Best Practices on Programming Fundamentals: From Honors Projects to Research-Based Projects

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Certain Community Colleges count with Honors Programs. These programs provide the opportunity to students in excellent academic status to work on additional course work assigned by the instructor on certain courses. This additional course work is considered to be an *honor project*. Students and faculty can take advantage of this opportunity to formalize *large scale projects* that can be extended through several courses, depending on the course learning objectives. If the faculty member agrees to "*mentor*" a student, the project has the potential to become an:

- *Enhanced Honor Project*: where the student must write an at least 1000 words paper, with academic references/sources. The paper must be peer-reviewed and approved by a selected committee. And finally, the student present the article in front of the committee, and/or a
- *Research-Based Project*: where the project has research implications that can be potentially applied to local/regional research developed by the scientific/engineering community who currently host their research at the University of Texas at El Paso, New Mexico State University, or Universidad Autonoma de Ciudad Juarez.

For several semesters, several STEM students, in particular computing-related fields have shown interest in developing honors projects and/or extra curricular research activities for freshman/sophomore courses, i.e., CS 1, CS 2, and CS 3. Occasionally, some of these extraordinary students take additional courses such as Computer Organization and Introduction to Scripting Programming using Python (a project-based course with emphasize on research projects such as cybersecurity, artificial intelligence, bioinformatics, and systems programming (e.g., including parallel, kernel, and neural network programming).

In this presentation, we will show the work done so far on students from El Paso Community College who were exposed to research project, in particular, a project titled "Comparison of Parallel CUDA Cores and CPU Cores". Finally, we discuss on how students who were exposed to these projects during their freshman/sophomore years in college, feature singular characteristics in the academic context such as: community and peer-leaders, educators role-models, or own remarkable programming skills.