



ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ
ವಿಟಿಯು ಅಧಿನಿಯಮ ೧೯೯೪ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯವಿಶ್ವವಿದ್ಯಾಲಯ
VISVESVARAYA TECHNOLOGICAL UNIVERSITY
State University of Government of Karnataka Established as per the VTU Act, 1994 "InanaSangama" Belagavi-590018, Karnataka, India



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REF: VTU/BGM/BCV703/1029/2026/ 2212

DATE: 4 AUG 2026

CIRCULAR

Subject: Revision of Syllabus for BCV703 – Prestressed Concrete regarding...

Reference: Stakeholder email dated 15.07.2026

Chairperson BoS in CV VTU Belagavi email dated: 28.07.2026

The Hon'ble Vice Chancellor's approval dated: 03.08.2026

It is hereby notified that the syllabus for **BCV703 – Prestressed Concrete (2022 scheme)** has been revised based on the feedback received from the teachers and students and is approved by the competent statutory bodies of the University. The revised syllabus shall be implemented with effect from the Academic Year 2026-27 (students currently studying in the 7th semester).

All Constituent, Affiliated Institutions are directed to adopt the revised syllabus for BCV703 in their respective academic programmes and ensure strict compliance.

The detailed syllabus document is enclosed herewith/available on the University website for reference and necessary action @ <https://vtu.ac.in/en/b-e-scheme-syllabus/#menu07>

Also @ <https://vtu.ac.in/en/category/administration/>

Encl: BCV703 Syllabus (Updated)

Prasad B. Rampure
REGISTRAR
7.

To,

1. The principals of affiliated (Constituent/non-autonomous) engineering colleges,
2. Chairpersons/Programme coordinators of University Departments at Kalaburagi, Belagavi, Mysuru, Bengaluru (Muddenhalli) and Talkal

Copy to.

1. To the Hon'ble Vice-Chancellor, through the Secretary to the VC, VTU Belagavi, for information
2. The Registrar (Evaluation), VTU Belagavi, for information and the needful.
3. The Director ITI SMU, VTU Belagavi, for information and to make arrangements to upload the circular on the VTU web portal.
4. The Regional Directors at Kalaburgi, Belagavi, Mysuru and Bengaluru with request to circulate to the colleges in their regions.
5. The Special Officer QPDS section VTU Belagavi for the information and needful (with a copy to Mr.P. Manjunath)
6. The Special Officer CoE, VTU Belagavi, for information
7. The Special Officer, Internships, VTU Regional Office Bengaluru, for information
8. Office copy.

Prestressed Concrete		Semester	7
Course Code	BCV703	CIE Marks	50
Teaching Hours/Week(L:T:P: S)	2:2:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	04	Exam Hours	3
Examination type (SEE)	Theory		
Course objectives: - To explain the necessity of prestressed concrete - To understand the principles and methods of design according to IS 1343 and IRC 112 - To estimate losses due to prestressing - To design pre-stressed concrete pipes, tanks, beams or I-girder for bridge, one-way and two-way slabs - To illustrate the concept of special bridge like cable stayed bridges and balanced cantilever bridges			
Teaching-Learning Process (General Instructions) These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes. 1. Blackboard teaching 2. Power point Presentation 3. Videos, NPTEL materials 4. Quiz/Assignments/Open book test to develop skills. 5. Adopt problem-based learning (PBL) to develop analytical and thinking skills.			
Module-1			
Introduction to pre-stressed concrete structures: Concepts of Prestressing- Historical development of prestressing-Design Codes for Pre-Stressed Structures- Advantages & Limitations of Pre-stressed Concrete Material - Need for High Strength Concrete- High Tension Steel- Types of Prestressing Steel. Concept of losses of Prestressing.			
Module-2			
Analysis of sections for Flexure: Elastic analysis of pre stressed concrete beams with straight, parabolic, triangular, trapezoidal cable profiles, Eccentric and concentric pre stressing, Numerical examples. Load balancing concept and kern point.			
Module-3			
Losses of Prestressing and Prestressing Systems: Losses— Immediate losses due to Friction and wobble, Elastic shortening Anchorage Slip - Time dependent losses due to Creep, Shrinkage and Relaxation losses - Introduction to Pre-stressing systems — Pre -Tensioning Devices — Post -Tensioning Devices - Anchorage Devices - Mechanical pre-stressing - Chemical Pre-stressing - Electrical Pre-stressing. Numerical examples on losses.			
Module-4			
Deflection of pre stressed concrete beams: Short term and long term deflections, Elastic deflections under transferred loads and due to different cable profiles Deflection limits as per IS 1343, Effect of creep on deflection, Load versus deflection curve, methods of reducing deflection, Numerical examples. Limit state of Collapse: Flexure- IS code recommendations, Ultimate flexural strength of sections, IS code recommendations on shear strength, Shear resistance of sections, shear reinforcement, Limit state of serviceability- Control of deflection and cracking, Numerical examples.			

Module-5
Design of Beams: Design of pre stressing force and eccentricity for type- 1 post tensioned prismatic beams, permissible stresses, Limiting zone and cable profile.
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) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures 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: - For the Assignment component of the CIE, there are 25 marks and for the Internal Assessment Test component, there are 25 marks. - The first test will be administered after 40-50% of the syllabus has been covered, and the second test will be administered after 85-90% of the syllabus has been covered - Any two assignment methods mentioned in the 220B2.4, if an assignment is project-based then only one assignment for the course shall be planned. The teacher should not conduct two assignments at the end of the semester if two assignments are planned. - For the course, CIE marks will be based on a scaled-down sum of two tests and other methods of assessment. Internal Assessment Test 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 course (duration 03 hours). - The question paper will have ten questions. Each question is set for 20 marks. - 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. - The students have to answer 5 full questions, selecting one full question from each module. - Marks scored shall be proportionally reduced to 50 marks

Suggested Learning Resources:

Books

1. Pre stressed concrete, N Krishna Raju, Tata McGraw Hill Publishers, 2009, ISBN 9780070634442
2. Pre stressed Concrete, P Dayarathnam, Oxford and IBH Publishing Co., 2000, ISBN 9780136916352
3. Design of pre stressed concrete structures, T Y Lin and Ned H Burns, John Wiley & Sons, New York, 2008, ISBN 9789812531179
4. Fundamental of pre stressed concrete, N C Sinha and S K Roy, 3rd Edition, S Chand and Company Ltd, 2011, ISBN 9788121924276
5. Code Books: IS 1343:2012; Pre stressed Concrete: Code of practice
6. RC 112 and IS 1343 codes

Web links and Video Lectures (e-Resources):

- E-learning content on L&T Edu Tech Platform.

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

- Visit to Site to understand prestressing