Nontraditional Manufacturing Processes

Instructor
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Office Hours: Will be announced in the class. You may also make an appointment at possible convenient times. Finally, e-mail through the course website is often a better way for questions and communication related to the course.

Course Description (3 credit hours)
Discussion and presentation of nontraditional manufacturing processes and fundamental theory encountered in multi-disciplinary aspects of advanced materials and fabrication techniques for production of advanced electronic, mechanical, and sensing devices and parts in macro, micro, and nano scales.

Course Objectives
Nontraditional manufacturing processes make use of chemical, electrical, magnetic, ultrasound, photonic, and laser energy sources and processes for producing parts by removing materials, deposition, joining, and special hybrid fabrication methodologies for microscale parts.

Learning Outcomes
The course will provide
1. The ability to select nontraditional and advanced manufacturing processes;
2. the ability to assess the capabilities, potentials, and limitations of different modern manufacturing processes for production of parts; and
3. the ability to assess and present production process on the basis of knowledge and developments and failure in manufacturing products.

Course Outline by Topical Areas
- Review of Basic Manufacturing Concepts
- Nontraditional Machining Processes
- Advanced Joining Processes
- Additive Manufacturing Process
- Advanced Metal Forming Processes
- Advanced Metrology and Precision
- Microfabrication Processes
- Surface Engineering Processes

Basic Background
Undergraduate level background in various traditional manufacturing processes.

Textbook(s) and other Required Materials
Reading topics in references, published articles, and notes. No textbook.
Recommended Textbooks and References

Assessment Methodology
- Participation in Discussions
- Projects (4-6): on selected topics, may include laboratory experiments, technical report and oral presentation
- Written Final Exam
- Attendance is required for class hours and laboratory.

Grading Items and Values
- Homework and Exercises: 20%
- Examinations:
  - Midterm: 15%
  - Final: 15%
- Projects: 50%

Attention:
- Make-up exams will NOT be given for the scheduled exams, unless the student has a documented legitimate excuse.

Grading Scale
- A: ≥90%
- B: ≥80%
- C: ≥70%
- D: ≥60%

Course Website on Canvas
1. UNT Canvas will be used for posting assignments, grades, solution to selected problems, presentations discussion, etc.
2. To access the Canvas, you need to use your EUID and password.
Class Policies
1. 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 by the second week of the semester.
2. All rules relating to academic dishonesty will be enforced in accordance with University policies.
3. State common law and federal copyright laws protect my lectures. They are my own original expression and I record them at the same time that I deliver them in order to secure protection. Whereas you are authorized to take notes in class thereby creating a derivative work from my lecture, 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.
4. This syllabus is subject to change at any time during the semester with changes to be announced in class.
5. Grades are based in part on the student's ability to communicate. Good written English is expected in all course work and is a factor in project report grades. The student’s ability to orally communicate the results of project and class assignments is also monitored.
6. Each student should retain graded lecture notes, quizzes, homework, tests, software-generated files, and reports to document errors in recorded grades.
7. 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 before the next class.
8. An I (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.
9. 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.