AUVSI Robosub
Sponsor: Naval Sea Systems Command (NAVSEA)-Keyport
Advisor: TBD
Team: 3 EE/CpE, 3 ME/MET students *#Interdisciplinary*

Develop an underwater autonomous robot to compete in the national competition. This year's team will build on the previous RoboSub, with specific, targeted improvements and an overall focus on system usability and success at completing competition tasks. Specifically, this year the goal is to autonomously maintain depth and bearing. This will allow the subsidiary goal of increased in-pool testing and pre-qualifying by 1 March.

Technical Objectives: These are mainly taken from discussions with the club. Continue to develop the 2016-2017 platform retaining the hardware components and arrangement while selecting specific elements to improve with the goal being to autonomously maintaining depth and bearing. Note: this does not preclude manufacturing a new sub for this year's efforts. In fact it would be encouraged to allow testing throughout the year.

- Maintain depth and bearing (allow students/club to set the metric (depth ± X in, bearing ± X deg over X ft transit by 30 Sept.)
    - Design and implement control system based on the vehicle dynamics
        - Model vehicle dynamics
        - Integrate depth and orientation sensors
        - Implement 6-DOF control system
    - Stabilize platform
        - Stiffen chassis
        - Rigidly mount modules/components
        - Ballasting system that can be easily trimmed but is stable/secure in during use
- Ease of use/maintenance/modification
    - Build on previous year's effort to increase modularity in hardware and software
    - Wireless above-water and wired below-water connectivity
    - Use battery pack that is widely available at retail stores
- Iterate over previous years
    - Watertight: Reconsider use of face seals
    - Reconsider power supply and GPU: Large in volume and power requirements
- Documented test plan
    - Validate performance
    - Increase testing time
    - Pre-qualify by 1 March