Program Specification

(Bachelor)

Program:	General Geology - Geo-exploration Techniques
Program Code (as per Saudi university ranking):	*Enter Program Code.*
Qualification Level:	Bachelor of Science
Department:	Geo-exploration Techniques
College:	Faculty of Earth sciences
Institution:	King Abdulaziz University
Program Specification:	New ☐ updated* ☒
Last Review Date:	11/12/2023

*Attach the previous version of the Program Specification.

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A. Program Identification and General Information

1. Program's Main Location :

Boys Main Branch - Jeddah

2. Branches Offering the Program (if any):

NA

3. Partnerships with other parties (if any) and the nature of each:

NA

4. Professions/jobs for which students are qualified

1. Technician geologist in the Mine Industries.
2. Technician geologist in the Oil Industries.
3. Technician geologist in the Geological Survey organizations

5. Relevant occupational/ Professional sectors:

1. Ministry of Energy
2. Saudi Aramco
3. Schlumberger
4. Haliburton
5. Mineral exploration and exploration (mining and quarrying).
6. Saudi Mining Company (Maaden)
7. Ministry of Education
8. Cement and Building Materials Factories.
9. King Abdulaziz City for Science and Technology
10. Saudi Geological Survey

6. Major Tracks/Pathways (if any):

Major track/pathway	Credit hours (For each track)	Professions/jobs (For each track)
1. Not Applicable	Not Applicable	Not Applicable

7. Exit Points/Awarded Degree (if any):

exit points/awarded degree	Credit hours
1. Not Applicable	

8. Total credit hours: (138)

B. Mission, Objectives, and Program Learning Outcomes

1. Program Mission:

Preparing national persona to work in the field of geological exploration, and qualifying people working in the same field.

2. Program Goals:

- To provide graduate students with the ability to conduct fieldwork in the Geo-Exploration Technique specializations.
- Research in the fields of geo-exploration techniques to assess the maximum potential of Saudi natural resources (oil, water, and industrial ore deposits)
- Provide graduate students with the ability to perform fieldwork in geo-exploration techniques for the exploration of Saudi natural resources (oil, water, and industrial ore deposits)
- Provide consulting services in the field of geo-exploration techniques to governmental organizations and private companies.
- Offer short courses and participate in specialized workshops for government and private organizations involved in geo-exploration.

3. Program Learning Outcomes*

Knowledge and Understanding	
K1	Understanding the basics of different techniques and methodologies for identifying and exploring geological resources.
K2	Learn the methods of analyzing of field measurement and interpreting geologic maps.
K3	Knowledge the theories and methods of geophysical techniques used for exploring subsurface resources.
K4	The ability to use technical techniques and tools necessary for geological exploration
K5	Learn the basics of interpreting and writing scientific reports.
K6	Understand the different methods of geological exploration techniques.
Skills	
S1	Analysis of field and laboratory data that help in reconstructing geological conditions.
S2	Analysis of geological maps to identify different geological targets.
S3	Using the latest technologies and software in analyzing and interpreting data
S4	Analyze various geological problems and determine the appropriate practical solution
S5	Spatial data analysis and satellite images interpretation to understand, identify and explore mineral resources.
Values, Autonomy, and Responsibility	
V1	High performance quality work.

V2	Demonstrate integrity and honesty in presenting work.
V3	State the value of working collaboratively.

* Add a table for each track or exit Point (if any)

C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	9	34	16.67%
	Elective			
College Requirements	Required	17	66	32.62%
	Elective			
Program Requirements	Required	20	85	36.23%
	Elective	4	14	6.52%
Capstone Course/Project	Required	1	6	2.89%
Field Training/ Internship	Required	1	3	1.45%
Residency year	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Others	Elective	3	8	3.62%
Total		55	138	100

* Add a separated table for each track (if any).

2. Program Courses

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	ELIG 110	English Language (1)	Required	NA	3	Institution
	ISLS 101	Islamic Culture (1)	Required	NA	2	Institution
	PHYS 110	General Physics	Required	NA	3	College
	EMR 201	Physical Geology	Required	NA	4	College
	EPS 111	Sedimentation and Stratigraphy	Required	NA	2	College
Level 2	ARAB 101	Arabic Language (1)	Required	NA	3	Institution
	ELIG 120	English Language (2)	Required	ELIG 110	2	Institution
	MATH 110	General mathematics (1)	Required	NA	3	Institution
	ESR 110	Introduction to Structural Geology	Required	EMR 110	3	College
	EMR 111	Introduction to Mineralogy	Required	EMR 110	3	College
Level 3	EMR 223	Introduction to petrology	Required	EMR 111	4	College
	EPS 202	Introduction to petroleum geology	Required	EMR 110	2	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	STAT 110	General Statistics	Required	NA	3	College
	EEG 201	Introduction to Environmental and Engineering Geology	Required	EMR 110	2	College
	EGP 211	Introduction to Geophysics	Required	EMR 110	2	College
	EHG 211	Introduction to hydrogeology	Required	EMR 110	2	College
	ESR 220	Introduction to remote sensing	Required	EMR 110 ESR 110	2	College
Level 4	ISLS 201	Islamic Culture (2)	Required	ISLS 101	2	Institution
	ARAB 201	Arabic language (2)	Required	ARAB 101	3	Institution
	CPIT 110	Programming and problem solving	Required	NA	3	Institution
	CHEM 110	General Chemistry	Required	NA	3	College
	ESR 202	Field Geology	Required	EMR 223	3	Department
	ESR 203	Geological Mapping	Required	EMR 223	2	Department
	ESR 221	Introduction to spatial information systems	Required	EMR 110 STAT 110	2	College
	EGT 211	Introduction to geoexploration Technique	Required	EMR 110	2	College
Level 5	EGT 307	Exploration Instruments	Required	EGT 211	2	Department
	EGT 320	Field Stratigraphic Techniques	Required	ESR 202 ESR 203	2	Department
	EGT 331	Satellite Imagery in Geo-Exploration	Required	ESR 220 ESR 221	3	Department
	EGT 340	Geophysical Techniques	Required	EGP 211	3	Department
	XX	Free Course 1	Elective		2	Department
	XX	Elective Course 1	Elective		2	Department
	XX	Elective Course 2	Elective		2	Department
Level 6	ISLS 301	Islamic Culture (3)	Required	ISLS 201	2	Institution
	EPS 302	Geology of Arabian Shelf	Required	ESR 202	2	Department
	EPS 308	Labor Market Skills In Earth Sciences	Required		3	College
	EGT 332	Geological Field Techniques	Required	EGT 331	3	Department
	EGT 351	Mining Geotechniques	Required	EGT 340	2	Department
	XX	Elective Course 3	Elective		3	Department
	XX	Elective Course 4	Elective		3	Department

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 7	EHG 401	Statistical Geology	Required		2	Department
	EGT 399	Training in The Specialization	Required	EGT 332 EGT 351	2	Department
	EGT 408	Seminar	Required	EGT 332	1	Department
	EGT 410	Exploration of Natural Deposits	Required	EGT 320 EGT 351	3	Department
	EGT 421	Safety of Field Crew	Required	EPS 302 EMR 322	2	Department
	EGT 431	Applied Structural Geology	Required	EPS 302 EMR 322	3	Department
	EGT 444	Geophysical Investigations	Required	EGT 340	3	Department
	EGT 452	Geotechnical Exploration	Required	EGT 340	2	Department
Level 8	ISLS 401	Islamic Culture (4)	Required	ISLS 301	2	Institution
	EGT 411	Ore Reserves Estimation	Required	EGT 410	2	Department
	EGT 422	Subsurface Techniques	Required	EPS 302	3	Department
	EGT 434	Geoinformatics	Required	EGT 431	2	Department
	EGT 499	Geo-Exploration Project	Required	EGT 399 EGT 452	4	Department
	XX	Free Course 2	Elective		3	Department
	XX	Elective Course 5	Elective		2	Department

* Include additional levels (for three semesters option or if needed).
** Add a table for the courses of each track (if any)

3. Course Specifications:

Insert hyperlink for all course specifications using NCAAA template (T-104)

All course specifications using NCAAA template are found in the following link: https://drive.google.com/drive/folders/1S8ah8szRp0luNo-aEDNVjJkezA7lUsdv?usp=drive_link

4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with program courses, according to the following desired levels of performance *(I = Introduced & P = Practiced & M = Mastered).*

Course code & No.	Program Learning Outcomes													
	Knowledge and understanding						Skills					Values, Autonomy, and Responsibility		
	K1	K2	K3	K4	K5	K6	S1	S2	S3	S4	S5	V1	V2	V3
EGT 211	I		I			I	I	I	I			I	I	I
EGT 307			I	I	I			I	I			I	I	I
EGT 320	I	I			P	P				I	I	P	P	
EGT 331	P			P		P		P	P			P	P	

Course code & No.	Program Learning Outcomes													
	Knowledge and understanding						Skills					Values, Autonomy, and Responsibility		
	K1	K2	K3	K4	K5	K6	S1	S2	S3	S4	S5	V1	V2	V3
EGT 332		P					P	P				P	P	
EGT 340			P		P	P		P		P	P	P	P	P
EGT 351				P		P		P	P			P	P	P
EGT 399	P	P				P	P	P				P	P	
EGT 408	M	P		P		P	M	P	P			P	P	P
EGT 410		P		P	P		M		P		P	P	P	P
EGT 411		M	P		P		M			P		P	P	P
EGT 421			P							P	P	P	P	
EGT 422	M		P				M			P		P	P	M
EGT 431		M			M			M				M	M	M
EGT 434			M	M				M	M				M	
EGT 444			M	M	M	M		M		M	M	M	M	M
EGT 452			M		M				M			M	M	M
EGT 499		M	M	M	M				M	M	M	M	M	M

* Add a separated table for each track (if any).

5. Teaching and learning strategies applied to achieve program learning outcomes.

Describe teaching and learning strategies, including curricular and extra-curricular activities, to achieve the program learning outcomes in all areas.

Teaching and learning strategies available to achieve program learning outcome are:

1. Lecture notes and presentations
2. Geological maps
3. In-class discussion and exercises
4. Laboratory work
5. Filed visits
6. Software training
7. Group work
8. Videos
9. Numerical methods
10. Research

6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure the achievement of program learning outcomes in all areas.

The program should devise a plan for assessing Program Learning Outcomes (all learning outcomes should be assessed at least twice in the bachelor program's cycle and once in other degrees).

Assessment methods available to ensure the teaching and learning strategies are met are:

1. In-class work
2. Homework
3. Assignments
4. Quizzes and Exams
5. Open discussions
6. Laboratory projects and Exercises
7. Group work

D. Student Admission and Support:

1. Student Admission Requirements

Students must complete 64 credit hours of university and college requirements in addition to passing the required courses to be eligible for admission to the department.

2. Guidance and Orientation Programs for New Students

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

King Abdulaziz University organizes two events for the enrolled students in the Direct Admission Program:

- Semester-1 Orientation Week: During this program, the students are introduced to the different university services including the Deanship of Students Affairs, Deanship of Admission and registration, library services, medical services, extracurricular activities…etc. The students are also informed about the process of application and admission to the different university faculties at the end of the Foundation year.
- Semester-2 Orientation Week: During this program, the students are informed about the different university faculties. Representatives from each faculty give presentations and answer the student questions.

The faculty of Earth Sciences organizes 3-days online sessions for students who are eligible to apply for program admission to help them in choosing the right program. Representatives from each faculty give presentations and answer the student questions.

The program introduces new to the department staff and show them the facilities that are available to them.

3. Student Counseling Services

(Academic, professional, psychological and social)
(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

Academic Advising through (AATU) the Vice-Dean Office:

The staff at the AATU provides general advice to students concerning registration, as well as advice for other student services. Moreover, the Academic Affairs units provides advice to 1st and 2nd year students facing difficulties in their studies and/or personal life. Students on probation are given special attention and support.

Academic Advising in the Academic Program:

Upon admission to the academic Program, each student is assigned a faculty member as his Academic Advisor for the whole period of study in the Program. Typically, each Academic Advisor is responsible for 5 to 10 students in the program. During the preregistration period, the students meet their Academic Advisors to discuss their plan for the upcoming term. The Advisor remains in close contact with the student until he graduates, tracking the student performance and giving guidance on how to correct any deficiencies. The advisor also guides the student in preparing his curriculum plan and in selecting the elective courses to fit his desired career path.

The advising and monitoring process in the Academic Program ensures that every student follows his curriculum plan. The advisor keeps and updates the student advising file that contains documentation on both the curriculum plan and the current transcript of the advisee. The advisor has access, through the Student Information System (ODUS Plus) to the student transcript, current schedule as well the list of courses offered. Although the pre-registration is carried out online by the student, other registration operations such as add-and-drop, course withdrawal, registration for electives, registration for the summer training and course substitutions all require the approval of the academic advisor. Course substitutions require; after certification by the course instructor that the new course is substantially equivalent to the one in the curriculum plan- the approval of the academic advisor and the department head.

Although the Student Information System (ODUS Plus) ensures that the students follow the curriculum plan of the Program and forces them to take courses in the proper order and comply with all the prerequisites, the role of the academic advisor is essential in monitoring the progress of the students. This is especially critical for students placed on probation by the Deanship of Admission and Registration. A

student is put on probation whenever his cumulative grade point average (GPA) falls below 2.0, or he has spent 9 semesters in the Faculty of Earth Sciences without graduating. The academic advisor is responsible for helping the student overcome such critical situations. Academic advisors also help the students in selecting their capstone design senior projects and summer training and provide career guidance to graduating students.

4. Special Support

(Low achievers, disabled, gifted, and talented students).

Special support for students at the program follows that assigned by the Deanship of Students' Affairs and the by-laws of the University as:

Work on overcoming the difficulties in coordination with the faculty members. This coordination is to organize and set agreements with the faculty members of the factors and arrangements of adaptation and organization for the students of special needs, helping them to effectively participate both in lectures and lessons in lecture halls or labs, or in the different on-campus activities and events. In some of the special cases, some individual adjustments and arrangements are possible according to the needs and requirements of each special needs student. The followings are examples of the services that could be offered in cooperation with the faculty to the special needs students:

- Give permission to the student to record the lectures.
- Offer a simple lecture timetable and in advance submission of any study materials or other related materials.
- Offer more time for reading and the proper support to gain the study skills.
- Assure the availability of the supporting audiovisual tools or any other alternative means that could assist in transferring knowledge to the special needs student.
- Offer additional educational support to enable the special needs student to understand the lessons and lectures he has missed because of reasons related to their disability.
- Coordinate with faculty to nominate other assessment tools that match the type of disability.
- Offer assistance during the exam, such as giving the special needs students more time to finish their exams and provide specialized committees to help them do well on their exams, such as securing scribes for those who have

hand movement problems. Further, secure isolation for those with attention-deficit hyperactivity disorder (ADHD) in special test rooms.

- Secure necessary electronic media such as audio CDs, and other media and tools that help the special needs students do well on their exams.
- Coordinate with the Central Library to give the special needs student extra time for returning their borrowed books, references, and periodicals. It is of the most importance that the Central Library represents a special-need friendly environment based on accessibility and the ability to benefit from its capacities.
- Ease of access and movement inside the campus, taking care of the setting up of the campus technical capacities suited to the special needs' requirements, and ease the special needs student's access to the lecture halls, laboratories, and various facilities that they may stand in need during their stay at the University. Moreover, specifying parking spaces close to the various University gates for the special needs students is required allowing them not to walk for long distances.

E. Faculty and Administrative Staff:

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professor		3	Strong geological background	3		3
Associate Professor		4	Leadership	4		4
Assistant Professor		1	Leadership	1		1
Lecturer		2	Leadership	2		2
Teaching Assistant		2		1		1
Technicians and Laboratory Assistant		2	Devoted	2		1
Administrative and Supportive Staff	5	2	High quality work	2		2
Others (specify)						

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources

Learning resources required by the Program (textbooks, references, and e-learning resources and web-based resources, etc.)

King Abdulaziz University has collaboration with Blackboard for all Teaching Staff and Students alike where all resources (such as, books, lecture notes, presentation slides, assignments, discussion) can be made available. In addition, the Deanship of Library Affairs successfully lunch the University's page on Vital-Source platform to help Staff View Textbooks and share it with students in Blackboard.

Faculty members have access to many web-based online resources to help in building better content that keep pace with advances in technology such as Science Direct, Saudi Digital Library (SDL), Web of Science (ISI), IEEE, Springer Link – Springer, Wiley and much more.

2. Facilities and Equipment

(Library, laboratories, classrooms, etc.)

The program has access to faculty of Earth Sciences facilities such as:

- Library.
- Modern classrooms with high quality data-show and boards.
- General laboratories
- Computer laboratories
- A well-established Museum with over 3,000 pieces from the Kingdom and around the world
- Museum
- Well-prepared Auditorium

The department includes research and training laboratories equipped with the necessary tools needed by undergraduate students and researchers alike, including, a laboratory for preparing thin section and polished-thin sections, cutting and crushing samples, mineral separation by heavy liquids, magnetic separation for minerals, mineral identification (using X-Ray Diffractometer), mineral chemistry (Scanning Electron Microscope and Probe Microanalyses) and chemical analyses (X-Ray Fluorescence, Inductive Coupled Plasma-Mass Spectrometer), rocks and minerals description in microscopic and macroscopic scale.

3. Procedures to ensure a healthy and safe learning environment

(According to the nature of the program)

The laboratories are equipped the health and safety environments regulation to ensure a healthy and safety environment for everyone coming to the laboratories. These are:

- Alarm-System.
- Fire Extinguisher
- Face shield.
- Chemical splash goggles for eye protection
- Gloves
- Lab coats

Students are NOT allowed into the laboratories before taking an induction course about the safety procedures and passing an oral exam. Further, students are required to design the desired experiments and present the hazardous materials and procedures in case of emergency. This is all achieved through contacting the Department laboratory advisor.

G. Program Quality Assurance:

1. Program Quality Assurance System

Provide a link to quality assurance manual.

The program quality assurance manual follows that of the University, and it is known as "Internal Quality Assurance System" (IQAS). The IQAS can be viewed at:

IQAS: https://drive.google.com/file/d/1-Q7QFlDQbQ_elAomuxO6-65s1DH3eoQy/view?usp=drive_link

2. Procedures to Monitor Quality of Courses Taught by other Departments

Program quality monitoring follows the same system as that adopted by King Abdulaziz University (IQAS) as well as EQUAP-Plus.

3. Procedures Used to Ensure the Consistency between Main Campus and Branches (including male and female sections).

NA

4. Assessment Plan for Program Learning Outcomes (PLOs),

PLO's are assessed by either direct and/or indirect measurements.

1- Direct Measurements: it includes

a. Pre-set KPI for each PLO and it is assed for every course where at the end of the program the final outcomes are calculated and reflected in the annual program report.

b. King Abdulaziz University has adopted a University-wide process to ensure the program's learning outcomes (PLOs) are implemented and delivered to the students. This is achieved by an assessment the student takes before the end of their final semester. This assessment is referred to as Exit Exam where students must sit for the exam. The results are then analyzed against the PLOs to assess and make adjustment to the CLOs if necessary.

2- In-direct Measurements: it includes student's surveys for both courses and the program.

5. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Leadership	Faculty	Interviews	End of academic year
Effectiveness of teaching & assessment	Students, graduates, alumni, employers	Surveys and interviews	End of semester
Learning resources	Students, graduates, alumni, employers	Surveys and interviews	End of semester

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, services, partnerships, etc.)
Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others.
Evaluation Methods (e.g., Surveys, interviews, visits, etc.)
Evaluation Time (e.g., beginning of semesters, end of the academic year, etc.)

6. Program KPIs*

The period to achieve the target (_2_) year(s).

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-P-01	Students' Evaluation of Quality of learning experience in the Program	4	Program Evaluation Survey	Annually
2	KPI-P-02	Students' evaluation of the quality of the courses	4	Course Evaluation Survey	Annually

No.	KPIs Code	KPIs		Targeted Level	Measurement Methods	Measurement Time
3	KPI-P-03	Completion rate		85%	Student and Graduate Affairs Committee	Annually
4	KPI-P-04	First-year students retention rate		90	Student and Graduate Affairs Committee	Annually
5	KPI-P-05	Students' performance in the professional and/or national examinations		NA	NA	NA
6	KPI-P-06	Graduates' employability and enrolment in postgraduate programs	a- Employed	85%	Alumni Unit	Annually
			b- Enrolled in postgraduate programs	10%		
7	KPI-P-07	Employers' evaluation of the program graduates proficiency		4	Employer Survey	Annually
8	KPI-P-08	Ratio of students to teaching staff		7:1	Academic Affairs committee	Annually
9	KPI-P-09	Percentage of publications of faculty members		100%	Development, Quality Assurance and Academic Accreditation Committee	Annually
10	KPI-P-10	Rate of published research per faculty member		1:1		Annually
11	KPI-P-11	Citations rate in refereed journals per faculty member		2:1		Annually

* including KPIs required by NCAAA

H. Specification Approval Data:

Council / Committee	APPROVED BY THE DEPARTMENT'S COUNCIL
Reference No.	COUNCIL MEETING NO. 5
Date	11/12/2023