Experiences with DEP teaching

Sridhar Iyer

Vikram Gadre

Outline

- Activities in teaching a course
- Factors influencing a DEP course
- Assumptions that do not hold in DEP
- M.Tech. versus PGDIIT
- IPR and other issues
- Suggestions

Activities in teaching a course

- Course planning
- Lecture preparation
- Lecture delivery
- Tutorials and homework
- Lab assignments
- Exams and grading

Some major differences between an IIT class and a DEP class

- **Communication medium:**
  - IIT class has "high" bandwidth => Possible to interact freely, get instantaneous visual feedback
  - DEP class has "low" bandwidth => Constrained interaction and that too with non-trivial delays
- **Student's background:**
  - IIT class has JEE/GATE filtering => Possible to assume minimum level of competence
  - DEP class has minimal filtering => Large variation in background/abilities even after pre-requisites
  - IIT students are mostly full-time
  - DEP students are mostly part-time working professionals
- **Instructor's skill:**
  - IIT class emphasis is on domain knowledge
  - DEP class requires good teaching skills also

Planning the course

- **For IIT students:**
  - Planning on-the-fly is "acceptable"
  - Dynamic changes of course direction are "ok"
- **DEP scenario:**
  - Students cannot be contacted at short notice
  - Students may be spending significant amount of time and/or money to attend each lecture
  - Students may plan other activities based on announced schedule
- **For DEP students:**
  - Course schedule needs to be well-planned and adhered to
  - Changes need to be announced at least one week in advance

Assumptions v/s reality

- **Assumption:**
  - The same course plan can be used for both IIT and DEP courses
- **Reality:**
  - The background of DEP students are different from IIT students
  - DEP students may be working professionals and consequently may not have much time
- **Hence:**
  - The contents and pace of the course needs to be different for IIT and DEP, even when the "same" course is conducted for both
  - Different evaluation criteria need to be applied
  - Different web pages needs to be maintained for each

Preparing for a lecture

- **For IIT students:**
  - Minimal preparation is "acceptable"
  - Most of the lecture can be done "on-line"
- **DEP scenario:**
  - Network may fail for "unknown" reasons
  - Re-transmission requests from RCs are quite common
  - Students may have to miss lectures due to "office" constraints
- **For DEP students:**
  - Reasonably detailed course notes are required
  - Lectures need to be well-planned so that one can talk to the camera, if necessary

Assumptions v/s reality

- **Assumptions:**
  - Some pointers to references are "sufficient"
  - Minimal web page and slides are "ok"
  - Slides can be made "just before the class"
- **Reality:**
  - DEP students may not have access to references
  - DEP students may not have time/money for web browsing
  - DEP administration needs time to dispatch material to RCs
- **Hence:**
  - Need for detailed references and tutorials even for basic topics
  - Need for a detailed course web page having most of the relevant papers etc available locally
  - Material needs to be dispatched at least one week prior to the lecture

Delivering a lecture

- **For IIT students:**
  - Student can simultaneously see board, slides, teacher and others
  - Teacher can see all the students and can dynamically adjust the time spent on a topic, depending on visual feedback
  - Uniform background and abilities are assumed for the entire class
- **DEP scenario:**
  - Student can see only one of teacher/slides/board at any given time. Teacher decides what is to be broadcast at any given time
  - Teacher has little visual feedback about students' understanding
  - Large variation in background and abilities of students, despite having pre-requisites
- **For DEP students:**
  - Need to speak much more slowly and carefully
  - Need to be aware of what is being broadcast
  - Need to focus more on basic material rather than advanced topics

Assumptions v/s reality

- **Assumptions:**
  - One can always switch to an RC to see what is going on
  - Students will interrupt if they do not understand something
- **Reality:**
  - Switching takes around 10 seconds. Entire class cannot be seen
  - Visual feedback may be deceptive
  - DEP students are typically much more diffident than IIT students
- **Hence:**
  - Need to be more alert about getting across to the students
  - Need to anticipate/imagine what is going on in class
  - Need to make the lectures more "friendly"

Tutorials and homework

- **For IIT students:**
  - Little emphasis on tutorials is "sufficient"
  - Assignments can be fairly advanced
  - Deadlines can be rigid
- **DEP scenario:**
  - Students may not have sufficient background
  - Students may not be familiar with IIT "style"
  - Students may not have sufficient time
- **For DEP students:**
  - More tutorials on basics are required
  - More exposure to problem-solving is required
  - Slight flexibility in deadlines is necessary

Lab assignments

- **For IIT students:**
  - Common and adequate infrastructure can be assumed
  - Specialized equipment/software may be available
  - May require the student to spend significant time in the lab
- **DEP scenario:**
  - Each RC may have different resources
  - RC may not be able to procure required equipment/software
  - RC may not have expertise to handle equipment/software
  - Lab time available to the student is highly limited
- **For DEP students:**
  - Assignments need to be more generic
  - Assignments may need to be simpler

Exams

- **For IIT students:**
  - Familiarity with problem solving can be assumed
  - Open notes/book and other creative exam styles are common
  - Quizzes may be conducted regularly as well as by "surprise"

- **DEP scenario:**
  - Students typically are not familiar with problem solving questions
  - Students typically have not encountered any creative exam style
  - Students may miss classes due to reasons beyond their control

- **For DEP students:**
  - Exams need to be simpler
  - Standard of questions should be increased gradually
  - Almost all exams need to be announced well in advance

Grading

- **For IIT students:**
  - Delays in returning of answer books are "acceptable"
  - Dynamic changes to grading policy are possible
- **DEP scenario:**
  - Students need early feedback on their performance
  - Students in different RCs may have different constraints
  - Total number of students may be much more than an IIT class
- **For DEP students:**
  - Correction of assignments/exams needs to be done "quickly"
  - TAs need to be very systematic to avoid "cribs"
  - Grading policy needs to be announced and adhered to

PGDIIT v/s M.Tech

- Theoretically, PGDIIT is the "same" course as corresponding M.Tech course
- In practice, the PGDIIT course needs to be "lower" than the corresponding M.Tech course

- Ideal situation:
  - PGDIIT course is not mixed with the M.Tech course
- Practical considerations:
  - Instructor willingness for repeated effort

Assumptions v/s reality

- **Assumptions:**
  - The course can be kept IIT-level; DEP students will learn to cope
  - The course can be DEP-level; IIT students can have offline interaction with the instructor
- **Reality: Suppose the lecture is targeted to DEP "average"**
  - DEP average is typically far below IIT average
  - Almost entire class in IIT will be in the "top" of a combined class
  - Typical IIT student will not seek additional interaction/work and so may be reduced to DEP level
- **Reality: Suppose the lecture is targeted to IIT "average"**
  - Number of DEP students may be much larger than IIT students
  - Most DEP students will be in the "bottom" of a combined class
  - Not fair to let them cope as best as they can
- **Mis-match of expectations: learning v/s certification**

Combining M.Tech and PGDIIT courses

- One possible solution:
  - Fine-grain modularization of topics
  - Extra lecture on basics of each topic for DEP students
  - Some common lectures for both sets of students
  - Extra lecture on advanced topics for IIT students
  - Extra assignments/exams for IIT students

- Question:
  - Is such a fine-grain modularization possible?
  - Is the instructor willing to put in the extra effort?

Other DEP specific issues

- **Coordinating with the DEP admin:**
  - Timely dispatch of course material
  - Stable decisions on audit/credit requirements

- **DEP studio:**
  - Need to wear dark shirts ☺
  - Handling of floor requests

- **IPR issues:**
  - IPR of slides borrowed from another source
  - IPR of own unpublished material being used in class

Watch out: Pitfalls

- Assuming that customizing one's course for DEP will not take much time
    - Making slides for DEP usually takes much longer than anticipated
- Assuming that specifying pre-requisites is enough to ensure uniformity
    - DEP students usually meet the pre-requisite only on paper
- Getting carried away in class
    - Not being aware of what is being broadcast
- Handling all floor requests
    - Few clueless/shameless students can upset entire lecture timing
- Attempting a lot of interaction
    - May result in bizzare queries/answers
- Assuming that everything will go fine
    - Murphy's Laws strike with amazing regularity ☺

Concluding remarks

- Many standard assumptions about giving a course within IIT do not hold for DEP
  - Extensive domain knowledge alone is not sufficient
  - Visual feedback about student's understanding is inadequate
  - Being a "good" teacher within IIT does not imply that the same material and delivery style will be good for DEP students

- DEP teaching is fun and satisfying if:
  - One likes teaching
  - One is willing to adapt one's style for the medium
  - One is willing to put in the "extra" effort to prepare detailed course material

Thank You