KABI JAGADRAM ROY GOVERNMENT GENERAL DEGREE COLLEGE

DEPARTMENT OF GEOLOGY

PROGRAMME OUTCOMES (POs), PROGRAMME SPECIFIC OUTCOMES (PSOs) AND COURSE OUTCOMES (COs)

Name of the Programme: Four-year Undergraduate Programmes of Geology (NEP,2020)

For UG NEP syllabus of Geology in Bankura University click link below:
https://www.bankurauniv.ac.in/uploads/tempimagepdflink/1691078312.pdf
https://www.bankurauniv.ac.in/uploads/tempimagepdflink/1724261712.pdf

1. Programme Outcome (PO)

A. **Graduate Attributes**: Some of the characteristic attributes that a graduate should demonstrate:

- **a)** Disciplinary knowledge
- **b)** Communication Skills
- **c)** Critical thinking
- **d)** Problem solving
- **e)** Analytical reasoning
- **f)** Research-related skills
- **g)** Cooperation/Teamwork
- **h)** Scientific reasoning
- **i)** Reflective thinking
- **j)** Information/digital literacy
- **k)** Self-directed learning
- **l)** Multicultural competence
- **m)** Moral and ethical awareness/reasoning
- **n)** Leadership readiness/qualities
- **o)** Lifelong learning

B. **Qualification descriptors:** Qualification descriptors for a bachelor's degree with honours are as follows:

a) Demonstrate (i) a systematic, extensive and coherent knowledge and understanding of an academic field of study as a whole and its applications, and links to related disciplinary areas/subjects of study; including a critical understanding of the established theories, principles and concepts, and of a number of advanced and emerging issues in the field of study; (ii) procedural knowledge that creates different types of professionals related to the disciplinary/subject area of study, including research and development, teaching and government and public service; (iii) skills in areas related to one's specialization and current developments in the academic field of study, including a critical understanding of the latest developments in the area of specialization, and an ability to use established techniques of analysis and enquiry within the area of specialization.

b) Demonstrate comprehensive knowledge about materials, including current research, scholarly, and/or professional literature, relating to essential and advanced learning areas pertaining to the chosen disciplinary areas (s) and field of study, and techniques and skills required for identifying problems and issues relating to the disciplinary area and field of study.

c) Demonstrate skills in identifying information needs, collection of relevant quantitative and/or qualitative data drawing on a wide range of sources, analysis and interpretation of data using methodologies as appropriate to the subject(s) for formulating evidence-based solutions and arguments.

d) Use knowledge, understanding and skills for critical assessment of a wide range of ideas and complex problems and issues relating to the chosen field of study.

e) Communicate the results of studies undertaken in an academic field accurately in a range of different contexts using the main concepts, constructs and techniques of the subject(s) of study.

f) Address one's own learning needs relating to current and emerging areas of study, making use of research, development, and professional materials as appropriate, including those related to new frontiers of knowledge.

g) Apply one's disciplinary knowledge and transferable skills to new/unfamiliar contexts and to identify and analyze problems and issues and seek solutions to real-life problems.

h) Demonstrate subject-related and transferable skills that are relevant to some of the job trades and employment opportunities.

2. Programme Specific Outcome (PSO)

The student graduating with the degree of B. Sc. Geology (Honours) should be able to:

(i) acquire a fundamental/systematic or coherent understanding of the academic field of geology, its different learning areas and applications in basic geology like mineralogy, petrology, stratigraphy, palaeontology, economic geology, hydrogeology, etc. and its linkages with related interdisciplinary areas/subjects like geography, environmental sciences, physics, chemistry, mathematics, life sciences, atmospheric sciences, remote sensing, computer science, information technology,

(ii) acquire procedural knowledge that creates different types of professionals related to the disciplinary/subject area of geology, including professionals engaged in research and development, teaching and government/public service,

(iii) acquire skills in areas related to one's specialization area within the disciplinary/subject area of geology and current/emerging developments in the field of geosciences,

(iv) demonstrate the ability to use skills in geology and its related areas of technology for formulating and tackling geosciences-related problems and identifying and applying appropriate geological principles and methodologies to solve a wide range of problems associated with geosciences,

(v) recognize the importance of remote sensing and GIS, mathematical modelling/simulation and computing, and the role of approximation and mathematical approaches to describing the physical world,

(vi) plan and execute geology-related experiments or investigations, analyze and interpret data/information collected using appropriate methods, including the use of appropriate software such as programming languages and purpose-written packages, and report accurately the findings of the experiment/investigations while relating the conclusions/findings to relevant theories in geology,

(vii) generate communication skills involving the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences of technical or popular nature,

(viii) generate analytical skills involving paying attention to detail and ability to construct logical arguments using correct technical language related to geology and ability to translate them with popular language when needed; ICT skills; personal skills, such as the ability to do geological work both independently and in teams

3. Course Outcome:

[*Abbreviations used*:

AEC- Ability Enhancement Courses [e.g., Compulsory English: Literature and Communication; MIL(Modern Indian languages): Santali/Sanskrit/Bengali); DSC - Department Specific Core Course; DSE – Department Specific Electives; ESE – End Semester Examination; IA – Internal Assessment; L – Lecture, P/Pr.- Practical; SEC – Skill Enhancement Course; T – Tutorial Th. – Theoretical; VAC – Value-Added Course (e.g., Environmental studies/Health and Wellness/ Understanding India: Indian Philosophical Traditions and Value Systems /Basics of the Constitution of India/Arts and Crafts of Bengal/ Historical Tourism in West Bengal etc.).]

COURSE CODE	COURSE TITLE	COURSE OUTCOME
Semester -I		
S/GEL/101/MJC-1	Earth System Science	Upon completion of this course the students will be able to acquire knowledge on: The nature of the solid earth, it's outer fluid cover and biosphere, The actions of the Earth's external and internal processes. Earth's origin and evolution, Earth's resources, tectonism and magmatism.
S/GEL/102/MN-1*	Earth System Science	

S/GEL/103/MD-1*	Introduction to Geology	The learners will acquire: A comprehensive idea on different branches of geology, knowledge on major parameters of the Earth- it's origin, endogenic and exogenic processes, evolution, resources, tectonism and magmatism.
S/GEL/104/SEC-1	Field Geology-I	The learners will be enabling to: use geological equipment, upgrade and relate the theoretical knowledge of geological aspects to field observations, present geological information of an area in terms of a report.
Semester-II		
S/GEL/201/MJC-2	Mineral Science	The study of this course enables to: Describe various physical and optical properties of minerals, mesoscopic and microscopic identification of minerals, explain different symmetry elements of the crystals and how these relate to crystal systems.
S/GEL/202/MN-2*	Mineral Science	
S/GEL/203/MD-2*	Rocks and Minerals	The students will be able: To identify and classify common minerals and rocks in hand specimens as well as in thin sections, to build an overall knowledge in mineral science and petrology, which is very essential in geology.
S/GEL/204/SEC-2	Field Geology-II	The learners will be enabling to: Upgrade and relate the theoretical knowledge of geological aspects to field observations, record geological field data systematically, and present geological information of an area in terms of a report.
Semester-III		
SGEL-301MJC-3	Elements of Geochemistry	The students will be able to demonstrate the behaviour of elements in geochemical context and relate this to how elements redistribute within the earth, establish the Earth's chemistry in terms of interactions between reservoirs, analyse the major processes operating in the Earth's crust and mantle, use isotopes to trace geological processes and

		dating of specific events, and get preliminary knowledge of geochemical analytical techniques.
SGEL-302MJC-4	Structural Geology	The course enables to understand: the concepts of stress, strain and deformation, significance of brittle, plastic and ductile deformation, origin and mechanisms of fold, foliation, lineation, faults and joint, fractures, processes and fabrics that occur in shear zones and their kinematic significance, and tectonic histories from analysis of geological maps
SGEL-303MN-3*	Structural Geology	
S/GEL-304MD-3*	Physics and Chemistry of The Earth	Course learning outcomes: The students will be acquainted with: the earth's interior, Earth's magnetic field, environmental geochemistry, and isostasy, nucleosynthesis etc.
SGEL 305SEC-3	Field Geology-III	This course is devised to provide details of structural mapping. It also will upgrade and relate the theoretical knowledge of geological aspects to field observations.
Semester -IV		
SGEL-401MJC-5	Igneous Petrology	Course learning outcomes: The study of this course enables to understand: different modes of magma formation and physical properties of magma significance of different forms and structures of igneous bodies, classification and petrogenetic significance of different igneous textures, processes leading to diversification of igneous, and genesis of some common rocks.
SGEL-402MJC-6	Sedimentology	This course enables students to: describe scales of sedimentary grain size measurement and statistical analysis of data to interpret provenance, transportation history or depositional environments, determine the texture and structure of clastic sedimentary rocks, procedure and importance of paleocurrent analysis, recognize how sediments become sedimentary rocks and how porosity forms and
SGEL-405MN-4*	Sedimentology	

		evolves and how they can interpret the diagenetic evolution of ancient sedimentary rocks, and comprehend concept of sedimentary environment and description of processes and products of different sedimentary environments viz. continental, marginal marine and marine.
SGEL-403MJC-7	Metamorphic Petrology	The course enables students to: understand the major metamorphic rocks - their general characteristics, mode of occurrences, classification and genesis. Identification of equilibrium mineral assemblages through textural and mineralogical observations understand dynamic nature of lithosphere leading to solid state transformations of rocks which gives clue to the past processes which are not possible to reconstruct by other means
SGEL-404MJC-8	Structural Geology Lab	The study of this course enables to: study topographic map to be used during geological field work, understand graphical and stereographical methods for measurements of attitudes of liner and planar structural elements, interpret geological maps and draw geological cross section

KABI JAGADRAM ROY GOVT. GENERAL DEGREE COLLEGE "MEJIA" ESTD-2015

Officer-in-Charge
Kabi Jagadram Roy Govt General Degree College
Mejia-722143 Dist-Bankura, W.B.