



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description

Company Name	<i>Systems Engineering and Engineering Management</i>	Date Submitted	<i>11/01/2018</i>
Project Title	<i>Habitable Layout Design driven by Psychophysical Criteria using Virtual Reality</i> (UNCC_HABIT)	Planned Starting Semester	<i>Spring 2019</i>

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills:

Discipline	Number	Discipline	Number
Mechanical		Electrical	
Computer		Systems	4

Project Overview and Requirements:

Motivated by spacecraft design, the project consists of evaluating layout designs driven by psychophysical criteria, which emphasizes on the individual's comfort and state of mind based on its living space. Currently, there are 10 conceptual layout designs are available for evaluation. This project will produce a Virtual Reality (VR) environment that enable people to assess various designs, and statistical analysis to optimize the design. The students will be trained to use a VR equipment in the department lab first. Then, they will implement various 3D models into VR environment and collect data of the human interaction with the layout design. Data collected will be evaluated by the students using various statistical tools involving multivariate analysis.

Expected Deliverables/Results:

Deliverables include:

- 3D models built for VR environment.
- Data collection of individuals using VR model.
- Report providing detailed analysis on collected data.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Matlab or any related software (required)
- Statistics (required)
- Design of Experiments (suggested)