Course Catalog Description
Creep and fatigue of engineering materials, introduction to continuum mechanics, deformable bodies, crystalline plasticity, cyclic loading and deformation, high temperature and rate dependent deformation, service life prediction, creep/fatigue/environment interactions, creep and fatigue fracture mechanisms, sliding, rolling, fretting, methods of analysis and case studies.

Required Background
Graduate Standing, Undergraduate knowledge in Mechanics of Materials and Materials Engineering.

Class Meeting Time and Place: Tuesdays and Thursdays, 11:30 AM – 12:50 PM, Classroom D208A.

Instructor:
Dr. Reza Mirshams, PE, Professor of Engineering Technology
Office Location: F128
Office Hours: Mondays and Fridays, 11 AM – 12 PM. Please make appointment for other times.
Email Address: Reza.Mirshams@unt.edu (preferred). Office Phone: 940-565-2594.

Course Website: The course will use UNT Blackboard Learn at https://learn.unt.edu environment for providing supplemental materials.

Textbook
The textbook should be available from the UNT Bookstore (unt.bncollege.com) or the publisher website (http://www.pearsonhighered.com/).

Supplemental References

Learning Outcomes
Fundamentals of engineered materials
Understand plasticity in materials
Understand dynamic loading and fatigue in materials
Understand creep phenomenon in materials
Understand materials failures
Consideration of creep and fatigue in engineering design
Understand life assessment of materials in engineered systems

Topics to be covered
Creep and fatigue in engineered materials
Deformation in solid materials
Micro and nano scales deformation in solids
Cyclic loading and deformation
Effect of temperature and loading rate
Creep and rupture
Life assessment of parts in mechanical systems
Failure in deformable mechanical systems

Teaching Methodology
Lecture, Problem Solving, Case Studies, Homeworks. Homeworks will be assigned every one to two weeks and due the next week except during exam weeks.

Grading Policy and Exam Schedule
Homework Assignments 20%
2 Case Studies Written Reports and Class Discussion 20%
Midterm Exam (Tuesday October 8th, Class Hour) 30%
Final Exam (Tuesday December 10, 11:00-1:00 p.m.) 30%

Grading Policies
90% and above A, 80-89% B, 70-79% C, 60-69% D, below 60% F.

CLASS POLICIES
1. Make-up exams are not allowed unless approved at least one day before exam.
2. Strongly recommended to attend all classes, but not required.
3. This syllabus is subject to minor modifications as the course develops during the semester with changes to be announced during the class hours.
4. UNT endeavors to offer you a high-quality education and to provide a supportive environment to help you learn and grow. And, as a faculty member, I am committed to helping you be successful as a student. Here’s how to succeed at UNT: Show up. Find support. Take control. Be prepared. Get involved. Be persistent.

To learn more about campus resources and information on how you can achieve success, go to https://success.unt.edu.
5. In cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request to me before the fourth class day.
6. All rules relating to academic dishonesty will be enforced in accordance with University policies.
7. The UNT Catalog procedures on cheating and plagiarism will be vigorously enforced. It is the duty of each student to protect their work so it is not available to others for submission as their efforts. This is especially true of files that are generated on the computer. Students that knowingly allow others to use their work are partners in this unethical behavior.
8. State common law and federal copyright laws protect this course lectures and materials. They have my own original expression and revisions to the textbook author(s) and I record them at the same time that I deliver them in order. Whereas you are authorized to take notes in class, thereby creating a derivative work from my lecture, and/or make a print of my lecture notes/slides. The authorization extends only to making one set of notes for your own personal use and no other use. You are not authorized to record my lectures, to provide your notes to anyone else or to make any commercial use of them without express prior permission from me.

9. Requests for review of graded work must be submitted during the lecture in which such work is returned to the students. The request should be accompanied by a written justification of the request including any supporting data.

10. Challenges to the course grade must be made according to the university academic policies.

11. An I (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.