**Course number and name: MTSE 4100: Senior Capstone Project**

**Credits and contact hours:** 3 Credits. Between 8 am and 5 pm, Monday to Friday, Department of Materials Science and Engineering, Discovery Park, UNT.

**Instructor’s or course coordinator’s name**: All Department Faculty

**Text book, title, author, and year**

None required.

1. *Other supplemental materials*

None

**Specific Course Information**

1. *Brief description of the content of the course (catalog description)*

Follow-on course from MTSE 4090, Senior Research Project I. Students continue to work with the same faculty mentor for this class and will continue to attend bi-weekly meetings with the other students to discuss progress, strategies, outcomes, etc. Designed primarily for the students to perform the proposed research plan established in MTSE 4090.

1. *Prerequisites or co-requisites*

[MTSE 3010](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt1653) , [MTSE 3020](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt8063) , [MTSE 3030](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt6141) , [MTSE 3040](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt9647) , [MTSE 3050](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt6102) , [MTSE 3070](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt5510) , [MTSE 3080](http://catalog.unt.edu/preview_entity.php?catoid=5&ent_oid=288&returnto=257#tt9658), MTSE 4090.

1. *Indicate whether a required, elective, or selected elective course in the program*

Required

**Specific goals for the course**

1. *Specific outcomes of instruction*

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| **Specific Course Learning Outcome** |
| 1. Students are expected to function in an environment that is more similar to that which they will encounter in their careers outside the university setting. As such, instructors have two main functions: to serve as advisors to the senior design student/teams and as evaluators of student/team progress consistent with course requirements. |
| 1. Students are expected to operate effectively in a team environment whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. |
| 1. Students will demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. The student will identify and describe a design problem with the help of the faculty mentor, and must demonstrate an ability to apply and integrate knowledge of material structure, properties, processing and performance for a materials selection and design problem. Students must consider additional aspects such as the economic, environmental, ethical, safety as well as social and political impacts of the effort. |
| 1. The student will demonstrate ability to present technical information clearly in both oral and written formats. |
| 1. Students must demonstrate ethical principles and professional responsibilities in an engineering context which must consider additional aspects such as the economic, environmental, ethical, safety as well as social and political impacts of the effort. |
| 1. Students must demonstrate an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. |
| 1. Students must demonstrate an ability to acquire and apply new knowledge as needed, using appropriate learning strategies. |

1. *Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes that are addressed by the course.*

This course addresses ABET Student Outcomes 1, 2, 3, 4, 5, 6, 7

**Brief list of topics to be covered**

1. Follow-up to initial materials design
2. Continuation of design activities
3. Mid-term presentation
4. Final presentation to faculty
5. Final project presentation