Indian Institute of Technology, Kanpur

Proposal for a New Course

1. Course No: SPA***A G 29 M

2. Course Title: *Introduction to Geology: Measuring the Heartbeat of a Planetary Body*

3. Lectures per week: *L=3, Tutorial: T=0, Laboratory: P=0*, Additional hours: (0-2) =0 (A), Credits (3*L+2*T+1*P+A) = 5

Duration of Course: *Half Semester*

4. Proposing Department: *Space, Planetary and Astronomical Sciences and Engineering*

5. Proposing Instructor: *DPGC Convener, SPASE*

6. Other Instructors who may teach this course:

7. Course Description

(A) Objectives: The course is aimed at providing the basic understanding of key geology concepts. It would prepare the students in taking geology intensive courses in planetary science that may include observational techniques and tools for interpretation.

(B) Contents:

1. Mineral and rock formation [6 lectures]

Magma generation, crystallization (nucleation and growth), Igneous, sedimentary and metamorphic rocks, Mineral deposits, Meteorites, Rocks and Minerals in thin-sections under microscope.

2. Geological time scale and Geological Clocks [4 lectures]

The time units on various planetary bodies (Earth, Moon, Mars), the need, the way to measure time, radioactivity, isotope systems, role in understanding various planetary processes

3. Geological processes and Geological cycles [8 lectures]

Magmatism (volcanism & plutonism), Evolution of atmosphere, Tectonism, Impact cratering, Weathering/Erosion by Wind, Water, Ice and Radiation, Atmospheric Envelope, Atmosphere-Surface Interactions in Geologic Cycles, Plate tectonics, Mantle convection, Seismicity, Geological landscapes created by various processes.

4. The relationship of Rocks/Minerals with life [2 lectures]

Mineral and rock formation as an energy source, Biomineralization, Mineral and Rocks as food for lifeforms, Minerals and rocks as biomarkers, Minerals and rocks as basic building blocks of life.

(C) Pre-requisites, if any: *None*

(D) Short summary for including in the Courses of Study Booklet:

This course serves as a primer for taking up a wide variety of geoscience courses probing the formation, evolution, destruction of minerals, rocks and the various landscapes on various planetary bodies (planets, satellites, comets, asteroids).

7. Recommended Books:

Cornelis Klein, Barbara Dutrow / *Manual of Mineral Science,* 23rd Edition / John Wiley & Sons, ISBN: 978-0-471-72157-4 February 2007 704 Pages

McSween, Jr, H. Y., Moersch, J. E., Burr, D. M., Dunne, W. M., Emery, J. P., Kah, L. C., & McCanta, M. C. / Planetary Geoscience/ 2019/ Cambridge: Cambridge University Press / ISBN-10 : 1107145384 ISBN-13 : 978-1107145382 / 350 pages

Alan P. Dickin / Radiogenic Isotope Geology / Third Edition (2018) / Publisher : Cambridge University Press / ISBN-10 : 9781107492127, ISBN-13 : 978-1107492127/ 498 pages

8. Any other remarks:

Dated: Proposer:

Dated: DUGC/DPGC Convener:

The course is approved/not approved

Chairman, SUGC/SPGC

Dated:

SSA

SCOM 281/24 Ltr

INDIAN INSTITUTE OF TECHNOLOGY KANPUR
POSTGRADUATE OFFICE

No. A(P)/IITK/course approval/
August 27, 2024

The Convener, DPGC
Departments of SPASE
IIT Kanpur

I am directed to communicate the concurrence of the SPGC (2023-24) in its 11th meeting held on 01/08/2024 for the approval of new PG course proposal. After detailed discussion the following courses were approved.

Course No	Title	Credits	Instructor	SPGC Decision
SPA627M	Introduction to fluid mechanics in space	3-0-0-0-(5)	Dr. Kartick Sarkar Dr. Ishan Sharma	Approved
SPA628M	Introduction to Planetary Remote Sensing from Space Missions	3-0-0-0-(5)	DPGC Convener, SPASE	Approved
SPA629M	Introduction to Geology: Measuring the Heartbeat of a Planetary Body	3-0-0-0-(5)	DPGC Convener, SPASE	Approved

Assistant Registrar
Academic Affairs

CC: OARS (DOAA Office) For necessary action

MINUTES

FOR THE 11th MEETING OF THE SENATE POSTGRADUATE COMMITTEE (2023-24) TO BE HELD ON August 1, 2024 (Thursday) AT 03:00 P.M.

Over Zoom (online)

Members present:

Prof(s): P M Mohite (AE), Vishal Agarwal (CHE), Chinmoy Kolay (CE), Abheejeet Mohapatra (EE), T H Syed (ES), Sukumar Vellakkal in place of Vasudha Jain (ECO), Feroz Hassn (HSS), Amit Shukla (DoMS), Malay Das in place of Santanu De (ME),Sudhanshu S Singh (MSE), Sudhansu Shekhar in place of Subhajit Dutta (MATH), Sharvari Nadkarni (SPASE), Laltu Chandra (SEE), Sagar Chakrabarty (PHY) (SPASE)

Members Absent: Prof(s), Suresh Kumar (BSBE), Ark Verma (CGS), Ashis Kumar Patra (CHM), J Ramkumar (DES), Shilpi Gupta(PSE), Piyush Rai (CSE), Sri Sivakumar (MSP), Pankaj Wahi (NET)

Student representative:

Shivam Nigam (19112264), Harsha Prasad (21106270), Nachiket (18102278)

Item requiring SPGC Approval:

a) Conversion from MSR/MTech to PhD Program:

S.No	Roll No	Name	Dept	Prog	Supervisor and DPGC Recommendation	SPGC Recommendation /Decision
01-	231180016	Sivani Biswal	BSBE	MTech	Recommended	Recommended
02-	231230006	Mo Zaid	ES	MTech	Recommended	Recommended

*Students has completed course and CPI requirement as per clause 4.6 of PG Manual

b) New course approval:-

ourse No	Title	Credits	Instructor	SPGC Recommendation /Decision
SPA627M	Introduction to fluid mechanics in space	3-0-0-0-(5)	Dr. Kartick Sarkar Dr. Ishan Sharma	Approved
SPA628M	Introduction to Planetary Remote Sensing from Space Missions	3-0-0-0-(5)	DPGC Convener, SPASE	Approved
SPA629M	Introduction to Geology: Measuring the Heartbeat of a Planetary Body	3-0-0-0-(5)	DPGC Convener, SPASE	Approved

Items requiring SPGC recommendation for Senate considerations:

a) Conversion of Programme Full Time to Part Time

S.No	Roll No	Name	Dept	Prog	Supervisor and DPGC Recommendation	SPGC Recommendation /Decision
1	19101268	Shiv Kumar	AE	PhD	Recommended	Recommended
2	21104030	Gedala Sai Praveen	EE	MTech	Recommended	Recommended

b) Termination (under clause 8.6)

S.No	Name	Roll No	Dept.	Prog.
01	Harshita Gupta	22127266	ECO	PhD

Sr.No. 1 Three times comprehensive exam failed.

Abheejeet Mohapatra 1/8/24