abst. P 33, Perth, Australia.

- **N. Khan.** 2012. Changes in the Antioxidant Enzymes Activity of Wheat Seedlings Under ABA and Water Stress Poster accepted in the Plant Abiotic Stress Tolerance II held on February 22-25, 2012 Vienna, Austria.

- **Khan, N** and F.N. Naqvi. 2009. Alterations in the activities of water stress antioxidant enzymes in *Triticum aestivum* under conditions poster presented in The 3rd International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress" held on 11th Oct – 16th Oct, 2009 Abst. P 4.1 Shanghai, China. This visit was sponsored by FAO.

- **Khan, N** and F.N. Naqvi. 2009. Alterations in reducing sugars in *Triticum aestivum* under irrigated and non-irrigated condition poster presented in "FEBS Workshop: Adaptation Potential in Plants" held on 19th-21st March, 2009 Abst. P.26 at Gregor Mendel Institute, Vienna, Austria.

- **Khan, N** and F.N. Naqvi. 2005. Morpho-biochemical characterization of wheat *(Triticum aestivum* L.) genotypes under drought stress poster presented in "The 2nd International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress" held on 24th Sep – 28th Sep, 2005 Abst. P 4.19 at "*La Sapienza*", University of Rome, Italy. This visit was sponsored by USAID.

Travel Grants:

2017 ICRISAT awarded fellowship, attended Inter Drought Conference in Hyderabad, India (US$730)

2013 United Nations Food and Agriculture Organization (FAO), Rome and Crawford Fund, Australia attended International Conference on Inter Drought-IV and Master Class on "Adaptation to Drought" in Perth, Australia ($840)

2009 United Nations Food and Agriculture Organization (FAO) attended The 3rd International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress in Shanghai, China (US$1800)

2005 USAID, attended Inter Drought-II and WUEMED workshop in Rome, Italy (€ 1000)

Research Grants:

2016-2017 Deans' Science Grant "Response of wheat genotypes to salinity stress" (952 US$)

2012-2013 Deans' Science Grant "Effect of phytohormones and water stress on the activities of antioxidant enzymes in wheat" (955.34 US$)

2011-2012 Deans' Science Grant "Genetic diversity in agronomic traits and cereal storage protein" (1909.76 US$)

Courses and Workshops:

2014 Wheat Genomics and Molecular Breeding in China V, Hefei, Anhui, China held on Aug 17-19.

The 15th Plant Genomics Conference in China, Hefei, Anhui, China held on Aug 19-22.

2013 Master Class on Adaptation to Drought held on August 27-31.

2012 Hands on training workshop on Biological Database and Research Tools in Bioinformatics at Baqai Institute of Information Technology, Baqai Medical University held on June 02-03.

2011 Hands on Training on Modern Techniques in Research on Abiotic Stress Tolerance in Plants organized by Nuclear Institute for Agriculture and Biology (NIAB) and Pakistan Atomic Energy Commission, Faisalabad held on Sept, 05-09.

2010 Workshop on Advanced Microscopy jointly organized by the M.A.H. Qadri Biological Research Centre, Centre for Plant Conservation, Department of Microbiology and Dr. Panjwani Center for Molecular Medicine & Drug Research (ICCBS), University of Karachi held on Feb 4-6.

Course on Professional Competency Enhancement Program for Teachers in collaboration with HEC and NAHE held at University of Karachi held on April 12-May 08.

2006 Course on Statistical Package (SPSS) for experimental data analysis, 2006 organized by Human Resource Center and Department of Genetics, University of Karachi.

2005 Workshop in WUEMED Improving Water Use Efficiency in MEDiterranean Agriculture: what limits the adoption of new technologies? held on 29th Sep – 30th Sep at CNR-Consiglio Nazionale delle Ricerche, Rome, Italy.

Workshop on REAL TIME PCR (15th August) held at the Department of Genetics, University of Karachi with the collaboration of Bioflux Corporation, Tokyo, Japan.

Workshop on Cephid Smart Cycler (A real time PCR machine) held on July 6th at the Department of Genetics, University of Karachi.

2003 Workshop on Application of cell-culture technology immunodiagnostics (Dec 15th– 20th) organized by Department of Microbiology, M.A.H. Qadri Biological Research Centre, University of Karachi and Pakistan Society for Microbiology**,** Karachi.

Workshop on PCR application in research and diagnostics (Oct 16th-18th) jointly organized by Department of Biochemistry, University of Karachi & PSBMB- Rahila Research and Reference Laboratories, Karachi, Pakistan.

HEJRIC-TOKTEN workshop on Animal cell culture (Dec 23rd 02 to Jan 03) at HEJ Research Institute of Chemistry, jointly sponsored by United Nations Development Program/National Talent pool of Pakistan & Methodist Research Institute, Clarian Health Partners, Inc. Indianapolis, U.S.A.

Member:

- Department QEC committee (March 2016 to date)
- Department Research Committee for M.Phil and Ph.D Programme (2011 to date)
- Organizing committee in the workshop on Science in mass media (June 7th - 9th, 2005) held at the Department of Genetics, University of Karachi.

Present Activities/Projects:

Completed Projects

- Effect of phytohormones and water stress on the activities of antioxidant enzymes in wheat
- Genetic diversity in agronomic traits and cereal storage protein

Ongoing activities

- Response to salinity stress in Pakistani wheat germplasm
- Effect of water stress on wheat genotypes
- Characterization of Pakistani wheat germplasm

Computer Skills:

- Word-highly proficient
- Power Point-highly proficient
- Excel- highly proficient
- Internet- highly proficient
- SPSS- highly proficient
- MEGA- highly proficient
- Power Marker- highly proficient
- STRUCTURE- highly proficient
- TASSEL- highly proficient

SARWAT AFSHAN
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Education

- Enrolled in Ph.D under the supervision of Dr. Shakeel R. Farooqi, Genetics, University of Karachi, Pakistan, 2012
- M.Phil, Genetics, University of Karachi, Pakistan, 2010
- M.Sc., Genetics, University of Karachi, Pakistan, 2000 (First division)
- B.Sc., Botany, Zoology, Chemistry, University of Karachi, 1997 (First division)
- Intermediate, Pre-Medical, P.E.C.H.S Govt. College for Women, Karachi, 1995 (First division)
- S.S.C, Science, Ali Ali Boys/Girls Secondary School, Karachi, 1993 (First division)

M.Phil Thesis Thesis title: Biochemical Characterization of Endosperm Proteins of Hexaploid Wheat Cultivars; Thesis Supervisor: Prof. Dr. Farzana Nasir Naqvi

Research Interest

- Biochemical characterization of proteins or protein profiling
- Study of the agronomic and morphological parameters
- Plant Tissue Culturing

Teaching Interest

- Clinical Genetics
- Cyto-Genetics
- Plant Breeding
- Immunogenetics

Research Experience

- Research Assistant to Prof. Dr. Atiya Abbasi , H.E.J Institute of Chemistry, University of Karachi, Pakistan, December 2008 – January 2009
- Research Officer at Plant Tissue Culture Lab, Pakistan Council of Scientific & Industrial Research Laboratories Complex (PCSIR), Karachi, Pakistan, March – November 2008

Teaching

Experience

- Lecturer, Department of Genetics, University of Karachi, February 2011till To date
- Cooperative Teacher , Department of Genetics, University of Karachi, Pakistan February 2009 – January 2011

Paper Publications

Afshan, S. and F.N. Naqvi. 2011. Allelic Variation in High Molecular Weight Glutenin Subunits in Pakistani Bread Wheat Genotypes. Cereal Research Communications. 39: 109-119

Afshan, S. and F.N. Naqvi. 2011. Genetic diversity of hexaploid wheat based on polymorphism in quality characteristics. Asian Journal of Agricultural Sciences. 3(4): 435-441.

Fatima, H. and S. Afshan. 2013. Evaluating the Response of Wheat Genotypes to Salinity Stress. Asian Journal of Agricultural Sciences. 5(6): 126-129.

Poster Presentations

7th International Conference on Biotechnology and Bioengineering and 2017 International Conference on Agricultural and Food Science held on October 25-27, 2017organized by Asia-Pacific Association of Science, Engineering and Technology and Virtual University of Pakistan.

Research Projects

DFS Research Grant awarded entitled “Polymorphism in hexaploid wheat accessions based on agronomic characteristics and grain quality traits”, year 2011.

DFS Research Grant awarded entitled “Evaluating the response of wheat genotypes to salinity stress”, year 2012.

DFS Research Grant awarded entitled “Response of wheat chlorophyll and proteins to nitrogen fertilizers”, year 2014.

DFS Research Grant awarded entitled “Molecular marker based genetic diversity analysis in rice using RAPD” , year 2016.

Research Supervised

Literature Review and Research Project entitled, “Response of Wheat Genotypes to Salinity Stress”, during the year 2012.

Literature Review and Research Project entitled, “Use of Fertilizers and the Quality of Wheat Proteins”, during the year 2012.

Literature Review and Research Project entitled, “Response of wheat genotypes to temperature stress”, during the year 2014.

Literature Review and Research Project entitled, “Correlation between nitrogen phosphorus and potassium (NPK) fertilizer and the chlorophyll content”, during the year 2014.

Literature Review and Research Project entitled, “Analysis of allelic variation of

high molecular weight glutenins in hexaploid wheat accessions of Pakistan", during the year 2015.

Literature Review and Research Project entitled, "Effect of heat shock on different wheat genotypes",during the year 2015.

Literature Review and Research Project entitled, "Effect of salinity on the morpho-physiological parameters, protein content and peroxidase activity of wild rice", during the year 2015.

Computer Skills

- Good practical knowledge of MS Excel, MS Word, MS Power Point
- Worked on MS Publisher
- Certificate course on SPSS (Statistical Package for Social Sciences) with practical experience

Workshops Organized

- Member Organizing Committee, Staff Development Course 4, held on 7th – 23rd May, 2007. Organized by Human Resource Centre, University of Karachi and National Academy of Higher Education, HEC.
- Member Organizing Committee, Staff Development Course 3, held on 20th Dec, 2006 – 23rd Jan, 2007. Organized by Human Resource Centre, University of Karachi and National Academy of Higher Education, HEC.
- Member Organizing Committee, Workshop 'Science in Mass Media' held on 7th – 9th June, 2005. Organized by Department of Genetics, University of Karachi.

Workshops/ Conferences Attended

- Hands on Training on "Modern Techniques in Research on Abiotic Stress Tolerance in Plants" held on September 5-9, 2011. Organized by the Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad, Pakistan.
- Workshop on Advanced Microscopy held on February 4-6, 2010. Jointly organized by the M.A.H. Qadri Biological Research Centre, Centre for Plant Conservation, Department of Microbiology and Dr. Panjwani Center for Molecular Medicine and Drug Research (ICCBS), University of Karachi, Pakistan.
- 2nd International Symposium-Cum-Training Course on Molecular Medicine and Drug Research held on 12 - 15 January, 2009. Organized by Dr. Panjwani Center for Molecular Medicine and Drug Research, International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.
- Staff Development Course held on 7th – 30th May, 2007. Organized by National Academy of Higher Education, HEC (Higher Education Commission), Pakistan.
- Workshop on Research Protocol Development held on 8th – 10th March, 2007. Organized by Dr. Panjwani Centre for Molecular Medicine and Drug Research, International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.
- Workshop on Intellectual Property Rights and Patenting held on 25th of November 2006 at Latif Ebrahim Jamal National Science Information Center, University of Karachi. Organized by Human Resource Centre and H.E.J Research Institute of Chemistry, Pakistan.

Survey’s Results

Number of Students who filled the evaluation forms: 42

	TEACHER'S EVALUATION	TEACHER-1					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	13	6	9	3	6	5
2	The Teacher conducts the classes as per schedule	18	7	11	1	2	3
3	The Teacher comes prepared for each lecture / practical	25	6	5	1	4	1
4	The Teacher demonstrates knowledge of the subject	22	11	4	5	0	0
5	The Teacher provides additional material apart from the text book	7	6	5	9	11	4
6	The Teacher creates an environment that is conducive for learning	14	5	11	2	8	2
7	The Teacher has completed the entire course	20	14	3	2	2	1
8	The Teacher is fair in evaluation	18	13	6	1	1	3
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	7	6	6	3	17	3
10	The Teacher remains available for consultation during specified office hours	13	5	7	5	6	6
11	The Teacher follows moral and ethical norms	17	10	10	0	1	4
	Total:	**174**	**89**	**77**	**32**	**58**	**32**
	Percent Score	**38**	**19**	**17**	**6.9**	**13**	**6.9**
	COURSE EVALUATION	**GENET-526**					
		5	4	3	2	1	No Response
12	The course is well organized	12	11	12	3	3	1
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	15	14	6	3	4	0
14	The course integrates the theoretical concepts with real world applications	17	9	12	2	2	0
15	The assignments, quizzes and exams covered the materials presented in the course	15	7	6	9	3	2
16	The course material is updated	17	11	8	1	3	2
17	The content presented in the course has increased my knowledge of the subject	20	14	3	3	1	1
18	The course content has stimulated my intellectual curiosity	20	10	8	2	1	1
	Total:	**116**	**76**	**55**	**23**	**17**	**7**
	Percent Score	**40**	**26**	**19**	**7.8**	**5.8**	**2**

Number of Students who filled the evaluation forms: 42

	TEACHER'S EVALUATION	TEACHER-2					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	29	6	3	1	2	1
2	The Teacher conducts the classes as per schedule	29	7	5	0	1	0
3	The Teacher comes prepared for each lecture / practical	35	5	0	0	1	1
4	The Teacher demonstrates knowledge of the subject	29	9	3	0	0	1
5	The Teacher provides additional material apart from the text book	15	9	5	4	7	2
6	The Teacher creates an environment that is conducive for learning	25	6	8	0	2	1
7	The Teacher has completed the entire course	35	4	1	1	0	1
8	The Teacher is fair in evaluation	22	9	5	2	3	1
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	13	9	10	2	5	3
10	The Teacher remains available for consultation during specified office hours	27	5	3	3	0	4
11	The Teacher follows moral and ethical norms	26	5	7	1	1	2
	Total:	**285**	**74**	**50**	**14**	**22**	**17**
	Percent Score	**62**	**16**	**11**	**3**	**4.8**	**3.7**
	COURSE EVALUATION	**GENET-527**					
		5	4	3	2	1	No Response
12	The course is well organized	27	6	6	1	1	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	23	12	6	0	0	1
14	The course integrates the theoretical concepts with real world applications	25	11	5	0	1	0
15	The assignments, quizzes and exams covered the materials presented in the course	27	8	4	1	0	2
16	The course material is updated	26	10	4	1	1	0
17	The content presented in the course has increased my knowledge of the subject	29	7	5	0	1	0
18	The course content has stimulated my intellectual curiosity	24	7	4	2	4	1
	Total:	**181**	**61**	**34**	**5**	**8**	**4**
	Percent Score	**62**	**21**	**12**	**2**	**2.7**	**1.4**

Number of Students who filled the evaluation forms: 42

	TEACHER'S EVALUATION	TEACHER-3					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	32	4	4	0	0	2
2	The Teacher conducts the classes as per schedule	36	2	3	0	1	0
3	The Teacher comes prepared for each lecture / practical	37	1	2	1	0	1
4	The Teacher demonstrates knowledge of the subject	27	11	4	0	0	0
5	The Teacher provides additional material apart from the text book	22	6	1	5	8	0
6	The Teacher creates an environment that is conducive for learning	25	10	4	1	0	2
7	The Teacher has completed the entire course	37	5	0	0	0	0
8	The Teacher is fair in evaluation	24	9	4	1	2	2
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	18	8	7	1	5	3
10	The Teacher remains available for consultation during specified office hours	33	3	2	1	0	3
11	The Teacher follows moral and ethical norms	29	6	3	1	0	3
	Total:	**320**	**65**	**34**	**11**	**16**	**16**
	Percent Score	**70**	**14**	**7**	**2.3**	**3.4**	**3.4**
	COURSE EVALUATION	**GENET-528**					
		5	4	3	2	1	No Response
12	The course is well organized	36	6	0	0	0	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	27	9	1	2	1	2
14	The course integrates the theoretical concepts with real world applications	22	13	4	2	0	1
15	The assignments, quizzes and exams covered the materials presented in the course	25	8	4	1	1	3
16	The course material is updated	30	7	2	0	2	1
17	The content presented in the course has increased my knowledge of the subject	29	6	3	1	0	3
18	The course content has stimulated my intellectual curiosity	22	10	7	0	2	1
	Total:	**191**	**59**	**21**	**6**	**6**	**11**
	Percent Score	**65**	**20**	**7.1**	**2**	**2**	**3.7**

Number of Students who filled the evaluation forms: 42

	TEACHER'S EVALUATION	TEACHER-4					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	31	5	1	2	1	2
2	The Teacher conducts the classes as per schedule	32	4	3	0	2	1
3	The Teacher comes prepared for each lecture / practical	42	0	0	0	0	0
4	The Teacher demonstrates knowledge of the subject	35	2	2	0	0	3
5	The Teacher provides additional material apart from the text book	20	7	5	3	5	2
6	The Teacher creates an environment that is conducive for learning	31	4	5	0	2	0
7	The Teacher has completed the entire course	29	9	2	1	0	1
8	The Teacher is fair in evaluation	27	9	5	0	1	0
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	8	7	10	3	8	6
10	The Teacher remains available for consultation during specified office hours	27	4	3	2	3	3
11	The Teacher follows moral and ethical norms	27	5	7	0	2	1
	Total:	**309**	**56**	**43**	**11**	**24**	**19**
	Percent Score	**67**	**12**	**9**	**2**	**5**	**4**
	COURSE EVALUATION	**GENET-529**					
		5	4	3	2	1	No Response
12	The course is well organized	33	5	2	1	1	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	25	7	5	1	2	2
14	The course integrates the theoretical concepts with real world applications	29	9	3	1	0	0
15	The assignments, quizzes and exams covered the materials presented in the course	19	8	6	3	3	3
16	The course material is updated	29	9	2	0	1	1
17	The content presented in the course has increased my knowledge of the subject	35	5	1	0	0	1
18	The course content has stimulated my intellectual curiosity	30	7	3	0	2	0
	Total:	**200**	**50**	**22**	**6**	**9**	**7**
	Percent Score	**68**	**17**	**7.5**	**2**	**3.1**	**2.4**

Number of Students who filled the evaluation forms: 42

	TEACHER'S EVALUATION	TEACHER-5					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	13	9	7	4	5	4
2	The Teacher conducts the classes as per schedule	30	4	2	2	1	3
3	The Teacher comes prepared for each lecture / practical	15	10	7	4	4	2
4	The Teacher demonstrates knowledge of the subject	18	8	5	3	5	3
5	The Teacher provides additional material apart from the text book	8	7	8	4	2	13
6	The Teacher creates an environment that is conducive for learning	9	10	10	4	6	3
7	The Teacher has completed the entire course	29	6	4	0	1	2
8	The Teacher is fair in evaluation	14	11	7	3	3	4
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	7	8	7	5	9	6
10	The Teacher remains available for consultation during specified office hours	21	7	5	0	4	5
11	The Teacher follows moral and ethical norms	22	6	4	4	2	4
	Total:	**186**	**86**	**66**	**33**	**42**	**49**
	Percent Score	**40**	**19**	**14**	**7**	**9**	**11**
	COURSE EVALUATION	**GENET-530**					
		5	4	3	2	1	No Response
12	The course is well organized	13	9	7	4	5	4
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	16	8	8	1	4	5
14	The course integrates the theoretical concepts with real world applications	16	12	4	6	0	4
15	The assignments, quizzes and exams covered the materials presented in the course	15	8	7	2	3	7
16	The course material is updated	20	7	6	3	2	4
17	The content presented in the course has increased my knowledge of the subject	17	9	8	2	2	4
18	The course content has stimulated my intellectual curiosity	16	8	4	2	8	4
	Total:	**113**	**61**	**44**	**20**	**24**	**32**
	Percent Score	**38**	**21**	**15**	**6.8**	**8.2**	**11**

Number of Students who filled the evaluation forms: 43

	TEACHER'S EVALUATION	TEACHER-6					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	17	4	4	6	11	1
2	The Teacher conducts the classes as per schedule	13	4	10	6	9	1
3	The Teacher comes prepared for each lecture / practical	22	4	6	4	5	2
4	The Teacher demonstrates knowledge of the subject	12	9	8	5	9	0
5	The Teacher provides additional material apart from the text book	14	3	6	7	13	0
6	The Teacher creates an environment that is conducive for learning	5	6	10	6	13	3
7	The Teacher has completed the entire course	19	4	5	5	9	1
8	The Teacher is fair in evaluation	14	12	3	3	7	4
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	12	4	11	3	11	2
10	The Teacher remains available for consultation during specified office hours	21	7	4	4	5	2
11	The Teacher follows moral and ethical norms	21	5	4	4	3	6
	Total:	170	62	71	53	95	22
	Percent Score	35.94	13.11	15.01	11.21	20.08	5
	COURSE EVALUATION	**GENET-531**					
		5	4	3	2	1	No Response
12	The course is well organized	17	4	6	6	9	1
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	12	6	10	5	8	2
14	The course integrates the theoretical concepts with real world applications	8	5	14	6	9	1
15	The assignments, quizzes and exams covered the materials presented in the course	10	11	5	7	5	5
16	The course material is updated	15	11	7	3	5	2
17	The content presented in the course has increased my knowledge of the subject	11	10	10	2	10	0
18	The course content has stimulated my intellectual curiosity	13	5	10	6	8	1
	Total:	86	52	62	35	54	12
	Percent Score	28.57	17.28	20.6	11.63	17.94	4

Number of Students who filled the evaluation forms: 43

	TEACHER'S EVALUATION	TEACHER-2					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	30	6	2	1	1	3
2	The Teacher conducts the classes as per schedule	27	4	7	2	1	2
3	The Teacher comes prepared for each lecture / practical	35	1	4	0	1	2
4	The Teacher demonstrates knowledge of the subject	29	2	1	1	0	10
5	The Teacher provides additional material apart from the text book	21	9	4	2	6	1
6	The Teacher creates an environment that is conducive for learning	27	9	2	2	2	1
7	The Teacher has completed the entire course	31	5	2	2	1	2
8	The Teacher is fair in evaluation	23	10	2	2	3	3
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	15	11	5	3	4	5
10	The Teacher remains available for consultation during specified office hours	28	6	3	1	2	3
11	The Teacher follows moral and ethical norms	27	3	3	3	2	5
	Total:	293	66	35	19	23	37
	Percent Score	61.95	13.95	7.4	4.017	4.863	7.82241015
	COURSE EVALUATION	**GENET-532**					
		5	4	3	2	1	No Response
12	The course is well organized	32	7	2	0	1	1
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	27	9	3	1	2	1
14	The course integrates the theoretical concepts with real world applications	26	7	5	1	3	1
15	The assignments, quizzes and exams covered the materials presented in the course	25	8	3	1	1	5
16	The course material is updated	31	4	3	1	2	2
17	The content presented in the course has increased my knowledge of the subject	26	10	2	2	1	2
18	The course content has stimulated my intellectual curiosity	27	5	3	3	1	4
	Total:	194	50	21	9	11	16
	Percent Score	64.45	16.61	6.977	2.99	3.654	5.31561462

Number of Students who filled the evaluation forms: 43

	TEACHER'S EVALUATION	TEACHER-7					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	29	8	3	2	0	1
2	The Teacher conducts the classes as per schedule	33	5	3	0	0	2
3	The Teacher comes prepared for each lecture / practical	35	1	4	1	1	1
4	The Teacher demonstrates knowledge of the subject	31	8	3	1	0	0
5	The Teacher provides additional material apart from the text book	22	5	8	1	6	1
6	The Teacher creates an environment that is conducive for learning	29	5	5	1	1	2
7	The Teacher has completed the entire course	31	4	3	2	0	3
8	The Teacher is fair in evaluation	23	9	7	1	0	3
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	19	3	9	2	4	6
10	The Teacher remains available for consultation during specified office hours	31	8	2	0	0	2
11	The Teacher follows moral and ethical norms	29	4	1	3	0	6
	Total:	312	60	48	14	12	27
	Percent Score	66	12.7	10	3	2.5	5.7
	COURSE EVALUATION	**GENET-533**					
		5	4	3	2	1	No Response
12	The course is well organized	27	7	6	2	1	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	23	11	6	1	2	0
14	The course integrates the theoretical concepts with real world applications	28	8	4	1	1	1
15	The assignments, quizzes and exams covered the materials presented in the course	22	6	5	4	1	5
16	The course material is updated	27	6	5	3	0	2
17	The content presented in the course has increased my knowledge of the subject	30	10	3	0	0	0
18	The course content has stimulated my intellectual curiosity	28	5	5	2	2	1
	Total:	185	53	34	13	7	9
	Percent Score	61.46	17.61	11.3	4.319	2.326	2.99

Number of Students who filled the evaluation forms: 43

	TEACHER'S EVALUATION	TEACHER-6					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	16	6	6	6	8	1
2	The Teacher conducts the classes as per schedule	11	8	11	5	7	1
3	The Teacher comes prepared for each lecture / practical	17	8	5	3	8	2
4	The Teacher demonstrates knowledge of the subject	11	12	6	6	7	1
5	The Teacher provides additional material apart from the text book	13	5	8	6	10	1
6	The Teacher creates an environment that is conducive for learning	6	6	7	9	13	2
7	The Teacher has completed the entire course	21	3	7	2	8	2
8	The Teacher is fair in evaluation	13	14	5	2	5	4
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	13	5	6	6	10	3
10	The Teacher remains available for consultation during specified office hours	23	6	4	3	4	3
11	The Teacher follows moral and ethical norms	20	8	5	2	3	5
	Total:	164	81	70	50	83	25
	Percent Score	35	17.12	15	10.5	17.5	5
	COURSE EVALUATION	**GENET-533**					
		5	4	3	2	1	No Response
12	The course is well organized	14	8	6	7	7	1
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	11	10	7	7	5	3
14	The course integrates the theoretical concepts with real world applications	11	6	11	3	10	2
15	The assignments, quizzes and exams covered the materials presented in the course	11	7	5	7	5	8
16	The course material is updated	19	6	6	4	5	3
17	The content presented in the course has increased my knowledge of the subject	14	7	9	6	5	2
18	The course content has stimulated my intellectual curiosity	14	5	5	6	9	4
	Total:	94	49	49	40	46	23
	Percent Score	31.23	16.28	16.3	13.29	15.28	7.64

Number of Students who filled the evaluation forms: 43

	TEACHER'S EVALUATION	TEACHER-8					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	32	5	0	0	0	6
2	The Teacher conducts the classes as per schedule	23	10	7	1	1	1
3	The Teacher comes prepared for each lecture / practical	40	0	1	1	1	0
4	The Teacher demonstrates knowledge of the subject	37	3	1	0	0	2
5	The Teacher provides additional material apart from the text book	33	3	2	0	4	1
6	The Teacher creates an environment that is conducive for learning	34	3	4	0	0	2
7	The Teacher has completed the entire course	25	7	6	3	0	2
8	The Teacher is fair in evaluation	28	5	2	2	2	4
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	19	4	6	2	7	5
10	The Teacher remains available for consultation during specified office hours	20	6	3	5	6	3
11	The Teacher follows moral and ethical norms	31	4	3	1	0	4
	Total:	322	50	35	15	21	30
	Percent Score	68	11	7.4	3.2	4.4	6.3
	COURSE EVALUATION	**GENET-534**					
		5	4	3	2	1	No Response
12	The course is well organized	35	4	3	0	1	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	28	9	4	0	1	1
14	The course integrates the theoretical concepts with real world applications	36	3	3	0	0	1
15	The assignments, quizzes and exams covered the materials presented in the course	25	5	5	1	3	4
16	The course material is updated	38	2	1	0	0	2
17	The content presented in the course has increased my knowledge of the subject	35	5	0	1	0	2
18	The course content has stimulated my intellectual curiosity	38	2	0	0	0	3
	Total:	235	30	16	2	5	13
	Percent Score	78	10	5.3	0.66	1.66	4.31

Number of Students who filled the evaluation forms: 43

	TEACHER'S EVALUATION	TEACHER-9					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	36	2	0	1	0	4
2	The Teacher conducts the classes as per schedule	30	6	2	1	1	3
3	The Teacher comes prepared for each lecture / practical	34	3	2	0	0	4
4	The Teacher demonstrates knowledge of the subject	29	8	2	0	0	4
5	The Teacher provides additional material apart from the text book	19	5	6	2	7	4
6	The Teacher creates an environment that is conducive for learning	29	5	3	1	0	5
7	The Teacher has completed the entire course	34	2	1	0	0	6
8	The Teacher is fair in evaluation	30	6	0	0	1	6
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	21	5	5	1	5	6
10	The Teacher remains available for consultation during specified office hours	27	7	2	1	0	6
11	The Teacher follows moral and ethical norms	28	3	3	1	0	8
	Total:	317	52	26	8	14	56
	Percent Score	67	11	5.5	1.7	3	12
	COURSE EVALUATION	**GENET-535**					
		5	4	3	2	1	No Response
12	The course is well organized	35	2	2	0	0	4
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	28	7	3	0	1	4
14	The course integrates the theoretical concepts with real world applications	31	3	3	1	1	4
15	The assignments, quizzes and exams covered the materials presented in the course	25	6	5	1	0	6
16	The course material is updated	30	2	4	1	0	6
17	The content presented in the course has increased my knowledge of the subject	31	6	4	0	0	2
18	The course content has stimulated my intellectual curiosity	25	6	5	1	1	5
	Total:	205	32	26	4	3	31
	Percent Score	68	11	8.6	1.3	1	10.2

Number of Students who filled the evaluation forms: 22

	TEACHER'S EVALUATION	TEACHER-5					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	8	4	8	0	2	0
2	The Teacher conducts the classes as per schedule	13	5	2	0	1	1
3	The Teacher comes prepared for each lecture / practical	8	4	5	3	1	1
4	The Teacher demonstrates knowledge of the subject	9	4	7	0	1	1
5	The Teacher provides additional material apart from the text book	6	5	3	4	3	1
6	The Teacher creates an environment that is conducive for learning	5	5	9	1	1	1
7	The Teacher has completed the entire course	17	1	3	0	1	0
8	The Teacher is fair in evaluation	10	6	4	1	1	0
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	6	3	4	6	3	0
10	The Teacher remains available for consultation during specified office hours	13	5	0	1	1	2
11	The Teacher follows moral and ethical norms	9	8	1	3	1	0
	Total:	104	50	46	19	16	7
	Percent Score	43	20.6	19	8	6.6	3
	COURSE EVALUATION	**GENET-625**					
		5	4	3	2	1	No Response
12	The course is well organized	11	9	1	1	0	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	10	8	3	1	0	0
14	The course integrates the theoretical concepts with real world applications	11	5	3	3	0	0
15	The assignments, quizzes and exams covered the materials presented in the course	12	2	3	1	2	2
16	The course material is updated	11	7	2	1	1	0
17	The content presented in the course has increased my knowledge of the subject	11	8	1	0	1	1
18	The course content has stimulated my intellectual curiosity	8	3	9	1	1	0
	Total:	74	42	22	8	5	3
	Percent Score	48.05	27.27	14.29	5.195	3.247	1.948

Number of Students who filled the evaluation forms: 22

	TEACHER'S EVALUATION	TEACHER-3					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	21	1	0	0	0	0
2	The Teacher conducts the classes as per schedule	22	0	0	0	0	0
3	The Teacher comes prepared for each lecture / practical	20	2	0	0	0	0
4	The Teacher demonstrates knowledge of the subject	18	3	1	0	0	0
5	The Teacher provides additional material apart from the text book	14	2	1	2	3	0
6	The Teacher creates an environment that is conducive for learning	18	3	1	0	0	0
7	The Teacher has completed the entire course	22	0	0	0	0	0
8	The Teacher is fair in evaluation	19	3	0	0	0	0
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	17	3	1	1	0	0
10	The Teacher remains available for consultation during specified office hours	20	1	1	0	0	0
11	The Teacher follows moral and ethical norms	18	3	1	0	0	0
	Total:	209	21	6	3	3	0
	Percent Score	86	9	2.5	1	1	0
	COURSE EVALUATION	**GENET-626**					
		5	4	3	2	1	No Response
12	The course is well organized	20	2	0	0	0	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	19	3	0	0	0	0
14	The course integrates the theoretical concepts with real world applications	19	2	1	0	0	0
15	The assignments, quizzes and exams covered the materials presented in the course	20	0	2	0	0	0
16	The course material is updated	21	1	0	0	0	0
17	The content presented in the course has increased my knowledge of the subject	18	3	1	0	0	0
18	The course content has stimulated my intellectual curiosity	19	1	2	0	0	0
	Total:	136	12	6	0	0	0
	Percent Score	88	8	4	0	0	0

Number of Students who filled the evaluation forms: 22

	TEACHER'S EVALUATION	TEACHER-3					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	16	2	0	0	0	4
2	The Teacher conducts the classes as per schedule	22	0	0	0	0	0
3	The Teacher comes prepared for each lecture / practical	21	1	0	0	0	0
4	The Teacher demonstrates knowledge of the subject	18	4	0	0	0	0
5	The Teacher provides additional material apart from the text book	15	2	2	1	2	0
6	The Teacher creates an environment that is conducive for learning	19	2	1	0	0	0
7	The Teacher has completed the entire course	22	0	0	0	0	0
8	The Teacher is fair in evaluation	17	4	0	0	0	1
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	18	3	0	1	0	0
10	The Teacher remains available for consultation during specified office hours	20	1	1	0	0	0
11	The Teacher follows moral and ethical norms	18	3	1	0	0	0
	Total:	206	22	5	2	2	5
	Percent Score	85.12	9.091	2.066	0.826	0.826	2.066
	COURSE EVALUATION	**GENET-627**					
		5	4	3	2	1	No Response
12	The course is well organized	20	2	0	0	0	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	19	2	1	0	0	0
14	The course integrates the theoretical concepts with real world applications	18	2	1	0	0	1
15	The assignments, quizzes and exams covered the materials presented in the course	19	1	1	0	0	1
16	The course material is updated	20	1	0	0	0	1
17	The content presented in the course has increased my knowledge of the subject	19	3	0	0	0	0
18	The course content has stimulated my intellectual curiosity	18	2	2	0	0	0
	Total:	133	13	5	0	0	3
	Percent Score	86.36	8.442	3.247	0	0	1.9

Number of Students who filled the evaluation forms: 22

	TEACHER'S EVALUATION	TEACHER-10					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	17	2	0	0	0	3
2	The Teacher conducts the classes as per schedule	17	2	0	0	0	3
3	The Teacher comes prepared for each lecture / practical	18	1	0	0	0	3
4	The Teacher demonstrates knowledge of the subject	14	5	0	0	0	3
5	The Teacher provides additional material apart from the text book	9	5	1	1	3	3
6	The Teacher creates an environment that is conducive for learning	15	2	2	0	0	3
7	The Teacher has completed the entire course	18	1	0	0	0	3
8	The Teacher is fair in evaluation	16	1	1	0	0	4
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	10	0	4	2	1	5
10	The Teacher remains available for consultation during specified office hours	10	4	4	1	0	3
11	The Teacher follows moral and ethical norms	13	5	1	0	0	3
	Total:	157	28	13	4	4	36
	Percent Score	64.88	11.57	5.372	1.653	1.653	14.88
	COURSE EVALUATION	**GENET-628**					
		5	4	3	2	1	No Response
12	The course is well organized	16	2	1	0	0	3
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	15	4	0	0	0	3
14	The course integrates the theoretical concepts with real world applications	14	2	1	2	0	3
15	The assignments, quizzes and exams covered the materials presented in the course	12	2	2	0	1	5
16	The course material is updated	14	2	2	0	0	4
17	The content presented in the course has increased my knowledge of the subject	13	6	0	0	0	3
18	The course content has stimulated my intellectual curiosity	15	2	1	0	1	3
	Total:	99	20	7	2	2	24
	Percent Score	64.29	12.99	4.545	1.299	1.299	15.58

Number of Students who filled the evaluation forms: 22

	TEACHER'S EVALUATION	TEACHER-8					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	9	5	5	0	1	2
2	The Teacher conducts the classes as per schedule	3	5	7	3	1	3
3	The Teacher comes prepared for each lecture / practical	10	5	5	1	0	1
4	The Teacher demonstrates knowledge of the subject	15	4	0	0	1	2
5	The Teacher provides additional material apart from the text book	11	2	4	0	3	2
6	The Teacher creates an environment that is conducive for learning	13	6	2	0	0	1
7	The Teacher has completed the entire course	9	5	6	0	0	2
8	The Teacher is fair in evaluation	12	3	4	0	0	3
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	9	1	5	1	2	4
10	The Teacher remains available for consultation during specified office hours	6	2	5	2	4	3
11	The Teacher follows moral and ethical norms	12	4	4	0	0	2
	Total:	109	42	47	7	12	25
	Percent Score	45.04	17.36	19.42	2.893	4.959	10.33
	COURSE EVALUATION	**GENET-629**					
		5	4	3	2	1	No Response
12	The course is well organized	13	4	3	0	0	2
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	12	6	1	1	0	2
14	The course integrates the theoretical concepts with real world applications	15	5	0	0	0	2
15	The assignments, quizzes and exams covered the materials presented in the course	12	4	3	1	0	2
16	The course material is updated	12	3	4	1	0	2
17	The content presented in the course has increased my knowledge of the subject	13	6	1	0	0	2
18	The course content has stimulated my intellectual curiosity	17	3	0	0	0	2
	Total:	94	31	12	3	0	14
	Percent Score	61.04	20.13	7.792	1.948	0	9.091

Number of Students who filled the evaluation forms: 16

	TEACHER'S EVALUATION	TEACHER-9					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	12	2	2	0	0	0
2	The Teacher conducts the classes as per schedule	14	2	0	0	0	0
3	The Teacher comes prepared for each lecture / practical	13	2	1	0	0	0
4	The Teacher demonstrates knowledge of the subject	11	3	2	0	0	0
5	The Teacher provides additional material apart from the text book	7	5	2	0	2	0
6	The Teacher creates an environment that is conducive for learning	10	3	1	0	0	2
7	The Teacher has completed the entire course	11	4	0	0	0	1
8	The Teacher is fair in evaluation	12	2	1	0	0	1
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	7	1	5	0	1	2
10	The Teacher remains available for consultation during specified office hours	10	4	1	0	0	1
11	The Teacher follows moral and ethical norms	10	4	1	0	0	1
	Total:	117	32	16	0	3	8
	Percent Score	66.48	18.18	9.091	0	1.705	4.545
	COURSE EVALUATION	**GENET-630**					
		5	4	3	2	1	No Response
12	The course is well organized	11	2	1	0	0	2
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	11	2	1	0	0	2
14	The course integrates the theoretical concepts with real world applications	8	5	1	0	0	2
15	The assignments, quizzes and exams covered the materials presented in the course	9	4	1	0	0	2
16	The course material is updated	10	3	1	0	0	2
17	The content presented in the course has increased my knowledge of the subject	12	1	1	0	0	2
18	The course content has stimulated my intellectual curiosity	7	5	2	0	0	2
	Total:	68	22	8	0	0	14
	Percent Score	60.71	19.64	7.143	0	0	12.5

Number of Students who filled the evaluation forms: 22

	TEACHER'S EVALUATION	TEACHER-10					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	16	4	0	0	0	2
2	The Teacher conducts the classes as per schedule	18	1	0	0	0	3
3	The Teacher comes prepared for each lecture / practical	19	0	0	0	0	3
4	The Teacher demonstrates knowledge of the subject	15	4	0	0	0	3
5	The Teacher provides additional material apart from the text book	11	3	1	1	3	3
6	The Teacher creates an environment that is conducive for learning	16	1	2	0	0	3
7	The Teacher has completed the entire course	18	1	0	0	0	3
8	The Teacher is fair in evaluation	16	1	1	0	0	4
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	10	0	4	2	2	4
10	The Teacher remains available for consultation during specified office hours	10	4	4	1	0	3
11	The Teacher follows moral and ethical norms	11	4	1	0	0	6
	Total:	160	23	13	4	5	37
	Percent Score	66.12	9.504	5.372	1.653	2.066	15.29
	COURSE EVALUATION	**GENET-631**					
		5	4	3	2	1	No Response
12	The course is well organized	17	2	0	1	0	2
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	14	4	1	0	0	3
14	The course integrates the theoretical concepts with real world applications	15	2	2	0	0	3
15	The assignments, quizzes and exams covered the materials presented in the course	13	1	3	0	0	5
16	The course material is updated	17	1	1	0	0	3
17	The content presented in the course has increased my knowledge of the subject	16	3	0	0	0	3
18	The course content has stimulated my intellectual curiosity	16	2	1	0	0	3
	Total:	108	15	8	1	0	22
	Percent Score	70.13	9.74	5.195	0.649	0	14.29

Number of Students who filled the evaluation forms: 23

	TEACHER'S EVALUATION	TEACHER-1					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	9	2	6	1	5	0
2	The Teacher conducts the classes as per schedule	6	5	6	5	0	1
3	The Teacher comes prepared for each lecture / practical	6	6	1	3	4	3
4	The Teacher demonstrates knowledge of the subject	9	4	7	0	2	1
5	The Teacher provides additional material apart from the text book	7	5	3	4	3	1
6	The Teacher creates an environment that is conducive for learning	5	5	4	5	2	2
7	The Teacher has completed the entire course	11	4	3	1	3	1
8	The Teacher is fair in evaluation	11	1	7	2	2	0
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	8	2	1	4	5	3
10	The Teacher remains available for consultation during specified office hours	6	5	4	5	1	2
11	The Teacher follows moral and ethical norms	10	3	4	4	1	1
	Total:	88	42	46	34	28	15
	Percent Score	34.78	16.6	18.18	13.44	11.07	6
	COURSE EVALUATION	**GENET-632**					
		5	4	3	2	1	No Response
12	The course is well organized	5	5	6	4	3	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	8	7	4	3	1	0
14	The course integrates the theoretical concepts with real world applications	9	5	5	1	2	1
15	The assignments, quizzes and exams covered the materials presented in the course	5	7	5	3	3	0
16	The course material is updated	9	5	6	2	1	0
17	The content presented in the course has increased my knowledge of the subject	12	4	4	2	1	0
18	The course content has stimulated my intellectual curiosity	10	6	4	1	2	0
	Total:	58	39	34	16	13	1
	Percent Score	36.02	24.22	21.12	9.938	8.075	0.621

Number of Students who filled the evaluation forms: 23

	TEACHER'S EVALUATION	TEACHER-10					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	19	2	0	0	2	0
2	The Teacher conducts the classes as per schedule	18	2	0	0	1	2
3	The Teacher comes prepared for each lecture / practical	18	1	1	0	2	1
4	The Teacher demonstrates knowledge of the subject	16	3	1	0	2	1
5	The Teacher provides additional material apart from the text book	12	2	3	3	2	1
6	The Teacher creates an environment that is conducive for learning	14	4	3	0	1	1
7	The Teacher has completed the entire course	20	0	0	0	0	0
8	The Teacher is fair in evaluation	16	1	4	0	1	5
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	10	4	1	1	3	1
10	The Teacher remains available for consultation during specified office hours	8	8	4	0	0	6
11	The Teacher follows moral and ethical norms	13	4	3	0	1	1
	Total:	164	31	20	4	15	19
	Percent Score	64.82	12.25	7.905	1.581	5.929	7.51
	COURSE EVALUATION	**GENET-633**					
		5	4	3	2	1	No Response
12	The course is well organized	20	1	1	0	1	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	13	7	1	0	2	0
14	The course integrates the theoretical concepts with real world applications	15	5	1	0	1	1
15	The assignments, quizzes and exams covered the materials presented in the course	15	4	2	1	1	0
16	The course material is updated	17	4	1	0	1	0
17	The content presented in the course has increased my knowledge of the subject	19	3	1	0	0	0
18	The course content has stimulated my intellectual curiosity	18	3	1	0	1	0
	Total:	117	27	8	1	7	1
	Percent Score	72.67	16.77	4.969	0.621	4.348	0.621

Number of Students who filled the evaluation forms: 23

	TEACHER'S EVALUATION	TEACHER-3					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	20	1	0	0	1	1
2	The Teacher conducts the classes as per schedule	21	1	0	0	1	0
3	The Teacher comes prepared for each lecture / practical	18	3	0	1	0	1
4	The Teacher demonstrates knowledge of the subject	17	1	1	0	2	2
5	The Teacher provides additional material apart from the text book	15	3	2	0	2	1
6	The Teacher creates an environment that is conducive for learning	16	2	2	1	1	1
7	The Teacher has completed the entire course	21	1	0	0	1	0
8	The Teacher is fair in evaluation	17	2	2	1	1	0
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	15	4	1	0	1	2
10	The Teacher remains available for consultation during specified office hours	19	2	1	0	0	1
11	The Teacher follows moral and ethical norms	18	2	1	1	0	1
	Total:	197	22	10	4	10	10
	Percent Score	78	8.696	3.953	1.581	3.953	3.953
	COURSE EVALUATION	**GENET-634**					
		5	4	3	2	1	No Response
12	The course is well organized	21	0	1	0	1	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	18	3	1	0	1	0
14	The course integrates the theoretical concepts with real world applications	16	6	0	1	0	0
15	The assignments, quizzes and exams covered the materials presented in the course	18	2	0	2	1	0
16	The course material is updated	21	1	0	0	0	1
17	The content presented in the course has increased my knowledge of the subject	19	2	0	0	1	1
18	The course content has stimulated my intellectual curiosity	17	3	0	0	0	3
	Total:	130	17	2	3	4	5
	Percent Score	80.75	10.56	1.242	1.863	2.484	3.106

Number of Students who filled the evaluation forms: 23

	TEACHER'S EVALUATION	TEACHER-3					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	17	2	1	0	2	1
2	The Teacher conducts the classes as per schedule	21	1	0	0	1	0
3	The Teacher comes prepared for each lecture / practical	19	2	0	1	0	1
4	The Teacher demonstrates knowledge of the subject	18	1	1	0	1	2
5	The Teacher provides additional material apart from the text book	15	3	2	1	2	0
6	The Teacher creates an environment that is conducive for learning	19	1	1	1	0	1
7	The Teacher has completed the entire course	21	0	0	0	1	1
8	The Teacher is fair in evaluation	17	2	2	0	1	1
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	16	2	1	0	1	3
10	The Teacher remains available for consultation during specified office hours	19	2	1	0	1	0
11	The Teacher follows moral and ethical norms	16	3	1	1	0	2
	Total:	198	19	10	4	10	12
	Percent Score	78.26	7.51	3.953	1.581	3.953	4.743
	COURSE EVALUATION	**GENET-635**					
		5	4	3	2	1	No Response
12	The course is well organized	20	1	0	0	1	1
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	15	4	1	0	1	2
14	The course integrates the theoretical concepts with real world applications	15	5	0	1	1	1
15	The assignments, quizzes and exams covered the materials presented in the course	19	0	0	0	1	3
16	The course material is updated	19	2	0	1	0	1
17	The content presented in the course has increased my knowledge of the subject	19	2	0	0	1	1
18	The course content has stimulated my intellectual curiosity	19	2	0	0	1	1
	Total:	126	16	1	2	6	10
	Percent Score	78.26	9.938	0.621	1.242	3.727	6.211

Number of Students who filled the evaluation forms: 23

	TEACHER'S EVALUATION	TEACHER-4					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	12	4	4	0	1	2
2	The Teacher conducts the classes as per schedule	3	6	9	1	1	3
3	The Teacher comes prepared for each lecture / practical	11	7	2	0	1	2
4	The Teacher demonstrates knowledge of the subject	14	3	3	0	0	3
5	The Teacher provides additional material apart from the text book	8	3	5	4	1	2
6	The Teacher creates an environment that is conducive for learning	14	4	2	0	2	1
7	The Teacher has completed the entire course	9	6	4	0	1	3
8	The Teacher is fair in evaluation	10	4	3	1	3	2
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	8	3	4	3	2	3
10	The Teacher remains available for consultation during specified office hours	8	4	4	3	2	2
11	The Teacher follows moral and ethical norms	8	5	2	2	2	4
	Total:	105	49	42	14	16	27
	Percent Score	41.5	19.37	16.6	5.534	6.324	10.67
	COURSE EVALUATION	**GENET-636**					
		5	4	3	2	1	No Response
12	The course is well organized	11	3	3	2	1	3
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	10	6	3	1	0	3
14	The course integrates the theoretical concepts with real world applications	12	5	2	1	0	3
15	The assignments, quizzes and exams covered the materials presented in the course	13	5	1	4	0	0
16	The course material is updated	12	4	3	1	0	3
17	The content presented in the course has increased my knowledge of the subject	12	7	0	0	2	2
18	The course content has stimulated my intellectual curiosity	14	3	3	0	1	2
	Total:	84	33	15	9	4	16
	Percent Score	52.17	20.5	9.317	5.59	2.484	9.938

Number of Students who filled the evaluation forms: 23

	TEACHER'S EVALUATION	TEACHER-2					
		5	4	3	2	1	No Response
1	The Teacher provides lesson plan in the first lecture	16	5	0	0	2	0
2	The Teacher conducts the classes as per schedule	14	4	2	2	0	1
3	The Teacher comes prepared for each lecture / practical	16	5	0	1	0	1
4	The Teacher demonstrates knowledge of the subject	17	3	0	1	0	2
5	The Teacher provides additional material apart from the text book	12	2	4	2	2	1
6	The Teacher creates an environment that is conducive for learning	15	5	1	0	1	1
7	The Teacher has completed the entire course	19	1	2	0	1	0
8	The Teacher is fair in evaluation	14	1	2	0	1	5
9	The Teacher returns the graded assignments, quizzes answer sheets etc. within specified time period	12	2	3	3	0	3
10	The Teacher remains available for consultation during specified office hours	12	8	2	1	0	0
11	The Teacher follows moral and ethical norms	13	4	4	1	0	1
	Total:	160	40	20	11	7	15
	Percent Score	63.24	15.81	7.905	4.348	2.767	5.929
	COURSE EVALUATION	**GENET-639**					
		5	4	3	2	1	No Response
12	The course is well organized	20	1	1	1	0	0
13	The syllabus clearly states course objectives, requirements, procedures and grading criteria	15	5	0	1	1	1
14	The course integrates the theoretical concepts with real world applications	16	4	1	1	0	1
15	The assignments, quizzes and exams covered the materials presented in the course	10	6	3	1	1	2
16	The course material is updated	20	0	1	1	0	1
17	The content presented in the course has increased my knowledge of the subject	18	3	0	0	1	1
18	The course content has stimulated my intellectual curiosity	12	5	2	2	2	0
	Total:	111	24	8	7	5	6
	Percent Score	68.94	14.91	4.969	4.348	3.106	3.727