

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Civil Engineering (Computer Aided Structural Analysis & Design)

Subject Name Fracture Mechanics (Major Elective -I)

Sr. No	Course content
1.	Fundamentals of Fracture Mechanics, Mechanisms of fracture and crack growth
2.	Cleavage fracture, ductile fracture, fatigue cracking, Environment assisted cracking
3.	Service failure analysis, linear elastic fracture mechanics, Griffith's criteria, stress intensity factors, crack tip plastic zone, Erwin's plastic zone correction, R curves, compliance, J Integral
4.	Concept of CTOD and CMD, Material models, crack models, band models, models based on continuum damage mechanics

Reference Books :

1. Elementary engineering fracture mechanics – David Broek – Sijthoff & Noordhoff – Alphen aan den Rijn – Netherlands
2. Fracture mechanics of concrete structures – Theory and applications – Rilem Report – Edited by L. Elfgreen – Chapman and Hall – 1989.
3. Fracture mechanics – applications to concrete – Edited by Victor, C. Li, & Z.P. Bazant – ACI SP 118.