STEM CENTER
Teaching Enhancement Grants

1. **Title:** *Active Learning Space: Develop software for Solving complex real world problems in team based approach*

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4. **STEM Course:**
a. COSC 4319 Software Engineering
b. 54 students

Project Narrative
Executive Summary
Among many courses offered in the Computer Science, software engineering is a special one. The reason is, in software engineering, students need to work as a group to develop a complex software. The goal of this software engineering course is to engage students to work as a team that will help them to success in their future career in industries or any other places where collaboration is practiced. However, the current classroom organization is not suitable for group based learning approach. All classroom in Computer science department are suitable for lecture focused learning. These type of set up is not ideal for active group based learning since it requires special arrangement. In an active group based learning, group members need to share their ideas and thoughts face to face and the static nature of classroom setting is an obstacle for effective group learning. The active learning space in Farrington 213 and 217 offers a great opportunity for team based learning. Both of the rooms has enough spaces. There will be total 14 groups for the software engineering course and they can be evenly divided in two rooms simultaneously. The goal of this project is to provide an active learning environment using STEM center active learning space. Moreover, active learning space will be used for group's oral and poster presentations and meetings. This type of activity will enrich the student's ability to brainstorm as a group, plan and coordinate among group members.
Rationale: COSC 4319 Software Engineering is a required course for all computer science major student. The main goal of this course is to specifying, designing, implementation and testing for large programming projects. Students are required to work as a group and develop working software focusing to solve real world problems.
There are several challenges when students work in a group project:
☐ **Group formation**: Many Computer Science students are comfortable in working individually rather than as a team. This is due to individual assignment practices during the entire computer science courses.
☐ **Management of large group**: Group based learning success depends on active participations of group members. If a group consists of many students, it is troublesome to ensure the active participation of each member.
☐ **Inexperience of team based learning**: Most students are trained to work individually rather than team based. But team work needs coordination among the group member in terms of time management, deal with different opinions while working on a unified goal. While working in a group, group members need to play some specific roles. The assignment of roles need to be discussed and based on the interest and capability.

The current class room of COSC 4319 Software Engineering has a static seating arrangement and not feasible for team based learning. The STEM Center active learning spaces in Farrington 213 and 217 have the setups for good team based learning. Each of these rooms have tables with adequate chairs and projectors. The main goal of the proposed project is to use the active learning spaces to train undergraduate students for team based learning with group presentation, poster presentation and discussion. Students will gain workable insights and knowledge for work as a team member and apply those for a successful project.

Methods:
One of the learning objectives of COSC 4319 is for students to acquiring skills in working with others as a member of a team. There will be total four meetings during the class time in the STEM center active learning spaces in spring 2020. All those meetings include but not limited to – oral presentation, poster presentation and group meetings for team building and practice. Team building exercises will be designed and implemented at each group meeting to address the challenges in group projects. The goal for each meeting is described in the following table.
☐ Meeting 01: Group Meeting

Student who decided to work in a group will discuss about the project and their roles in the project. When they create a prototype, the active learning space is a good platform from them to discuss about various aspects of their projects. The projectors, paper and story boarding facility is a good fit for this purpose.
☐ **Meeting 02: Building Teamwork:**

The PI will design and deliver some team building strategy and skills to the students. There will be discussion and participations among those skills. These will help students to have a mindset of team working environment. Resolve and be respectful to different opinion and get the project advance within due time. However, each group member will evaluate other member of the group and will be guided how more efficiently they can engage in active team based learning.
☐ **Meeting 03: Poster Presentation**

Each of the group needs to make a poster presentation. There are total 14 groups in the class. They can present simultaneously in two rooms and that will help them to deliver their combined team work in a professional manner. This will also demand their coordination as a team.
☐ **Meeting 04: Oral Presentation**

The final oral presentation will be at the active learning spaces. Students will present their projects. Computer Science faculty members will be present to evaluate their project also their team effort.
Materials:
Printing poster at SHSU library, pen, papers, markers and sticky note.
Expected Results and Dissemination Plan:
Students are expected to develop and gain working knowledge for active team based learning. Students are working in groups to develop a poster about the project that has never been done for this course. This poster presentation will encourage students to present their works in a real research oriented environment. This type of novel environment encourages them to work more deliberately for a better group project. Since this is a new approach in terms of number of groups and the overall format of the course, the outcome will be shared with ABET committee members and also undergraduate curriculum committee. If the overall outcome is better, then this format can be applied for this course and also courses with similar expectation for better learning experiences.