Savitribai Phule Pune University

B.E. Civil (2012 Course)

401 010 Elective IV: Open Elective: 5(h)

Forensic Civil Engineering

Teaching Scheme	Examination Scheme
Lecture: 3 hours / week	Theory Examination:
Practicals: 2 hours / week	In-Sem: 30 Marks
	End-Sem: 70 Marks
	Term work: 50 marks

1) **Introduction to forensic engineering**, History of forensic engineering, Purpose / objectives of Forensic Civil Engineering
2) **Forensic investigations:** Tools and techniques, Methods of forensic investigations – Root cause analysis, Events and casual factors charting, Management oversight and risk tree, System safety accident investigation, Reverse engineering, Factography, Corrosion, Fire investigation, Review of designs
3) **Failure Analysis:** Failures of structures, Failures types and mechanisms, Causes of failures during design-construction- operation,
4) **Risk**: Risk assessment, Assessment of damage, Repairs and remediation,
5) **Monitoring and instrumentation** –Different DT &NDT methods, Physical evidences
6) **Professional practice**: Ethics, Legal issues, Mitigation of failure
7) **Report writing:** Forensic Civil Engineering reports, Case studies

Practical

One assignment on each unit

References

1) Learning from Failures – R.N.Raikar
2) Structural Diagnosis - R.N.Raikar
3) Beyond Failure: Forensic Case Studies for Civil Engineers Kindle Edition- Norbert J. Delatte Jr. (Author)
4) Forensic Engineering 2018: Forging Forensic Frontiers- Edited by Rui Liu, Michael P. Lester, Alicia E. Díaz de León, and Michael J. Drerup, ISBN (PDF): 9780784482018
5) Forensic Engineering: Learning from Failures- Kenneth L. Carper (Editor) ISBN-13: 978-0872625174 ISBN-10: 0872625176
6) Forensic Engineering: Informing the Future with Lessons from the Past Publisher: ICE Publishing (September 2, 2013), ISBN-10: 0727758225ISBN-13: 978-0727758224
7) Forensic Engineering: Civil Engineering Special Issue1 Paperback – Import, Jan 2009 –

Simon Fullalove (Editor) Publisher: Inst of Civil Engineers Publication , ISBN-10: 0727736388ISBN-13: 978-0727736383

8) Guidelines for Forensic Engineering Practice Paperback – Import, 15 Sep 2012 -- Joshua B. Kardon (Editor)

9) Forensic Engineering: Damage Assessments for Residential and Commercial Structures Hardcover , Jan 2013 - Stephen E. Petty (Editor)

10) Ethical Issues in Forensic Engineering- J Paul Guyer,ISBN10 1490563601, ISBN13 9781490563602

11) Failure Case Studies in Civil Engineering: Structures, Foundations, and the Geoenvironment, Second Edition- Edited by Paul A. Bosela, Pamalee A. Brady, Norbert J. Delatte, and M. Kevin Parfitt, P.E.

12) Forensic Engineering Proceedings of the Third Congress Edited by Paul A. Bosela, Pamalee A. Brady, Norbert J. Delatte, and M. Kevin Parfitt, P.E.

12) Proceedings, Conference on Forensic Civil Engineering, Association of Consulting Civil Engineers(I),Bangalore, August,2013 and Nagpur, 2015