

A report.

I am supposed to teach the subject “Basic of VLSI Design”. The syllabus oscillates around the concept of MOSFET and its applications. But suddenly at the end of the last module a new concept of BiCMOS is introduced which in my opinion is quite out of the box as the topic requires the concept of BJT also. In the given amount of hours, it is quite difficult for the students to recall and go through the fundamentals of the BJT. I would like to scrap this small part and may be it can be introduced in the syllabus of semiconductor device. Also in the course outcome of the curriculum nothing is given for this concept, so unnecessary it will give an extra load to the students. I would also like to introduce software called as the MAGIC followed by CADENCE for the layout design. The open software MAGIC will help them to understand the basic of layout and the CADENCE software will help them in higher level and can act as a bridge between academia and industry.

As a fresher a lot of new concepts I came across at IIT, IISER Bhopal for effective teaching and for understanding the whole class & student as an individual. However, I am going to implement a few which has motivated me the most like flipped classroom and blended learning. A lot of course content is also available for them in the platform like NPTEL and MIT online which will be helpful for us to maintain the coordination between the class and the assignments. They are provided in a very simple way which can be understood by the students very easily as a part of the homework.

The flipped classroom concept deals with the flipping of traditional homework and classroom studies. In the given course curriculum, it can be done quite easily as they have to deal here with both theory and practicals (simulations using SPICE). For certain portion of the syllabus like simulation of static and dynamic characteristics of CMOS, it is advantageous to use the flipped classroom concept as the students will get to read the theory which is very easily achievable from MOOCs (the exact lectures will be provided) as a home work and its application or hands on will be performed by them in the group of three or four in the class room including the concept of inclusive classroom. Working together in clusters will help the students to develop the habit of working in a group which is required today in almost all fields of work and it will also help the students to share their view and learn from each other. These hands on will help the class to deal with the problems which is quite hard to solve initially and needs some guidance. The corresponding theory will be explained at the moment with the help of discussions, which will help the students to learn effectively and me to cover the syllabus easily in the given time.

Apart from the practical classes for simulation, for the core of the theory a few lectures will be again given to the students as part of homework by using MOOCs and its numerical and other complex theory will be taught to them with the help of traditional class room method followed by digital platform (blended learning). If, however anyone feels some difficulty in understanding the online lectures, the concept will be again introduced in the class. Some

concepts will be discussed in the class while taking numerical, it can be explained to the student in a much more effective manner in a small amount of time as they are quite familiar with the topic. I am planning to add PowerPoint presentation in my lectures also that will help both me and the students to develop presentation and communication skills. For those students who cannot attend my lectures for a genuine reason I am planning to connect with them through Skype.

For the last module of the syllabus I am going to give the student an assignment to present a topic individually maybe using PowerPoint or by any means they wish for about 25 minutes including questions and answers.

A few fixed topics will be given to all the students to prepare and demonstrate randomly, then after a small quiz it will be discussed in the class using Socratic method. I guess it will help me and them to understand and remember a lot of points in the class itself.

I hope and I wish the method implemented by me will help the students to slowly adopt to the digital source of learning, make them more interactive and at most will make them how to learn themselves in a group and in individual.

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Thank you all!

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