

STEM education for the 21st Century

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As an educator I am very passionate about student learning and how well they grasp complex technical concepts. This passion is reflected in all courses, projects and workshops; that I teach, supervise or design. I am also aware that individuals have different learning styles, and I try to design my lectures and presentations to reach the widest possible audience. The overall objective for my classes is that everyone is given a opportunity to do well, irrespective of their learning style.

To achieve this, lectures are planned to follow a logical sequence; with a smooth 'hand-shake' from one lecture to the other. This ensures continuity throughout the class. When it is necessary to move to a completely new subject matter it is conducted as smoothly as possible in an attempt to ensure that the students can follow the transition.

Student evaluations are also given as much consideration as when dealing with students learning styles. For the classes I have lectured, traditional exams are coupled with student research projects. These projects are designed from the course materials, and the students must defend their work orally. Projects provide a means by which students can get their hands 'dirty'. It gives them to opportunity to 'see, feel and experience' the Physics, Mathematics and Engineering involved. Students must be trained to properly understand the Physics associated with a principle, make the appropriate Mathematical deductions, and develop Computational Engineering models to support and represent their findings. In my opinion that this approach is necessary as more complex and interdisciplinary computational models are required to address today's global issues.

Another policy I strictly enforce in my classes is that I meet with my students individually once a month. This works well with small classes. Students are required to have short scheduled monthly meetings with me. I believe that it is important to have sufficient 'face time' with my students, so that potential learning issues are identified early in the duration of the course and steps are taken to amend these issues. I have found that implementing the above model has worked well both for myself and my students.