

**Pir Mehr Ali Shah
ARID AGRICULTURE UNIVERSITY
RAWALPINDI**

DEPARTMENT OF BIOLOGY

(M. Phil. Programme)



Self Assessment Report

4th Cycle (2012-14)

Program Team

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1. INTRODUCTION

The Department of Zoology/Biology established in 1997. The M. Phil. Degree in Biology started in 2006. A total of 15 students get admission each year and an equal number of students are placed in Biochemistry, Botany and Zoology for research by keeping in view merit and research interest. Presently, five major research groups are established regarding Wildlife and Ecology, Parasitology, Reproductive Physiology, Endocrinology, and Aquaculture and Fisheries with various national and international collaborations such as National Agriculture Research Council (NARC), Punjab Fish Hatcheries Islamabad, National Institute of Health (NIH), and for clinical exploration different healing centers of Rawalpindi and Islamabad, for example, General Hospital Rawalpindi and National Oncology Radiology Institute (NORI) and Institute of Biomedical and Genetic Engineering (IBGE), Islamabad. The academic staff of the Department of Zoology is highly qualified and trained in the field. Students are encouraged to work on conventional as well as applied aspects that are at the cutting edge of new research and policy initiatives. Faculty members have won various research projects and travelling grants from Higher Education Commission (HEC), Pakistan and Pakistan Science Foundation (PSF). The PhD students have been visiting world's top research laboratories under the International Research Support Initiative Program (IRSIP) offered by HEC, Pakistan.

SECTION-1

CRITERION-1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

The program aims to produce highly qualified biologists with diversity of sub-disciplines of biochemistry, botany and zoology reflecting the student's particular interest and expertise.

Mission Statement

The program advances research and knowledge of molecular, cellular, organism, population, community, and ecosystem biology by using both disciplinary and interdisciplinary approaches.

STANDARDS:

Standard 1-1: Documented measurable objectives

Objectives:

1. Strengthen basic and advance knowledge of biology
2. Develop capabilities to design and carry out a hypothesis based specific research plan to solve a real problem in the biological sciences.
3. Training to write the research in the form of a thesis

Outcomes:

- 1) The graduating students have basic knowledge of the subject.
- 2) The graduating students are able to conduct new research projects based on a real time problem.
- 1) Graduates are getting jobs, presenting their work in conferences, publishing papers and getting admission in PhD program in various national and international institutes.

Main elements to achieve objectives

Research

1. Basic concepts of biology in major foci of cell and molecular, ecological, evolutionary, and behavioral biology are taught through specific courses.
2. Advance and recent knowledge of the subject is imparted through discussing recent research papers, seminars, encouraging students to attend conferences.
3. Encourage research at the interface of basic and applied biology.
4. Develop and maintain research programs that comprise the foundations for teaching and service, and maintain those activities at the forefront of emerging disciplines.

Teaching

- 1) Keep up a thorough, broad major in biological sciences that gives a convincing learning background.
- 2) Emphasize universally useful critical thinking and scientific capacities that have broad applications to adjust to the evolving world.
- 3) Emphasize the essential basic concepts in biology that constitute topics of unification and integration.
- 4) Prepare graduates that are capable to establish interdisciplinary correspondence.

TABLE-1: OBJECTIVES ASSESSMENT

S. #	Objective	How Measured	When Measured	Improvement Identified	Improvement made
1	Strengthen basic and advance knowledge of biology	Interview, semester examination and comprehensive examination	While entry into the program, end of semester and course work	Curriculum update and faculty training	Specific optional courses are offered to increases knowledge of a specific sub-discipline of Zoology. The courses are given to senior faculty.
2	Develop capabilities to design and carry out a hypothesis based specific research plan to solve a real problem in the biological sciences.	Students are given the tasks to make some hypothesis in the area of their interest	During research planning for M. Phil degree	The ideas must not be copied	Students are forced to get latest review articles and device the hypothesis
3	Training to write the research in the form of a thesis	Synopsis writing/Thesis writing and evaluation	Synopsis writing/ Thesis evaluation	The problems are identified at presentation	The problems are solved accordingly

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

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

* Relevant

** Relevant and satisfactory

*** Highly relevant and satisfactory

TEACHERS EVALUATION

Following teachers are evaluated, namely:

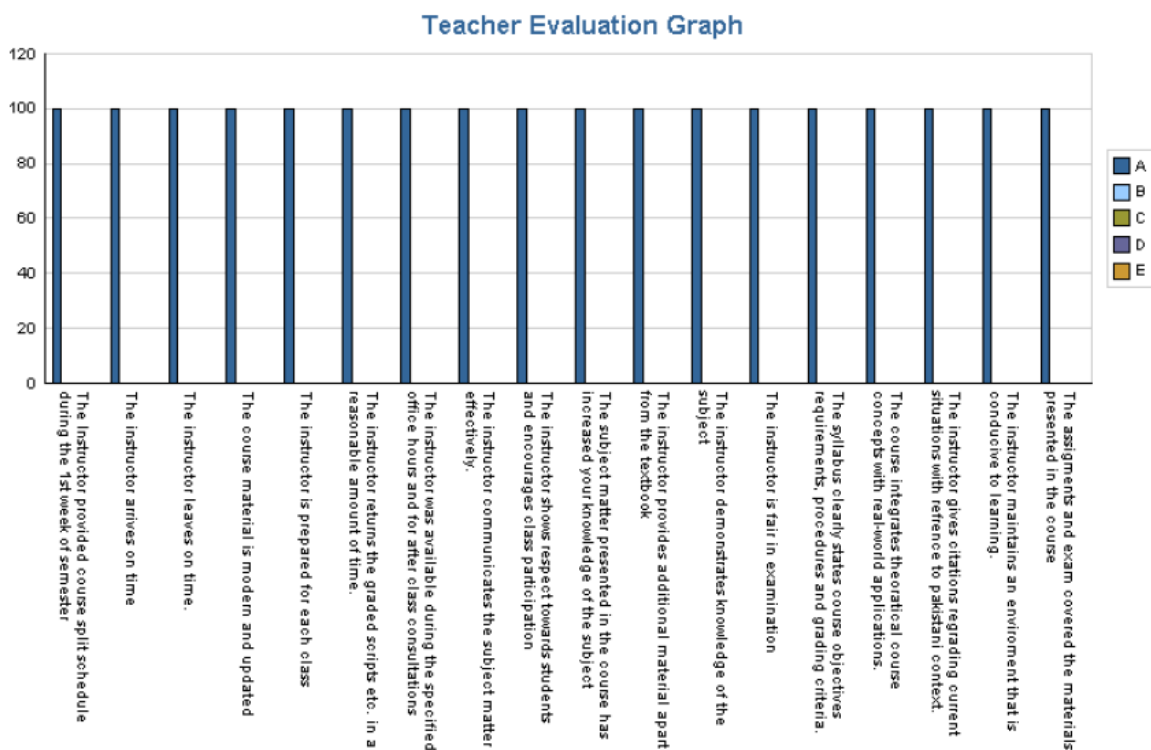
Course #	Courses Title	Credit Hours	Course Instructor
BIOL-725	Animal Reproductive Biology	3(2-2)	Dr. Shamim Akhter
BIOL-724	Conservation Biology	3(2-2)	Dr. Sajid Nadeem
BIOL-723	Immunology	3(2-2)	Dr. Farhana Ch.
BIOL-721	Fish Biology	3(2-2)	Dr. M. Zubair Anjum
BIOL-722	Host-Parasite Interaction in Animals	3(2-2)	Dr. Farhana Riaz Ch.
BIOL-726	Patho-Physiology	3(2-2)	Dr. Abida Arshad
BIOL-734	Molecular Evolution	3(2-2)	Dr. Abida Arshad

The teachers were evaluated by the students at the end of course completion through the proforma-10 (Annex-II). Detail of performance of each teacher is given below.

Teacher Name: Shamim Akhtar

Course Name: Animal Reproductive Biology

Section: B **M/E:** E **Semester#:** 1

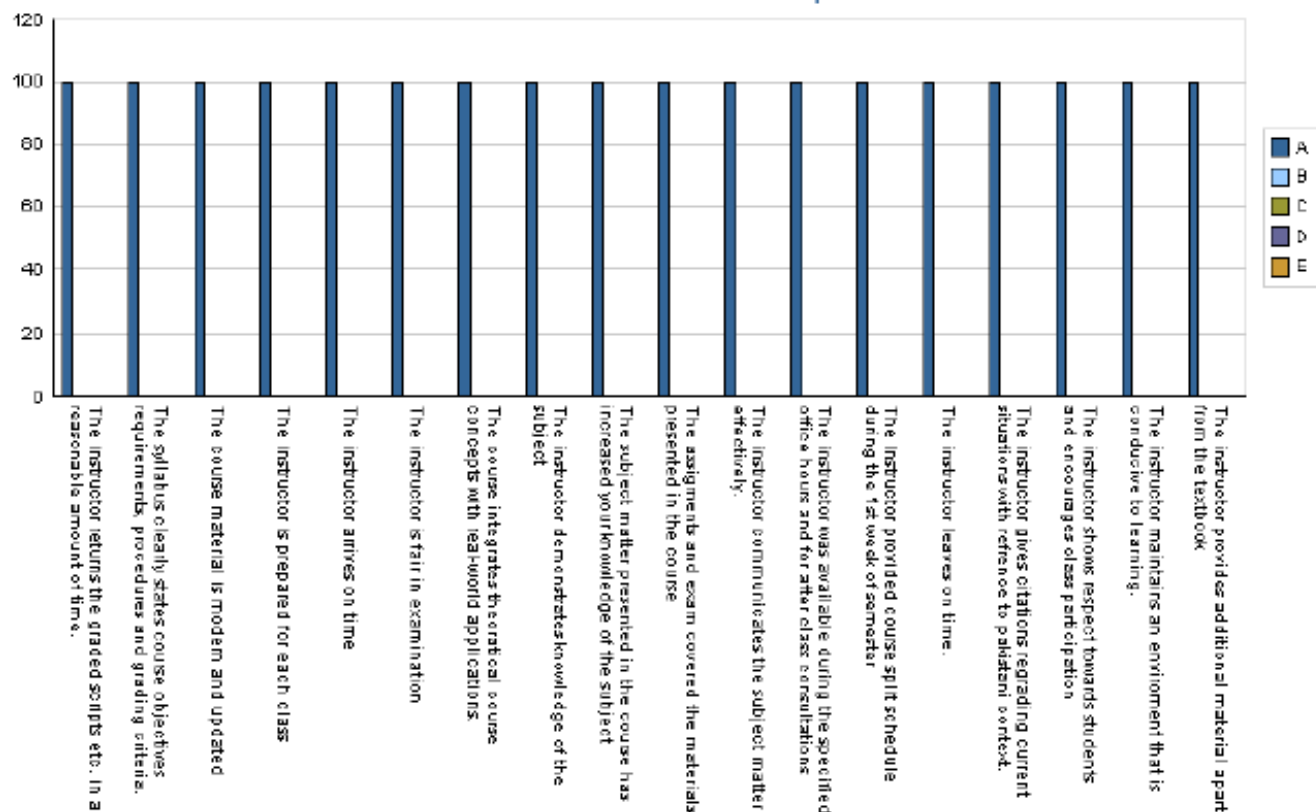


Teacher Name: Shamim Akhtar

Course Name: Animal Reproductive Biology

Section: A M/E: M Semester#: 1

Teacher Evaluation Graph

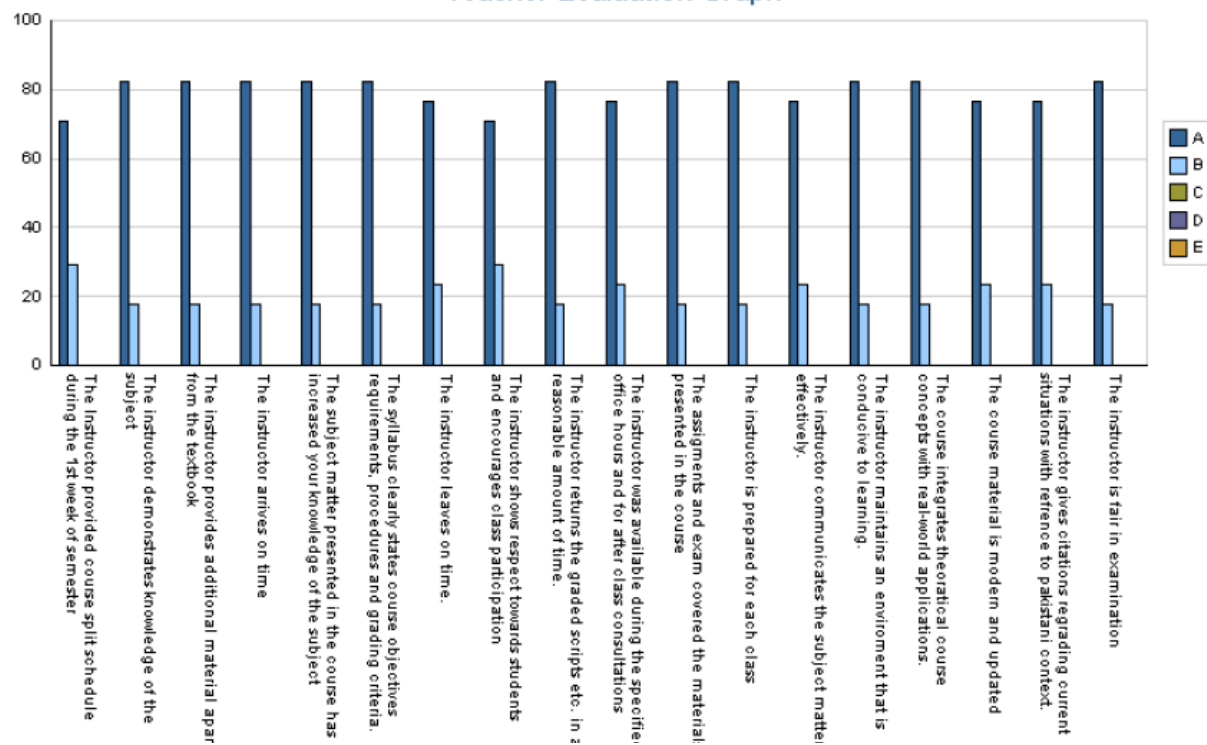


Teacher Name: Muhammad Sajid Nadeem

Course Name: Conservation Biology

Section: B M/E: E Semester#: 1

Teacher Evaluation Graph

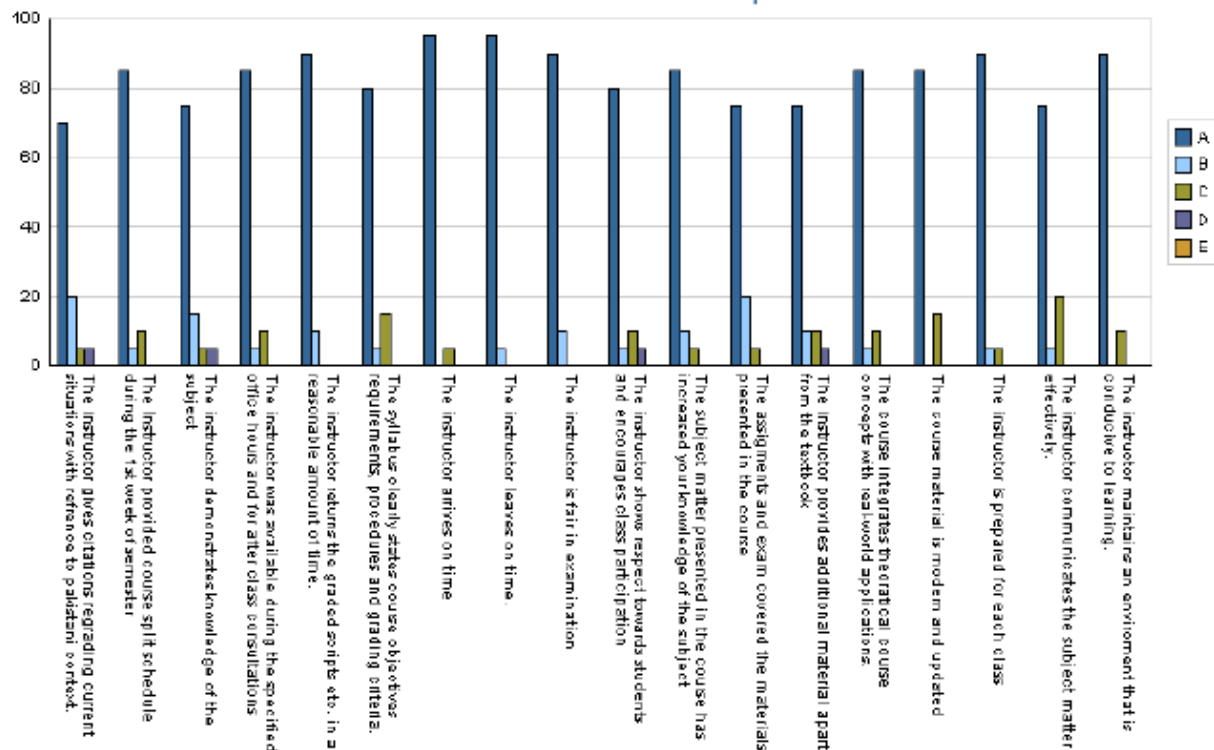


Teacher Name: Muhammad Sajid Nadeem

Course Name: Conservation Biology

Section: A M/E: M Semester#: 1

Teacher Evaluation Graph

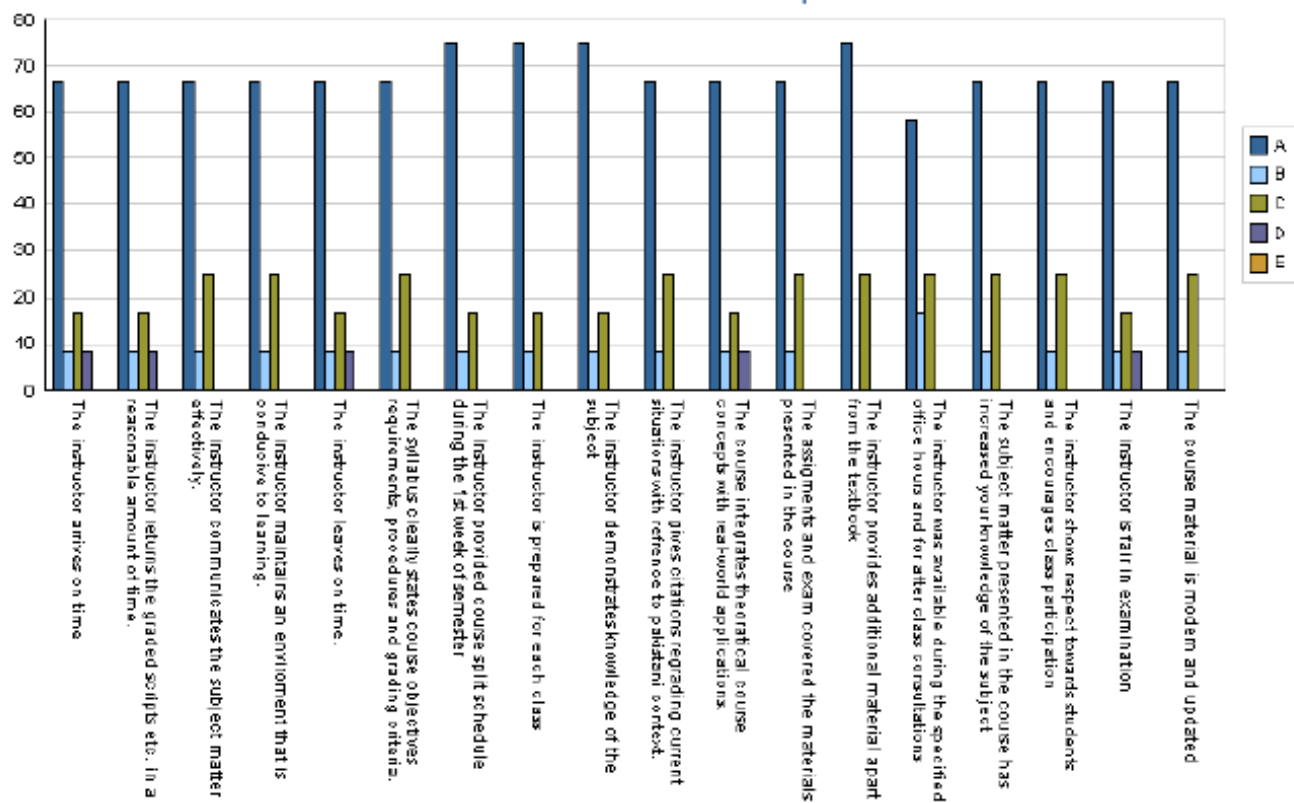


Teacher Name: Farhana Riaz Chaudhry

Course Name: Immunology

Section: A M/E: M Semester#: 1

Teacher Evaluation Graph



Teacher Name: Farhana Riaz Chaudhry

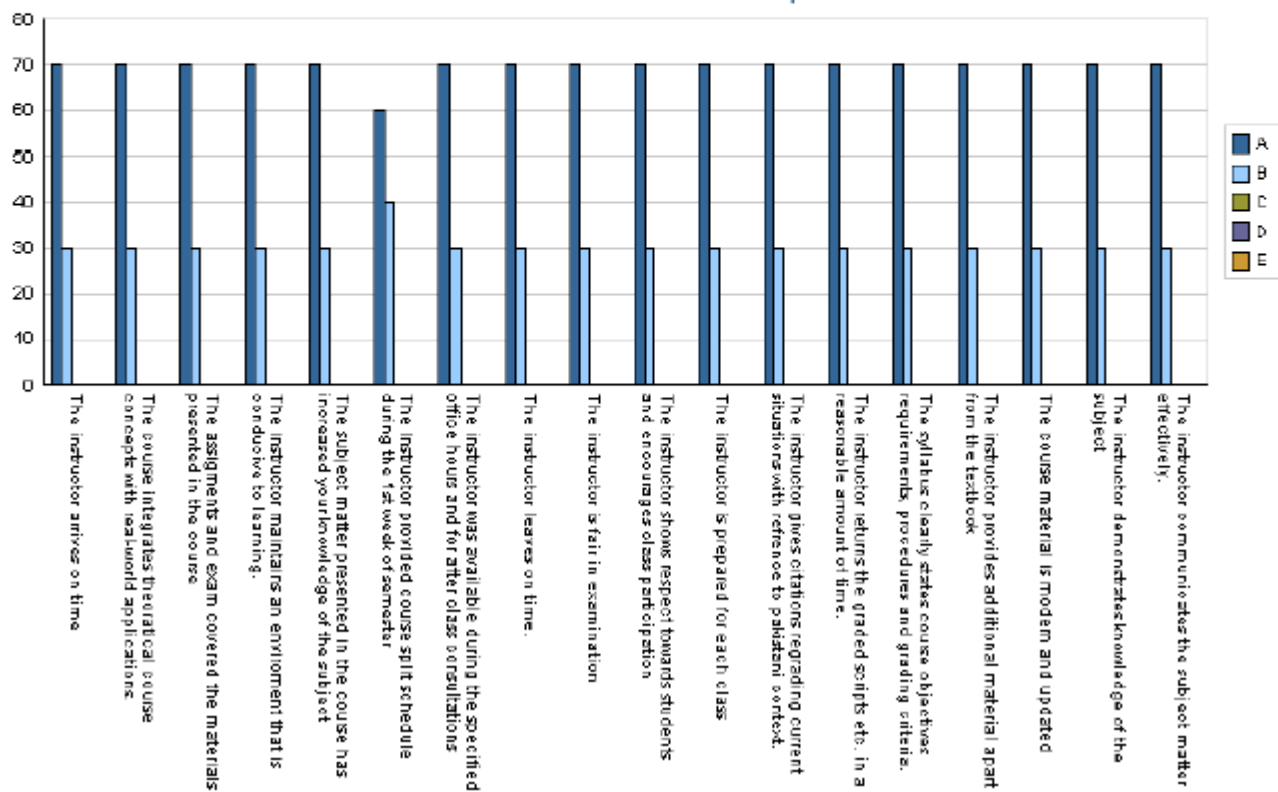
Course Name: Immunology

Section: B

M/E: E

Semester#: 1

Teacher Evaluation Graph

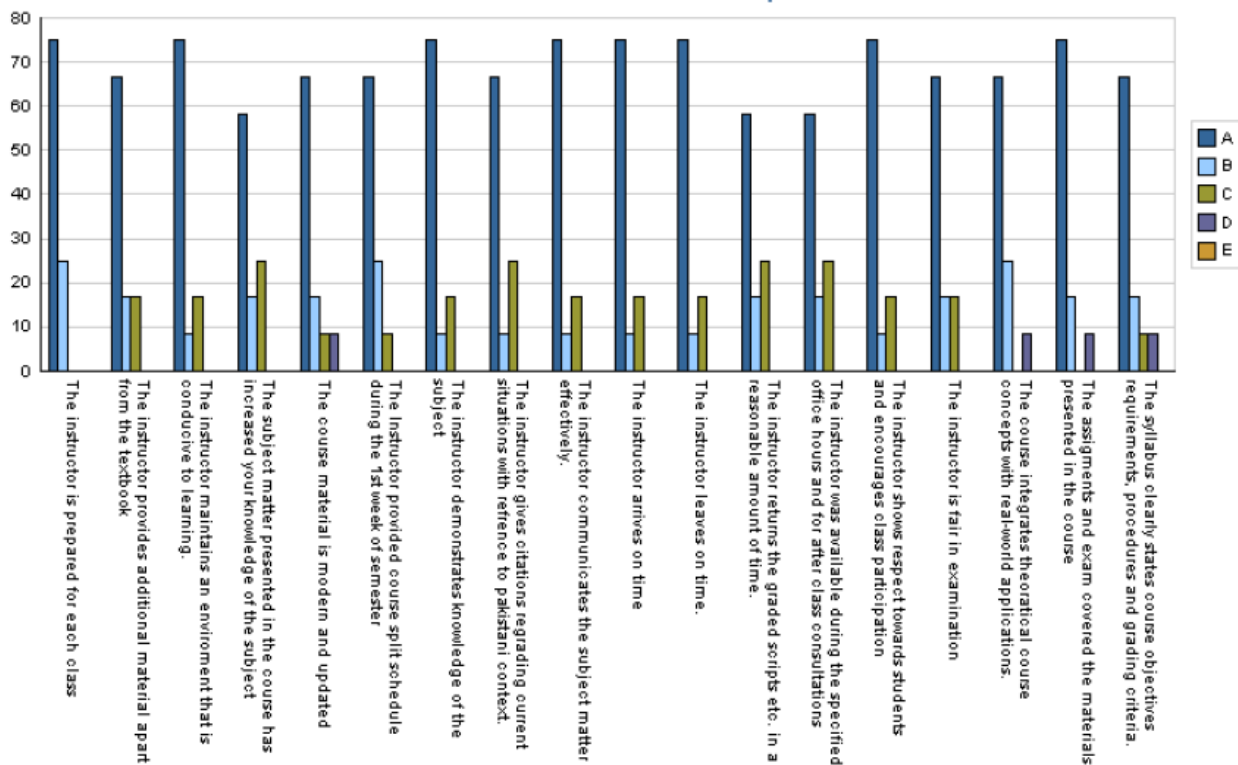


Teacher Name: Muhammad Zubair Anjum

Course Name: Fish Biology

Section: A M/E: M Semester#: 1

Teacher Evaluation Graph

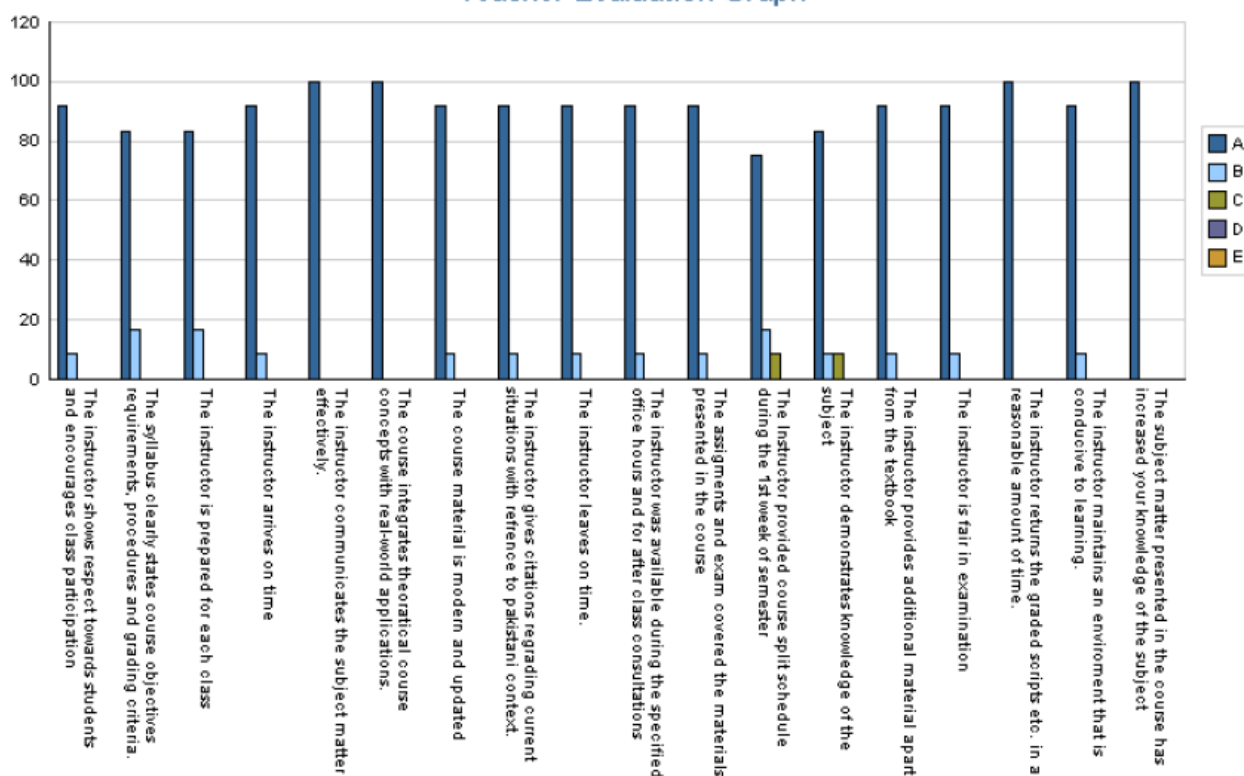


Teacher Name: Muhammad Zubair Anjum

Course Name: Fish Biology

Section: B M/E: E Semester#: 1

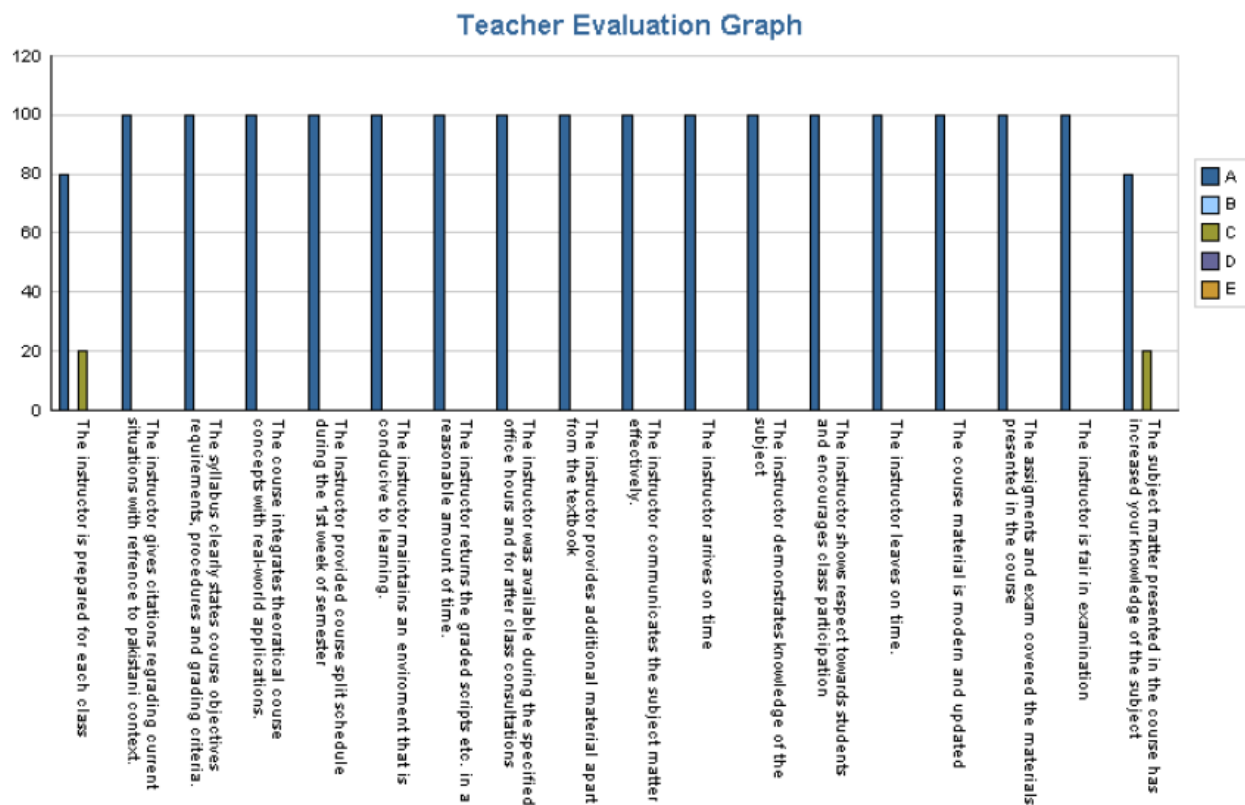
Teacher Evaluation Graph



Teacher Name: Farhana Riaz Chaudhry

Course Name: Host /Parasite Interactions in Animals

Section: A M/E: M Semester#: 2

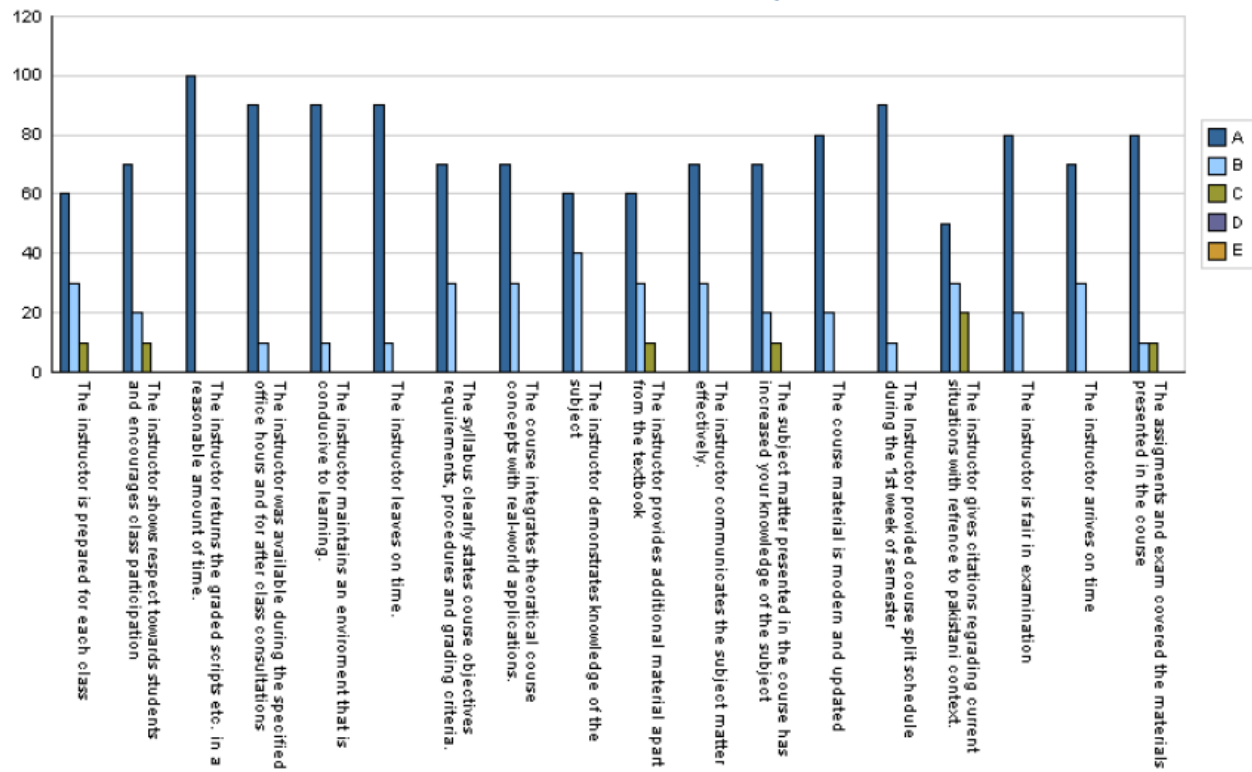


Teacher Name: Abida Arshad

Course Name: Patho-physiology

Section: A M/E: M Semester#: 2

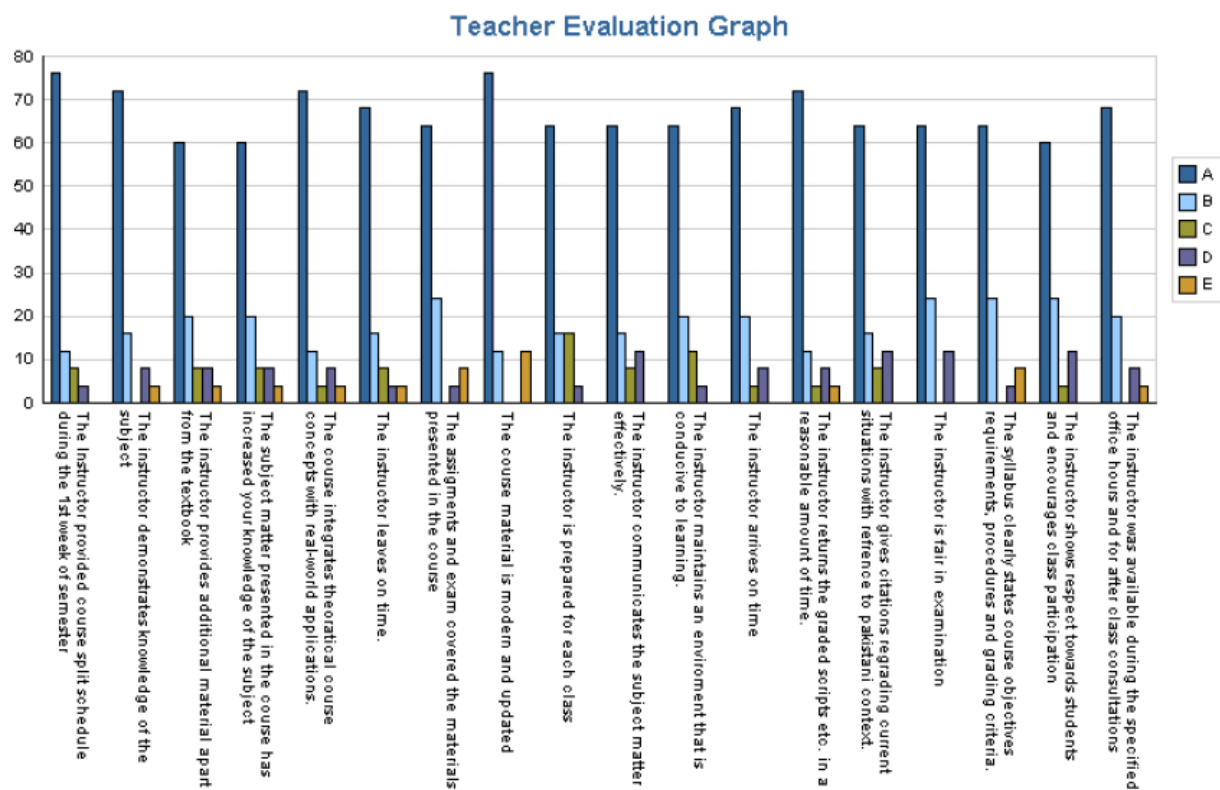
Teacher Evaluation Graph



Teacher Name: Abida Arshad

Course Name: Molecular Evolution

Section: A M/E: M Semester#: 2



COURSE EVALUATION

Courses offered during the report period are given below. These were evaluated by students at the end of course completion through proforma-1 (Annex-I). Detail of evaluation of each course is given in the form of graphs.

Course #	Courses Title	Credit Hours	Course Instructor
BIOL-725	Animal Reproductive Biology	3(2-2)	Dr. Shamim Akhter
BIOL-724	Conservation Biology	3(2-2)	Dr. Sajid Nadeem
BIOL-723	Immunology	3(2-2)	Dr. Farhana Ch.
BIOL-721	Fish Biology	3(2-2)	Dr. M. Zubair Anjum
BIOL-722	Host-Parasite Interaction in Animals	3(2-2)	Dr. Farhana Riaz Ch.
BIOL-726	Patho-Physiology	3(2-2)	Dr. Abida Arshad
BIOL-734	Molecular Evolution	3(2-2)	Dr. Abida Arshad

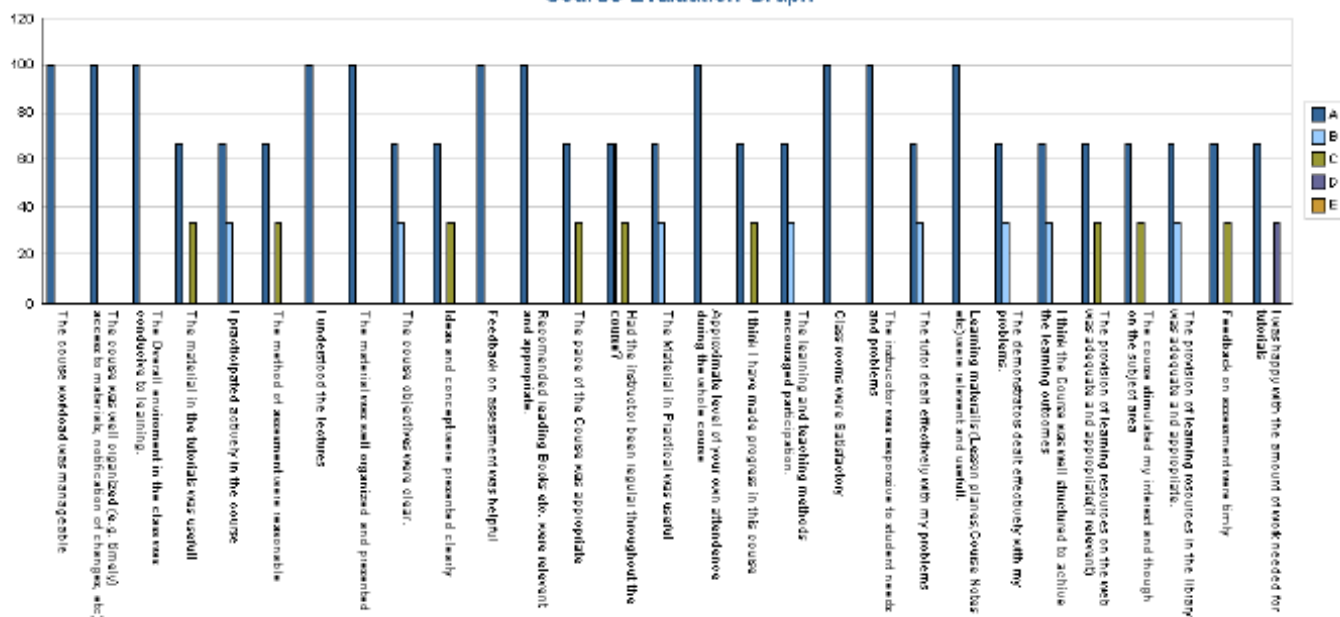
Teacher Name: Shamim Akhter

Course Name: Animal Reproductive Biology

Section: B M/E: B Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



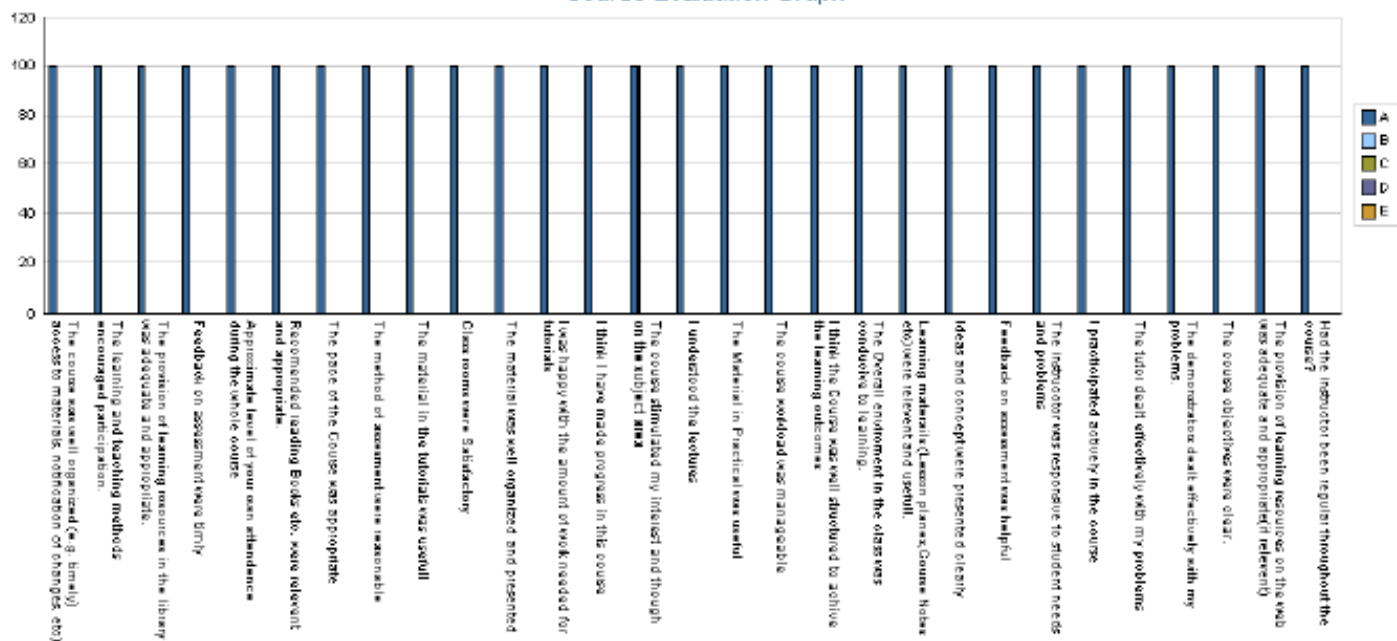
Teacher Name: Shamim Akhtar

Course Name: Animal Reproductive Biology

Section: A M/E: M Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



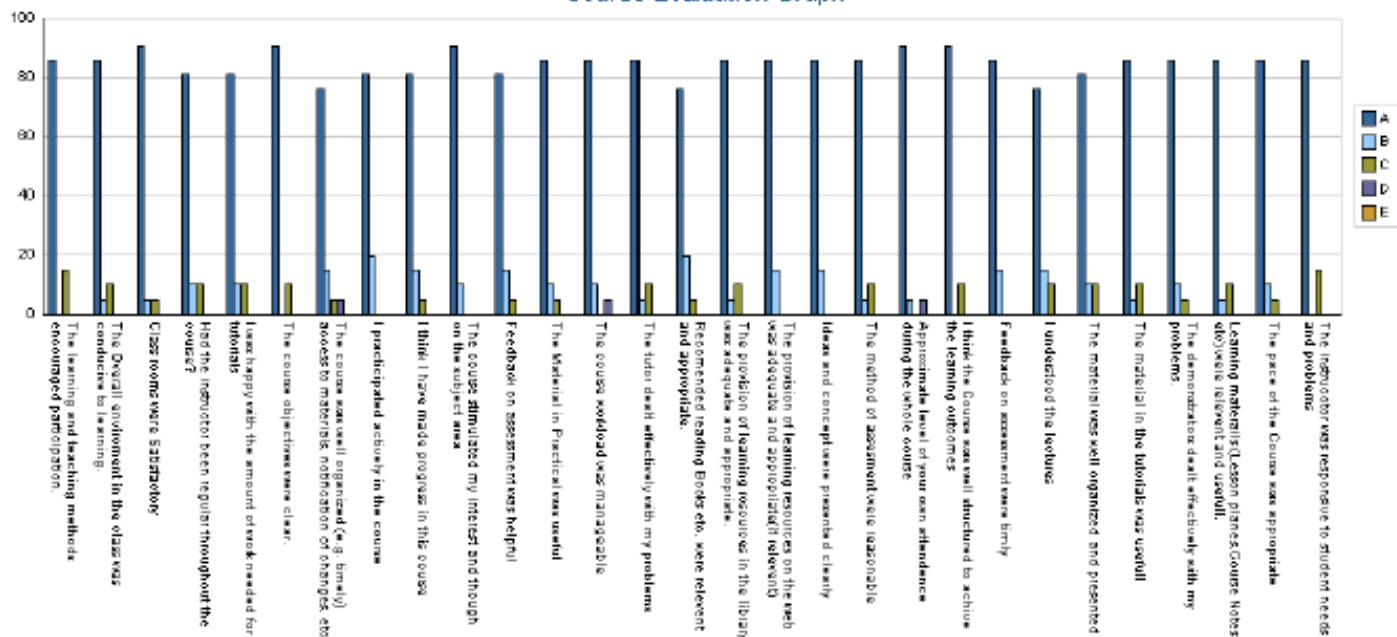
Teacher Name: Muhammad Sajid Nadeem

Course Name: Conservation Biology

Section: A M/E: M Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



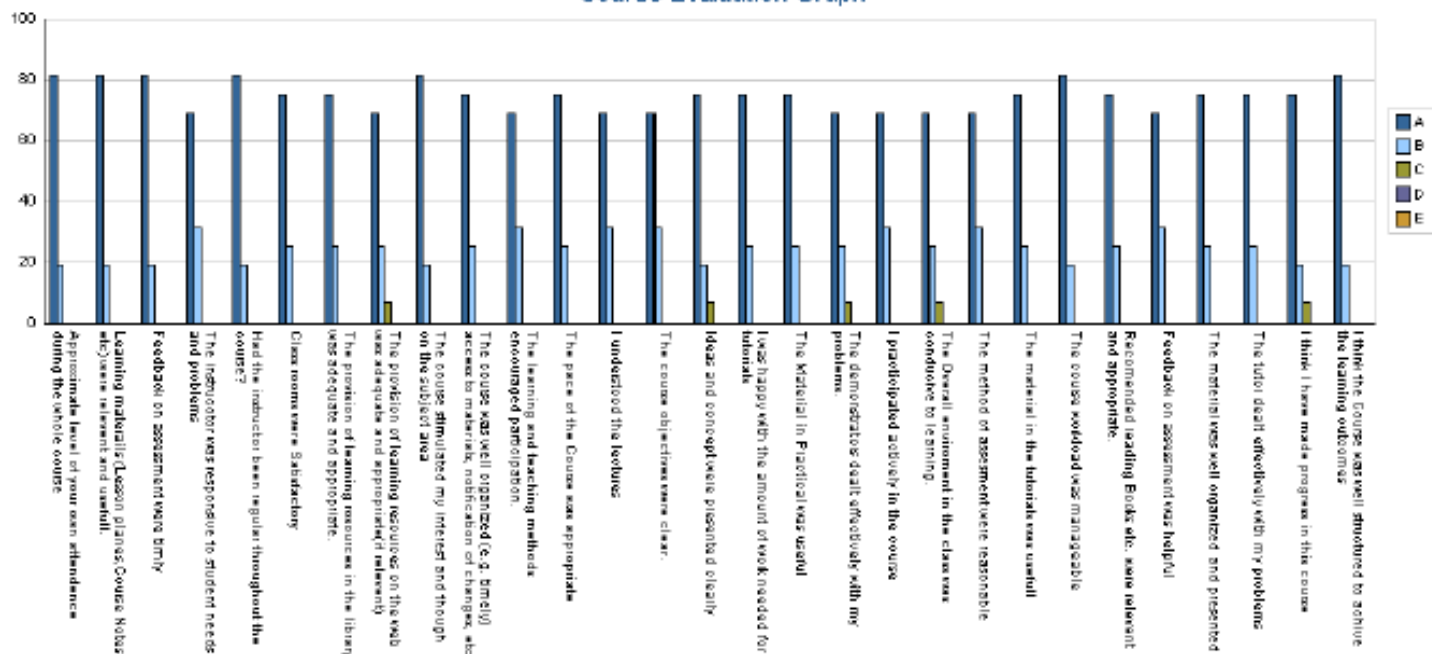
Teacher Name: Muhammad Sajid Nadeem

Course Name: Conservation Biology

Section: B M/E: B Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



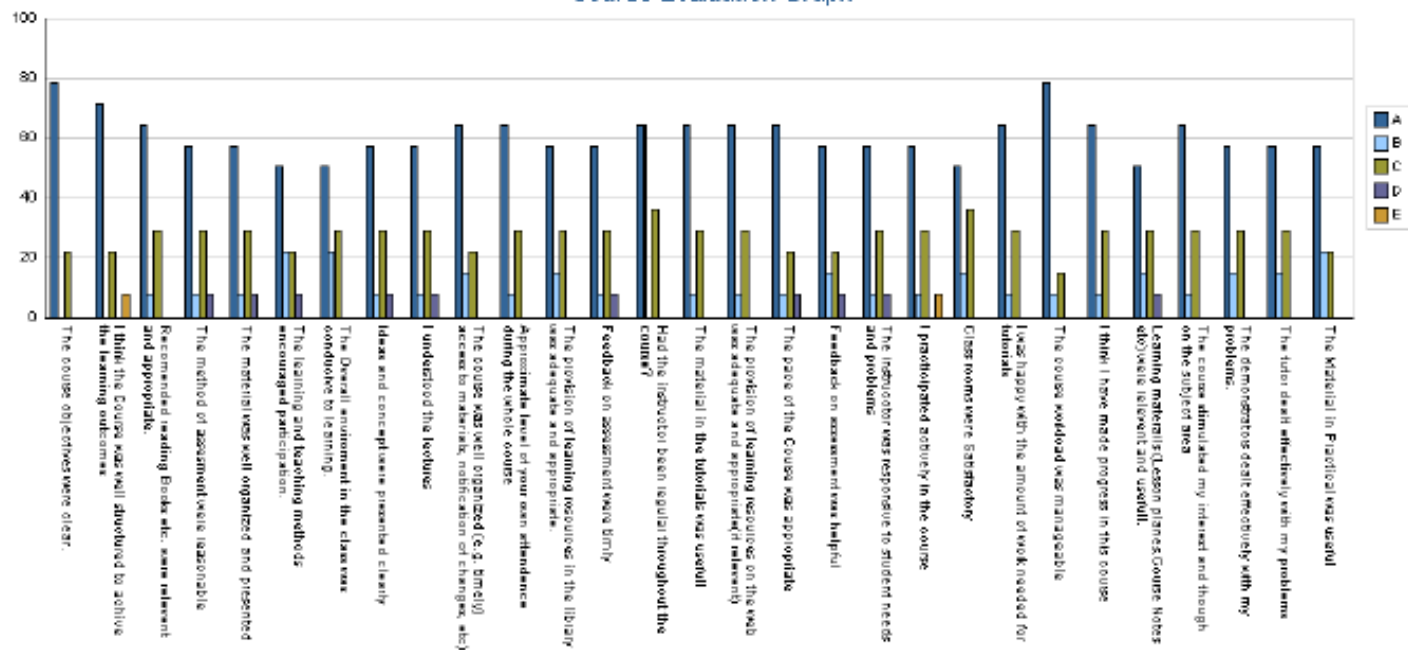
Teacher Name: Farhana Riaz Chaudhry

Course Name: Immunology

Section: A M/E: M Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



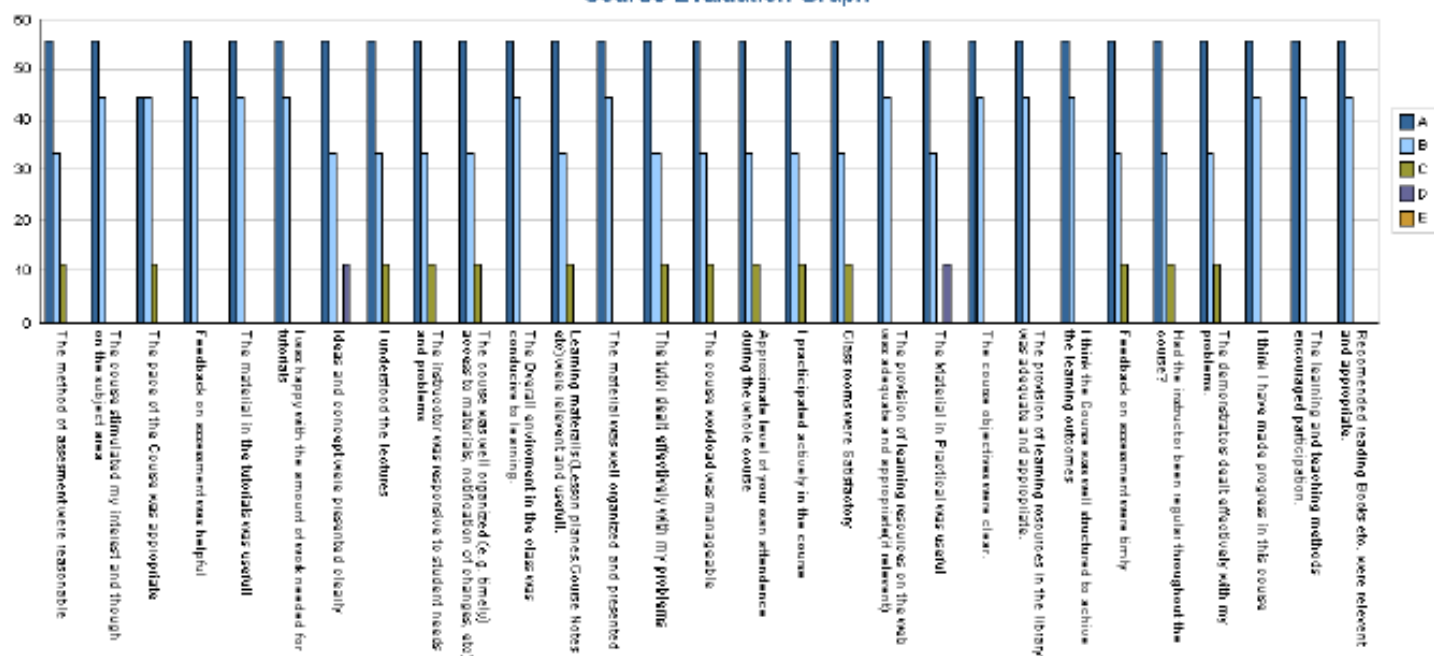
Teacher Name: Farhana Riaz Chaudhry

Course Name: Immunology

Section: E M/E: E Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



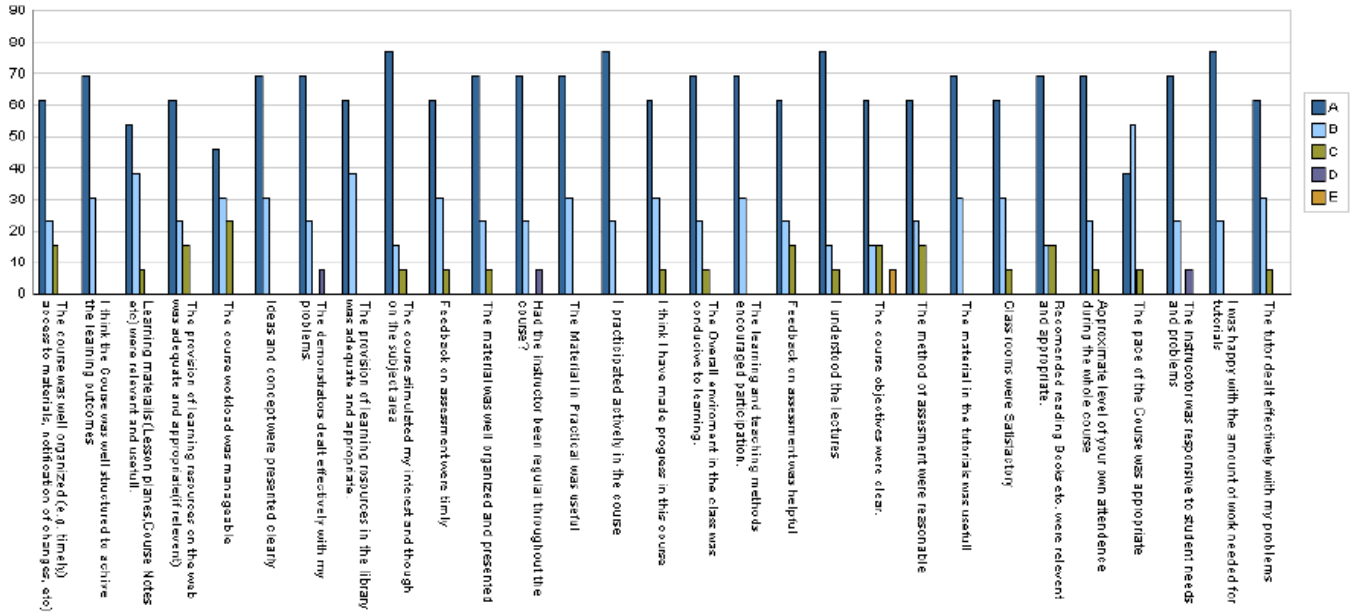
Teacher Name: Muhammad Zubair Anjum

Course Name: Fish Biology

Section: A M/E: M Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



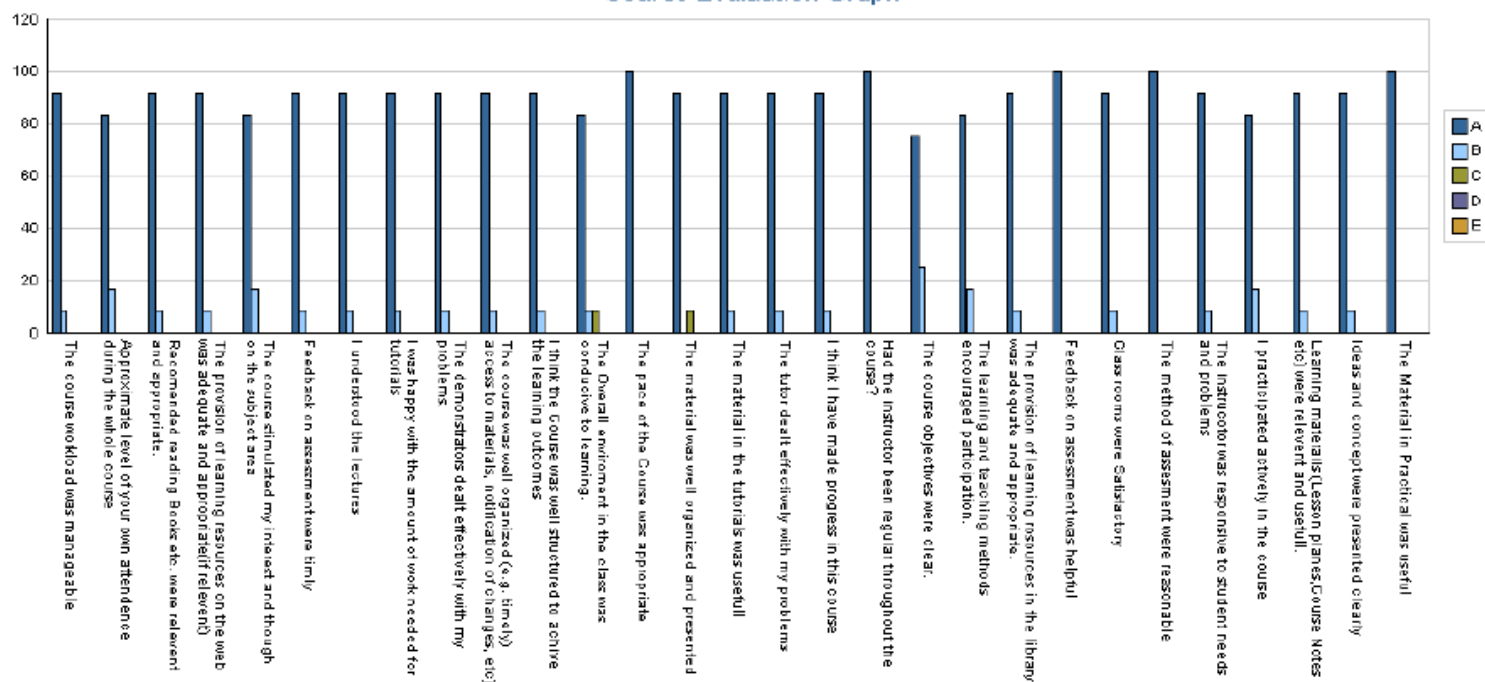
Teacher Name: Muhammad Zubair Anjum

Course Name: Fish Biology

Section: B M/E: E Semester# 1

Class: M.Phil (Biology)

Course Evaluation Graph



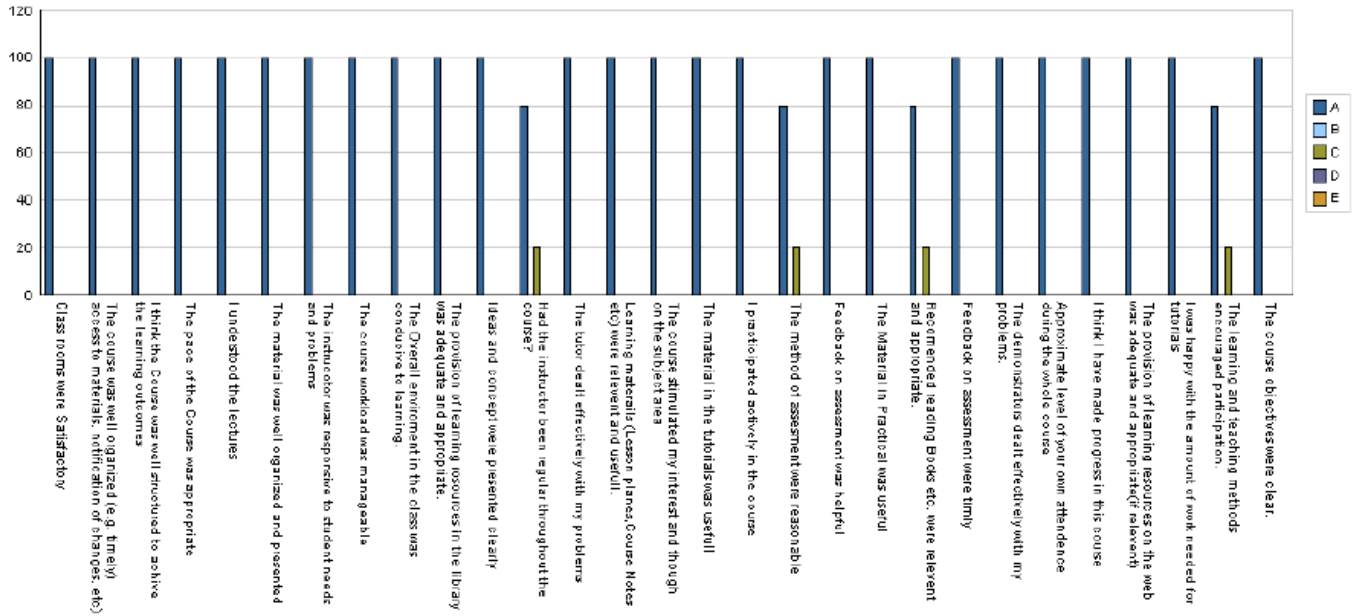
Teacher Name: Farhana Riaz Chaudhry

Course Name: Host /Parasite Interactions in Animals

Section: A M/E: M Semester# 2

Class: M.Phil (Biology)

Course Evaluation Graph



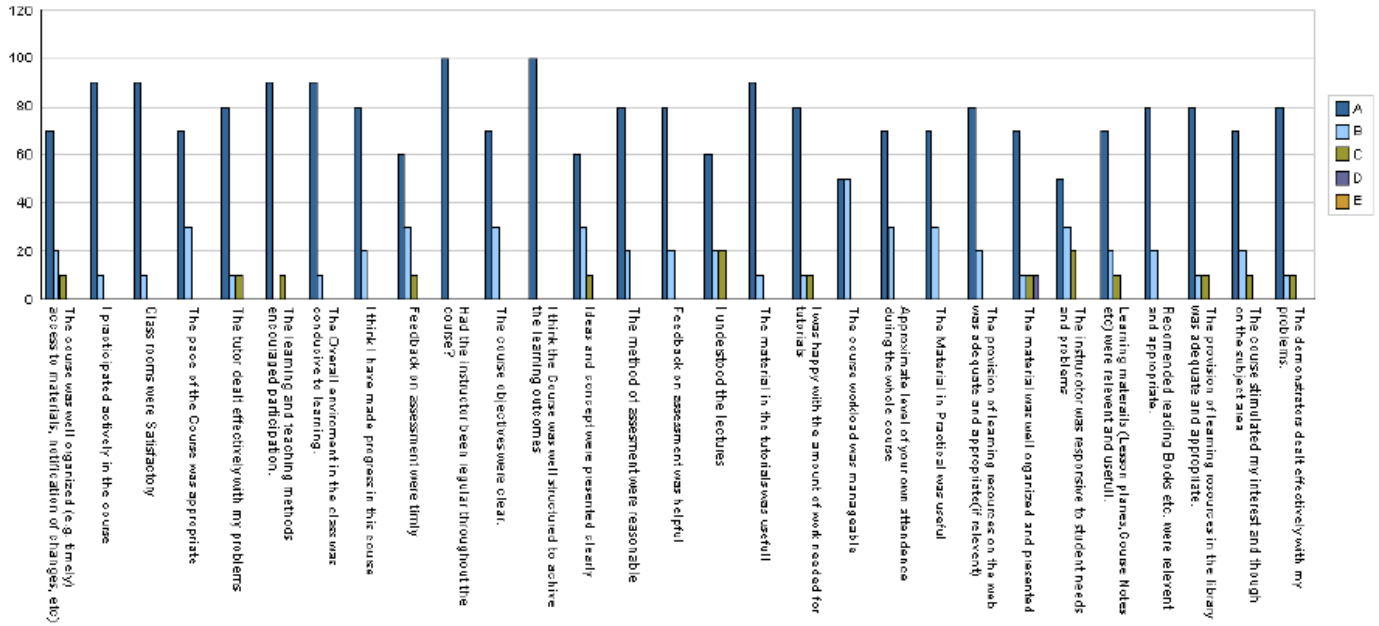
Teacher Name: Abida Arshad

Course Name: Patho-physiology

Section: A M/E: M Semester# 2

Class: M.Phil (Biology)

Course Evaluation Graph



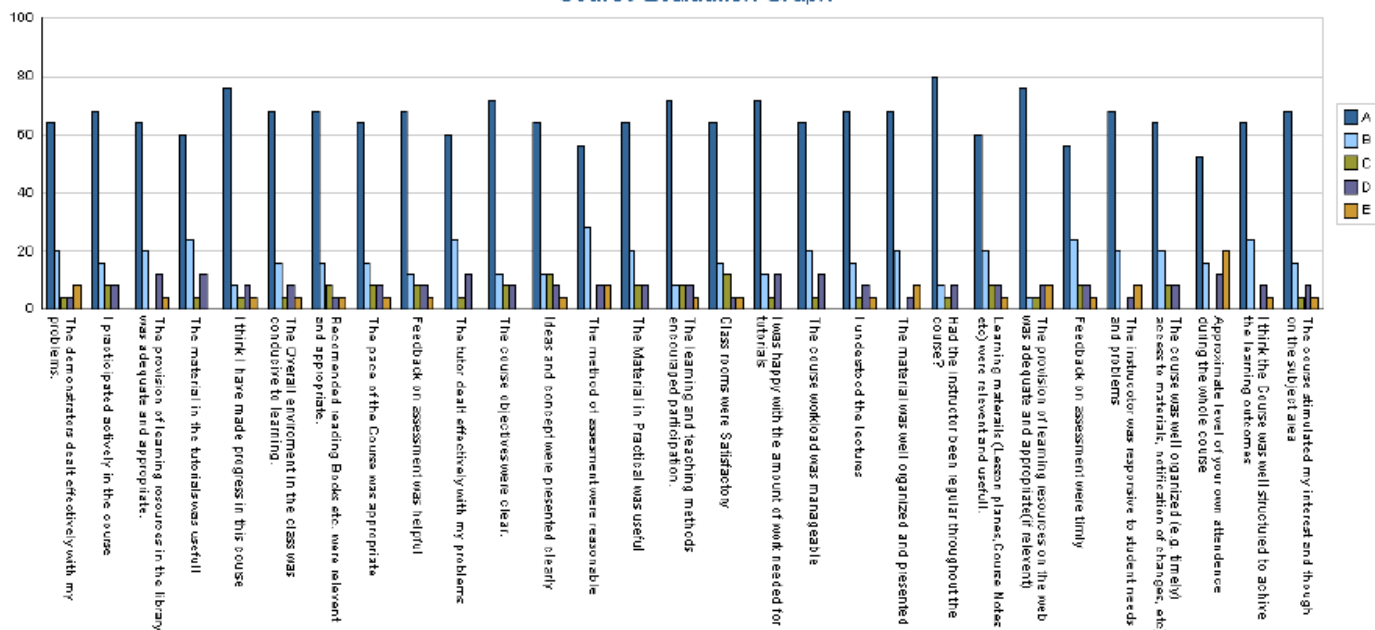
Teacher Name: Abida Arshad

Course Name: Molecular Evolution

Section: A M/E: M Semester# 2

Class: M.Phil (Biology)

Course Evaluation Graph



Faculty Course Review Survey

The questionnaire for the evaluation has been filled and analyzed. The internal evaluation was done through with mid and final term examinations for all courses offered by department.

Faculty Course Review Survey

Course #	Title	Credit Hours	Course Instructor	Assessment method	No. of Students	Comments on curriculum	Any Change for future in course	Semester	Grades					
									A	B	C	D	E	F
BIOL-725	Animal Reproductive Biology	3(2-2)	Dr. Shamim Akhter	Mid/Final Exam	11	Good	Appropriate	Spring	28	62	10	0	0	0
BIOL-724	Conservation Biology	3(2-2)	Dr. Sajid Nadeem	Mid/Final Exam	21	Appropriate	Appropriate	Spring	27	73	0	0	0	0
BIOL-723	Immunology	3(2-2)	Dr. Farhana Ch.	Mid/Final Exam	13	Good	Should be revised to short it	Spring	13	77	5	4	1	0
BIOL-721	Fish Biology	3(2-2)	Dr. M. Zubair Anjum	Mid/Final Exam	17	Lengthy	Should be revised to simplify	Fall	28	70	0	2	0	0
BIOL-722	Host-Parasite Interaction in Animals	3(2-2)	Dr. Farhana Riaz Ch.	Mid/Final Exam	14	Interesting	Can be simplified	Fall	35	63	2	0	0	0
BIOL-726	Patho-Physiology	3(2-2)	Dr. Abida Arshad	Mid/Final Exam	11	Appropriate	Can be simplified	Fall	33	57	10	0	0	0
BIOL-734	Molecular Evolution	3(2-2)	Dr. Abida Arshad	Mid/Final Exam	12	Appropriate	Appropriate	Spring	54	39	7	0	0	0

ALUMNI SURVEY RESULTS

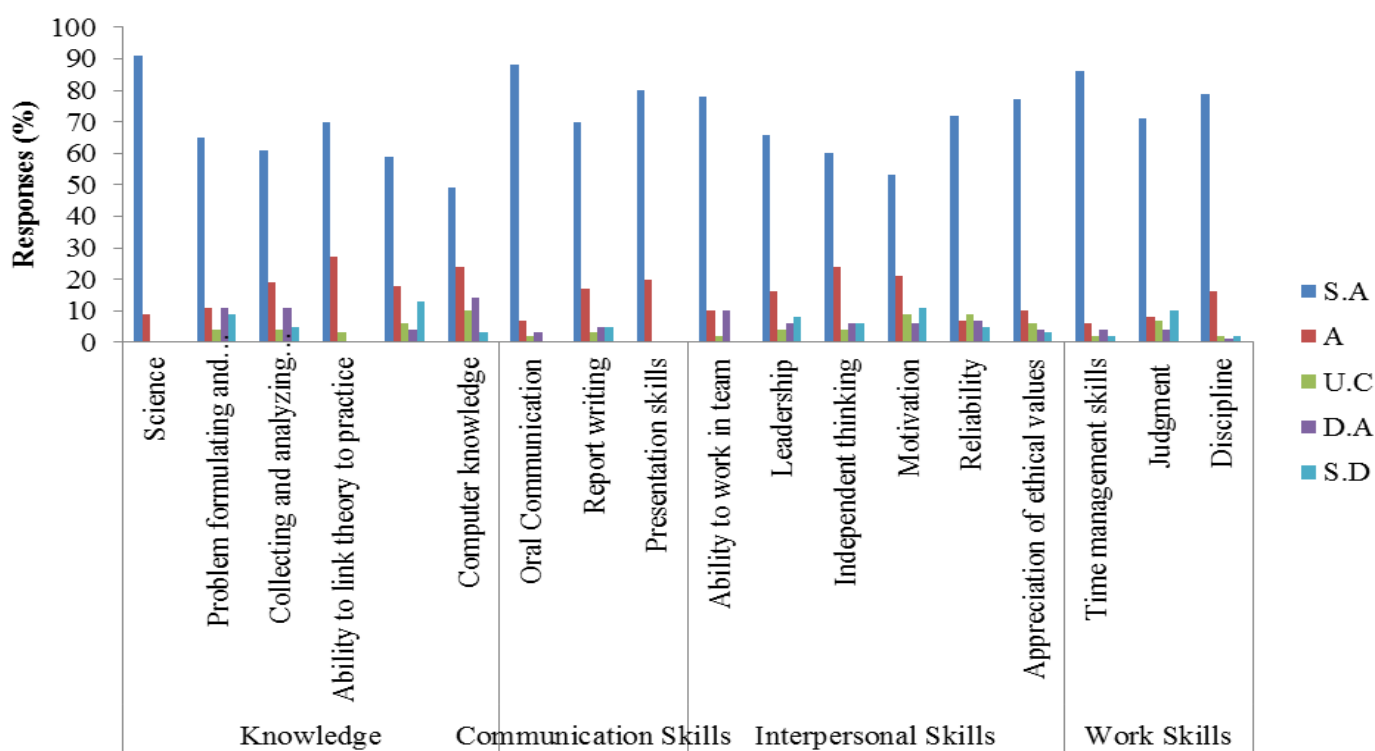
Feedback of M. Phil. students graduated was acquired through Proforma-7. Majority of the Alumni have highlighted various weaknesses and strengths of the programme.

General comments:

More facilitation to the students for laboratory and field research is required. Each student must have sufficient funding for research.

Career opportunities:

Job opportunity after getting this degree is there in research organizations, etc



Key: SA=Strongly Agree, A=Agree, UC=Uncertain, D=Disagree, SD=Strongly Disagree

Fig.23 Alumni Survey

SURVEY OF GRADUATING STUDENTS

Survey of graduating students was conducted through Performa 3. Students showed their high satisfaction in program effectiveness for enhancing team work, support for learning, meeting objectives of program and conducive environment for learning. Other aspects of the program have also been rated high. They were dissatisfied only with infrastructure of department.

Best aspects of the Program:

- Program is conducive and improved learning skills
- Confidence building, field work, research and writing abilities
- Enhanced writing, professional and management skills of wildlife

Aspects of Program in need of improvement:

- More research equipment/facilities in laboratories and for field
- More scholarships for the students

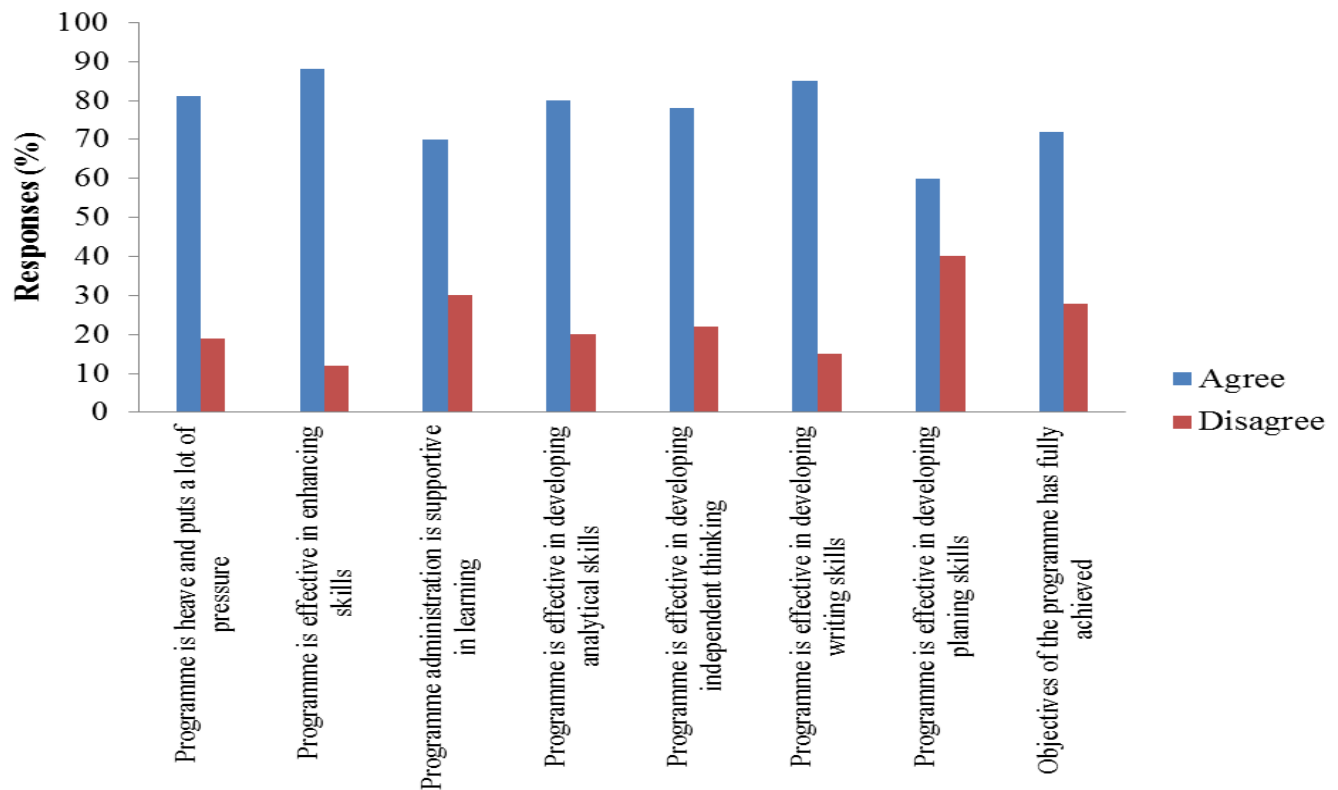


Fig. 24. Graduating Students Survey

RESEARCH STUDENTS PROGRESS REVIEW

Survey of M. Phil. research students progress review was conducted through Performa 2.

Results are given below in graphs

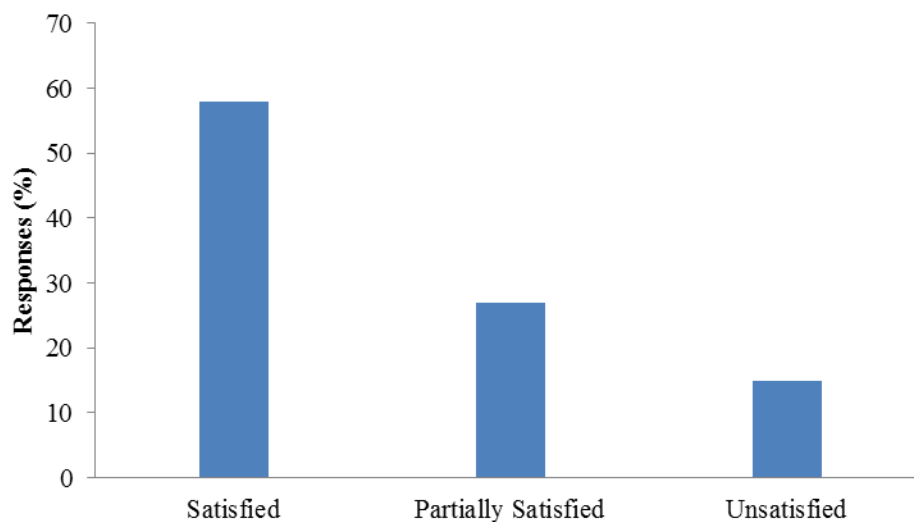


Fig. 25. Level of supervision received

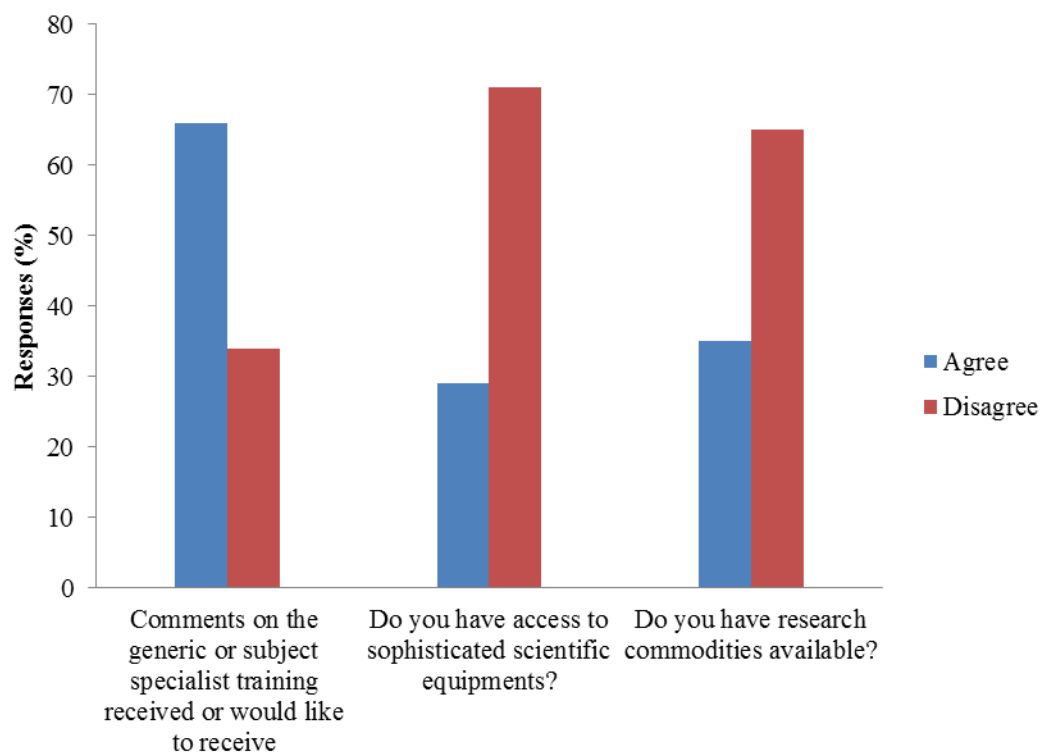


Fig.26. Response of students on Misc. issues

Faculty Survey

	Dr. Shamim Akhtar	Dr. M. Sajid Nadeem	Dr. Farhana Riaz Ch	Dr. M. Zubair Anjum	Dr. Abida Arshad
Your mix of research, teaching and community service	V. Satisfied	Satisfied	Satisfied	Satisfied	V. Satisfied
The intellectual stimulation of your work	Satisfied	Satisfied	V. Satisfied	Satisfied	Satisfied
Type of teaching / research you currently do	V. Satisfied	V. Satisfied	Satisfied	V. satisfied	Satisfied
Your interaction with students.	Satisfied	Satisfied	V.Satisfied	Satisfied	Satisfied
Cooperation you receive from colleagues	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied
The mentoring available to you.	Satisfied	V. Satisfied	Satisfied	Satisfied	V. Satisfied
Administrative support from the department	Satisfied	Satisfied	Satisfied	V. Satisfied	V. Satisfied
Providing clarity about the faculty promotion process	Satisfied	V. Satisfied	Satisfied	V. Satisfied	Satisfied
Your prospects for advancement and progress	Satisfied	Satisfied	V. Satisfied	Satisfied	Satisfied

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

Sophisticated equipments are not available in the department and funding is not offered to the students. Therefore difficulties are being faced in advance research. Latest literature and reviews are hardly available. There is need for short teacher training to faculty members. Moreover, museum and animal house are lacking. Practical aspects of the courses are weak.

Major Future Improvement Plans

Teachers are submitting projects to equip lab fully with modern equipments for the advance research work and extend facilities of museum and animal house.

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

•

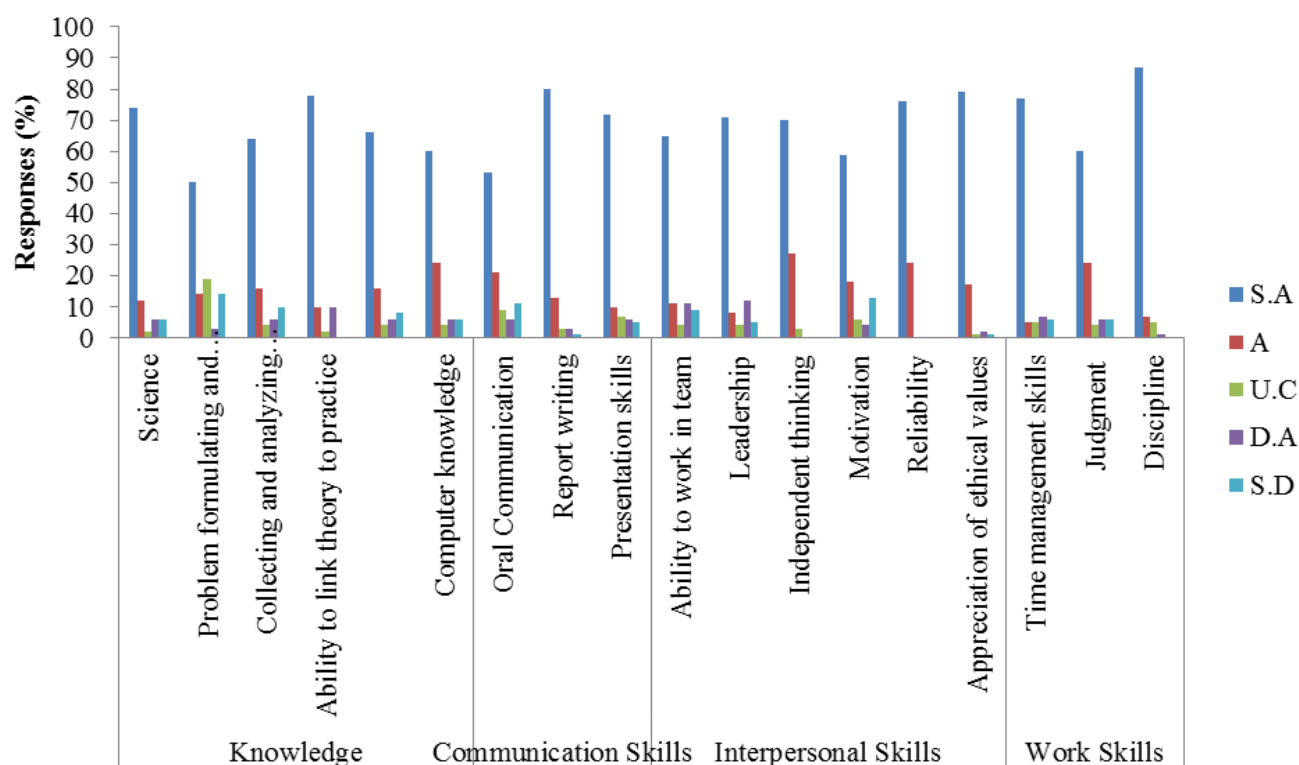
Table-1: QUANTITATIVE ASSESSMENT OF THE DEPARTMENT

S. No.	Particulars	No.	Remarks
1	M. Sc degree awarded	~30	Every year 30 students get enrolled most of them acquire degree and join different institutes for higher degree while other got employment in various fields. Few are part of the faculty of same university.
2	M. Phil produced	75	Program started in 2007-08

4	Students: Faculty (ratio)	8:1	This faculty ratio includes National Professors of HEC also
5	Technical: non technical (ratio)	4:1	
6	Average grade point	3	

EMPLOYER'S SURVEY

The purpose of this survey is to obtain employers input on the quality of education Department of Zoology is providing and to assess the quality of the academic program. The survey is with regard to University of graduates employed at different organization. A total of 12 employers gave the data. According to 8 employers, the students have excellent knowledge of science, 9 employers agreed that candidates have excellent power of problem formulation and solving skills, and have great ability of oral communication and are reliable and ethically sound. Employers showed a severe concern about computer skills of the candidates.



Key: SA=Strongly Agree, A=Agree, UC=Uncertain, D=Disagree, SD=Strongly Disagree

Fig. 27. Employer's survey

Research progress (2012-14)

Name of Faculty Member	Journal Publications	Conference publication	Projects	Short courses
Dr. Mazhar Qayyum	5	-	0	-
Dr. Shamim Akhtar	4	-	1	1
Dr. Muhammad Sajid Nadeem	2	-	1	-
Dr. Farhana Riaz	1	2	1	1
Dr. Amjad Rashid Kiyani	1	-	1	
Dr. M. Mushtaq	2	-	1	
Dr. M. Zubair Anjum	1	-	2	
Mr. Muhammad Irfan	1	1	0	-

SECTION 2

CRITERION-2: CURRICULUM DESIGN AND ORGANIZATION

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

Degree Title:

M.Phil. Biology

Definition of Credit Hour:

One credit hour is one theory lecture or two hours laboratory (practical / week). One credit hour carries 20 marks. A semester is of 18 weeks.

Degree Plan:

M.Phil. Consists of 4 semesters/2 years. 32 credit hours course work and a 10 credits research thesis.

Pre-requisites

Academic Requirements:

A person holding M.Sc. with Biology or equivalent degree from any recognized institute with at least second division or 2.5/4CGPA is eligible to get admission.

Merit is determined by entry test and past academic performance

Degree Requirements:

Degrees are awarded after completing the required 34 credit hours (courses). Minimum Grade Point Average for obtaining the degree is 2.50/4.00 CGPA.

Examination

In course work, student's evaluation is done by mid-term examination, assignments/quizzes and final examination. A student, who misses the mid-term examination, is not allowed a make-up examination and is awarded zero marks in that examination. In case a student does not appear in the final examination of a course, he shall be deemed to have failed in that course. In theory, weightage to each component of examination is as prescribed here under: The qualification marks for each examination is 40%. .

Mid Examination	30%
-----------------	-----

Assignments	10%
Final Examination	60%

For practical examination (if applicable) 100% is given to practical as scored final examination. A student is eligible to sit for the examination provided that he/she has attended not less than 75% of the classes in theory and practical, separately

M. Phil Biology

Course #	Courses Title	Credit Hours
BIOL-724	Conservation Biology	3(2-2)
BIOL-725	Animal Reproductive Biology	3(2-2)
BIOL-716	Aromatic, Poisonous and Medicinal Plants	3(2-2)
BIOL-720	Seminar-I	1(1-0)
ZOOL-734	Mamology	3(2-2)
ZOOL-713	Clinical Bacteriology	3(2-2)
BOT-715	Phytogeography	3(2-2)
BOT-724	Molecular Basis of Morphogenesis	3(3-0)
BOT-725	Molecular Advances in Phytosystematics	3(2-2)
BOT-735	Plant Microbe Interactions	3(2-2)
BCH-732	Medical Nutrition Therapy	3(2-2)
BCH-734	Numerical Problems in Biochemistry	3(3-0)
BCH-735	Principles of Advanced Biochemical Techniques	3(3-0)
ZOOL-725	Human Genetics	3(2-2)
BIOL-729	General Pharmacology	3(2-2)
BIOL-723	Immunology	3(2-2)
BIOL-718	Neurology & Neuro Chemistry	3(2-2)
BIOL-722	Host/Parasite Interactions in Animals	3(2-2)
BIOL-714	Biosociology	3(2-2)
BIOL-719	Special Problems	1(1-0)
BIOL-720	Seminar-II	1(1-0)
STAT-701	Experimental Statistics	3(3-0)
BCH-731	Advances in Biochemistry	3(3-0)
ZOOL-718	Applied Reproductive Physiology	3(2-2)
ZOOL-714	Medical Virology	3(2-2)
ZOOL-715	Faunal Biodiversity of Pakistan	3(2-2)
ZOOL-733	Ornithology	3(2-2)
BOT-728	Principles of Genome Analysis and Genomics	3(3-0)
BOT-713	Medicinal Plants of Pakistan	3(2-2)
BOT-715	Phytogeography	3(2-2)
BOT-734	Forensic Botany	3(3-0)
BOT-722	Plant Nutrition	3(2-2)

STANDARD 2-1: The curriculum must be consistent and supports the program's documented objectives

Courses	Objectives		
	1	2	3
BIOL-724	***	**	*
BIOL-725	***	**	*
BIOL-723	*	*	*
Highly satisfactory	***		
Satisfactory	**		
Non satisfactory	*		

STANDARD 2-2: ELEMENTS VS COURSES

Elements	M.Phil. Zoology/Biology Courses
Theoretical background	BIOL-724, BIOL-725, BIOL-723
Problem analysis	BIOL-719, BIOL-720,
Solution Design	STAT-701

STANDARD 2-3:

The curriculum is designed and offered according to the requirements of HEC. There are compulsory basic and advance courses along with an applied course of statistics. Students have to take a minimum 32 credit hours courses. They have to write a thesis worth 10 credits

STANDARD 2-4:

Higher Education Commission (HEC) course work of 32 credit hours

Program	Credit hours/semester	Total Credit hours	Theory	Practical	Thesis
M. Phil.	16	32	24	8	10

STANDARD 2-5:

Courses being offered are highly informative and fulfilling the requirements but most of the courses are of basic nature and only one or two are applied.

STANDARD 2-6:

There is deficiency of information technology related courses but some activities and courses in program are useful to give basic training of computer use.

S. No.	Course No.	How applied and integrated through out the program
1	STAT-701	Use of statistical software enable the students to learn basic use of computer
2	BIOL-720, BIOL-719	Seminar preparation requires the basic knowledge of computer sciences. It urges the students to learn basic use of computer. Same is the case with thesis writing
3	Synopsis and Thesis write up	

STANDARD 2-7:

Two seminars of one credit hour each are compulsory at the M. Phil. level. Moreover, students have to defend their research report. Assignments are given to M. Phil. students on specific titles (part of the course) which are presented orally and given as written report (assignments) by the students which have increased their oral and written communication skills.

S. No.	Course No.	How applied and integrated through out the program
1	BIOL-720	Two seminars of one credit hour each are compulsory at the M. Phil. level during course work
2	Courses presentations/assignments	During course work, a presentation/assignment is obligatory for each course
3	Synopsis formation	Before commencing research in open forum
4	Thesis writing	Thesis viva to an external examination

SECTION-3

CRITERION-3: LABORATORIES AND COMPUTING FACILITIES

Laboratory Title:

1. Microbiology and Parasitology laboratory
2. Reproductive Physiology/Endocrinology laboratory
3. Wildlife & Biodiversity laboratory
4. Animal Physiology laboratory
5. Fisheries laboratory

Location and Area:

Faculty of Sciences, D-Block, 2nd Floor, New Academic Block and area of each laboratory is 450 square feet

Objectives:

Laboratories are used for:

1. Practical exercise and demonstrations to graduate students in their introductory and major courses
2. Research work for the Post-graduate students
3. Used for implementing the funded projects by the University, HEC, PSF, PARC and other agencies.
4. Laboratories are well specious and adequate.

Major apparatus viz equipments:

Microscopes, autoclave, incubator, deep freezer, refrigerators, laminar flow cabinet, pH meter, elective balance, slide and overhead projectors, shaker, hitter, pipettes are present but some are out dated and out of order. Centrifuge (slow and ultra), PAG-Electrophoresis apparatus, PCR Spectrophotometer. Moreover, department requires an animal house and a museum

Safety Regulations:

Safety measures are not available against fire (Extinguishers), minor hazards and accidents, injuries (First Aid Kit). However, the University maintains a Medical Dispensary for such incidents.

STANDARD-3.1: LABORATORY MANUALS:

- Laboratory manuals of each subject (Microbiology and Parasitology, Reproductive Physiology, Wildlife & Biodiversity, Animal Physiology) are not available. The department has no library at all. However, individual teachers have their books.

STANDARD-3.2: SUPPORT/LABORATORY PERSONAL FOR MAINTENANCE OF LABORATORY

Laboratories are maintained by only one laboratory assistant (equipment, glassware, chemicals, material etc). A laboratory attendant assists the students in practicals, cleaning and washing.

STANDARD-3.3: COMPUTING INFRASTRUCTURE AND FACILITIES

- **Computer facilities:** available to all faculty members and the post graduate students
- **Safety arrangements:** The labs have no exhaust fan. No first aid kits/facilities provided in the laboratories/department.

SECTION-4

CRITERION 4: STUDENT SUPPORT AND ADVISING

The university organizes support programs and provide information regarding admission, scholarship schemes etc. Department in its own capacity arrange orientation and guided tours of department.

STANDARD-4.1: FREQUENCY OF COURSES

- Courses are taught as per criteria laid down by HEC.
- Courses are offered according to the scheme of study approved by Academic Council and courses are offered as per the availability and expertise of the teachers.
- Elective courses are offered according to the policy of the university.
- For postgraduate programs, a variety of courses are offered according to demand of the profession.

STANDARD-4.2: STRUCTURE OF THE COURSES

Theoretical as well as practical aspects are focused in designing the courses. Theoretical problems are explained and assignments are also given to the students. Practical are carried out in the labs as well as in the field. Field visits to related research organizations are also organized for the awareness of the students about the latest developments in the area and to stimulate them for discussion and teacher/student interaction.

- Board of Studies approved the course contents
- Faculty members interact frequently to the students to solve their problems. Students are always welcome to ask questions in class rooms and teachers are also available even after the classes.

STANDARD-4.3: GUIDANCE TO THE STUDENTS

Following steps have been taken for the guidance of the students:

1. Information about the program requirements are provided to the students through the office of the head of the department.
2. Through the personal communication of the teachers with the students
3. Students can also contact with relevant teachers whenever they face any professional problem.
4. Students can interact with the teachers/scientists in the universities or research organization according to their requirement and there is open option for the students to get the membership in the professional societies like Pakistan Zoological Society and other relevant professional societies.

SECTION-5

CRITERION-5: PROCESS CONTROL

It includes student admission, student's registration, faculty requirement activities which are dealt by various statutory bodies and the university administration.

STANDARD-5.1: PROGRAM ADMISSION CRITERIA

- The admission advertisement is given in the National Papers by the Registrar office. The criteria and rules of the admission are followed set by the University.
- PhD admission is based on the recommendations of supervisory committee
- Admission criteria is revised every year before the announcement of admissions

STANDARD-5.2: PROCESS OF REGISTRATION

- The student's name, after completion of the admission process, is forwarded to the Registrar Office for proper registration in the specific program and the registration numbers are issued to the students.
- Students are evaluated through Mid, Final and Practical exams and through assignments
- Registration is done for one time for each degree but evaluation is done through the result of each semester. If the students fulfill the criteria of the university they are promoted to the next semester.
- In general, the students are registered on competition bases keeping in view the academic and research standards.

STANDARD-5.3: RECRUITING PROCESS FOR FACULTY

Recruitment policy developed by the university is according to HEC rules.

Induction of all posts is done as per rule:

- Vacant and newly created positions are advertised in the National newspapers, applications are received by the Registrar office, call letters are issued to the

short –listed candidates on the basis of experience, qualification, publications and other qualities/activities as per rules of the university

- The candidates are interviewed by the University Selection Board, principal and alternate candidates are selected.
- Selection of candidates is further approved by the Syndicate and then candidates are invited to join the university within a specified period.
- Induction of new candidates depends upon the number of approved vacancies.
- At present, no procedure exists for retaining highly qualified faculty members. However, the revised pay scales of structure is quite attractive
- HEC also supports appointments of highly qualified members as foreign faculty Professors, National Professors and deputed them in various departments of the university.

STANDARD-5.4: TEACHING AND DELIVERY OF COURSE MATERIAL

- The department revises the curriculum time to time depending upon the requirements, innovations and new technology to enhance the high quality teaching.
- With the emergence of new fields, new courses are designed and included in the scheme of study
- Students usually purchase low price editions books. Very few related books are also available in the university library, where documentation, copying and internet facilities are available.
- Some teachers also provides notes to the students
- Most of the lectures are supplemented by overhead, slides and pictures
- All efforts are made that courses and knowledge imparted meet the objectives and outcome. The progress is regularly reviewed in the staff meetings.

STANDARD-5.5: COMPLETION OF PROGRAM REQUIREMENTS

The controller of examinations announces the date of commencement of examination. After ~20-30 days of the examinations, the controller office notifies the results of the students. The evaluation procedure consists of mid and final examinations, practical formulas, assignments and reports, oral and technical presentations. Candidates who secure 80% or more marks are awarded grade A. Gold medals are awarded to the students who secure highest marks. Degrees are awarded to the students on the annual convocation that is held every year.

SECTION-6

CRITERION-6: FACULTY: Standard 6.1: Full Time Faculty
Table: 4.6

Name	Designation	Qualification	Country Awarding Degree	Date of Birth	E-mail Address
Dr. Mazhar Qayyum	Associate Professor	Ph.D.	Pakistan	7.6.1963	Mazhar_dr@yahoo.com
Dr. Shamim Akhtar	Assistant Professor	Ph. D	Pakistan	13.06.1964	sashraf1993@yahoo.com
Dr. Muhammad Sajid Nadeem	Assistant Professor	Ph. D	Pakistan	04.04.1970	sajidnm@hotmail.com
Dr. Farhana Riaz	Assistant Professor	Ph. D	Pakistan	25.07.1972	Farhana_ahmer@yahoo.com
Dr. Amjad Rashid Kiyani	Assistant Professor	Ph. D	UK	28-3-1966	ark120106@yahoo.co.uk
Dr. Muhammad Mushtaq	Assistant Professor	Ph. D	Pakistan	10.12.1970	mushtaq@uaar.edu.pk
Dr. M. Zubair Anjum	Assistant Professor	Ph. D	Austria	9-3-1978	zubair.anjum@uaar.edu.pk
Mr. Muhammad Irfan	Lecturer	Ph. D. student	Pakistan	16.02.1984	Muhammadirfan11@gmail.com

Table.4.7 Faculty Distribution by Program Areas in Zoology/Biology

Program area of specialization	Courses in the area and average number sections per year	Number of faculty members in each area	Number of faculty with Ph. D degree
Microbiology/Parasitology	7	2	2
Wildlife	6	2	2
Biodiversity	2	1	-
Reproductive physiology	2	1	1
Endocrinology	2	1	-

STANDARD 6.2: EFFECTIVE PROGRAMS FOR FACULTY DEVELOPMENT

1. Professional training and availability of adequate research and academic facilities are not provided according to the faculty members
2. Library facility is insufficient as no latest subject books are available.

STANDARD-6.3: FACULTY MEMBER MOTIVATION

- Time to time provision of enthusiasm to the young faculty by the senior faculty members.

SECTION-7

CRITERION-7: INSTITUTIONAL FACILITIES

INSTITUTIONAL FACILITIES

The institution is working toward acquisition of infrastructure to support new trends in learning such as e-learning

- Electronic library books and journals are available for learning purpose.
- Facilities regarding the infrastructure to support new trends in learning are being provided

However, the library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personal.

- Insufficient library's technical collection of books
- Recommended books, relevant journals of the programs are not available to the students.

Classrooms and offices must be equipped with multimedia and air conditioners and working places of faculty must be adequate to enable them to carry out their responsibilities.

STANDARD-7.1: INFRASTRUCTURE

The faculty is provided with laptops under the Chief Minister Punjab scheme which is very helpful to assess e-resources for the high quality education and producing research of international standard. However, telephone sets/connections are not present.

STANDARD-7.2: LIBRARY FACILITIES

The Central Library being a small library has sufficient space, but less number of books, journals and periodicals with no catalogue frameworks. The department itself does not have a library.

STANDARD-7.3: CLASS ROOM AND FACULTY OFFICES

At present only two class rooms are available for all the degree programs being offered. Rooms are equipped with white boards and lacking multimedia. The learning environment is not conducive being very cold in winter and very hot in summer. No heater and air conditioner is installed in class rooms, labs and offices. Two to three teachers are sharing an office.

SECTION-8

CRITERION-8: INSTITUTIONAL SUPPORT

The university authorities are responsive and trying their best to facilitate academic and research activities of the department. The administration is keen for promoting and establishing research culture by appointing highly qualified faculty.

INTSTITUTIONAL SUPPORT:

The working places for faculty are inadequate as two to four teachers share a small office. Moreover, being on the second floor, offices are not usually comfortable in hot or cold weather.

STANDARD-8-1: SUPPORT AND FINANCIAL RESOURCES

The department does not have enough funds to support a single research student. However, the individual research grants for faculty are mainly supporting the departmental research activities. It is needed to increase the financial resources of the department to support research and academic activities.

STANDARD-8-2: HIGH QUALITY RESEARCH SCHOLARS

Research Assistants	M.Phil. Students
4	15

Faculty to M. Phil. student ratio is 1:3

STANDARD-8-3: FINANCIAL RESOURCES

The total budget of the department of Biology for the financial year 2013-14 was Rs. 350,000 which is insufficient for the purchase of equipment, chemicals etc.

SUMMARY

The Department of Zoology/Biology established in 1997. The M. Phil. Degree in Biology started in 2006. A total of 15 students get admission each year and an equal number of students are placed in Biochemistry, Botany and Zoology for research by keeping in view merit and research interest. Presently, five major research groups are established regarding Wildlife and Ecology, Parasitology, Reproductive Physiology, Endocrinology, and Aquaculture and Fisheries. The admissions are offered on merit and students have to fulfill prerequisite criteria of Graduate Assessment Test (GAT) General and university subject test for admission in M. Phil. program. Moreover, M. Phil. program gives the opportunity to specialize in one or more areas of biology of particular interest. Graduates acquire a general biological and scientific background as well as gain experience in problem solving and develop the communication, numerical and computer skills required for a wide range of careers. In order to assess whether the department is fulfilling its objectives or not, surveys on various aspects such as course evaluation, teacher evaluation, alumni survey, research/graduating students surveys and faculty survey etc. have been conducted by the departmental members of the program team. The data revealed that students are satisfied with the subject approach of faculty members, their fairness in examination, and level of knowledge. The course evaluation survey showed that students are satisfied with the workload and value of knowledge provided to them. Faculty and students are satisfied with working environment and published 17 research articles in journals of repute. During 2012-14, faculty won 7 research projects of that 3 external and four were internal. According to a research student survey, access to scientific equipment is limited. Similarly, the department has limited budget for research purposes which cannot support laboratories and research activities. The performance of the department may be further improved considering; a) Laboratories need modern equipments, b) allocation of sufficient funds will be helpful for learning, teaching and research.

COURSES OFFERED
M. Phil Biology)

Course #	Courses Title	Credit Hours
BIOL-724	Conservation Biology	3(2-2)
BIOL-725	Animal Reproductive Biology	3(2-2)
BIOL-716	Aromatic, Poisonous and Medicinal Plants	3(2-2)
BIOL-720	Seminar-I	1(1-0)
ZOOL-734	Mamology	3(2-2)
ZOOL-713	Clinical Bacteriology	3(2-2)
BOT-715	Phytogeography	3(2-2)
BOT-724	Molecular Basis of Morphogenesis	3(3-0)
BOT-725	Molecular Advances in Phytosystematics	3(2-2)
BOT-735	Plant Microbe Interactions	3(2-2)
BCH-732	Medical Nutrition Therapy	3(2-2)
BCH-734	Numerical Problems in Biochemistry	3(3-0)
BCH-735	Principles of Advanced Biochemical Techniques	3(3-0)
ZOOL-725	Human Genetics	3(2-2)
BIOL-729	General Pharmacology	3(2-2)
BIOL-723	Immunology	3(2-2)
BIOL-718	Neurology & Neuro Chemistry	3(2-2)
BIOL-722	Host/Parasite Interactions in Animals	3(2-2)
BIOL-714	Biosociology	3(2-2)
BIOL-719	Special Problems	1(1-0)
BIOL-720	Seminar-II	1(1-0)
STAT-701	Experimental Statistics	3(3-0)
BCH-731	Advances in Biochemistry	3(3-0)
ZOOL-718	Applied Reproductive Physiology	3(2-2)
ZOOL-714	Medical Virology	3(2-2)
ZOOL-715	Faunal Biodiversity of Pakistan	3(2-2)
ZOOL-733	Ornithology	3(2-2)
BOT-728	Principles of Genome Analysis and Genomics	3(3-0)
BOT-713	Medicinal Plants of Pakistan	3(2-2)
BOT-715	Phytogeography	3(2-2)
BOT-734	Forensic Botany	3(3-0)
BOT-722	Plant Nutrition	3(2-2)

FACULTY RESUMES

1. CURRICULUM VITAE

1. Personal Data

Name: Dr. Muhammad Sajid Nadeem

Present Address: Associate Professor,
Department of Zoology, Pir Mehr Ali Shah Arid Agriculture
University, Murree road, Rawalpindi, Pakistan.

Telephone 0300-8539455

E-mail sajidnm@uaar.edu.pk

2. Academic Qualification

- Ph. D. in Zoology from University of the Punjab, specializing in wildlife. (Year 2005)
Thesis: Ecology of Houbara Bustard (*Chlamydotis undulata macqueenii*) in Punjab Nag Valley (Balochistan) and Uzbekistan.
- Master of Science in Zoology from University of The Punjab, specializing in wildlife research and fieldwork (year 1994).
Thesis: Behavioural patterns of Blue Peafowl (*Pavo cristatus*) in Changa Manga Wildlife Sanctuary.
- Bachelor of Science with Botany, Geography and Zoology from Islamia University Bahawalpur. (Year 1990)

3. Area of Specialization: Wildlife / ecology / conservation

4. HEC approved supervisor

5. Professional Experience (Research and Teaching): 15 years

6. Fellowship/Membership of Professional Associations/Societies: 05

7. Research Projects; Completed=02; ongoing=01

8. Participation in Conferences/Workshops: 23

9. Supervision of Post-Graduate Theses: a) Ph.D.:3; b)M.Phil.: 17.

10. Publications

- | | |
|--|----|
| a. Papers Published in Peer Reviewed Journals: | 56 |
| b. Books / proceedings: | 02 |
| c. Research/Technical Reports (Unpublished): | 13 |

Publications during reported period (2013-2014)

- 1) Nighat, S; Iqbal, S; **Nadeem, M. S**; Mahmood, T. and Shah, S. I. 2013. Estimation of heavy metal residues from the feathers of Falconidae, Accipitridae, and Strigidae in Punjab, Pakistan. *Turk. J. Zool.* 37(4):488-500.
- 2) Mahmood, T; Usman-Ul-Hassan, S.M; **Nadeem, M.S**; and Kayani, A.R. 2013. Population and diet of migratory Common Starling *Sturnus vulgaris* wintering in agricultural areas of Sialkot District, Pakistan. *Forktail*, 29:102-103.
- 3) **Nadeem, M. S**; Mahmood, T; and Mahmood-ul-Hassan, M. 2014. Breeding success of Stone Curlew *Burhinus oedicephalus* in Nag Valley (1999-2001), Kharan, Pakistan. *Turk. J. Zool.* 38(4): 510-514.
- 4) Noreen, S; **Nadeem, M. S**; Beg, M. A; and Anwar, M. 2014. Seasonal variation in the reproductive tract of the Indian flying fox, *Pteropus giganteus* (Brünnich, 1782). *Animal Biology*, 64(4):343-364.
- 5) **Nadeem, M. S**; Zafar, S; Kayani, A. R; Mushtaq, M; Beg, M. A; and Nasir, M. F. 2013. Distribution and Roosting Habitats of Some Microchiropteran Bats in Rawalpindi District, Pakistan. *Pak. J. Zool.* 45(2):565-569.
- 6) Naqvi, S. R; Mushtaq, M; Beg, M. A; **Nadeem, M. S**; and Kayani, A. R. 2013. Dietary Habits of the House Rat (*Rattus rattus*) in Urban Rawalpindi, Pakistan. *Pak. J. Zool.* 45(2):531-536.
- 7) Mahmood, T; Niazi, F; and **Nadeem, M. S**. 2013. Diet composition of Asiatic Jackal (*Canis aureus*) in Margallah Hills National Park, Islamabad, Pakistan. *J. Anim. Plant Sci.* 23 (2):446-456.
- 8) Mirza, Z.S; **Nadeem, M. S**; Mirza, M. A; and Malik, I. 2013. Spatial and Temporal Fluctuations in the Physico-Chemical Limnology of Mangla Dam (Pakistan). *Pak. J. Zool.* 45(3):679-686.
- 9) Ali, S; Rakha, B.A; Hussain, I; **Nadeem, M. S**; and Rafique, M. 2013. Ecology of Feral Pigeon (*Columba livia*) in Urban Areas of Rawalpindi/Islamabad, Pakistan. *Pak. J. Zool.* 45(5):1229-1234.
- 10) Mushtaq, M; Kayani, A.R; **Nadeem, M. S**; and Beg, M.A. 2014. Distribution Pattern of Commensal Rodents in shops of Urban Rawalpindi. *Pak. J. Zool.* 46(6):1585-1589.
- 11) Mirza, Z.S; Mirza, M.R; **Nadeem, M. S**; and Sulehria, A.Q.K 2013. Revised Checklist of fishes of Mangla Reservoir, Pakistan. *Biologia (Pak)*. 59(1):1-6.

2) CURRICULUM VITAE

1. Personal Data

Name: **Dr. Farhana Riaz Chaudhry**

Present Address: Assistant Professor,
Department of Zoology, Pir Mehr Ali Shah Arid Agriculture
University, Murree road, Rawalpindi, Pakistan.

Telephone 03235069304

E-mail farhana_ahmer@yahoo.com

2. Academic Qualification

Year	Degree/Diploma	Institute
2007	Ph.D (Zoology)	University of Arid Agriculture, Rawalpindi-Pakistan
1996	M.Sc.(Zoology)	Punjab University, Lahore-Pakistan
1994	B.Sc. (Pre-medical)	Punjab University, Lahore-Pakistan

3. Area of Specialization: Human and veterinary Parasitology

4. HEC approved supervisor

5. Professional Experience(Research and Teaching): 06 years

6. Fellowship/Membership of Professional Associations/Societies: 04

7. Research Projects; Completed=02; On-going =01

8. Participation in Conferences/Workshops: 10

9. Supervision of Post-Graduate Theses: M.Phil.: 18. Ph.D: 04

10. Publications

Papers Published in Peer Reviewed Journals: 11

Publications during reported period (2013-2014)

1. Zainab Wahab, Amna Azad, Farhana Riaz Chaudhary (2014). Nematicidal Potential and Cuticular Alterations in Plant Treated *Haemonchus Contortus* Int J Indigenous Medicinal Plants

2. Rubaba Hamid Shafique, Pavel B. Klimov, Muhammad Inam, Farhana Riaz Chaudhary, Barry M. OConnor Group 1 Allergen Genes in Two Species of House Dust Mites, *Dermatophagoides farinae* and *D. pteronyssinus* (Acari:Pyroglyphidae): Direct Sequencing, Characterization and Polymorphism (2014).PLOS ONE
3. Amna Azad, Zainab Wahab, Farhana Riaz Chaudhary (2014). Invitro evaluation of flukicidal property of medicinal plants and his histomorphological alterations. Global Science and Technology Forum.
4. Lubna Saleem, Rukhshanda Munir, Manzoor Hussain, Giancarlo Ferrari, Muhammad Afzal, F. R. Chaudhry. (2014).Efficacy and cross-protectivity of live intranasal aerosol Hemorrhagic Septicemia vaccine in buffalo calves. Int.J.Curr.Microbiol.App.Sci.
5. Shumaila Naz, Dilwar Abbas Rizvi, Amara Javaid, Muhammad Ismail, F. R. Chaudhry (2013).Validation of PCR Assay for Identification of *Sarcoptes scabiei* var. *hominis*. Iranian J Parasitol

3. CURRICULUM VITAE

1. Personal Data

Name: Dr. Amjad Rashid Kayani

Present Address: Assistant Professor

Department of Zoology, Pir Mehr Ali Shah Arid Agriculture University, Murree road, Rawalpindi, Pakistan.

Telephone 0332- 5268134

E-mail a.r.kayani@uaar.edu.pk

2. Academic Qualification

- **Ph.D.** (Zoology) 2006 The University of Reading, UK
- **M.Sc.** (Zoology) 1988 University of Agriculture, Faisalabad
(Marks obtained 751 out of 920; 83%; **Ist Div.; CGPA 3.93**)
- **B.Sc.** (Zoology, Botany & Geography) 1985 Govt. Postgraduate College Jhelum, The University of Punjab, Lahore
(Marks obtained 496 out of 800; 62%; **Ist Div.**)

3. Area of Specialization: Animal ecology, behavior and reproductive biology

4. HEC approved supervisor: Yes

5. Professional Experience (Research and Teaching): 25 years

6. Fellowship/Membership of Professional Associations/Societies: 01

7. Research Projects; Completed=01; ongoing=01

8. Participation in Conferences/Workshops: 06

9. Supervision of Post-Graduate Theses: a) Ph.D.:2 (in progress); b) M .Phil.: 08.

Distinctions:

- **University Distinction:** Stood first in the order of merit among all students who qualified for M.Sc. Zoology during calendar year 1988, The University of Agriculture, Faisalabad

- **University Merit Scholarship**, The University of Agriculture Faisalabad, 1986-87 and 1987-88
- **TROSS Scholarship** from Ministry of Science & Technology, Government of Pakistan (2001) for PhD study in UK

10. Publications

Papers Published in Peer Reviewed Journals:

10

Publications during reported period (2013-2014)

- Mahmood, T., Jabeen, K., Hussain, I. and **Kayani, A. R.** 2013. Plant species association, burrow characteristics and the diet of the Indian pangolin, *Manis crassicaudata*, in the Potohar Plateau, Pakistan. *Pakistan Journal of Zoology*, 45(6): 1533 - 1539
- Mahmood, T., Usman-ul-Hassan, S.M., Nadeem, M. S and **Kayani, A. R.** 2013. Population and Diet of migratory Common Starling *Sturnus vulgaris* wintering in agricultural areas of Sialkot district, Pakistan. *The Forktail*, 29: 143-144
- Nadeem, M.S., Zafar, S., **Kayani, A. R.**, Mushtaq, M., Beg, M.A. and Nasir, M.F. 2013. Distribution and roosting habitats of some microchiropteran bats in Rawalpindi District, Pakistan. *Pakistan Journal of Zoology*, 45(2): 565-569
- Naqvi, S.R., Mushtaq, M., Beg, M.A., Nadeem, M.S. and **Kayani, A. R.** 2013. Dietary habits of the house rat (*Rattus rattus*) in Urban Rawalpindi, Pakistan. *Pakistan Journal of Zoology*, 45(2): 531-536
- Mushtaq, M; **Kayani, A.R**; Nadeem, M.S. and Beg, M.A. 2014. Distribution Pattern of Commensal Rodents in Shops of Urban Rawalpindi, Pakistan. *Pakistan Journal of Zoology*, 46(6): 1585- 1589.

4. CURRICULUM VITAE

1. Personal Data

Name: Dr. Mazhar Qayyum

Present Address: Professor,
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2. Academic Qualification

DEGREE	YEAR	SUBJECTS	INSTITUTIONS
Post Doctorate	2003	Parasitology	Louisiana State University, USA
Ph.D	1997	Parasitology	Quaid-I-Azam University, Islamabad, Pakistan
M.Phil	1991	Parasitology	Quaid-I-Azam University, Islamabad, Pakistan
M.Sc	1989	Biology (Animal Sciences)	Quaid-I-Azam University (Animal Sciences), Islamabad, Pakistan

3. Area of Specialization: Parasitology

4. HEC approved supervisor

5. Professional Experience (Research and Teaching): 19 years

6. Fellowship/Membership of Professional Associations/Societies: 03

7. Research Projects; Completed=04

8. Participation in Conferences/Workshops: 20

9. Supervision of Post-Graduate Theses: a) Ph.D.:10; b) M.Phil.: 23.; M. Sc. 13

10. Publications

Papers Published in Peer Reviewed Journals: 47

d.

Publications during reported period (2010-2012)

1. MUHAMMAD BILAL ANWAR, RODNEY JACKSON, MUHAMMAD SAJID NADEEM, JAN E. JANECKA, SHAFQAT HUSSAIN, MIRZA AZHAR BEG, GHULAM MUHAMMAD, **MAZHAR QAYYUM**, 2011. Food habits of the snow leopard *Panthera uncia* (Schreber, 1775) in Baltistan, Northern Pakistan. **Eur J**

Wildl Res, DOI 10.1007/s10344-011-0521-2

2. ATIF KAMAL, **MAZHAR QAYYUM**, IQBAL U CHEEMA AND AUDIL RASHID, 2011. Biological Monitoring of Blood Naphthalene Levels as a Marker of Occupational Exposure to PAHs among Auto-Mechanics and Spray Painters in Rawalpindi. Kamal et al. **BMC Public Health** 2011, 11:467
3. IRFAN, M., RAJA, G. K., MURTAZA, S., MANSOOR, R., **QAYYUM, M.** AND RIZVI, S.S.R. Physical stress may result in growth suppression and pubertal delay in working boys. **J. Med. Hypotheses Ideas**. 5(25): 2011.
4. HAROON AHMED, BUSHRA MIRZA, QASIM KHAN, WASEEM SAFDAR AND **MAZHAR QAYYUM**. Seroprevalence of hypodermosis (*Hypoderma lineatum*) in the cattle of potohar region, Pakistan. **International Journal of Cell and Molecular Biology** 2(2):497-510, 2011.
5. HAROON AHMED, RIAZ KHAN, ROSARIO PANADERO-FONTAN, CEFERINO LOPEZ SANDES, MUHAMMAD FAROOQ IQBAL, SYED MUHAMMAD SQLAN NAQVI, **MAZHAR QAYYUM**, 2012. Geographical Distribution of Hypodermosis (*Hypoderma* sp.) in Northern Punjab, Pakistan. **Kafkas Univ. Vet. Fak. Derg** 18(suppl-A) A215-A219, 2012.
6. NAUSHEEN IRSHAD, **M.QAYYUM**, M.HUSSAIN AND M.QASIM KHAN, 2010. Prevalence of Tick Infestation and Theileriosis in Sheep and Goats. *Pak Vet J*, 30(3): 178-180.
7. SAIRA MUFTI, M. MAQBOOL AHMAD, YUSUF ZAFAR AND **MAZHAR QAYYUM**, 2011. Phenotypic Analysis of Adult *Fasciola* spp. From Potohar Region of Northern Punjab, Pakistan. *Pakistan J. Zool.*, vol. 43(6), pp. 1069-1077, 2011
8. MUHAMMAD BILAL ANWAR, MUHAMMAD SAJID NADEEM, AMJAD RASHID KAYANI AND **MAZHAR QAYYUM**, 2011. Is Mammalian Hair Fiber Analysis by Optical Fiber Diameter Analyzer Helpful to Identify Prey from Scats of Carnivores? *Pakistan J. Zool.*, vol. 43(6), pp. 1218-1220, 2011.
9. Z. S. MIRZA, M. S. NADEEM, M. A. BEG AND **MAZHAR QAYYUM**, 2012. Population Status and Biological Characteristics of Common Carp, *Cyprinus Carpio*, in Mangla Reservoir (Pakistan). *The Journal of Animal & Plant Sciences*, 22(4):2012, Page: 933-938.

5. CURRICULUM VITAE

1. Personal Data

Name: Dr. Shamim Akhtar

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E-mail: sashraf1993@gmail.com

2. Academic Qualification

1.	Ph.D. (Zoology)	University of Arid Agriculture, Rawalpindi	2006
2	M.Phil. (Zoology)	University of Agriculture, Faisalabad.	1991
3	M.Sc. (Zoology)	University of Agriculture, Faisalabad.	1987
4	B.Sc (Zool, Bot, Chem)	University of the Punjab, Lahore	1985
Post Doctoral Fellowship :		Commonwealth Post Doctoral Fellowship at “The Royal Veterinary College, University of London, UK. 2009	

3. Area of Specialization: Reproductive Physiology

4. HEC approved supervisor

5. Professional Experience (Research and Teaching): 15 years

6. Fellowship/Membership of Professional Associations/Societies: 02

7. Research Projects; Completed=06; ongoing=01

8. Participation in Conferences/Workshops: 20

9. Supervision of Post-Graduate Theses: a) Ph.D.:1; b) M.Phil.: 23; M.Sc. 20.

10: International collaborations = Three institutes/universities

11. Publications

Papers Published in Peer Reviewed Journals: 50

Publications during reported period (2010-2012)

- 1.** Ansari, M. S., B. A. Rakha, S. M.H. Andrabi, N.Ullah, R. Iqbal, W. V. Holt, **Shamim Akhter**. 2012. Glutathione-supplemented tris-citric acid extender improves the post-thaw quality and in vivo fertility of buffalo (*Bubalus bubalis*) bull spermatozoa. Reproductive Biology, 12: 271-276. (*Impact factor: 1.222*)
- 2.** **Shamim Akhter**, M. S. Ansari, B. A. Rakha, N. Ullah, S. M. H. Andrabi and M. Khalid. 2012. *In vitro* evaluation of liquid-stored buffalo semen at 5°C diluted in soya lecithin based extender (Bioxcell®), tris-citric egg yolk, skim milk and egg yolk-citrate extenders. Reproduction in Domestic Animals, 46(1): 45-49. (*Impact factor: 1.392*)
- 3.** **Shamim Akhter**, M. S. Ansari, S. M. H. Andrabi, B. A. Rakha, N. Ullah, M. Khalid. 2011. Soya-lecithin in extender improves the freezability and fertility of buffalo (*Bubalus bubalis*) bull spermatozoa. Reproduction in Domestic Animals, 47: 815-819. (*Impact factor: 1.392*)
- 4.** **Shamim Akhter**, M. S. Ansari, B. A. Rakha, S. M. H. Andrabi, N. Ullah and M. Khalid. 2011. Effect of low density lipoproteins in extender on freezability and fertility of buffalo (*Bubalus bubalis*) bull semen. Theriogenology, 76(4): 759-764. (*Impact Factor: 2.082*)
- 5.** Ansari, M. S., B. A. Rakha, S. M. H. Andrabi and **Shamim Akhter**. 2011. Effect of straw size and thawing time on quality of cryopreserved buffalo (*Bubalus bubalis*) semen. Reproductive Biology, 11(1): 49-54. (*Impact factor: 1.222*)
- 6.** **Shamim Akhter**, M. S. Ansari, B. A. Rakha, S. M. H. Andrabi and N. Ullah. 2010. Cryopreservation of buffalo (*Bubalus bubalis*) semen in Bioxcell® extender. Theriogenology, 74: 951-955. (*Impact Factor: 2.082*)
- 7.** Ansari, M. S., B. A. Rakha, N. Ullah, S. M. H. Andrabi, S. Iqbal, M. Khalid and **Shamim Akhter**. 2010. Effect of exogenous glutathione in extender on the freezability of Nili-Ravi buffalo (*Bubalus bubalis*) bull spermatozoa. Animal Science Papers and Reports, 28: 235-244. (*Impact factor: 0.918*)
- 8.** Ansari, M. S., B. A. Rakha and **Shamim Akhter**. 2011. Effect of L-cysteine in extender on post-thaw quality of Sahiwal bull semen. Animal Science Papers and Reports, 29: 197-203. (*Impact factor: 0.918*)

- 9.** Ansari, M. S., B. A. Rakha, S. M. H. Andrabi and **Shamim Akhter**. 2010. Usefulness of powdered and fresh egg yolk for cryopreservation of Zebu bull spermatozoa. *Reproductive Biology*, 10(3): 235-240. (*Impact factor: 1.222*)
- 10.** **Shamim Akhter**, B. A. Rakha, M. S. Ansari. 2010. Comparison of egg yolks from three avian species in extender for cryopreservation of Sahiwal bull epididymal spermatozoa. *Animal Science Papers and Reports*, 29: 131-138 (*Impact factor: 0.918*)
- 11.** Batool, K. Mehboob, S. Qadeer, M. S. Ansari, B. A. Rakha, N. Ullah, S. M. H. Andrabi, **Shamim Akhter**. 2012. Effect of α -tocopherol acetate and ascorbic acid in extender on quality of Zebu bull spermatozoa. *Pakistan Journal of Zoology*, 44 (6): 1487-1491. (*Impact Factor: 0.309*)
- 12.** N. A. Qureshi, M. S. Ansari, **Shamim Akhter**, A. A. Khan, I. Hussain and B. A. Rakha. 2012. Feeding Habits of Common Quail (*Coturnix coturnix*) migrating through Rawalpindi, Pakistan. *Pakistan Journal of Zoology*, 44 (6): 1760-1762. (*Impact Factor: 0.309*)
- 13.** Mehmood, A., M. S. Ansari, **Shamim Akhter**, A. A. Khan, I. Hussain, Shams-ul-Hassan, T. Z. Qureshi and B. A. Rakha. 2012. Occurrence of Pathogenic bacteria in small mammals-inhabiting poultry farms of Rawalpindi/Islamabad, Pakistan. *Pakistan Journal of Zoology*, 44(4): 1185-1187. (*Impact Factor: 0.309*)
- 14.** Mehmood, A., M. S. Ansari, T. Hussain, **Shamim Akhter**, S. A. Khan, S. Hassan, A. A. Khan and B. A. Rakha. 2012. Common shrew (*Suncus murinus*): A potential reservoir of pathogenic bacteria at poultry farms, Rawalpindi, Pakistan. *Pakistan Journal of Zoology*, 44(3): 879-880. (*Impact Factor: 0.309*)
- 15.** Atiq, N., N. Ullah, S. M. H. Andrabi and **Shamim Akhter**. 2011. Comparison of Photometer with Improved Neubauer Hemocytometer and Makler Counting Chamber for Sperm Concentration Measurement in Cattle. *Pak Vet J*, 31(1): 83-84. (*Impact Factor: 1.365*)
- 16.** Ansari M. S., B. A. Rakha, **Shamim Akhter**. 2011. Effect of butylated hydroxytoluene in extender on motility, plasmalemma and viability of Sahiwal Bull Spermatozoa. *Pakistan Journal of Zoology*, 43: 311-314. (*Impact Factor: 0.309*)

- 17.** Ansari, M. S., B. A. Rakha, N. Ullah, S. M. H. Andrabi and **Shamim Akhter**. 2011. Glutathione addition in *tris*-egg yolk extender improves the quality of cooled buffalo (*Bubalus bubalis*) bull semen. Pakistan Journal of Zoology, 43: 46-55. (*Impact Factor: 0.309*)
- 18.** Ansari, M. S., B. A. Rakha, N. Ullah, S. M. H. Andrabi, M. Khalid and **Shamim Akhter**. 2011. Effect of L-cysteine in *tris*-citric egg yolk extender on post thaw quality of Nili-Ravi buffalo (*Bubals bubalis*) bull spermatozoa. Pakistan Journal of Zoology, 43: 41-47. (*Impact Factor: 0.309*)
- 19.** **Shamim Akhter**, B. A. Rakha, M. S. Ansari, S. M. H. Andrabi and N. Ullah. 2011. Effect of glucose supplementation in skim milk diluter on motility, plasma membrane and acrosomal integrity of Nili-Ravi buffalo bull spermatozoa stored at 5°C. Pakistan Journal of Zoology, 43(1): 291-294. (*Impact Factor: 0.309*)
- 20.** **Shamim Akhter**, B. A. Rakha, M. S. Ansari, S. M. H. Andrabi and N. Ullah. 2011. Storage of Nili-Ravi Buffalo (*Bubalus bubalis*) Semen in Skim Milk Extender Supplemented with Ascorbic Acid and α -Tocopherol. Pakistan Journal of Zoology, 43(1): 273-277. (*Impact Factor: 0.309*)
- 21.** Mehmood, A., M. S. Ansari, T. Hussain, **Shamim Akhter**, S. A. Khan, S. Hassan, A. A. Khan and B. A. Rakha. 2011. Bandicoot rat (*Bandicota bengalensis*): A novel reservoir of pathogenic bacteria at poultry farms, Rawalpindi/Islamabad, Pakistan. Pakistan Journal of Zoology, 43(1): 201-202. (*Impact Factor: 0.309*)
- 22.** **Shamim Akhter**, M. S. Ansari, B. A. Rakha, S. M. H. Andrabi M. Anwar and N. Ullah. 2010. Effect of fructose addition in skim milk extender on the quality of liquid Nili-Ravi buffalo (*Bubalus bubalis*) semen. Pakistan Journal of Zoology, 42: 227-231. (*Impact Factor: 0.309*)
- 23.** Begum I, A Azim, S Akhter, MI Anjum and M Afzal, 2010. Mineral dynamics of blood and milk in dairy buffaloes fed on calcium and phosphorus supplementation. Pakistan Veterinary Journal, 30(2): 105-109. (*Impact Factor: 1.365*)
- 24.** Ansari, M. S., B. A. Rakha, S. M. H. Andrabi, N. Ullah and **Shamim Akhter**. 2010. Cryopreservation of Sahiwal bull epididymal spermatozoa. Pakistan Journal of Zoology, 42: 241-243. (*Impact Factor: 0.309*)

6. CURRICULUM VITAE

1. Personal Data

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2. Academic Qualification

Ph.D. _ Ecology (2009)
Institute of Zoology, Department of Integrative Biology and Biodiversity Research.
Universität für Bodenkultur Wien, Austria.

M.Sc. _ Zoology (2004)
University of Agriculture, Faisalabad, Pakistan.

B.Sc. _ Zoology, Botany & Geography (2002)
University of Punjab, Lahore, Pakistan.

3. Area of Specialization: Fisheries / Ecology

4. HEC approved supervisor

5. Professional Experience (Research and Teaching): 07 years

6. Fellowship/Membership of Professional Associations/Societies: 02

7. Research Projects; Completed=03; ongoing=01

8. Participation in Conferences/Workshops: 14

9. Supervision of Post-Graduate Theses: a) M.Phil: 14.

10. Publications = 04 Abstract = 05