SELF ASSESSMENT REPORT

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DEPARTMENT OF GEOLOGY
KHUSHAL KHAN KHATTAK UNIVERSITY, KARAK
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EXECUTIVE SUMMARY

The Department of Geology, Khushal Khan Khattak University, Karak, is a department of higher studies and research in geosciences. It was established in 2014 with an aim to create professionally trained man power to explore the natural deposits and utilize the mineral resources of this prolific zone of Pakistan. The department of geology conducts research on each and every aspect of geosciences like hydrocarbon exploration, hydrogeological modeling, subsurface imaging, water exploration, mineral mapping, desertification, and geological mapping of the potential zones. The main focus of the Department is to establish a well-equipped energy studies center. The department offers BS program in Geology with fresh admissions advertised every September (Fall). Currently enrolled students count is 14, 13,12 and 26 students in 1st , 3^{rd,} 5th and 7th Semesters respectively.

It should be a matter of satisfaction to all the concerned that the Department has been successful in the pursuit of the aims and objectives for which it was established. The curriculum was designed by the faculty members of the department. The curriculum and course contents of the degree were shared with Geology experts working in different universities and industries. A few suggestions were put by experts, and the curriculum was designed accordingly. Departmental Board of Studies comprises of Head of the Department as convener and four senior faculty members.

The Department of Geology is in the phase of development and currently has three labs for the research including a well-equipped mineralogy and petrography lab, rock cutting lab and RS and GIS lab. Some sophisticated and advanced equipment for these labs are already tendered. Students of 8th semester are currently involved in the research projects related to different aspects of geosciences. The research topics cover solution to some key problems including energy, water and environment. The faculty members are also pursuing some research topics of applied nature for their academic growth.

Improvements in the curriculum design are based on the approved criteria. The university examinations and academic activities are annually scheduled in the form of academic calendar. Although, the basic facilities are available for students and faculty like petrography, structure geology, hydrogeology but the labs require further technical improvements in order to keep pace with the advanced research techniques around the world. Incharge Student’s Affairs has taken very

active actions related to extra-curricular activities like sports, speech competition etc. Currently tutorial classes are also arranged on weekly basis.

Institutional facilities were measured through labs, library, administration, infrastructure, class rooms and faculty offices. There are some minor short comings and limitation which are hopefully in line for upcoming projects.

The geology department of the university can be taken further if the following suggestions are fulfilled.

- The department of geology needs latest geological equipment for state of the art research in order to keep pace with the research in developed countries.
- The latest geological softwares should be acquired with academic licenses in order to get students trained for the future prospects in industries and other private firms.

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Introduction

The Department of Geology, Khushal Khan Khattak University, Karak has been established in September 2014 after two years of the establishment of KKKUK. The science of geology is vital in district Karak because of its high potential of Hydrocarbons, economic mineral deposits (Uranium, Gold, Gypsum & Halite etc.) and ground water depletion issues.

Currently, the Department of Geology is offering BS program (4 years). The Department's basic purpose is the development of Energy Study Center to overcome the energy crises. This energy center is subdivided into Renewable and Non-renewable Energy studies departments. Department of Geology is part of newly established Energy Studies Center. With the passage of time and hiring of experienced and highly qualified faculty, the department of Geology is planning to initiate M. Phil and PhD level programs in the field of Geology. Being newly established, the Department of Geology is bridging the gap between the academia and industry i.e. Geological Survey of Pakistan (GSP), Department of Geology & National Center of Excellence in Geology (NCEG), University of Peshawar, Energy related institutions, Oil & Gas industries (National and Multinational), SUPARCO, Pakistan Meteorological Department and various academic institutes. The department of Geology is committed and in the process of establishing the latest Geological laboratories, GIS & Remote Sensing labs, Geochemistry labs and Geophysical labs. Currently the Mineralogy/Petrology and GIS & RS labs have been established. It should be the matter of satisfaction for all concerned that so far, the department of geology has been successful in the pursuit of the aims and objectives for which it was established.

Criterion 1: Program mission, objectives and outcomes

Standard 1-1:

The program must have measurable objectives to support mission.

Vision:

Aspire for leading and trend setting Department of Geology in the province and find due place among country wide.

Mission:

To make the Department's vision a reality, the Department of Geology is committed to provide state of the art teaching and research facilities to produce professionally sound graduates at the highest national and international levels of excellence for academic institutions, national and international oil companies and mineral exploration/mining and related organizations.

Objectives:

- To inculcate critical thinking, enthusiasm, initiative and necessary skills to become professionals of Earth Sciences through provision of market oriented courses and practices.
- To prepare students for professional positions in industry, government and for careers in academic research and teaching.
- To promote in-depth analysis of the earth crust and explore its economic deposits for the welfare of the country by conducting practical experiments and research in the field.
- To produce experts in Earth sciences. The department will not be restricted to one specialization rather it will pursue the academic research in all the fields of geology i.e:
  - Structural Geology
  - Petroleum Geology
  - Economic Geology
  - Sedimentology
  - Paleontology
  - Geophysics
  - Environmental Geosciences
  - Engineering Geology
  - GIS and Remote Sensing
  - Hydrogeology

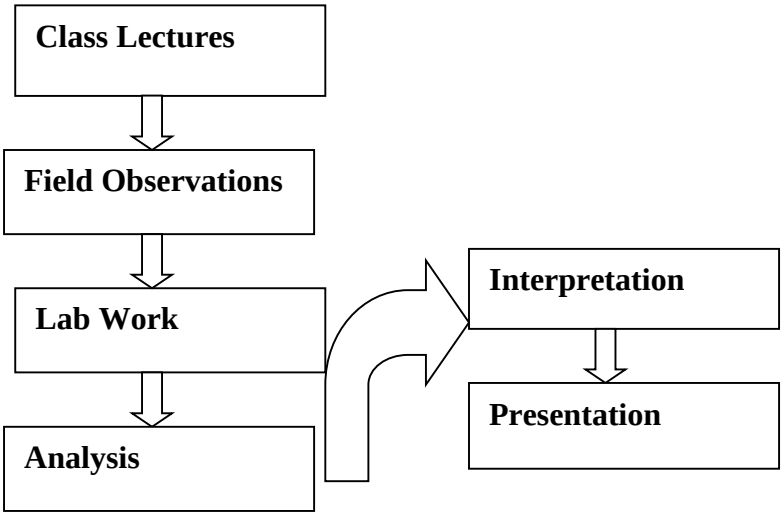
Standard 1-2:

The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.

Learning Outcomes:

Upon completion of degree in Geology, students will be able:

- To study earth, its origin, age and composition, explore economic deposits like coal, petroleum, gemstones and ore minerals, delineate geological structures and their interpretation.
- To design and conduct a scientific research project for different industries. Students will develop a high level of ideas in the collection, analysis, evaluation, and presentation of data under supervision of faculty.
- To understand and interpret various geological phenomenon in the field. Students will have a strong knowledge of field geology.
- To develop their skills using traditional and more state of the art software's to collect, evaluate, and present scientific data and information. They will also have an awareness of critically evaluating and analyzing different types of data, consider the strengths and weaknesses of instrumental measurements, and assess analytical errors.



Standard 1-3:

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

The sample of program's assessment result is given in Annexure B.

Standard 1-4:

The department must assess its overall performance periodically using quantifiable measures

The strength of the present admitted students are as follows:

S.No.	Semester	Number of Students
1	1st	14 students
2	3rd	13 students
3	5th	12 students
4	7th	26 students

Criterion 2: Curriculum Design and Organization

Standard 2-1:

The curriculum must be consistent and supports the program's documented objectives.

A: Degree Title: BS Geology

The curriculum for BS in Geology has been designed in the light of HEC guidelines and finely set by the faculty members of the department. The curriculum and course materials have been carefully studied with geological specialists working in both academia and industry in the country's many geological disciplines. Experts' insightful recommendations were taken into account, and where necessary, new courses have been introduced and existing courses have been modified. There is a departmental Board of Studies, which is made up of the Head of Department, who serves as convener, four senior departmental faculty members, three members from reputable universities, and two people from industry.

Currently the board of studies comprises of the following members.

S.No	**Name**	**Affiliation**
1	Dr. Nazir Ur Rehman	Convener, HOD Department of Geology, KKKUK

2	Mr. Afrasiab	Lecturer Department of Geology, KKKUK
3	Mr. Waheed Ullah	Lecturer Department of Geology, KKKUK
4	Mr. Muhammad Waqar Azeem	Lecturer Department of Geology, KKKUK
5	Mr. Kamran Shehzad	Lecturer Department of Geology, KKKUK
6	Prof. Dr. Sajjad Ahmad	Professor at Department of Geology University of Peshawar
7	Dr. Sajjad Ahmad	Associate Professor at Department of Geology University of Peshawar
8	Mr. Amjad Ali	Chief Geologist, Khyber Pakhtunkhwa Oil & Gas Company Limited, (KPOGCL), Peshawar
9	Mr. Khalid Khan	Director, Geological Survey of Pakistan (GSP), Islamabad.
10	Dr. Fayaz Ali	Department of Geology, University of Peshawar

B: Definition of Credit Hour:

A "CREDIT HOUR" is the unit of measuring educational credit, usually based on the number of classroom hours per week throughout a term.

C: Degree Plan

The department of Geology offers BS geology according to the following approved HEC curriculum

Name of Degree	**Pre-requisites**
BS GEOLOGY	1. Pre-Medical Group
	2. Pre-Engineering Group
	3. Other subjects (studied at least 02 subjects from the following 03 subjects i.e. Chemistry, Physics and Mathematics)
	03 years diploma in Associate Engineering (DAE) equivalent to F.Sc.

List of major courses for BS Geology:

Semester 1

Subject	Codes	Course	Credit Hour (CH)	Total CH
Eng.	101	English I	3-0-3	3
Pk. St.	101	Pakistan Studies	2-0-2	2
Math.	101	Applied Mathematics I	3-0-3	3
Phy.	114	Applied Physics I	2-3-3	3
Chem.	115	Applied Chemistry I	2-3-3	3
Geol.	116	General Geology	3-0-3	3
Total				**17**

Semester 2

Subject	Codes	Course	Credit Hour (CH)	Total CH
Eng.	102	English II	3-0-3	3
Isl. St.	101	Islamic Studies	2-0-2	2
Math.	102	Applied Mathematics II	3-0-3	3
Phy.	124	Applied Physics II	2-3-3	3
Chem.	125	Applied Chemistry II	2-3-3	3
Geol.	126	Geomorphology	2-3-3	3
Total				**17**

Semester 3

Subject	Codes	Course	Credit Hour (CH)	Total CH
Geol.	231	Stratigraphy	3-0-3	3
Geol.	232	Basics of structural geology	2-3-3	3
Geol.	233	Optical mineralogy & Crystallography	2-3-3	3
Geol.	234	Invertebrate Paleontology	2-3-3	3
Geol.	235	Hydro Geology	3-0-3	3
Geol.	236	Geological Fieldwork-I	0-6-2	2
Total				**17**

Semester 4

Subject	Codes	Course	Credit Hour (CH)	Total CH
Geol.	241	Descriptive Mineralogy	2-3-3	3
Geol	242	Sedimentology	2-3-3	3
Geol.	243	Igneous Petrology	2-3-3	3
Geol.	244	Field Geology	2-3-3	3

Geol.	245	Geotectonic	2-3-3	3
Geol.	246	Geological Fieldwork-II	0-6-2	2
Total				**17**

Semester 5

Subject	Codes	Course	Credit Hour (CH)	Total CH
Geol.	351	Economic Geology	3-0-3	3
Geol.	352	Geochemistry	2-3-3	3
Geol.	353	Engineering Geology	2-3-3	3
Geol.	354	Micropaleontology	2-3-3	3
Geol.	355	Computer Applications in Geology	2-3-3	3
Geol.	356	Geological Fieldwork-III	0-6-2	2
Total				**17**

Semester 6

Subject	Codes	Course	Credit Hour (CH)	Total CH
Geol.	361	Applied Structural Techniques	2-3-3	3
Geol.	362	Sequence Stratigraphy	2-3-3	3
Geol.	363	Petroleum Geology	3-0-3	3
Geol.	364	Sedimentary Depositional System	2-3-3	3
Geol.	365	Applied Geophysics	2-3-3	3
Geol.	366	Geological Fieldwork-IV	0-6-2	2
Total				**17**

Semester 7

Subject Codes		Course	Credit Hour (CH)	Total CH
Geol.	471	Geology & Tectonics of Pakistan	3-0-3	3
Geol.	485	Metamorphic Petrology	2-3-3	3
Geol.	474	Environmental Geology	2-3-3	3
Geol.	475	Research Methodology	3-0-3	3
Geol.	476	Elective course	2-3-3	3
Total				**15**

Semester 8

Subject	Codes	Course	Credit Hour (CH)	Total CH
Geol.	481	Introduction to R.S & G.I.S	2-3-3	3
BBA.	113	Principles of Management	3-0-3	3

Geol.	483	Elective course	2-3-3	3
Geol.	484	Thesis/Project Report	5-3-6	6
Total				**15**
			Total	**132**

LIST OF GROUPS OF ELECTIVE COURSES

Groups	**Elective Courses**	**Credit hours**
Group-I Mineralogy and Petrology	Geochemistry II	2-3-3
	Igneous petrology	2-3-3
	Metamorphic petrology	2-3-3
	Sedimentary Petrology	2-3-3
	Mineralogy II	2-3-3
Group-II Paleontology & Stratigraphy	Stratigraphy II	2-3-3
	Micropaleontology II	2-3-3
	Palynology II	2-3-3
	Nano fossils	2-3-3
	Invertebrate Paleontology II	2-3-3
	Vertebrate paleontology	2-3-3
Group-III Economic Geology	Ore deposits	2-3-3
	Mineral exploration	2-3-3
	Coal geology	2-3-3
	Mining geology	2-3-3
	Metalogeny and Plate tectonics	2-3-3
	Fundamental gemology	2-3-3
	Descriptive gemology	2-3-3
	Mineral deposits of Pakistan	2-3-3
	Mineral economics	2-3-3
Group-IV Engineering	Rock mechanics	2-3-3
	Soil mechanics	2-3-3
	Seismotectonics	2-3-3
	Engineering geology II	2-3-3
Group-V Petroleum Geosciences	Sequence stratigraphy-II	2-3-3
	Petroleum Engineering	2-3-3
	Reservoir geology	2-3-3
	Organic Geochemistry	2-3-3
	Petroleum geology of Pakistan	2-3-3
	Geological and Geophysical Software application	2-3-3
	Logging and log interpretation	2-3-3
	Seismic interpretation	2-3-3
	Basin modeling	2-3-3
	Seismic stratigraphy	2-3-3

Group VI Applied Geophysics	Earthquake Seismology	2-3-3
	Geomagnetism and Paleomagnetism	2-3-3
	Electrical and radiometric exploration methods	2-3-3
	Borehole geophysics	2-3-3
	Seismic Prospecting	2-3-3
	Gravity and magnetic methods	2-3-3
	Rock Physics	2-3-3
Group-VII Geochemistry	Thermodynamics	2-3-3
	Geochemical Exploration	2-3-3
	Stable Isotopes	2-3-3
	Radio Isotopes Geochemistry	2-3-3
	Low temperature Geochemistry	2-3-3
	High Temperature Geochemistry	2-3-3
Group-VIII Sedimentology	Clastic sedimentology	2-3-3
	Carbonate sedimentology	2-3-3
	Basin modeling	2-3-3
	Quaternary geology	2-3-3
	Clay Mineralogy	2-3-3
Group-IX Hydrogeology	Hydrology	2-3-3
	Ground water investigation	2-3-3
	Ground water engineering	2-3-3
	Hydrochemistry and ground water pollution	2-3-3
Group-X Industrial Mineralogy	Industrial mineralogy-I	2-3-3
	Industrial mineralogy-II	2-3-3
	Instrumental techniques	2-3-3
	Clay mineralogy	2-3-3
	Mineral economics	2-3-3
Group-XI Marine Geology	Marine geology	2-3-3
	Oceanography	2-3-3
	Marine geochemistry	2-3-3
	Geology of Arabian sea	2-3-3
Group-XII Environmental Geosciences	Environmental Geology-II	2-3-3
	Soil and water Resources	2-3-3
	Environmental Hazards	2-3-3
	Hydrological System and environment	2-3-3
	Environmental Impact assessment and management	2-3-3
	Natural resource management	2-3-3
	Occupational Health and Safety	2-3-3
Group- XII Structure, Tectonics and Neotectonics	Structure geology- II	2-3-3
	Metamorphic Structures	2-3-3
	Applied structure techniques	2-3-3
	Tectonics of Pakistan	2-3-3
	Neotectonics	2-3-3
	Seismotectonics	2-3-3
	Quaternary Geology	2-3-3

	Earthquake Seismology	2-3-3
	Geological and Geophysical Software application	2-3-3
Group- XIV Coal geology	Metalogeny and Plate tectonics	2-3-3
	Exploration and exploitation of coal	2-3-3
	Coal, Environment and Clean Coal Technology	2-3-3
	Coal geology	2-3-3
	Mining geology	2-3-3
	Coal deposits of Pakistan	2-3-3
Group- XV Geotechnical Engineering	Earthquake Engineering and Risk Assessment	2-3-3
	Ground water system	2-3-3
	Excavation and Tunneling	2-3-3
	Engineering Foundation	2-3-3
	Dam Engineering	2-3-3
	Engineering Geology-II	2-3-3
	Rock Mechanics	2-3-3
	Soil Mechanics	2-3-3

Standard 2-2:

Theoretical background, problems analysis and solution design must be stressed within the program's core material.

Theoretical background	Geol. 116 General Geology, Geol. 126 Geomorphology Geol. 231 Stratigraphy, Geol. 245 Geotectonic, Geol. 363 Petroleum Geology, Geol. 354 Micropaleontology, Geol. 471 Geology & Tectonics of Pakistan, Geol. 364 Sedimentary Depositional System, Geol. 242 Sedimentology, Geol. 474 Environmental geology, Geol. 343 Igneous Petrology and Geol. 485 Metamorphic Petrology.
Problem analysis	Geol. 232 Basics of Structural Geology, Geol. 362 Sequence Stratigraphy, Geol. 481 Introduction to RS & GIS, Math.101 Applied Mathematics I, Math.102 Applied Mathematics II, Geol. 361 Applied Structure Techniques,

	Geol. 365 Applied Geophysics, Geol. 475 Research Methodology
Solution Design	Basin Modeling (Elective course), Seismic Interpretation (Elective course), Geological and Geophysical Software Applications (Elective course), Geol. 236/246/256/366, Geological Field works, Geol. 484 Thesis/Project Report

Standard 2-3:

The Curriculum must satisfy the core requirements for the program as specified by the respective accreditation body.

The curriculum is divided into the following groups regarding credit hours.

Program	**Arts & Humanities**	**Geology**	**Social Sciences**	**Maths& Basic Sciences**	**Elective courses**	**Others**
BS Geology	13 C.H	98 C.H	Nil	18 C.H	6 C.H are parts of Elective courses	Nil

Standard 2-4:

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

This standard is closely similar to that of above standard 2-3. Both have same requirements and credit hour distribution. For this purpose, we must be concerned about the above standard.

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.

The detail is given in table 2.1

S.No	**Subjects**	**Remarks**
1	Arts and humanities	Satisfactory
2	Basic sciences	Satisfactory
3	Tutorial	Satisfactory

4	Seminars	Satisfactory

Standard 2-6:

Information technology component of the curriculum must be integrated throughout the program

In this fast changing world and continuously evolving technology it has become imperative to adapt to it in order to stay scientifically relevant. The applications of drone, satellite data, geophysical data and their integration using different software platforms have made the job much easier. With this evolved technology, job market requires these skills from the graduates. This is the reason why HEC has demanded from the universities to make information technology as an important part of syllabus. Geology department has the following subjects list of Information technology.

S.No	IT Courses	Credit Hours
1	Introduction to Computer Applications in Geology (software's like GIS, CORAL DRAW, MS OFFFICE, KINGDOM, PETREL)	03
2	Geographic Information System and Remote Sensing	03

Standard 2-7;

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

Oral and written communication is very important in Geology. For the improvement of this technique some weekly seminars and class discussions are arranged in the department of Geology. However, some subjects also approved by the Board of studies regarding the improvement of oral and written communication skills, shown in the following table:

S.No	Subjects for oral written communication skills	Credit hour
1	English 1	03
2	English 2	03
3	Research Methodology	03
4	Field work viva and report writings	02

Criteria 3. Laboratories and Computer Facilities

Currently department has RS&GIS lab, Petrography lab, material testing instruments and geophysical instruments. The RS & GIS lab is comprised of fifty numbers of core i7 (10 gen) system, also connected to eduroam service for universities. These systems are utilized by students for spatial analysis softwares, research work of thesis students and daily routine assignments given by teachers in their respective subjects.

The Petrography lab consists of rock cutting machine, thin section preparation/polishing instruments and eighteen number of microscopes including Nikkon LV-100 (01 No.), two Stereo microscopes and Nikkon E-200 (15 No.). The Petrography lab also contains HD-LED (large size) for thin sections display to students. The material testing instruments includes sieves, hotplates, gold panning kits for basic soil mass classification. The department desires to establish fully functional material testing lab where advance soil & rock mass classification tests will be performed. The Geophysics part includes Terrameter SAS-1000 basic unit which has been used for groundwater exploration and cavities detection studies by the students. The department is planning to strengthen labs in the following category in which instruments purchase is in progress.

- Geochemistry lab
- Geotechnical lab
- Environmental Geology lab
- Geophysics lab
- All these labs will be fully equipped with licensed software and connected with the university main network.

Criteria 4. Student Support and Guidance

Khushal Khan Khattak University, Karak, encourages students in different curricular and co-curricular activities including sports and participation in literary and cultural societies. Activities are going on in all 08 societies. The names of the societies are as follows

1. Blood donor and medical society
2. Volunteer and social work society
3. Sports and Hiking society
4. Literary society
5. Art and culture society
6. Female student’s society

7. Religious affairs society
8. Character building society

Department of Geology appreciates the healthy co-curricular activities arranged by KKKUK and for the student to heighten their talent in every field of life. The tutorial classes are the part of the attempt to counsel the students in their ethical and social problems which can affect their personality. The faculty members of the department help the students regarding scholarships, career opportunities and counseling.

Standard 4-1:

Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

- Subjects are weekly distributed to cover each topic. Weekly distribution is very effective technique in course completion
- Subjects are distributed in such a way that every subject is taught by subject expert faculty.
- Elective courses are designed according to the industry needs and related to the field of interest of individual student.
- Major courses are taught in applied side.
- Proper time has been arranged for laboratory work.

Standard 4-2:

Courses in the major must be structured to ensure effective Interaction between students, faculty and teaching assistants.

Before commencement of semester a meeting is called by the HOD for the distribution of major subjects and the work load among the faculty members in which following criteria are considered.

- The subjects are distributed on basis of mutual understanding and the interest of faculty members.
- The classroom environment is very suitable for learning as the students are treated politely and encouraged to ask questions during classes. They are also provided with guidance and supervision during office time when required.
- Students are strongly involved in discussion and research ideas sharing.
- Geological Field visits are arranged to different areas of the country to ensure the delivery of field experience.

- Extensive practical sessions are arranged according to a scheduled program in which students and faculty get enough time to discuss different ideas.

Standard 4-3:

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

Students are encouraged to come to the offices for discussion and for solving their problem regarding the research. In an effort to provide professional guidance and exposure to the students an MoU was signed between KKKUK and KPOGCL. As per the provision in MoU, the students of Geology are being provided with opportunities to go out for field visits with the partner teams to get practical experience. This department is also planning to make such interactions with other organizations like GSP, MOL, OGDCL etc.

The faculty members take final semester students on field trips that are connected to their lectures and theses on an individual basis. Students are also taught about the present global energy crisis, its risks, and ways to deal with them, as well as how it affects the environment. Faculty members guide the students in making interactions with the industries. Teachers also inform the Students about different organizations, opportunities and guide them regarding obtaining membership of some organizations like PAPG, PGN, AAPG and Youth Hostels.

Criterion 5: Process Control

Standard 5-1:

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

The admission advertisements are announced in Daily leading newspapers and uploaded on the university official website by web admin as well. The admission process is carried out under the supervision of departmental admission committee convened by Head of Department to ensure merit and to follow university rules and regulations.

Criteria for admission:

Student who have passed the Intermediate examination in Pre Engineering, Pre Medical, Computer Science or Diploma of Associate Engineering with minimum second division are eligible for admission into BS Geology program.

Seat distribution:

The seats distribution which has been approved by university academic council is as follow;

Open merit	40
Disable	01
Hafiz ul Qur'an	01
Sports	02
Other Provinces	04 (01 Each Province)
Afghan Students Quota (02%)	01
Physically handicapped Students **(MPhil/PhD Only)**	01
Chitral Students	02
Gilgit Baltistan Students	02
Foreign Students (For Admission in Finance, Commerce, ICT and Agriculture Disciplines) under Pakistan Technical Assistance Programme (PTAP)	02
Balochistan Students	02
FATA Students (For 10 Years)	02
Minority Students	01
Children of Overseas Pakistanis	01
Formula for Merit Calculation / Aggregate Percentage	[{SSC percentage + 2 x (F.Sc percentage)/3] x 100

Migration Policy:

A student from other educational institution, who intends to migrate to University, shall meet the following requirements:

1. A genuine and plausible reason for migration.
2. Production of a certificate of good character from his/her parent institution.
3. Production of detailed marks certificate and syllabi of courses he/she studied for equivalence purposes.
4. Migration certificate from the institution/University last attended.

Students desiring to transfer their credits, earned at other institutions, will be accepted under the following conditions:

1. Credits have been earned from institutions recognized / accredited by HEC.
2. Original transcript is produced along with photocopy.
3. Course outlines, duly signed by the institute, should be produced for evaluation.
4. Credits will be acceptable for undergraduate courses passed with at least 'C' grade / 2.0 out of 4.0 GP or equivalent.
5. Credits from other institution will be evaluated by the equivalence/evaluation committee on a course-to-course basis with the courses offered by the University.
6. Letter grades / grade points of the transferred courses will not be counted towards CGPA of courses of the University.
7. The transferred courses will appear in the full transcript of the University.
8. Character certificate, from the last attended institution, stating that the student has not been expelled on misconduct, indiscipline, undesirable activities, may be produced.
9. Students should not assume that their academic qualifications will allow them transfer of credits till written confirmation has been given.

In case of acceptance and willingness of the student for admission, he will have to produce migration certificate from the last attended institution.

Standard 5-2:

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

- After taking admission in BS geology students are required to register their courses on the University Management system in which daily class/subject activities i.e. attendance, quizzes, assignments etc are carried out by the concerned teachers. This practice is repeated every semester for existing number of students in the department.
- Internal evaluation of the students throughout the semester is done on the basis of their performance in quizzes, assignments, presentations, attendance.
- Promotion to the next semester is granted on the basis of student's collective performance in internal grades, midterm exam and final semester exam.

- Practical knowledge of the students is examined on the basis lab performance, field reports and final semester dissertation defense.
- Students are kept informed about their performance, classroom attendance and their overall progress and accordingly warned where required.

Standard 5-3:

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

The University follows the following procedure in recruitment of faculty members.

- First of all, posts are advertised in three leading daily newspapers of the region and also uploaded on university website. After the closing date of advertisement, the establishment section of the university scrutinizes the application form and if there is any deficiency in the application form, the applicant is properly informed to overcome the deficiency in the given time.
- After the proper scrutiny by the scrutiny committee, the university conducts the proper selection board.
- After the selection board the case is brought to the syndicate for approval.
- The candidates selected are informed by office orders, and they have to join in specific time.

It is recommended for retaining the qualified faculty members that the opportunity for higher studies and trainings must be kept open and facilitated. A proper on-campus accommodation will also help in retaining the highly qualified staff especially from other parts of the country.

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.

- The department has successfully conducted four board of studies as per HEC guidelines for curriculum approval and inter-semesters shuffling of different subjects.

- Beside the available reference books and course materials, some reference books and course materials have been suggested which has been purchased / arranged for central library.
- The mode of teaching is designed in such a way that practical knowledge is imparted to the students where they get hands on trainings.

Standard 5-5:

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

The examination section has divided the examination and evaluation into the following categories.

- Quizzes
- Assignments
- Mid and Final examinations
- Geological field Reports and Oral presentations.

The exam scheduled by the controller of examination and marks of the subject are distributed in the following pattern;

S.N0	Marks	Weightage
1	Assignments, presentation +quiz +attendance	20%
2	Mid Term Examination	30%
3	Final Term Examination	50%

Grading standard:

The existing Graded standard is as under;

Percentage	Letter Grade	Grade point
90-100	A+	4.00
85-89	A	4.00
80-84	A-	3.93-3.66
75-79	B+	3.33-3.59
74-70	B	3.26-3.00
69-65	B-	2.66-2.93
60-64	C+	2.33-2.59

56-59	C	2.00-2.25
54-55	C-	1.66-1.83
52-53	D+	1.30-1.48
50-51	D	1.00-1.15
Below 50	F	0.00

As per "The Khushal Khan Khattak University, Karak Regulations for Semester System" the new Graded standard is as under which is implemented after October 04, 2021 for Fall-2021 batch and onward;

Grade	Grade Point	Percentage
A	3.67-4.00	85 and above
A-	3.34-3.66	80-84
B+	3.01-3.33	75-79
B	2.67-3.00	71-74
B-	2.34-2.66	68-70
C+	2.01-2.33	64-67
C	1.67-2.00	61-63
C-	1.31-1.66	58-60
D+	1.01-1.30	54-57
D	0.10-1.00	50-53
F	0.00-below 50	Below 50

Criterion 6: FACULTY

Standard 6-1:

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

Currently the geology department has 06 faculty members. Details of the faculty members are as following:

S.No.	Name	Designation	Qualification
1	Dr. Nazir UrRehman	Assistant professor/HoD	PhD
2	Mr. Fakhrul Islam	Lecturer	MS
3	Mr. Afrasiab Khattak	Lecturer	MS
4	Mr. Kamran Shehzad	Lecturer	PhD in progress
5	Mr. M. Waqar Azeem	Lecturer	PhD in progress
6	Mr. Waheed Ullah	Lecturer	MPhil

The faculty Resumes are available in Annexure A.

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.

The courses in every semester are distributed on the basis of relevant expertise and in accordance of existing workload. Faculty members are arranged on the basis of criteria, laid down by HEC. Three batches in BS-Geology have been graduated from the inception of this department. Alumni of this department have been engaged in different sectors and in higher education which show good response.

Standard 6-3:

Results of the faculty survey:

- Please refer to Annexure C for Question's detail.

Criterion 7: INSTITUTIONAL FACILITIES

Regarding this Criterion, University should have updated system for students' learning like newspapers, libraries, digital library, online books and journals. Photocopiers, scanners, printers and plotters will be available very soon.

Standard 7-1:

The institution must have the infrastructure to support new trends in learning such as E-learning. Supportive Infrastructure and Facilities in learning:

Khushal Khan Khattak University, Karak, is newly established university but in a very short time the University achieved most targets regarding education standards.

a. Khushal Khan Khattak University has updated laboratories for the students. Two labs are well developed and well updated (computer lab and media lab). Pakistan Education Research Network facilities are also now available for students and faculty for the research purpose. It will make the research work accessible for students.
b. Three labs for Department of Geology have been developed which are functional for academic activities that include RS & GIS, Petrography and Geophysics labs.

Standard- 7-2:

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

Khushal Khan Khattak University, Karak, has the central library of latest books and journal. The university has arranged the book fair events in 2015 and 2016. A qualified librarian with well-trained supporting staff is responsible to manage the library in an efficient manner. Approximately 15000 books, subscription to adequate number of international journals, periodicals and magazines have been stocked in library.

As per the requirement of the geology department the university shall purchase the books for the department in near future and a book fair has been arranged recently.

Standard- 7-3:

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

Khushal Khan Khattak University, Karak, has proper classrooms for each department. Practical classes' labs are available for students. For presentations, multimedia projectors are available. There are combined offices for lecturers in each department. These offices are having basic facilities. Faculty members needs latest laptop for

- Research work.
- Presentations

Criterion 8: INSTITUTIONAL SUPPORT

Khushal Khan Khattak University, Karak, has supporting Administration team. This team facilitates the faculty in different ways. They also help and support the students in different activities and provide many services.

Administration team is very important partner in achieving Khushal Khan Khattak university vision, mission, and goals by providing standard financial and administrative support and services to the faculty. This team is also important for students to facilitate them in scholarships etc.

The University Treasurer Office supports the effective and capable use of Khushal Khan Khattak university resources through planning, analysis, liability and arrangement of resources to significances.

The Registrar is in charge of supporting the university's academic and administrative goals. The registrar of Khushal Khan Khattak University assists with student admission as well as teaching and administrative staff hiring, development, and placement. Khushal Khan Khattak University is having permanent security guards. They are very experienced retired persons of the defence force of Pakistan. This team of the university facilitate students and employees in providing secure working environment at the campus.

Khushal Khan Khattak University's Transportation Services provides management in developing and implementing complete, reasonable, flexible, well-organized, and supportive programs to facilitate the faculty and students in pick and drop. Both staff members and students may get anything they need from this area of the institution. This area of our institution is highly busy and cooperative, and it promptly offers all accessories to the departments. Technical staff members of the Khushal Khan Khattak University are very supporting for the employees and students too. They properly deliver the technical services to the departments and other administrative offices.

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……..

Khushal Khan Khattak University provides best financial resources to facilitate their employees. The university is situated in remote area that is why University has special provision of hard area / incentive allowance for all the employees. The financial resources are controlled by the finance section of the university.

University provides funds for the research projects to the faculty members through ORIC.

The university provides hostel facility and transport facility to the employees.

Standard 8-2:

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

Khushal Khan Khattak University Karak has been working on faculty development. Few faculty members are enrolled in well reputed universities as Phd and MS scholars. The faculty members also supervise BS students of final semesters after selection of some challenging topics. Currently there is no Research Assistant available with the department.

Standard- 8-3:

Financial resources must be provided to acquire and maintain Library Holdings, laboratories and computing facilities.

Khushal Khan Khattak University Karak is in progress and developmental stages and the support and positive sense of competent authorities have made it possible to achieve main targets related to academics, and provision of all facilities to students for learning and provide opportunity for faculty members for research. It is pertinent to mention that Energy Center building in our new academic blocks having thousand plus capacity is final completion phase. The said building will be available for utilization in Fall-2023 tentatively which overcome the space issues. Owing to which state of the art above targeted labs will be established and operated.

Annexure A Faculty Resumes

Dr. Nazir Ur Rehman

Name	***Nazir UrRehman***
Personal	*Address: Village Kanda Karak, post office Karak, Tehsil and District: Karak.* *Phone: +92-927-291022, Cell # +92-3339712671* **E-mail:** nazirktk@yahoo.com
Experience	• *17/01/2003 to 23/06/2015 Worked as a Senior Scientist in Pakistan Atomic Energy Commission.* • *24/06/2015 till date, Working as Assistant Professor, Khushal Khan Khattak University, Karak.*
Honor and Awards	• Gold Medal in M. Sc. Geology, University of Peshawar, (2000) • Gold Medal in B. Sc. (Hons.) Geology, University of Peshawar, (1998) • First position in S.S.C. Govt. high School Karak. • Gold Medal awarded by Pakistan Atomic Energy Commission on 28th may 2014

Memberships	• Member of organizing committee of sequence Stratigraphy and clastic system workshop conducted by Pro. H. Reading, Oxford University, UK, at NCE in Geology, University of Peshawar.
Graduate Students Postdocs Undergraduate Students *Honour Students*	Nil
Service Activity	Head of Department and teaching
Brief Statement of Research Interest	Structural Geology, Geological mapping, Uranium Geochemistry and Geotectonic
Publications	1- Rehman, U. N., Ahmad, S., Faisal, S., Ullah, S., Azeem, W. M., Afrasiab & Jabir, N. 2022. Structural Refinement of the southern Kohat Basin and adjoining areas: Implications for Hydrocarbon Potential of the Kohat Basin, Pakistan. Bahria University Research Journal of Earth Sciences, Vol. 7, Issue 1, PP. 8-19. 2- Ullah, S., Ullah, R., Rehman, U. N.,& Turab, A. S. 2021. Physio-Mechanical Properties of the Lockhart Limestone Aggregate at Kohala Bala, South Eastern Hazara, North Pakistan. Bahria University Research Journal of Earth Sciences, Vol. 6, Issue 1, pp. 1-6. 3- Rehman, A.; Qin, J.; Pervez, A.; Khan,

M.S.; Ullah, S.; Ahmad, K.; Rehman, N.U. 2021. Land-Use/Land Cover Changes Contribute to Land Surface Temperature: A Case Study of the Upper Indus Basin of Pakistan. Sustainability 2022, 14, 934.

4- Azeem, W. M., Rehman, K., Rehman, U. N., Afrasiab., Farooq, M., & Arshad, N. 2021.Delineation of sinkhole in evaporite deposits using electrical resistivity survey: a case study of southern Kohat Plateau, Pakistan. *Arabian Journal of Geosciences*, *14*(4), 1-9.

5- Nazir, J., Ali, M., Javed S., &Rehman, U. N. AVO analysis of Post-Stack Seismic data of Cretaceous Lumshiwal Formation in Kabirwala Block, Central Indus Basin Pakistan. Journal of Himalayan Earth Sciences Volume 53, No. 2, 2020 pp. 70-77.

6- Rehman, U. N.,Ahmad, S., Faisal, S., Ali, F., Ullah, S., Azeem, W. M., & Afrasiab. 2020. Assessment of drinking water quality and human health risks in Karak and adjoining areas, Southeastern Kohat Basin, Pakistan. Journal of Himalayan Earth Sciences Volume 53, No. 1, 2020 pp. 126-139.

7- Ullah, R., Ullah, S.,Rehman, U. N.,

Ali, F., Asim, M. & Tahir, M. 2020 Aggregate Suitability of the Late Permian Wargal Limestone at Kafar Kot Chashma Area, Khisor Range, Pakistan, Int. J. Econ. Environ. Geol. Vol. 11 (1) 89-94. 2020.

8- Rehman, U. N., Ahmad, S., Ali, F., Alam, I. & Shah, M. A. 2017. Joints/Fractures analyses of Shinawah area, District Karak, Khyber Pakhtunkhwa, Pakistan. Journal of Himalayan Earth Sciences Volume 50, (2), pp. 93-113.

9- Rehman, N., Ahmad, I., Ahmad, S., Ali, F. & Waheedullah., 2016. Structural analysis of the Kharthop and Kalabagh Hills area, Mianwaliistrict, Punjab, Pakistan Journal of Himalayan Earth Sciences Volume 49, No. 2, pp. 63-74.

10- Ahmad, S., Ali, F., Rehman, N. & Gul, J., 2000. Lithostratigraphy of the Kurram Group along Mirali-Miran Shah Road, North Waziristan Agency, NWFP,Pakistan. Geol. Bull. Univ. ofPeshawar, Vol. 33, PP.79-86, 2000.

11- Rehman, N., Alam, I. & waheedullah, S., 2017. Station wise statistical Joints/Fractures analyses in Shanawa area, District Karak, Khyber Pakhtunkhwa. (in press).

	12- One abstract published in Abstract Volume, 4th Pakistan Geological Congress, Islamabad. P.73.
Research Grants and Contracts.	Nil
Other Research or Creative Accomplishments	Nil
Selected Professional Presentations	• Presentation on Wireline Logging at NMC-I, D.G. Khan. • Presentation on structural disharmony between the Karak Fault Zone and Shinghar-Surghar ranges at DEUP-II, Kohat.

Mr. Afrasiab Khattak

Name	**Afrasiab Khattak**
Personal	Department of Geology, Khushal Khan Khattak University, opposite Tableeghemarkaz district, Karak, Province, Khyber Pakhtunkhwa, Pakistan. **Cell: +92-3350510794** **E-mail:**geo.afrasiab@gmail.com
Experience	• 25/11/2015 till date, Working as Lecturer, Khushal Khan Khattak University, Karak.
Memberships	Member of PAPG; (Pakistan Association of Petroleum Geologist, under registration PAPG-1182-09 Linked with AAPG (American Association of Petroleum Geologists).

Service Activities	• Teaching • Departmental semester coordinator • Departmental incharge of Co-curricular activities. • Member of QEC • Member of admission committee
Brief Statement of Research Interest	1-Remote Sensing and GIS 2-Sedimentology 3- Biostratigraphy
Presentations	• Nill
Publications	• Rehman, Nazir Ur, Sajjad Ahmed, Shah Faisal, Shuja Ullah, M. Waqar Azeem, **Afra Siab**, Rizwan Ullah, Kamran Shehzad, Salik Javed, and Jabir Nazir. "STRUCTURAL REFINEMENT OF THE SOUTHERN KOHAT BASIN AND ADJOINING AREAS: IMPLICATIONS FOR HYDROCARBON POTENTIAL OF THE KOHAT BASIN, PAKISTAN." Bahria University Research Journal of Earth Sciences 7 (2022): 8-19. • Rehman, N., Ahmad, S., Faisal, S., Ali, F., Ullah, S., Ullah, R., Khan, M.A., **Afrasiab**, Azeem, M.W., (2020). Assessment of drinking water quality and human health risks in Karak and adjoining areas, southeastern Kohat Basin, Pakistan. Journal of Himalayan Earth Sciences, 53(1), 126-139. http://nceg.uop.edu.pk/GeologicalBulletin/Vol-53(1)-2020/Vol-53(1)-2020-Paper10.pdf • Azeem, M. W., Rehman, K., Rehman, N. U., ***Afrasiab***., Farooq, U., & Arshad, A. (2021). Delineation of sinkhole in evaporite deposits using electrical resistivity survey: a case study of southern Kohat Plateau, Pakistan. *Arabian Journal of Geosciences*, *14*(4), 1-9.

Mr. Muhammad Waqar Azeem

Name	**Mr. Muhammad Waqar Azeem**
Personal	*Address: Vill. Algadi, P.O, Tehsil & District Karak, 27200, Khyber Pakhtunkhwa, Pakistan* *Phone: +92-927-291022, Cell # +92-300-5912789, +92-3319804483*
Experience	• 24th Nov, 2015-Present as "Lecturer" in Geology Department, Khushal Khan Khattak University Karak, KP, Pakistan • 25th August 2014- 09th Oct 2015 as "Assistant Geophysicist"in Khyber Pakhtunkhwa Oil & Gas Company Limited, Peshawar, Pakistan • 11th April 2014- 15th May 2014 as "Internee Processing Geophysicist" in SAGeo Seismic Data Processing Center, Islamabad, Pakistan • 1st Dec, 2013- 7th April 2014 as "Field Geophysicist" in Bureau of Geophysical Prospecting (BGP) International, Pakistan
Memberships	• Pakistan Geophysical Network (PGN) in active member in organizing workshops in NCEG Peshawar and participation in lecture series in OIST, Islamabad • Pakistan Association of Petroleum Geoscientists (PAPG) membership and participation of various geological field trips.
Service Activities	• Teaching different subjects of the BS-Geology curriculum. • Supervising different undergraduate research groups. • Research on individual basis and in collaboration with other universities faculty members. • Member of Proctorial Board of Khushal Khan Khattak University
Brief Statement of Research Interest	• Magnetic paleo-environmental proxies using experimental techniques, numerical models of magnetic minerals, and machine learning techniques to unmix magnetic components.. • Comparative Computational Fluid Dynamics and Time lapse Geophysical Studies of salinity intrusion with fresh groundwater in areas having evaporite deposits.
Presentations	• Presentation on Exploration Management System (EMS) to officials in Khyber Pakhtunkhwa Oil & Gas Company Limited, Peshawar, Pakistan.

	• TCM/OCM/FCM presentations on Lakki Exploration lease of KPOGCL.
Publications	• Rehman, Nazir Ur, Sajjad Ahmed, Shah Faisal, Shuja Ullah, **M. Waqar Azeem**, Afra Siab, Rizwan Ullah, Kamran Shehzad, Salik Javed, and Jabir Nazir. "STRUCTURAL REFINEMENT OF THE SOUTHERN KOHAT BASIN AND ADJOINING AREAS: IMPLICATIONS FOR HYDROCARBON POTENTIAL OF THE KOHAT BASIN, PAKISTAN." Bahria University Research Journal of Earth Sciences 7 (2022): 8-19. • Irfan, M., Hamza, S., **Azeem, M. W**., Mahmud, S., Nawaz-ul-Huda, S., & Qadir, A. (2022). Groundwater Exploration and Salinity Intrusion Studies using Electrical Resistivity Survey (ERS)-Winder,Balochistan, Pakistan. Rudarsko-geološko-naftni zbornik, 37(1). • **Azeem, M. W.**, Rehman, K., Rehman, N. U., Farooq, U., & Arshad, A. (2021). Delineation of sinkholes in evaporite deposits using electrical resistivity survey: a case study of southern Kohat Plateau, Pakistan. *Arabian Journal of Geosciences*, *14*(4), 1-9. • Rehman, N., Ahmad, S., Faisal, S., Ali, F., Ullah, S., Ullah, R., Khan, MA., Afrasiab, **Azeem, MW.** (2020). Assessment of drinking water quality and human health risks in Karak and adjoining areas, Southeastern Kohat Basin, Pakistan. *Journal of Himalayan Earth Sciences*, *53*(1), *126-139.* • Analysis of b-value and the ω-upper bound magnitude of GIII distribution of the Pamir–Hindu Kush region (Submitted as co-author).

Mr. Fakhrul Islam

Name	**Mr. Fakhrul Islam**
Personal	*Address:* Mohallah Abbas Khel Village and Post Office Pipal Tehsil Katlang, District Mardan. *Phone:* +92-3005305709 +92-3459259220
Experience	• March, 2015 to Date as "Lecturer" in Geology Department, Khushal Khan Khattak University Karak,

	KP, Pakistan • November 2012- February 2015 as "Gis engineer" in NIDA Pakistan
Memberships	• Pakistan Association of Petroleum Geoscientists (PAPG).
Service Activities	• Currently Teaching different subjects in the field of Geology • Faculty advisor of sports society of Khushal Khan Khattak University, Karak. • Focal person of QEC from Geology Department • Member of Board of Study • Admission committee member
Brief Statement of Research Interest	• Hydrocarbon evaluation using well logs and seismic data. • Surface and subsurface correlation of oil fields. • Fractural analysis of rocks for hydrocarbons,minerals etc.
Presentations	• Presentation on Disaster Management in Azad Jammu Kashmir University. • Presentation about well logs in OGDCL, Pakistan
Publications	Nil

Mr. WaheedUllah

Name	**WaheedUllah**

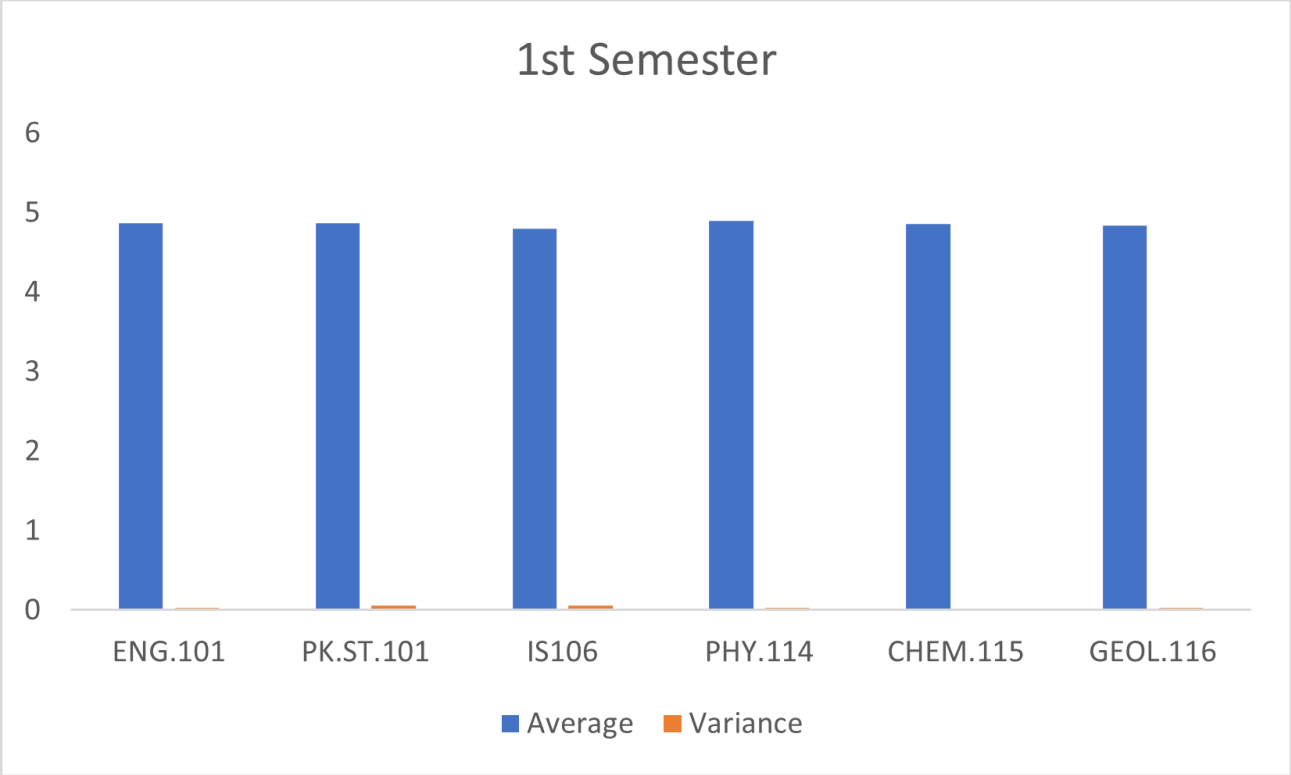
Personal	Address: Village and P/O Ahmad Abad, District Karak, N.W.F.P. Pakistan. Cell # +92-313-9197849 +92-333-9714164 Telephone # +92-927-270019 E-mail: waheedullah@kkkuk.edu.pk
Experience	➢ Lecturer in Geology, KKK University, Karak from Jan-2016 to Date ➢ **Junior Scientist** (Exploration Geologist, SPS-8) in Pakistan Atomic Energy Commission from Feb-2012 to Dec-2015. ➢ **Mud Logging Geologist** in Sperry Drilling from May-2008 to July-2011.
Honor and Awards	NIL
Honor Student	2005 B.Sc. (Hon's) Geology 2006 M.Sc Geology
Service Activity	Active member of Volleyball club
Brief Statement of Research Interest	Bio-Stratigraphy and paleontology
Publications	1. Structural analysis of the Kharthop and Kalabagh Hills area, Mianwali District, Punjab, Pakistan. (Nazir-ur- Rehman , Irshad Ahmad , Sajjad Ahmad and **Waheedullah**, Journal of Himalayan Earth Sciences Volume 49, No. 2, 2016, pp. 63-74
Research Grants	NIL
Other Research or Creative Accomplishments	NIL

Mr. Kamran Shehzad

Name	**Kamran Shehzad**
Personal	*Address: MohallahShamshaKhel, Village, Post Office, Tehsil & District Swabi, Khyber Pakhtunkhwa, Pakistan* *Phone: +92-927-291022, Cell # +92-3149897997*
Experience	• March 09, 2015 till date, as "Lecturer" at Department ofGeology, Khushal Khan Khattak University Karak, KPK, Pakistan • Jan 1st 2013 to March 6, 2015 as "Research assistant" at SRMIHP, NCE in Geology, University of Peshawar, Pakistan
Memberships	• Active member of Pakistan Geophysical Network (PGN) in organizing workshops in NCEG Peshawar • Pakistan Association of Petroleum Geoscientists (PAPG) membership and participation of various geological field trips.
Service Activities	• Teaching different subjects in the field of Geology • Special lectures in tutorial classes of the University • Member of Quantification committee of Khushal Khan Khattak University
Brief Statement of Research Interest	• Interested in Paleontology and Historical Geology • Evaluation of source and reservoir rock and developing the petroleum system of an area • Mineralogy, gemology and geochemistry
Presentations	• Presentation on Petroleum system of Tirah and Aurakzai block (FATA) at OGDCL House, Islamabad, Pakistan • Presentation on Source rock evaluation and Hydrocarbon Potential of FATA region at NCE in Geology, University of Peshawar, Pakistan

Annexure B **Courses Evaluation Survey**

1st Semester:



Anova: Single Factor

SUMMARY

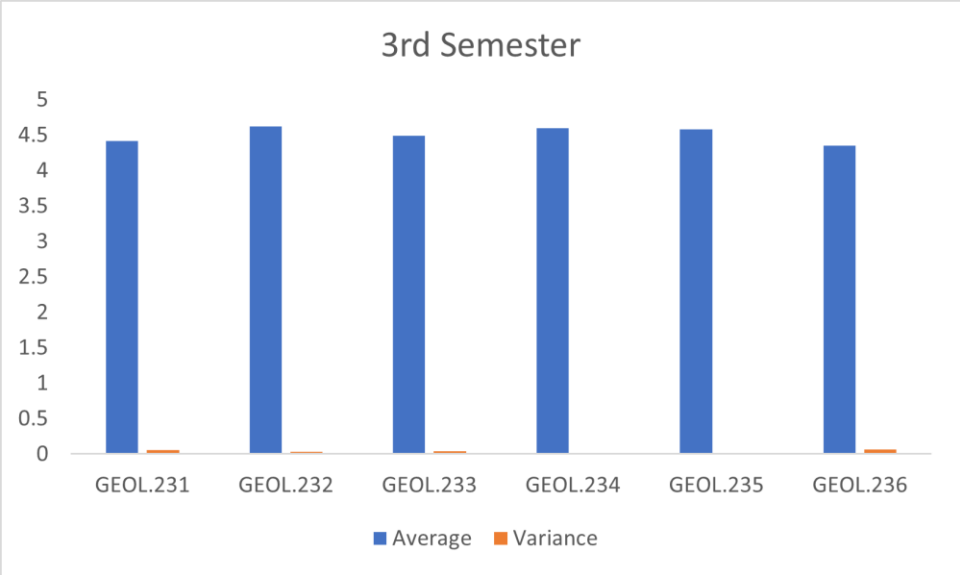
Course Code	*Count*	*Sum*	*Average*	*Variance*
ENG.101	10	48.66667	4.866667	0.02963
PK.ST.101	10	48.66667	4.866667	0.054321
IS106	10	48	4.8	0.054321

PHY.114	10	49	4.9	0.025926
CHEM.115	10	48.58333	4.858333	0.009336
GEOL.116	10	48.4	4.84	0.033778

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.055579	5	0.011116	0.321711	0.897779	2.38607
Within Groups	1.865806	54	0.034552			
Total	**1.921384**	**59**				

3rd Semester:



Anova: Single Factor

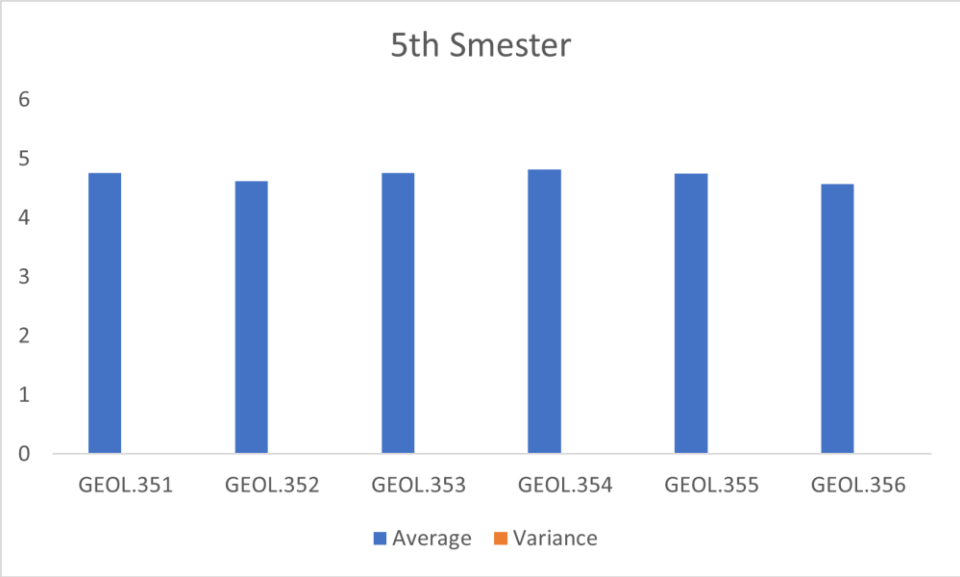
SUMMARY

Course Code	*Count*	*Sum*	*Average*	*Variance*
GEOL.231	10	44.18182	4.418182	0.053627
GEOL.232	10	46.27273	4.627273	0.033884
GEOL.233	10	44.88889	4.488889	0.041701
GEOL.234	10	46	4.6	0.01701
GEOL.235	10	45.8	4.58	0.010667
GEOL.236	10	43.54545	4.354545	0.066942

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.597821	5	0.119564	3.205032	0.013203	2.38607
Within Groups	2.014478	54	0.037305			
Total	2.612299	59				

5th Semester:



Anova: Single Factor

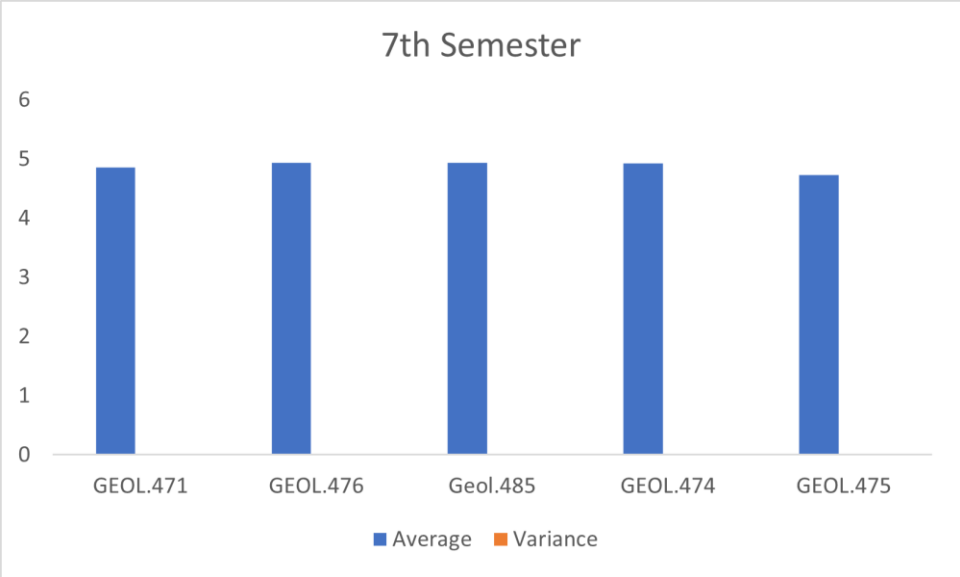
SUMMARY

Course Code	*Count*	*Sum*	*Average*	*Variance*
GEOL.351	10	47.63636	4.763636	0.011387
GEOL.352	10	46.18182	4.618182	0.005142
GEOL.353	10	47.63636	4.763636	0.005877
GEOL.354	10	48.18182	4.818182	0.014692
GEOL.355	10	47.45455	4.745455	0.006979
GEOL.356	10	45.72727	4.572727	0.02213

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.459091	5	0.091818	8.320943	6.96E-06	2.38607
Within Groups	0.595868	54	0.011035			
Total	1.054959	59				

7th Semester:



Anova: Single Factor

SUMMARY

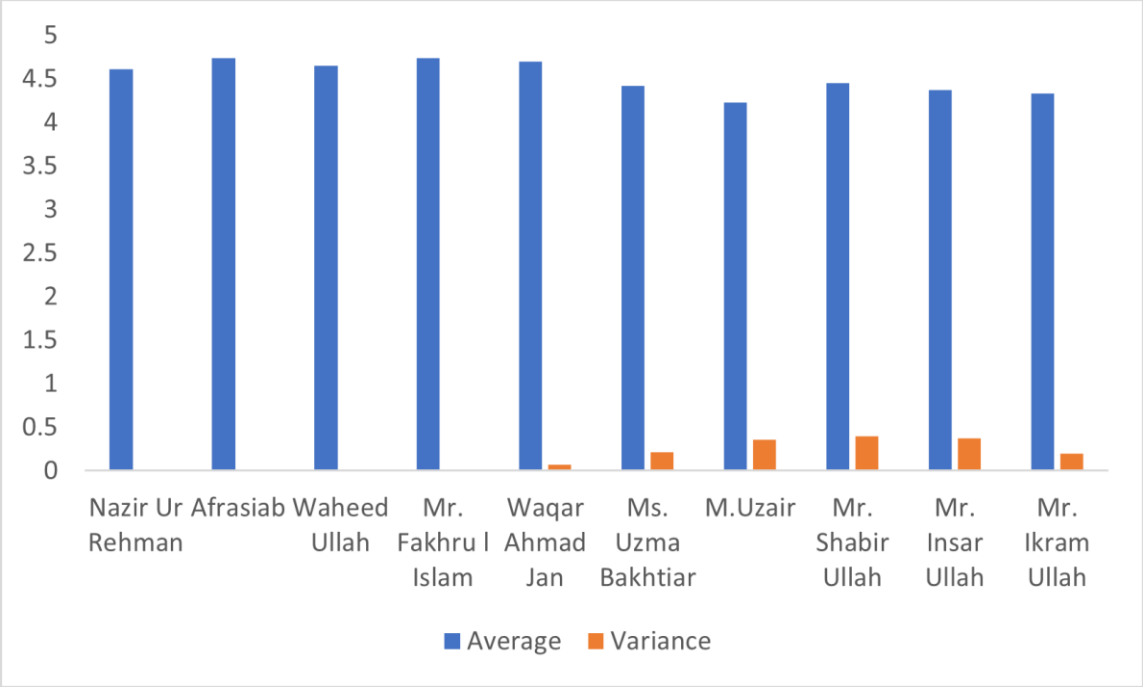
Course Code	*Count*	*Sum*	*Average*	*Variance*
GEOL.471	10	48.6	4.86	0.007111
GEOL.476	10	49.4	4.94	0.004889

Geol.485	10	49.4	4.94	0.004889
GEOL.474	10	49.3	4.93	0.004556
GEOL.475	10	47.3	4.73	0.006778

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.326	4	0.0815	14.43898	1.17E-07	2.578739
Within Groups	0.254	45	0.005644			
Total	0.58	49				

Annexure C Teachers Courses Evaluation Survey



Anova: Single Factor

SUMMARY

Faculty	*Count*	*Sum*	*Average*	*Variance*
Nazir Ur Rehman	10	46.13939	4.613939	0.013017
Afrasiab	10	47.40152	4.740152	0.001563
Waheed Ullah	10	46.52677	4.652677	0.01198
Mr. Fakhru l Islam	10	47.37955	4.737955	0.002947
Waqar Ahmad Jan	10	47	4.7	0.071717
Ms. Uzma Bakhtiar	10	44.20606	4.420606	0.218394
M.Uzair	10	42.30572	4.230572	0.360132
Mr. Shabir Ullah	10	44.53131	4.453131	0.395193
Mr. Insar Ullah	10	43.72273	4.372273	0.377966
Mr. Ikram Ullah	10	43.36364	4.336364	0.200275

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3.081306	9	0.342367	2.070957	0.040351	1.985595
Within Groups	14.87866	90	0.165318			

Total	17.95997	99			

Faculty Survey

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Mr. Afrasiab	10	61	6.1	0.0003456
Mr. Waheed Ullah	10	62	6.2	0.0002456
Dr. Nazir Ur Rehman	10	69	6.9	0.00014573
Mr. Muhammad Waqar Azeem	10	57	5.7	0.00321
Mr. Fakhrul Islam	10	61	6.1	0.0003456

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	11.5	5	3.432	3	0.078
Within Groups	39.5	82	0.654		
Total	51	87			