

Instructor:

Name: Dr. Madhu Karthik M, madhu@iitpkd.ac.in
Office: 121

Class Hours:

Tuesday:	12:00 – 12.50	Wednesday:	09:00 – 09:50
Thursday:	09:00 – 09:50	Friday:	11:00 – 11.50

Textbook:

Pillia, S.U., and Menon, D. *Reinforced Concrete Design* 3rd Ed., Tata McGraw Hill Education Pvt. Ltd., 2011.

Varghese, P.C. *Limit State Design of Reinforced Concrete* 2nd Ed., Phi Learning, 2009.

Standards:

IS 456:2000 Indian Standard Plain and Reinforced Concrete – Code of Practice, BIS, New Delhi.

IS 875 (Part 1-5) Code of Practice for Design Loads (other than earthquake) for Buildings and Structures, BIS, New Delhi.

SP 16:1980 Design Aids for Reinforced Concrete to IS 456:1978, BIS, New Delhi.

SP 24:1983 Explanatory Handbook on Indian Standard Code of Practice for Plain and Reinforced Concrete, BIS, New Delhi

References

Wight, J.K., and MacGregor, J.G. *Reinforced Concrete: Mechanics and Design*, 7th edition.

Raju, N.K. *Design of Reinforced Concrete Structures (IS:456-2000)* 3rd Ed., CBS Publisher, 2013.

Sinha, S.K. *Reinforced Concrete Design*, 2nd Ed., Tata McGraw-Hill Education, 2002.

Dayaratnam, P. *Design of Reinforced Concrete Structure* 4th Ed., Oxford and IBH, 2011

Park, R., and Paulay, T. *Reinforced Concrete Structures*, John Wiley and Sons, 1975

Course Website: <https://moodle.iitpkd.ac.in/>

Learning Objective:

The course will introduce students to:

- Reinforced concrete structures: materials and design philosophies.
- Design of beams, columns, slabs, and footing.
- Design for flexure, shear, torsion, and compression.
- Working stress method.

Major Course Content:

Introduction to reinforced concrete structures; basic material properties; basic design concepts; design for flexure; design for shear and torsion; design for compression; design for combined actions; working stress method

Learning Outcomes:

At the end of the course, the student should be able to:

- Understand the properties of materials, and various design concepts
- Analyze structural elements at ultimate loads
- Design structural elements such as beams, slabs, columns, and footing.
- Design structural elements for flexure, shear, torsion, and compression.

Grading:

The grade for this course will be based upon grades from assignments, tutorials, unannounced assessment tests (ATs), two scheduled quizzes, and a final exam as follows:

Assignments/Tutorials/ATs	20%
Quiz I	20%
Quiz II	20%
Final Exam	40%

Exams:

There will be two quizzes and a final as per the academic calendar. The questions that appear on the exams will be inspired from assignment/tutorial problems relating to the pertinent material. It is your responsibility to show up for the scheduled exams and take them at the appointed time.

Attendance and ATs:

Attendance in class is considered mandatory. A student who has less than 85% attendance in the class, will not be permitted to appear in the end-semester examination. To assess student knowledge and preparedness, unannounced assessment tests (ATs) may be given at random during class periods at the discretion of the instructor. These ATs may and often will be over covered material or assigned reading material.

Assignments and Tutorials:

Your best preparation for the exams is thoughtful, diligent effort on the assignment and tutorial problems.

All assignments due in class must be turned in at the beginning of class on the day the assignment is due. Assignments/tutorials not turned in on time will be considered late. Late homework (up to two days) is subject to a 50% penalty. Homework that is more than two days late will not be accepted.

Assignments/tutorials will be checked/graded only if the solution appears to be substantially complete. It is the students' responsibility to submit any work in a neat and legible fashion. The instructor shall not make efforts to interpret the students work. Unacceptable and generally sloppy homework will be returned for no credit.

Prepare formal hand written solutions (unless otherwise mentioned) on A4 paper using a pen. Work submitted on paper torn out of a notebooks will not be accepted. Begin each new problem on a new sheet. Your name, course, date of submission, and total number of pages must appear on the top right of the submission. Staple all sheets for each assignment into a single packet. Loose sheets of papers will not be accepted, and the instructor is not responsible for lost/misplaced sheets.

The body of the homework for each problem should consist of the following sections:

- Problem:** Give the problem statement
Given: State all that is known about the problem
Required: State what you have been asked to determine
Figures: Figures drawn to solve problems should be neat and legible. Draw detailed free body diagrams (as and when required) in support of your solution.
Solution: Present your solution in a logical and methodical manner.
Summary: Provide an organized summary of the problem.

Re-Assessment Policy:

Great care is taken to ensure that your homework/tutorial problems, assessment tests, and quizzes are assessed correctly, fairly and consistently. However, there may be instances when a mistake has been made in assessing your work. If you feel that there has been a mistake, you must submit the work for re-assessment within 48 hours after it has been returned to you. Any work submitted after this 48-hour period will not be re-assessed. (Note that this policy does not apply to the final exam, which shall be re-examined as per the B-Tech ordinances and regulations of IIT Palakkad).

When you resubmit the work for re-assessment, you must attach a formal written statement indicating where you feel you deserve points back. The entire problem is then open for a re-assessment, and your new score may be higher or lower than before.

Discussions about assessment procedure is not entertained. However, I will be happy to discuss the material and concepts covered in the problem with you during office hours.

Academic Integrity Statement:

No form of scholastic misconduct will be tolerated. Academic misconduct includes copying, cheating, fabrication, falsification, multiple submissions, plagiarism, complicity, etc. Violations will be reported to the disciplinary committee, and handled appropriately.

Copyright Statement:

The handouts used in this course are copyrighted. By “handouts,” it is meant that all materials that have been generated for this course. Such materials include but are not limited to syllabi, quizzes, exams, problem sets, worked problems, materials presented on the course website, in-class materials, review sheets, additional problem sets, and/or solutions prepared for these materials. Because these materials are copyrighted, you do not have the right to copy them, or possess copies of them outside of the normal course uses for which they were intended.