DEPARTMENT OF ZOOLOGY

LAHORE COLLEGE FOR WOMEN UNIVERSITY, LAHORE

SELF-ASSESSMENT REPORT

BS ZOOLOGY

Submitted to

Quality Enhancement Cell,

Lahore College for Women University, Lahore

Dated:

Program Team Members:

1. Dr. Sumera Sajjad, Assistant Professor
2. Dr. Shafaq Fatima, Assistant Professor
3. Dr. Mateen Arshad, Assistant Professor

Head of the Department

Prof. Dr. Farkhanda Manzoor

T A B L E O F C O N T E N T S

Description	Page No.
Criterion 1: Program Mission, Objectives and Outcomes	
Standard 1.1.1	
Standard 1.1.2 (a&b)	
Standard 1.1.3	
Standard 1.1.4	
Standard 1.2	
Standard 1.3	
Standard 1.4	
Criterion 2: Curriculum Design and Organization	
Standard 2.1	
Standard 2.2	
Standard 2.3	
Standard 2.4	
Standard 2.5	
Standard 2.6	
Standard 2.7	
Criterion 3: Laboratories and Computing Facilities	
Standard 3.1	
Standard 3.2	
Standard 3.3	
Criterion 4: Student Support and Advising	
Standard 4.1	

Standard 4.2	
Standard 4.3	
Criterion 5: Process Control	
Standard 5.1	
Standard 5.2	
Standard 5.3	
Standard 5.4	
Standard 5.5	
Criterion 6: Faculty	
Standard 6.1	
Standard 6.2	
Standard 6.3	
Criterion 7: Institutional Facilities	
Standard 7.1	
Standard 7.2	
Standard 7.3	
Criterion 8: Institutional Support	
Standard 8.1	
Standard 8.2	
Standard 8.3	
Appendices	

INTRODUCTION :

Zoology is the branch of Natural Science that deals with animal biology and is concerned with every level of biological organization i.e., from gene to the ecosystem and with the structure, evolution, physiology, behavior, entomology, genetics, development and distribution of animals in all taxonomic groups. Zoology department at Lahore College for Women was established in 1956. Dr. Nazir Ahmed was the first head of the Department of Zoology. Lahore College for Women was elevated to the status of a Women University in September 2002. Zoology Department at Lahore College for Women University includes eight concentration areas: 1) General Zoology, 2(Cell and Molecular Biology, 3) Entomology and Parasitology, 4) Genetics, 5) Physiology and Endocrinology, 6) Microbiology 7) Biodiversity and Conservation and Fisheries and Aquaculture.

The syllabi are duly upgraded and modernized to make them abreast with the International standards. Currently department enrolls students for 4 years Bachelor's degree (BS Zoology), 2years MS degree (MS Zoology) and Ph.D. program.

Mission of the Department

The overarching aim of post graduate degree programs in Zoology is to train and prepare scholars who bare capable of productive careers in animal biology in teaching and research at national and international levels, develop human resource in recently emerging technological and disciplinary fields such as Genetic engineering, Bioinformatics, Endocrinology, Microbiology, Entomology, Biodiversity, Wildlife and Conservations etc. Our aims and objectives are:

- To impart knowledge about the advances in major disciplines of Zoology.
- To teach different methods of exploration, investigation, organization of data and its utilization in practical life.
- To equip students with the knowledge and skills for better planning and management of animal resources, environment, health, medicine, agriculture and livestock in the country.
- To prepare and train students for advanced studies and specialization in recently emerging technological and interdisciplinary fields such as Genetic engineering, Endocrinology, Entomology & parasitology, Biochemistry, Microbiology, Biodiversity, Wildlife and Conservation etc. After completing the degree students will be able to apply knowledge to the respective fields more effectively.
- To develop the scientific attitude and demonstrate professional skills in teaching research and managerial positions in wide range of professions in national and international organizations.

The core values of the department are:

- Quality
- Honesty and Character building
- Value Addition
- Hard work
- Care
- Esteem
- Assurance
- Accountability
- Impartiality
- Transparency
- Conviction

- Team spirit

Teaching Methodologies:

All courses taught are excellent mix-match of various methods including lectures, practicals, seminars, assignment, workshops, tutorials, and group discussions using audio-visual aids. The teaching culminates in developing the ability in students to collect, recognize and interpret the information through various sources like library and internet. This creates originality amongst students enabling them to work with gravity of purpose with sharp learning skills.

CRITERION 1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Program Mission of Zoology Department:

Mission of the graduate program is to achieve excellence through provision of quality animal biology training and services to develop productive skills for Zoology professionals/ research scholars to handle multifarious challenging needs.

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

Name of Program	Duration	No. of Modules	Total Credit hrs
BS Zoology	**4 years**	**8 Semesters (Course work + Research)**	**136**

1.1: Program's Objectives:

1.1.1 BS Zoology (4 years degree program):

Curriculum for the degree consists of HEC approved courses. In year 1 and 2 the students learn the basic, foundation and compulsory courses according to the weightage given by the HEC. These courses include i) Compulsory courses, ii) Core Courses from Zoology, iii) Supporting Minor Courses from Botany and Chemistry and iv) Elective Courses e.g., Statistics, Psychology etc. In the final years the students study the advanced courses and work bon research projects (Annexure I).

1.1.1.1 BS Zoology Program Objectives:

1. To impart knowledge about animal sciences through wide range of subjects related to natural sciences.

2. To teach different methods of exploration, investigation, organization of data and its utilization in practical life with reference to animal biology.

3. To enable students to acquire knowledge base facts about biological diversity of animals including analysis at the level of genes, cells, tissues, organs, individuals, interactions od individuals, populations and ecosystems and skills for better planning, protection and management of resources, environment, health, agriculture and livestock in the country.

4. To prepare and train students for advanced studies and specialization in recently emerging technological and interdisciplinary field such as Biodiversity, Wildlife and Conservation, Molecular Biology, Entomology & Parasitology, Genetics, Endocrinology and Physiology. After completing the degree, students will be able to apply knowledge to the respective fields and would go for consideration of larger role of biology in society.

1.1.2 Strategies are based on:

i) Designing the program as per requirement of students

ii) Develop curriculum according to the need of the program.

iii) Regular revision of curriculum to keep them abreast with national and international developments.

iv) Providing all resources including class room facilities, multimedia, computers and properly equipped laboratories.

v) Updating the knowledge of teachers through workshops and training programs.

vi) Encouraging the establishment of linkages at national and international level.

vii) Establish liaison with the potential employers and provide economical consultancy services.

viii) Develop moral basis of the students to impart concept of teams, honesty and discipline through ethical attitudes.

1.1.3 Assessment of Educational Objectives of Program:

Research degrees are assessed by completion of an advanced research project. Taught courses are assessed through a combination of coursework and projects related to the study. The educational objectives of program are regularly assessed as indicated in the Table below:

Table 1 Program Objectives Assessment

Objectives	How Measured	When Measured	Improvements Identified (Based on outcome Examination)	Improvements Made
As given in Para 1.1	1 Regular assessment of student's knowledge and ability to exhibit the skill by the teacher:	Regular	1) Regularity of attendees required 2) Work based teaching 3) Course / curriculum revision to enhance outcomes and make it more work based 4) Enhancing communication skills 5) Guidance to students	1) Attendance rules applied more strictly 2) Teachers training and development 3) Student encouraged to enhance their writing skills 4) Course / curriculum revised 5) Students encouraged to attend the National and International workshops/ Seminars / Conference
	i) Class tests	1 per mid term		
	ii) Class exercise relating to problem	1 per mid term 1 post mid term		
	iii)Presentation of relevant topic	Once in a semester		
	iv) Quizzes	As per course requirement		
	2. Written examination	Twice during each semester		
	3. Practical assignment in each course	Once in a semester		
	4. Discussion	As per requirement		
	5. Research Project	Once during program		

	6. Teaching / Learning Process Survey (Teachers evaluation by the students)	Once in a semester	Shortcomings as per survey identified	Teachers are intimated the survey report who make efforts to improve which is monitored in next survey
	7. Faculty Survey Form	Once in a semester	1) More time to be spent on the following during teaching: i) Teacher student interaction ii) Personal development topic ethics, moral & code of conduct. iii) Improvement in quality iv) Administrative support	All the improvements identified have been implemented.
	8. Suggestion received from students	As and when received	1) Administrative and personal problems of students 2) Laboratory facilities	Complaints are addressed immediately
	9) Students/ Quality Assurance Advisor liaison			
2	New Introductions 1. Employer Surveys	Once a year	Results awaited	
3	2. Alumni Survey:	Once a year	Results awaited	
4	Survey of Graduating	Once a year	Results awaited	

	Students:			
5	Latest Research Student Progress Review	As per requirement	Regular Assistance from the concerned quarters	Support and the cooperation from other organizations as per requirement of the project
	Survey of Department offering Ph.D.	Every six months		
	Faculty resume	Once a year	1. Qualification 2. Training	1) Sent for higher studies 2) Internal and external training arranged

Standard 1.2: The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program

1.2.1 BS Zoology Program Outcomes:

1. Use of the scientific methods and experimental designs for problem solving.
2. Ability to develop hypothesis, formulate appropriate test, observe and acquire results, critically discuss the results and make conclusions.
3. Critical thinking skills in the analysis of data and hypothesis involving logical reasoning and statistical analysis.
4. Knowledge about the diversity of animal, their interaction with internal and external environment and interdisciplinary relationship.

Table 4.2: Outcomes versus Objectives

Program Objectives	**Program Outcomes**			
	1	**2**	**3**	**4**
1	X			X
2	X	X	X	
3	X	X	X	X
4		X	X	X

Program Objectives	Program Outcomes			
	1	2	3	4
1	◊	◊	_	_
2a	_	_	◊	◊
2b	_	_	◊	◊
2c	_	*	*	◊

Legend: ***** Denotes **Substantial** Contribution to the objectives

◊ Denotes **Moderate** Contribution to the objectives

_ Denotes **No** Contribution to the objectives

Standard 1.3: The results of program's assessment and the extent to which they are used to improve the program must be documented.

1.3.1.a. Action taken on the basis of Assessment:

1) Syllabus revision
2) Teachers training
3) Labs development
4) Faculty development

1.3.1.b. Strengths of Department:

i) Teamwork
ii) Infrastructure
iii) Work environment
iv) Science Laboratories, Common Science Library, Computing and internet facilities

1.3.1.c. Weakness of Department:

i) Departmental Library
ii) Trained Laboratory Personals
iii) Strengthening of existing Laboratory facilities

Standard 1.4: The department must assess its overall performance periodically using quantifiable measures.

1.4.1 Performance Measures:

Zoology department assesses the overall performance using quantifiable measures e.g., statistical method.

i) Student's enrollment

ii) Student passed out

iii) Attrition rate

iv) Student teacher ratio

v) Number of publication

vi) Books in library

vii) Workshops and seminars

viii) Purchase of equipment

ix) Other performance indicators

Ta**ble 3: No. of Students Enrolled**

Program	**Session**	**No. of Students**
BS Zoology	2013-2017	73
	2014-2018	78
	2015-2019	82
	2016-2020	48
	2017-2021	56
	2018-2022	58

Table 4: Student passed out

Program	Year	No. of Students
BS Zoology	2013	25
BS Zoology	2014	51
BS Zoology	2015	42
BS Zoology	2016	35
BS Zoology	2017	68
BS Zoology	2018	67
BS Zoology	2019	In process

Table 5: Attrition rate and students honoured

Program	Year	%age of honoured students	Attrition rate (%)
BS Zoology	2009-2013		
BS Zoology	2010-2014		
BS Zoology	2011-2015		
BS Zoology	2012-2016		
BS Zoology	2013-2017		
BS Zoology	2014-2018		

Table 6: Student Teacher ratio

Program	Year	No of Teachers	No of Students	Ratio
BS Zoology	2009-2013	15	73	5
BS Zoology	2010-2014	14	78	6
BS Zoology	2011-2015	13	82	6
BS Zoology	2012-2016	14	48	3
BS Zoology	2013-2017	14	56	4
BS Zoology	2014-2018	14	58	4

Table 7: Number of publications

Year	Paper Published
2013	17
2014	18
2015	16
2016	17
2017	21
2018	17

Table 8: Books in library

Year	**Purchased**	**Stock**
2013		**986**
2014		**986**
2015		**50**
2016		**50**
2017		**50**
2018	**179**	**229**

Table 9. Workshops and seminars organized

Year	2013	2014	2015	2016	2017	2018
Total No of workshops and seminars organized	0	01	01	05	01	6

Table 10. Purchase of equipment

Year	2013	2014	2015	2016	2017	2018
No. of equipment exceeding the price of Rs. 100,000	01	03	01	02	01	0

Table 11. Other performance indicators

Sr.	Contents	2013	2014	2015	2016	2017	2018
1	QMS certification	NIL	NIL	NIL	NIL	NIL	NIL
2	Programs offered	BS	BS	BS	BS	BS	BS
3	Membership of professional Bodies	University, Faculty Board, NCRS	University, Faculty Board, NCRS	University, Faculty Board, NCRS	University, Faculty Board, NCRS	University, Faculty Board, NCRS	University, Faculty Board, NCRS
4	Revision of syllabi	1	1	1	1	1	1

1.4.2: Research areas

The faculty is involved in research in the following areas:

- Molecular Biology
- Entomology
- Genetics
- Biochemistry
- Endocrinology and Physiology
- Pathophysiology and Parasitology
- Microbiology

- Biodiversity and Conservation
- Fisheries and Aquaculture

1.4.3: ACADEMIC CALENDAR 2013-2014

Fall Semester (October, 2013 to March 2014) MS Zoology (YEAR 1)		
Mid Term	**October 2013-December 2013**	**Teaching**
	15th December 2013-24th December	**Examinations**
Final Term	**January 2014-February 2014**	**Teaching**
	1st March 2014-20th March 2014	**Examination**
Spring Semester (March, 2014 to July 2014) MS Zoology (YEAR 1)		
Mid Term	**25th March -2014- 25th April 2014**	**Teaching**
	25th April 2014-10th May 2014	**Examinations**
Final Term	**11th May 2014-30th June 2014**	**Teaching**
	1st July 2014-15th July 2014	**Examination**

1.4.4: ACADEMIC CALENDAR 2014-2015

Fall Semester (October, 2014 to February 2015) MS Zoology (YEAR 1)		
Mid Term	**October 2014-November 2014**	**Teaching**
	1st December 2014-20th December 2014	**Examinations**
Final Term	**21st December 2014-10th February 2015**	**Teaching**
	12th February 2015-20th March 2014	**Examination**
Spring Semester (March, 2015 to July 2015) MS Zoology (YEAR 1)		
Mid Term	**21st March -2015- 25th April 2015**	**Teaching**
	26th April 2015-10th May 2015	**Examinations**
Final Term	**11th May 2015-30th June 2015**	**Teaching**
	1st July 2015-15th July 2015	**Examination**

1.4.5: ACADEMIC CALENDAR 2015-2016

Fall Semester (October, 2015 to February 2016) MS Zoology (YEAR 1)		
Mid Term	**October 2015-November 2015**	**Teaching**
	1st December 2015-20th December 2015	**Examinations**
Final Term	**21st December 2015-10th February 2016**	**Teaching**
	12th February 2016-20th March 2016	**Examination**
Spring Semester (March, 2016 to July 2016) MS Zoology (YEAR 1)		
Mid Term	**21st March -2016- 25th April 2016**	**Teaching**
	26th April 2016-10th May 2016	**Examinations**
Final Term	**11th May 2016-30th June 2016**	**Teaching**
	1st July 2016-15th July 2016	**Examination**

1.4.6: ACADEMIC CALENDAR 2016-2017

Fall Semester (3rd October, 2016 to 14th February 2017) MS Zoology (YEAR 1)		
Mid Term	**3rd October 2016- 27th November 2016**	**Teaching**
	28th November 2016-3rd December 2016	**Examinations**
Final Term	**6th December 2016-5th February 2017**	**Teaching**
	6th February 2017-14th February 2017	**Examination**
Spring Semester (15th February, 2017 to July 2017) MS Zoology (YEAR 1)		
Mid Term	**15th February -2017- 9th April 2017**	**Teaching**
	10th April 2017-18th April 2017	**Examinations**
Final Term	**19th April 2017-3rd July 2017**	**Teaching**
	4th July 2017-30th July 2017	**Examination**

1.4.7: ACADEMIC CALENDAR 2017-2018

Fall Semester (4th October, 2017 to 14th February 2018) MS Zoology (YEAR 1)		
Mid Term	**4th October 2017- 27th November 2017**	**Teaching**
	28th November 2017-3rd December 2017	**Examinations**
Final Term	**6th December 2017-5th February 2018**	**Teaching**
	6th February 2018-14th February 2018	**Examination**
Spring Semester (15th February, 2018 to July 2018) MS Zoology (YEAR 1)		
Mid Term	**15th February -2018- 9th April 2018**	**Teaching**
	10th April 2018-18th April 2018	**Examinations**
Final Term	**19th April 2018-3rd July 2018**	**Teaching**
	4th July 2018-30th July 2018	**Examination**

CRITERION 2: CURICULUM DESIGN AND ORGANIZATION

Curriculum of Zoology for each program is developed on the basis of detailed guidelines given by the HEC.

PROGRAM BS ZOOLOGY (Annexure I)

Tabe 12: Road map for BS 2014-2018 (136 CREDIT HOURS)

Semester I (17)	Semester II (17)	Semester III (17)	Semester IV (18)	Semester V (19)	Semester VI (15)	Semester VII (16)	Semester VIII (17)
CC/Eng-101	CC/Eng-102	CC/Eng-201	CC/Eng-202	Maj/Zoo-301	Maj/Zoo-306	Maj/Zoo-401	Maj/Zoo-406
Language in Use	Academic Reading and Writing	Communication Skills	Advanced Academic Reading and Writing	Cell and Molecular Biology	Biostatistics	Evolution and Principles of Systematics	**Elective Subject
CC/Isl-101	CC/PS-	CC/ Stat-	CC/CS-201	Maj/Zoo-	Maj/Zoo-	Maj/Zoo-	Maj/Zoo-

	101	201		302	307	402	407
Islamic Education/ Ethics	Pakistan Studies	Basic Statistics	Computer Applications	General Biochemistry	Developmental Biology	Zoogeography and Paleontology	* Special Subject A (II)
Maj/Zoo-101	Maj/Zoo-102	Maj/Zoo-201	Maj/Zoo-203	Maj/Zoo-303	Maj/Zoo-308	Maj/Zoo-403	Maj/Zoo-408
Principles in Animal Life	Principles of Genetics and Evolution	Invertebrate Diversity	Animal Form and Function-I	Genetics	Ecology	*Special Subject A (I)	* Special Subject B (II)
Min/Bot-101	Min/Bot-102	Maj/Zoo-202	Maj/Zoo-204	Maj/Zoo-304	Maj/Zoo-309	Maj/Zoo-404	Res/Zoo-401
Morphology of Plants (Minor-I)	Diversity of plants (Minor-II)	Chordate Diversity	Animal Form and Function-II	General Physiology	Animal Diversity and Wild Life	* Special Subject B (I)	**Thesis**
Min/Chem-101 or Min/Geog-101	Min/Chem-102 or Min/Geog-102	Min/Bot-201 or Min/Chem-201 or Min/Geog-201	EC/Stat-201	Maj/Zoo-305	Maj/Zoo-310	Maj/Zoo-405	
General Inorganic Chemistry Physical Geography -I (Minor-I Choose Any one)	Physico-Organic Chemistry-I Physical Geography-II (Minor-II Choose Any one)	Plant Physiology and Ecology Physico-Organic Chemistry-II Human Geography (Minor III Choose Any one))	Inferential Statistics(Elective outside the major)	Economic Zoology	Animal Behavior	Research Methodologies	

* From the list of approved courses

** From the list of approved courses

Table 13: Curriculum Course Requirements- BS Zoology

1(Definition of credit hour: 1 credit hour is equivalent to 15-16 teaching hours/semester:

Curriculum Break up	Credit Hours
HUMANATIES AND SOCIAL SCIENCES • Language in use • Academic reading and writing • Communication Skills • Advanced academic reading and writing • Islamic education • Pakistan Studies	**16**
STATISTICS AND COMPUTER SCIENCES • Basic statistics • Computer applications • Inferential statistics (elective) • Biostatistics	**11**
SUPPORTIVE COURSES • Morphology of plants • Diversity of plants • General Inorganic Chemistry/Physical Geography-I • Plant Physiology and Ecology/Physico-Organic Chemistry-II/ Human Geography	**20**
CORE COURSES • Principles of animal life	**62**

• Principles of Genetics and Evolution • Invertebrate Diversity • Chordate Diversity • Animal Form and Function-I • Animal Form and Function-II • Cell and Molecular Biology • General Biochemistry • Genetics • General Physiology • Economic Zoology • Developmental Biology • Ecology • Animal diversity and Wildlife • Animal Behavior • Evolution and Principles of Systematics • Zoogeography and Paleontology	
SPECIALIZATIONS AND RSEARCH • Special subject –I (Paper A & B) • Special subject –II (Paper A & B) • Elective subject • Research Methodologies • Thesis	**27**
Total Credit Hours	**136**

Table 13a: Details of Curriculum Break up-BS ZOOLOGY

Semester	Course Number	Stats and computer/ supportive courses		Core courses	Specializations and Research	Humanities and Social Sciences
		Stats and computer	supportive courses			
1	CC/Eng-101, CC/Isl-101, Maj/Zoo-101, Min/Bot-101, Min/Chem-101 or Min/Geog-101		Min/Bot-101, Min/Chem-101 or Min/Geog-101 (8 credit)	Maj/Zoo-101, (4 credit)		CC/Eng-101, CC/Isl-101, (5 credit)
2	CC/Eng-102, CC/PS-101, Maj/Zoo-102, Min/Bot-102, Min/Chem-102 or Min/Geog-102		Min/Bot-102, Min/Chem-102 or Min/Geog-102 (8 credit)	Maj/Zoo-102, (4 credit)		CC/Eng-102, CC/PS-101, (5 credit)
3	CC/Eng-201, CC/ Stat-201, Maj/Zoo-201, Maj/Zoo-202, Min/Bot-201 or	CC/ Stat-201, (2 credit)	Min/Bot-201 or Min/Chem-201 or Min/Geog-201 (4 credit)	Maj/Zoo-201, Maj/Zoo-202, (8 credit)		CC/Eng-201, (3 credit)

	Min/Chem-201 or Min/Geog-201					
4	CC/Eng-202, CC/CS-201, Maj/Zoo-203, Maj/Zoo-204, EC/Stat-201	CC/CS-201, EC/Stat-201 (7 credit)		Maj/Zoo-203, Maj/Zoo-204, (8 credit)		CC/Eng-202, (3 credit)
5	Maj/Zoo-301, Maj/Zoo-302, Maj/Zoo-303, Maj/Zoo-304, Maj/Zoo-305,			Maj/Zoo-301, Maj/Zoo-302, Maj/Zoo-303, Maj/Zoo-304, Maj/Zoo-305, (19 credit)		
6	Maj/Zoo-306, Maj/Zoo-307, Maj/Zoo-308, Maj/Zoo-309, Maj/Zoo-310	Maj/Zoo-306, (02 credit)		Maj/Zoo-307, Maj/Zoo-308, Maj/Zoo-309, Maj/Zoo-310 (13 credit)		
7	Maj/Zoo-401, Maj/Zoo-402, Maj/Zoo-403,			Maj/Zoo-401, Maj/Zoo-402, (6	Maj/Zoo-403, Maj/Zoo-404, Maj/Zoo-405, (10 credit)	

	Maj/Zoo-404, Maj/Zoo-405,			credit)		
8	Maj/Zoo-406, Maj/Zoo-407, Maj/Zoo-408, Res/Zoo-401,				Maj/Zoo-406, Maj/Zoo-407, Maj/Zoo-408, Res/Zoo-401, (17 credit)	
Total (136)		11	**20**	**62**	**27**	**16**

Standard 2.1: The curriculum must be consistent and and supports the program's documented objectives

Different Zoology programs (BS, MS and Ph.D) contents/courses meet the program objectives as shown in the table.

Table 2.1 (A) BS COURSES VERSUS PROGRAM OBJECTIVES

Courses/Group of Courses	**Objectives**			
	1	**2**	**3**	**4**
CC/Eng-101	**X**		**X**	
CC/Isl-101	**X**		**X**	
Maj/Zoo-101	**X**		**X**	
Min/Bot-101	**X**	**X**	**X**	
Min/Chem-101 or Min/Geog-101		**X**	**X**	**X**
CC/Eng-102	**X**		**X**	
CC/PS-101	**X**		**X**	
Maj/Zoo-102	**X**	**X**	**X**	**X**

Min/Bot-102	**X**	**X**	**X**	
Min/Chem-102 or Min/Geog-102		**X**	**X**	**X**
CC/Eng-201	**X**		**X**	
CC/ Stat-201		**X**	**X**	**X**
Maj/Zoo-201	**X**		**X**	**X**
Maj/Zoo-202	**X**		**X**	**X**
Min/Bot-201 or Min/Chem-201 or Min/Geog-201		**X**	**X**	**X**
CC/Eng-202	**X**		**X**	
CC/CS-201		**X**	**X**	**X**
Maj/Zoo-203	**X**	**X**	**X**	**X**
Maj/Zoo-204	**X**	**X**	**X**	**X**
EC/Stat-201		**X**		**X**
Maj/Zoo-301	**X**	**X**	**X**	**X**
Maj/Zoo-302	**X**	**X**	**X**	**X**
Maj/Zoo-303	**X**	**X**	**X**	**X**
Maj/Zoo-304	**X**	**X**	**X**	**X**
Maj/Zoo-305	**X**	**X**	**X**	**X**
Maj/Zoo-306	**X**	**X**	**X**	**X**
Maj/Zoo-307	**X**	**X**	**X**	**X**
Maj/Zoo-308	**X**	**X**	**X**	**X**
Maj/Zoo-309	**X**	**X**	**X**	**X**
Maj/Zoo-310	**X**	**X**	**X**	**X**
Maj/Zoo-401	**X**	**X**	**X**	**X**
Maj/Zoo-402	**X**	**X**	**X**	**X**
Maj/Zoo-403	**X**	**X**	**X**	**X**
Maj/Zoo-404	**X**	**X**	**X**	**X**

Maj/Zoo-405	**X**	**X**	**X**	**X**
Maj/Zoo-406	**X**	**X**	**X**	**X**
Maj/Zoo-407	**X**	**X**	**X**	**X**
Maj/Zoo-408	**X**	**X**	**X**	**X**
Res/Zoo-401		**X**	**X**	**X**

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION

Standard 2.2: Theoretical background, problem analysis and solution design must be stressed within the program's core material.

Program: BS ZOOLOGY

All courses of the programs adequately address:

1) Theoretical background
2) Problem solving
3) Solution design
4) Application of the theoretical knowledge

- Some of the courses include the theoretical background and contain problem solving and solution design while other deals with Theoretical background, Problem analysis and Solution design separately.
- Great emphasis of the program is on problem solving strategies and design of the solution. The product of the task results in the application of the theoretical knowledge in the applied fields of natural science.

Table 2.2 (A): Standard 2-2 requirement

Elements	Courses
Theoretical background (22)	Maj/Zoo-101, Maj/Zoo-102, Maj/Zoo-201, Min/Chem-101 or Min/Geog-101, Min/Chem-102 or Min/Geog-101, Min/Bot-101, Min/Bot-102, Min/Bot/Chem/Geog-201, Maj/Zoo-202, Maj/Zoo-203, Maj/Zoo-204, Maj/Zoo-301, Maj/Zoo-302, Maj/Zoo-303, Maj/Zoo-304, Maj/Zoo-305, Maj/Zoo-307, Maj/Zoo-308, Maj/Zoo-309, Maj/Zoo-310, Maj/Zoo401, Maj/Zoo-402
Problem analysis (4+ research)	CC/Stat-201, EC/Stat-201, Maj/Zoo-306, Maj/Zoo-405, Res/Zoo-401
Solution design (5+research)	Maj/Zoo-403, Maj/Zoo-404, Maj/Zoo-

	406, Maj/Zoo-407, Maj/Zoo-408, Res/Zoo-401
Application of the theoretical knowledge (research and thesis)	Res/Zoo-401

Standard 2.3: The curriculum must satisfy the core requirements for the program, as specified by the respective accreditation body.

The curriculum satisfies both the core requirements of credit hours and criteria of admission lay down by Lahore College for Women University and HEC and are in par with the international standards.

Standard 2.4: The curriculum must satisfy the major requirements for the program as specified by the respective accreditation body.

The curriculum satisfies major requirement of the problem. No formal accreditation with any professional body. The programs and curriculum has the approval of Board of the studies of Zoology.

Standard 2.5: The curriculum must satisfy general education, arts and professional and other discipline requirements for the program, as specified by the respective accreditation body/council.

The curriculum satisfies general education discipline requirements. No formal accreditation with any professional body but it fulfills all the necessary/basic requirements of the accreditation body. The program and the curriculum has the approval of Board of Studies of Zoology and Lahore College for Women University.

Standard 2.6: Information technology component of the curriculum must be integrated throughout the program.

Requirement for the information technology component is fulfilled by various courses as well as through the presentation made by each student in almost every semester.

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

Oral and written communication skills of the student are developed by the structurally designed courses for English, seminars, question answer, debates and by the class participation of the student.

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

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

Instructions to the students are available with the course tutors and are made accessible to the students. Every laboratory has formulated safety guidelines with major equipment and electric gadgets which are clearly displayed in each laboratory.

LABORATORY DETAILS

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

1. Micro and Molecular Biology Laboratory

Lab Title	**Micro and Molecular Biology**
Location	Department of Zoology, LCWU
Objectives	1. Application of recombinant micro organisms in health 2. Use of microbes as a tool for the assessment of environment associated risks. 3. Researching recent advances in health, agricultural and environmental biotechnology and nanomaterials. 4. Deal with potential microbes related to genetic engineering.
Adequacy for Instruction	
Courses Taught	1. Microbiology 2. Advanced Cell and Molecular Biology 3. Microbial Biotechnology 4. Molecular Biology
Available Software	**Not yet available**
Major Apparatus	1. Petridishes 2. Beakers 3. Micropipettes 4. Screw capped bottles 5. Flasks
Major Equipment	1. Autoclave 2. Refrigerator 3. Incubator 4. Colony counter 5. Microwave oven 6. Gel illuminator
Requirement	1. pH meter

for Strengthening	2. UV spectrophotometer 3. Camera fitted microscope 4. Centrifuge 5. Incubators 6. Ultra centrifuge 7. -80 ºC freezer 8. Blotting apparatuses 9. Electroporator 10. Scintillation apparatus 11. PCR 12. ELISA 13. Incubated Shaker 14. Gel Documentation System 15. HPLC 16. Gel Apparatus (horizontal and vertical) 17. Safety cabinet Type II 18.Water bath shakers

Safety Procedures (**Micro and Molecular Biology Laboratory)**

Safety Regulations	**In case of fire** 1. Fire extinguisher 2. Alarm Sounds **In case of Injury and electric Shock** 1. First Aid Kit **General Instructions** 1. Cleanliness of lab using disinfectants 2. Lab containment 3. Safety measure (Lab coat, masks etc.)

2. Parasitology Laboratory

Lab Title	**Parasitology Lab**
Location	Department of Zoology, LCWU
Objectives	1. Parasitological investigation by serology and histology 2. Providing basic practical skills of laboratory techniques in Parasitology. 3. Introduce techniques, which are used to detect the cysts, eggs and larvae of parasites in the faecal material.
Adequacy for Instruction	
Courses Taught	Parasitology I Parasitology II Protozoology Helminthology and Host Parasite Relationship Epidemiology of Parasitic Disease Wildlife Parasitology
Available Software	**Not yet available**
Major Apparatus	1. Petri dishes 2. Slides

	3. Cover slips 4. Beakers
Major Equipment	
Requirement for Strengthening	1. PCR 2. ELISA

Safety Procedures (**Parasitology Laboratory)**

Safety Regulations	**In case of fire** 1. Fire extinguisher 2. Alarm Sounds **In case of Injury and electric Shock** 1. First Aid Kit **General Instructions** 1. Use of biohazards consumables

3. Entomology Laboratory

Lab Title	**Entomology Lab**
Location	Department of Zoology, LCWU
Objectives	1. Familiarized with modern equipment's used in entomological research. 2. Providing skills for the implementation of Integrated Pest Management. 3. Skilling with practical advances in vector management with growth regulators.
Adequacy for Instruction	
Courses Taught	1. Advance Instrumental techniques 2. Entomology 3. Molecular Entomology 4. Research Methods in Entomology 5. Biological Toxicology
Available Software	**Not yet available**
Major Apparatus	1. Petridishes 2. Flasks 3. Cover slips 4. Micropipettes 5. Soxhlet extractor
Major Equipment	1. Microscope 2. Incubator 3. Weighing balance
Requirement for Strengthening	1. Insect growth and rearing chambers 2. Humidifier 3. Hygrometer 4. Micro applicator 5. Air conditioner

	6. Heater

Safety Procedures (**Entomology Laboratory)**

Safety Regulations	**In case of fire** 1. Fire extinguisher 2. Alarm Sounds **In case of Injury and electric Shock** 1. First Aid Kit **General Instructions** 1. Use of biohazards consumables

4. Human Molecular Genetics Laboratory

Lab Title	**Human Molecular Genetics**
Location	Department of Zoology, LCWU
Objectives	1. Establishment of repository of DNA samples and pedigrees of genetic diseases for research purpose. 2. Use of Pedigrees as a tool for genetic counseling of affected diseases. 3. Researching recent advances in health, medical biotechnology.
Adequacy for Instruction	
Courses Taught	1. Molecular Genetics 2. Applied Genetics 3. Medical Biotechnology 4. Molecular Biology 5. Human Genetics
Available Software	Cyrillic
Major Apparatus	1. PCR plates 2. Beakers 3. Falcon tubes 4. Micropipettes 5. Screw capped bottles 6. Flasks 7. Measuring cylinder 8.Eppendrofs 9.Blue,Yellow and white tips 10.Glass pipettes
Major Equipment	1. Weighing balance 2. Gel Electrophoresis
Requirement for Strengthening	1. Incubators 2. -20°C Refrigerator 3. Incubated Shaker 4. Deep Freezer 5. Laminar Air flow Cabinet

	6. pH meter 7.Hot plate and magnetic stirrer

Safety Procedures (**Human Molecular Genetics Laboratory)**

Safety Regulations	**In case of fire** 1. Fire extinguisher 2. Alarm Sounds **In case of Injury and electric Shock** 1. First Aid Kit **General Instructions** 1. Cleanliness of lab using disinfectants 2. Lab containment 3. Safety measure (Lab coat, masks etc.)

5. Physiology, Endocrinology and Biochemistry Laboratory

Lab Title	**Physiology, Endocrinology and Biochemistry**
Location	Basement of Zoology Department
Objectives	1. To teach advanced techniques related to biochemical and physiological analysis. 2. To teach skills to use the advanced equipment in a coherent way. 3. To conduct research in the related areas.
Adequacy for Instruction	1. Overhead projector 2. Laboratory manuals
Courses Taught	1. Advance Instrumental Techniques 2. Immunology 3. Molecular Physiology 4. General Endocrinology 5. Biological Toxicology 6. General Endocrinology 7. Molecular Physiology
Available Software	1. SPSS 2. Minitab

Major Apparatus	1. Measuring cylinder 2. Culture tubes 3. Haemocytometers 4. Petri dishes 5. Beakers 6. Jars 7. Staining apparatus 8. Dissecting dishes/boards 9. Reagents bottles/jars 10. Micropipettes 11.Glass pipette 12. Weighing balance 13. Conical and round bottom flask 14 Separating funnels
Major Equipment	1. Autoclaves 2. Binocular Microscopes 3. Conductivity Meter 4. Digital Balances of varying capacities 5. Distillation Apparatus 6. Heating mantle 7. Horizontal Gel Apparatus 8. Hot plates with magnetic stirrer 9. Incubator 10. Microcentrifuge Machine 11. pH Meter 12. Refrigerators. 13. Stereoscopic Camera fitted Microscope

	14. Student Microscopes (Binocular) 15. Student Microscopes (Monocular) 16. Table top centrifuge machine. 17. Water bath
Requirement for Strengthening	1. Automated ELIZA 2. Double Distillation Apparatus 3. De-ionizer 4. Heamatology Apparatus 5. Oven 6. Power Lab System 7. Semi-Automated Chemistry Analyzers

Safety Procedure (Physiology, Endocrinology and Biochemistry Laboratory)

Safety Regulations	**In Case of Fire** • Inform the concern authority immediately about the fire to evacuate the building and to notify the Fire Department. • Use stairways, not elevators. • As you leave, close the doors and windows behind you. • If there is smoke and heat, stay low, Crawl to nearest exit if need be. • If you are trapped: Cover your nose and mouth with wet cloth Do NOT jump Do NOT open break windows • If you must through flames -hold your breath move quickly, covering your head and hair. Keep your head down, close your eyes as much as possible. • Leave the area by the nearest stairway that is clear of smoke. • Do not re-enter the building until notified to do so by the Fire Department. **In case of Electric Shock** While waiting for medical help, follow these steps:

	• Look first. Don't touch. The person may still be in contact with the electric source. • Turn off the source of electricity, if possible. • Check for signs of circulation (breathing, coughing or movement). • If absent, begin cardiopulmonary resuscitation (CPR) immediately. Prevent shock. • Lay the person down and position the head slightly lower than trunk with the legs elevated. • After coming into contacts with electricity, the person should see a doctor to check for internal injuries, even if he or she has no obvious signs or symptoms. • Never, ever modify, attach or otherwise change any high voltage equipment. **In case of injury/burns/poisoning Inhalation of poisonous gases, vapors and aerosols:** • Ensure your own safety by wearing respiratory protection (gas mask), then carry out the rescue by removing the injured person outside into fresh air. • If the injured person stops breathing, immediately apply mouth-to-mouth resuscitation; in case of cardiac arrest,apply cardiopulmonary resuscitation (CPR). • If the injured person is conscious, he or should sit upright; an unconscious victim should be arranged in the recovery position until medical assistance arrives. • Treat any ingestion of unknown chemicals as poisoning. **General Bleeding:** • Wear gloves when touching or rinsing the wound. • Cover the wound with the sterile dressing and apply a protective bandage. Disinfect only if no further medical treatment is necessary. • Have the patient sit or, preferably, lie down. Raise the injured limb applies pressure with your finger and apply pressure bandage with a thick, absorbent dressing. • Never use a tourniquet. If application of a pressure bandage is not possible, exert pressure directly on the wound. **BURNS:** • Remove the affected clothing of the injured person immediately in case of skin burns. • Rinse the burn immediately with the plenty of water (for at least 10 minutes). • Do not attempt to neutralize. • Cover injured areas with a sterile dressing to prevent infection.

	• Use an eye-wash bottle to rinse the affected eye thoroughly with plenty of water. • Do not apply any cream, powder, oil or any other preparation to the burn or scald. **General Laboratory Instructions:** Conduct yourself in a responsible manner at all times in the laboratory. 1. Ask your teacher before proceeding with the activity. 2. Never work alone in the laboratory. 3. Do not touch any equipment, chemicals or other materials in the laboratory area until you are instructed to do so. 4. Do not eat food, drink beverages, or chew gum in the laboratory. 5. Do not use laboratory glassware as container for food or beverages.

6. Fisheries & Aquaculture

Lab Title	**Fisheries & Aquaculture**
Location	Basement of Zoology Department
Objectives	4. To teach advanced techniques related to fisheries and aquaculture. 5. To teach skills to use the advanced equipment in a coherent way. 6. To conduct research in the related areas.
Adequacy for Instruction	1. Laboratory manuals
Courses Taught	1. Principles of Fish Biology 2. Fish Physiology and Breeding 4. Limnology 5. Endocrinology of Fish 6. Fresh Water Biology 7. Aquatic Toxicology 8. Fish Nutrition and Health 9. Aquaculture Biotechnology
Available Software	1. SPSS 2. Minitab

Major Apparatus	1. Flasks 2. Petri dishes 3. Beakers 4. Autoclave bottles 5. Hot plate
Major Equipment	1. Fiberglass tanks with aeration system 2. Aquaria with aeration system 3. Meter to check Water quality parameters 4. DO Meter 5. Student Microscopes (Binocular) 6. Weighing balance 7. Refrigerator 8. Fridge (4 degree, -20 degree) 9. Incubator
Requirement for Strengthening	1. Microtome 2. Automatic staining machine 3. Freeze dryer 4. Proximate analysis equipment 5. Power Lab System

Safety Procedure (Fisheries & Aquaculture Laboratory)

Safety Regulations	**In Case of Fire** • Inform the concern authority immediately about the fire to evacuate the building and to notify the Fire Department. • Use stairways, not elevators. • As you leave, close the doors and windows behind you. • If there is smoke and heat, stay low, Crawl to nearest exit if need be. • If you are trapped: Cover your nose and mouth with wet cloth Do NOT jump

	Do NOT open break windows • If you must through flames -hold your breath move quickly, covering your head and hair. Keep your head down, close your eyes as much as possible. • Leave the area by the nearest stairway that is clear of smoke. • Do not re-enter the building until notified to do so by the Fire Department. **In case of Electric Shock** While waiting for medical help, follow these steps: • Look first. Don't touch. The person may still be in contact with the electric source. • Turn off the source of electricity, if possible. • Check for signs of circulation (breathing, coughing or movement). • If absent, begin cardiopulmonary resuscitation (CPR) immediately. Prevent shock. • Lay the person down and position the head slightly lower than trunk with the legs elevated. • After coming into contacts with electricity, the person should see a doctor to check for internal injuries, even if he or she has no obvious signs or symptoms. • Never, ever modify, attach or otherwise change any high voltage equipment. **In case of injury/burns/poisoning Inhalation of poisonous gases, vapors and aerosols:** • Ensure your own safety by wearing respiratory protection (gas mask), and then carry out the rescue by removing the injured person outside into fresh air. • If the injured person stops breathing, immediately apply mouth-to-mouth resuscitation; in case of cardiac arrest, apply cardiopulmonary resuscitation (CPR). • If the injured person is conscious, he or should sit upright; an unconscious victim should be arranged in the recovery position until medical assistance arrives. • Treat any ingestion of unknown chemicals as poisoning. **General Bleeding:** • Wear gloves when touching or rinsing the wound. • Cover the wound with the sterile dressing and apply a protective bandage. Disinfect only if no further medical

	treatment is necessary. • Have the patient sit or, preferably, lie down. Raise the injured limb applies pressure with your finger and apply pressure bandage with a thick, absorbent dressing. • Never use a tourniquet. If application of a pressure bandage is not possible, exert pressure directly on the wound. **BURNS:** • Remove the affected clothing of the injured person immediately in case of skin burns. • Rinse the burn immediately with the plenty of water (for at least 10 minutes). • Do not attempt to neutralize. • Cover injured areas with a sterile dressing to prevent infection. • Use an eye-wash bottle to rinse the affected eye thoroughly with plenty of water. • Do not apply any cream, powder, oil or any other preparation to the burn or scald. **General Laboratory Instructions:** Conduct yourself in a responsible manner at all times in the laboratory. 7. Ask your teacher before proceeding with the activity. 8. Never work alone in the laboratory. 9. Do not touch any equipment, chemicals or other materials in the laboratory area until you are instructed to do so. 10. Do not eat food, drink beverages, or chew gum in the laboratory. 11. Do not use laboratory glassware as container for food or beverages.

7. PhD Laboratory

Lab Title	**PH.D. Lab**
Location	Department of Zoology, LCWU
Objectives	1. Advanced techniques for PhD students.
Adequacy for Instruction	
Courses Taught	
Available Software	**Not yet available**
Major Apparatus	
Major Equipment	1. Camera Fitted Microscope 2. Weighing balance 3. Semi-automated chemistry analyzer

	4. Haematology analyzer (nonfunctional) 5. Refrigerated centrifuge 6. centrifuge 7. Spectrophotometer 8. PCR 9. Ph meter 10. Electrophoresis apparatus 11. Real time PCR 12. Water bath
Requirement for Strengthening	RNA Extraction

Safety Procedures (**Ph.D. Laboratory)**

Safety Regulations	**In case of fire** 1. Fire extinguisher 2. Alarm Sounds **In case of Injury and electric Shock** 1. First Aid Kit **General Instructions** 1. Use of biohazards consumables

Standard 3.2: There must be adequate support personnel for instructional and maintaining the laboratories.

Laboratory staff is insufficient for routine laboratories maintenance. The course tutor supervises each experiment and provides practical guidance to the students.

Standard 3.3: The university computing infrastructure and facilities must be adequate to support program's objective.

The computing infrastructure of the Zoology department is adequate (see criterion 8) there is one computer lab and it consist of 36 computers for the use of the students. The number of computers is constantly under review.

CRITERION 4: STUDENT SUPPORT AND ADVISING

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

The strategy for programs (courses) offering is controlled. The BS courses are offered once a year.

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

- The facility of teaching assistants is not available and the effective student/faculty interaction in program is streamlined by coordinator of these faculty members and the commonality is maintained through any curriculum which is adopted for the particular course.
- The programs are structured to ensure effective interaction between students, faculty and Head of the department. The students requiring extra help are provided service through tutorials, question and answers. Questions are encouraged by the faculty from the students. Seminars are arranged where the students are free to discuss the topics relating to the program. Debates are initiated. The students are free to interact with the class in charge and Head of department in case of any shortcomings.

Standard 4.3: Guidance on how to complete the program must be available to all the students and access to academic advising must be available to make course decision and career choice.

- The students are provided guidance regarding the completion of the program and having access to qualified faculty as well as student counseling. The students are encouraged to bring forward their suggestions and complaints through a complaint box which is maintained in the institute. The students once in semester carry-out the teacher's evaluation.
- The counseling of the students are done in the following way:
    a) Faculty members are the first available source to the students for guidance
    b) Class Incharge provide further guidance followed-up by guidance from the senior faculty member e.g. Head of department and the Quality Assurance

Advisor. They guide the students regarding the program, it's effectiveness, careers prospect and any other difficulty of personal nature.

- The counseling is also available at the Student Counseling Center of the University

CRITERION 5: PROCESS CONTROL

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

BS Zoology [4 Year Degree Program]

This is a 4 year degree program with minimum 136 credit hours. The program is divided in 8 semesters with 2 semesters each.

Eligibility and Admission Criteria

Females students who have passed Intermediate with pre-Medical or A Level or equivalent securing more than 60% marks can apply for admission. Admission is strictly made on merit and previous year merit is clearly indicated in the prospectus at the time of admission.

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

Advertisements are made in leading newspaper and on Lahore College for Women University website. The student academic progress is monitored regularly by the course tutor through regular examination system. The process of registration and monitoring are reviewed once in a year three months before the date of admission.

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

- The standards are clearly indicated in the University Calendar which is followed. Qualification which are required for each subject are kept in mind. The criteria for recruiting are qualification, experience which is judged through analysis of CVs written test and personal interviews. In case of permanent faculty members, the recruiting is done by a board constitute by Lahore College for Women University whereas, visiting faculty members are recruited by a board constituted by the Institute. The input of the students for maintaining the quality of the teacher is done by evaluating the teachers regularly once in a semester by the students. The results of these studies are sent to the teacher who are asked to improve and in extreme cases, replacements are made.
- An Annual Confident Report (ACR) is initiated by the Dean annually for each member of staff and retention of the staff, their increment and promotion are based on ACRs.
- The faculty members performing well are rewarded by increment and honorariums. Good working conditions provided job satisfaction, pays, providing facilities like Ph.D. programs and scholarships are incentive to faculty member who perform well.

Standard 5.4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.

There are process and procedures to ensure that the teaching and delivery of the program material to the student emphasizes active learning. For instance, exercise, tasks, activities, assignments and projects based on practicality of the knowledge are given to the students and research thesis is initiated at the end of the program. Process is monitored and assessed regularly.

Standard 5.5: The process that ensures that graduates have completed the requirement of the program must be based on standards, effectively and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

- In order to ensure that graduates/outgoing students have completed the requirements of the programs are based on standards.

- The semester rules have been adopted by the Zoology department and the course tutor, QEC and the Head of department ensure their compliance.
- The operation is reviewed once a year and is documented as Management of Academic programs.

CRITERION 6: FACULTY

Standard 6.1: There must be enough full time faculty members who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. The interest and qualifications of all the 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 obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.

There is adequate full time faculty which provides adequate coverage of the program with continuity and stability. The interest and qualification of all faculty members are pre-judged and monitored for each course forming a part of the program. The level of the competency of the faculty members are evaluated at time of induction and monitored during teaching.

Program areas	**Courses in area and semester per year**	**Number of faculty members in each year**	**Number of faculty with Ph.D. degree**
Area 1. **(Graduate)**	39 courses+ Research 02 Semester per year	14	13

Standard 6.2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place.

All the faculty members remain current in the discipline and sufficient time is provided for scholarly activities and professional development. The newly inducted faculty is given enough time to familiarize with the working environment of the Institute. During this time, they are monitored. Faculty is provided with centralized training by Registrar's office through NAHE and professional faculty development program of Learning Innovation Division (LID), HEC. They are encouraged to attend international seminars. Some of the faculty members had opportunity to get training and research experience from foreign universities/Institutions (Annexure II).

Standard 6.3: All faculty members should be motivated and have job satisfaction to excel in their profession.

The faculty members are regularly motivated and efforts are made to provide job satisfaction so that they excel in their profession. The satisfaction of the faculty and their input is measured by faculty survey form.

CRITERION 7: INSTITUTIONAL FACILITIES

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

Academic Building: (Dedicated/owned)

1. Class rooms: 04
2. General Labs: 02
3. Computer Lab 01
4. Seminar Room: 01
5. Committee Room: 01
6. Museum 01
7. H.O.D. Office 01
8. Staff room 01
9. Store room 02

- Overhead projectors are used in the class rooms.
- Internet facility is available throughout department.
- Access to HEC digital library

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

- Almost 1000 up-to-date books are available in Science library covers all the areas of the programs.
- University provides digital library facility and common science library is available for books borrowing.
- There is no departmental Library or reading room facility available for the students in the department.

Standard 7.3: Class-rooms must be adequately equipped and offices must be adequate

to enable faculty to carry out their responsibilities:

- 4 class rooms, 2 laboratories, one seminar room, Office of the Head of the department and one computer Lab
- Independent offices are not available to the faculty members. They share a common committee room for their reading and other intellectual activities.

CRITERION 8: INSTITUTIONAL SUPPORT

Standard 8.1: There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars:

- Teachers are recruited on the basis of criterion established by the University and HEC.
- Existing faculty is sent to different courses of teaching organized to update the knowledge.
- Zoology Department has collaboration with industry, NGOs, government departments, universities, research institutes and various other organizations of the country.
- No secretarial support is provided to the teachers to meet the working needs.

Standard 8.2: There must be an adequate number of high quality graduate students, research assistants and Ph.D. students:

Research assistants available to the faculty to conduct research activities dedicated to relevant project only.

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

- Budget for library (0.1 Million Pak Rupees) was withdrawn after 2015.
- Budget for general laboratory (equipment, glassware, chemicals) is 0.5 Million Pak Rupees.