



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

(ವಿ ಟಿ ಯು ಅಧಿನಿಯಮ ೧೯೯೪ ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

(State University of Government of Karnataka Established as per the VTU Act, 1994)

"JuanaSangama" Belagavi-590018, Karnataka, India

REGISTRAR

Phone : (0831) 2498100

Fax : (0831) 2405467

REF: VTU/BGM/ACA/2022-23/ 3221

DATE: 23 SEP 2022

CIRCULAR

Subject: - Updates related to the course 21CV34 Earth Resource and Engineering regarding...

Reference: Hon'ble Vice-Chancellor's approval dated 20.09.2022

This is with reference to the subject mentioned above, for the course **21CV34 - Earth Resources and Engineering**, updates in the scheme related to the Teaching department (TD) and Paper Setting Board / Department (PSB) are made as Geology (in place of Civil Engineering dept.). And also in the syllabus portion, the typo error related to the SEE assessment process is corrected as 03 hours duration theory question papers to answer 05 selecting at least one from each module (in place of MCQ pattern). The corrected scheme page and syllabus pages are enclosed for information

The principals of Constituent /Affiliated Engineering Colleges are hereby informed to bring the content of the circular to the notice of all concerned.

Encl: as mentioned above.

Sd/-
REGISTRAR

To,

1. The Principals of all affiliated/ constituent Engineering Colleges under the ambit of VTU Belagavi.

Copy to.

1. To the Hon'ble Vice-Chancellor through the secretary to VC, VTU Belagavi for information
2. The Registrar (Evaluation), VTU Belagavi for information and needs (copy to QPDS section).
3. The Regional Directors (I/c) of all the regional offices of VTU for circulation.
4. The Director I/c. ITI SMU, VTU Belagavi for information and to make arrangements to upload the circular on the VTU web portal.

Registrar



B.E. in Civil Engineering

Scheme of Teaching and Examinations 2021

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2021 - 22)

III SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	BSC 21MAT31	Transform Calculus, Fourier Series and Numerical Techniques (Common to all)	TD- Maths PSB-Maths	2	2	0	0	03	50	50	100	3
2	IPCC 21CV32	Geodetic Engineering	TD: Civil Engg PSB: Civil Engg	2	2	2	0	03	50	50	100	4
3	IPCC 21CV33	Strength of Materials	TD: Civil Engg PSB: Civil Engg	2	2	2	0	03	50	50	100	4
4	PCC 21CV34	Earth Resources and Engineering	TD: Geology PSB: Geology	3	0	0	0	03	50	50	100	3
5	PCC 21CVL35	Computer Aided Building Planning and Drawing	TD: Civil Engg PSB: Civil Engg	0	0	2	0	03	50	50	100	1
6	UHV 21UH36	Social Connect and Responsibility	Any Department	0	0	2	0	01	50	50	100	1
7	HSMC 21KSK37/47	Samskrutika Kannada	TD and PSB HSMC	0	2	0	0	01	50	50	100	1
	HSMC 21KBK37/47	Balake Kannada										
	HSMC 21CIP37/47	OR Constitution of India and Professional Ethics										
8	AEC 21CV38X	Ability Enhancement Course - III	TD: Concerned department PSB: Concerned Board	If offered as Theory Course				01	50	50	100	1
				0	2	0	0					
				If offered as lab. course				02				
0	0	2	0									
Total									400	400	800	18

9	Scheduled activities for III to VIII semesters	NCMC 21NS83	National Service Scheme (NSS)	NSS	All students have to register for any one of the courses namely National Service Scheme, Physical Education (PE)(Sports and Athletics), and Yoga with the concerned coordinator of the course during the first week of III semester. The activities shall be carried out between III semester to VIII semester (for 5 semesters). SEE in the above courses shall be conducted during VIII semester examinations and the accumulated CIE marks shall be added to the SEE marks. Successful completion of the registered course is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities.							
		NCMC 21PE83	Physical Education (PE)(Sports and Athletics)	PE								
		NCMC 21YO83	Yoga	Yoga								

Course prescribed to lateral entry Diploma holders admitted to III semester B.E./B.Tech programs

1	NCMC 21MATDIP31	Additional Mathematics - I	Maths	02	02	--	--	---	100	---	100	0
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Note: BSC: Basic Science Course, IPCC: Integrated Professional Core Course, PCC: Professional Core Course, INT - Internship, HSMC: Humanity and Social Science & Management Courses, AEC - Ability Enhancement Courses, UHV: Universal Human Value Course.

L - Lecture, T - Tutorial, P - Practical/ Drawing, S - Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination, TD: Teaching Department, PSB: Paper Setting department

21KSK37/47 Samskrutika Kannada is for students who speak, read and write Kannada and 21KBK37/47 Balake Kannada is for non-Kannada speaking, reading, and writing students.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching-Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2021-22 may be

Semester III**: Earth Resources and Engineering**

Course Code	21CV34	CIE Marks	50
Teaching Hours/Week (L:T:P:S)	3:0:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	3	Exam Hours	3

Course objectives:

- This course will enable students;
 1. To understand the importance of earth's dynamic interior in civil engineering and Geo Hazard mitigation and management
 2. To analyse the physical characteristics of the rocks and Minerals for its suitable application in Engineering
 3. To evaluate earth Process for providing sustainable management and Development through Geoengineering.
 4. Subsurface Exploration for providing safe and suitable site condition and Earth Resources for Reengineering activities
 5. To application of modern tools and techniques in Earth Resources Management and.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- Chalk and Talk method.
- Show Video/animation films to explain earth dynamics and influence of geology in prime civil constructions
- Encourage collaborative (Group Learning) Learning in the class
- Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking
- Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking process such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
- Topics will be introduced in a multiple representation.
- Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
- Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1**Module /unit – 01 – Introduction, scope of earth science in Engineering, 8 hrs**
Geohazards and disasters, Mitigation and management

Earth's internal dynamics, Plate tectonics, Earth quakes types, causes, iso-seismal line, seismic zonation map, seismic proof structures, Numerical problems on location of epicenter; volcanic eruption, types, causes, ; landslides, causes types, preventive measures; tsunamis causes consequences, mitigation; cyclones, causes management

Teaching-Learning Process

- chalk and talk method,
- power point presentation.
- Case studies
- Field visits

Module-2	
Earth Resources	8hrs
Minerals -Industrial, rock forming and ore minerals. Physical properties, composition and uses Rocks as a construction materials- physical properties, texture, composition, applications aggregate, decorative (facing/polishing), railway ballast, rocks for masonry work monumental/architecture, rocks as aquifers, water bearing properties igneous, sedimentary	
Teaching-Learning Process	<ul style="list-style-type: none"> • Chalk and talk method, • Power point presentation and Animated videos • Case studies • Field visits experience the real world examples
Module-3	
Surface investigation for Civil Engineering projects	8hrs
Weathering, type, causes, soil in situ, drifted soil, soil profile, soil mineralogy, structure, types of soil Black cotton soil v/s Lateritic soil; effects of weathering on monumental rocks, River morphology and basin investigation for engineering Projects like earthen dam, gravity dam, arch dam, features river erosion, deposition and their influences on river valley projects, morphometric analysis of river basin, selection of site for artificial recharge, interlinking of river basins, coastal process and landforms, sedimentation /siltation, erosion	
Teaching-Learning Process	<ul style="list-style-type: none"> • Chalk and talk method, • Power point presentation and Animated videos • Case studies • Field visits experience the real world examples
Module-4	
Subsurface investigation for deep foundation	8hrs
Borehole data (and problems), Dip and strike, and outcrop problems (numerical problem geometrical simple trigonometry based), Electrical Resistivity meter, depth of water table, (numerical problem) seismic studies, faults, folds, unconformity, joints types, recognition and their significance in Civil engineering projects like tunnel project, dam project, Ground improvements like rock bolting, rock jointing, grouting	
Teaching-Learning Process	<ul style="list-style-type: none"> • Chalk and talk method, • Power point presentation and Animated videos • Case studies • Field visits experience the real world examples
Module-5	
Geo-tools and techniques for civil Engineering Applications	7hrs
Toposheets, Remote sensing and GIS. Photogrammetry (scale, flight planning, overlap, elevation effects, interpretation keys, numericals on flight, planning scale, elevation, flying height, ...), GPS Ground Penetrating Radas (GPR), Drone, and their applications	
Teaching-Learning Process	<ul style="list-style-type: none"> • Chalk and talk method, • Power point presentation and Animated videos • Case studies • Field visits and research institutes experience the real world examples

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

1. Apply geological knowledge in different civil engineering practice.
2. Students will acquire knowledge on durability and competence of foundation rocks, and confidence enough to use the best building materials.
3. competent enough to provide services for the safety, stability, economy and life of the structures that they construct
4. Able to solve various issues related to ground water exploration, build up dams, bridges, tunnels which are often confronted with ground water problems
5. Intelligent enough to apply GIS, GPS and remote sensing as a latest tool in different civil engineering for safe and solid construction.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

Continuous Internal Evaluation:

Three Unit Tests each of **20 Marks (duration 01 hour)**

1. First test at the end of 5th week of the semester
2. Second test at the end of the 10th week of the semester
3. Third test at the end of the 15th week of the semester

Two assignments each of **10 Marks**

4. First assignment at the end of 4th week of the semester
5. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

6. At the end of the 13th week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

(to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course).

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (**duration 03 hours**)

1. The question paper will have ten questions. Each question is set for 20 marks. Marks scored out of 100, shall be proportionally reduced to 50 marks
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.
3. The students have to answer 5 full questions, selecting one full question from each module

Web links and Video Lectures (e-Resources):

- <https://www.youtube.com/watch?v=aTVDiRtRook&list=PLDF5162B475DD915F>
- <https://www.youtube.com/watch?v=EBiLLjAxBuU&index=2&list=PLDF5162B475DD915F>
- <https://www.youtube.com/watch?v=sTY-ao4RZck&list=PLDF5162B475DD915F&index=3>
- <https://nptel.ac.in/courses>
- <https://youtu.be/fvoYHzAhvVM>
- <https://youtu.be/aTVDiRtRook>

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- <https://www.earthsciweek.org/classroom-activities>
- Field Visits
- https://serc.carleton.edu/NAGTWorkshops/hazards/events/12262004.html?serc_source=recommendati on
- https://serc.carleton.edu/NAGTWorkshops/visualization/examples/CBezanson.html?serc_source=recom mendation
- <https://serc.carleton.edu/NAGTWorkshops/coursedesign/goalsdb/14712.html>

Textbooks -

1. Engineering Geology, by Parthasarathy et al, Wiley publications
2. A textbook of Engineering Geology by Chenna Kesavulu, Mac Millan India Ltd
3. Principle of Engineering Geology, by K.M. Bangar, Standard publishers
4. Physical and Engineering Geology, by S.K. Garg, Khanna publishers
5. Principles of Engineering Geology, by KVGK Gokhale, BS Publications

Reference books –

1. Introduction to Environmental Geology by Edward A Keller, Pearson publications.
2. Engineering Geology and Rock Mechanics B. P. Verma, Khanna publishers
3. Principles of Engineering Geology and Geotechnics, Krynine and Judd, CBS Publications