Central University of Kerala

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Kasaragod, Kerala, India, 671123

DEPARTMENT OF GEOLOGY

No. CUK/GEO/BOS/MIN/2021/01 Dtd: 17/08/2021

Minutes of the 2nd Meeting of the 2th Board of Studies in Geology held online at 10.00 a.m. on 17/08/2021

The Department of Geology, Central University of Kerala conducted the Board of Studies (BoS) meeting on 17th August, 2021. It was the Second BoS meeting of the second Board of Studies. Due to the COVID-19 pandemic situation the meeting was conducted through online via Google Meet platform. The panel members included invited subject experts, Head of the Department, internal members and department faculties as special invitee. The attendees of the meeting were as follows: -

BoS Attendees:

Invited subject experts

- Prof. (Dr.) Rajneesh Bhutani, Professor, Department of Earth Sciences, Pondicherry University
- Prof. (Dr.) Rajesh Raghunath, Professor, Dept .of Geology, University of Kerala,
- Prof. (Dr.) Prakash Narasimha, K.N., Professor, Department of studies in Earth science, University of Mysore, Manasagangotri
- Dr. A. Anil Kumar, Director, Marine & Coastal Survey Division, Geological Survey of India, Manglaluru.

Internal members from the Central University of Kerala

- Dr. Pratheesh P., Assistant Professor and HOD (i/c), Dept. of Geology.
- Dr. Sijinkumar A.V., Assistant Professor, Dept. of Geology.
- Dr. S. Anbazhagi, Assistant Professor, Dept. of Environmental Science.

Special invitee from the Central University of Kerala

- Dr. Sandeep K., Assistant Professor, Dept. of Geology.
- Dr. Chandan Kumar B., Assistant Professor, Dept. of Geology.

The BoS meeting started with the welcome address by Dr. Pratheesh P., Head of the Department (i/c). Dr. Pratheesh P. gave a brief introduction on the objectives of the BoS meeting. Thereafter, he welcomed all experts and faculty to the meeting, and briefed the agenda of BoS meeting.

The agenda for discussion in the BoS meeting was proposed by the Head of the Department. The main items discussed in the BoS are given below:

(a) The inclusion of programme outcome and course outcomes in the syllabus of department of geology, central university of Kerala thereof.

(b) Consider the revised syllabus for 2021 admission

c) Inclusion of employment oriented courses in syllabus

The details of agenda-wise discussion and the final recommendation by the BoS are given below.

Agenda 1: The inclusion of programme outcome and course outcomes in the syllabus of department of geology, central university of Kerala thereof.

Dr. Pratheesh P. has explained the Faculty Council discussion regarding inclusion of programme outcome and course outcomes in the syllabus. Then Dr. Pratheesh P. invited the Board of Studies opinion. BoS members have accepted the proposed programme outcome and course outcome. Prof. Rajneesh Bhutani opined that there should be some integration of thinking skills in the programme outcome.

Recommendation: Following a detailed discussion on the contents, the members approved the inclusion of programme outcome and course outcomes in the Department of Geology, Central University of Kerala curriculum.

Agenda 2: Consider the revised syllabus for 2021 admission.

Dr. Pratheesh P. has presented the revised syllabus for 2021 along with proposed programme structure. BoS members have accepted the proposed programme structure with some small suggestions.

Prof. Rajneesh Bhutani pointed that Geochemistry was missing from the curriculum, which is very much essential for an earth science. After a long discussion, BoS has decided to incorporate Geochemistry as a compulsory elective paper. Prof. Prakash Narasimha has suggested the usage of 'Planetary Sciences' instead of 'planetary Geosciences'. Dr. A. Anil Kumar has suggested a title change for Oceanography as 'Oceanography and Marine Geology'. Prof. (Dr.) Rajesh Raghunath has recommended some modifications in sequence stratigraphy. Apart from this BoS has recommended a number of additions in the core course discussion.

Recommendation: After a detailed discussion on the revised syllabus, the members unanimously approved the new syllabus for MSc Geology programme in Department of Geology Central University of Kerala. All the recommendations from the experts have incorporated in the revised syllabus.

Agenda 3: Inclusion of employment oriented courses in syllabus.

Dr. Pratheesh P. has explained the feedback received from the Alumni through the Alumni Coordinator, on the inclusion of employability oriented courses. He also pointed that the faculty council has discussed the same and incorporated a new core course 'Geospatial Technology and Engineering Geology' in the proposed syllabus. BoS had a fruitful discussion on the syllabus framework of the newly inducted course.

Recommendation: Following a detailed discussion on the contents, the members approved inclusion of 'Geospatial Technology and Engineering Geology' as core course in the proposed curriculum.

After this, overall agenda discussed in the BoS were summarised by Dr. Pratheesh P. Thereafter, Dr. Sijinkumar A.V. offered the vote of thanks, which conluded the BoS meeting.

Dr. Pratheesh P.

Head (i/c), Department of Geology

CENTRAL UNIVERSITY OF KERALA
DEPARTMENT OF GEOLOGY
M.Sc. GEOLOGY

Course Code	EGE 5302	Semester	III
Course Title	Hydrogeology		
Credits	3	Type	Core

This is a participatory, experimental and employability based skill development course essential for ground water exploration.

Course Description

Hydrogeology is the study ofthe occurrence, distribution, and movement of groundwater below the Earth's surface. The course deals withvarious hydrogeologic processes, hydrological properties of rocks and principles of groundwater flow. It gives an overview of different groundwater exploration methods and water quality standards. The basic skills to apply pumping-test data to determine aquifer properties and an understanding of the chemical constituents in groundwater and surface waters is also provided by the course. The course will provide the theoretical knowledge required for the role of a professional hydrogeologist.

Course Outcome

By the end of the course, students are expected to be able to:

- **Define hydrogeological terms, properties, methods of measurement and examine the significance of hydrogeological results.**
- **Explain the principles of groundwater flow and groundwater chemistry.**
- **Appraise the different types of aquifers, their composition, flow patterns, chemistry and vulnerability to pollution.**
- **Demonstrate an understanding of the laws governing groundwater flow in porous media.**
- **Apply basic quantitative analysis techniques to solve practical hydrogeology problems.**
- Analyse of pumping test data to understand aquifer properties

Course Structure

Module - 1

Hydrological cycle and origin of ground water. Classification of rocks with respect to their water bearing properties- aquifers, aquicludes, aquitards, aquifuges. Types of aquifers. Hydrological properties of rocks: Porosity, permeability, void ratio, specific yield and specific retention, hydraulic conductivity, storativity, transmissivity.Barometric efficiency and tidal efficiency.

Module – 2

Groundwater flow: Darcy's law and its experimental verification, flow nets, fluid potentials.Well hydraulics: Pumping tests and data analysis. Steady radial flow to a well in confined and unconfined aquifers-Theim's equation, Dupuit-Forhemeir equation. Unsteady radial flow to a well in confined and unconfined aquifers-Theis, Chow's and Jacob's methods.Application of isotope studies and tracer techniques in ground water flow.

Module – 3

Ground water exploration: Geological methods- lithological and structural mapping. Geophysical methods-Electrical Resistivity methods, Wenner and Schlumberger arrays,
Profiling and VES methods. Seismic Refraction methods. Well logging: Spontaneous Potential Logging, Radiation logging, Gamma-gamma ray logging. Use of Aerial photos

and satellite imageries in ground water prospecting. Well design criteria: Types, construction, maintenance and development of wells. Physical, chemical and bacterial measures of water quality. Water quality standard for different purposes – Drinking, Domestic, Irrigation and Industrial. Saline water intrusion in coastal aquifers and its prevention – Ghyben-Herzberg relationship. Artificial recharge and rain water harvesting methods.

Evaluation &Grading

Skill development (Analytical, Writing and Presentation) – 20%
Class Test – 20%

End Semester Assessment – 60%

References

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