<u>**EST 599-T01 – Systems Engineering Management**</u>
<u>**FALL 2019(Preliminary)**</u>

Room: SCI 1310

Wednesdays: 9:00 – 11:50AM

Instructor: Ed Palacio   Email: Eduardo.Palacio@Stonybrook.edu

Office Hours: I have an office in the East Campus, inside the LIHTI building; individual meetings can be arranged upon request.

<u>**Course Objectives:**</u>

Systems engineering (SE) establishes the technical framework for delivering material capabilities to the customer. SE provides the foundation upon which everything else is built and supports program success. SE ensures the effective development and delivery of capability through the implementation of a balanced approach with respect to cost, schedule, performance and risk, using integrated, disciplined and consistent SE activities and processes regardless of when a program enters the developmental life cycle. SE also enables the development of resilient systems that are trusted, assured and easily modified. The value of systems engineering is supported by the GAO Report 17-77, which indicates that, "Systems engineering is the primary means for determining whether and how the challenge posed by a program's requirements can be met with available resources. It is a disciplined learning process that translates capability requirements into specific design features and thus identifies key risks to be resolved. Prior best practices work has indicated that if detailed systems engineering is done before the start of product development, the program can resolve these risks through trade-offs and additional investments, ensuring that risks have been sufficiently retired or that they are clearly understood and adequately resourced if they are being carried forward."

This course will be an introduction to the System Engineering processes and methodologies that allow for an effective and efficient path to technical product development. The course will look at two highly diverse system design processes , a classical top-down flow down traditionally used in complex, large system, product development, typical of the Defense business (Waterfall/VEE), and the Agile system development process preferred by modern day SW design endeavors (SCRUM)

The traditional SE process spans the complete product life cycle, from identifying user needs and concepts through delivery and sustainment. It will also focus on the SE event-driven technical reviews and audits that assess program maturity and determine the status of the technical risks associated with cost, schedule and performance goals. Agile emphasizes a design process that uses continual involvement by the customer and end users to define and refine user needs not easily captured by up-front design specifications. Both processes have their place in modern day system engineering and both provide distinct advantages as well as limitations.