

**Agenda of the First (1<sup>st</sup>) Senate meeting to be held on Mon, Jan 19, 2009, IIT (transit) campus in NSIT, Dwarka.**

- 1. Admission to IIITD in 2009 - how do we admit students**
- 2. Academic dishonesty policy**
- 3. Policy for termination of program, semester drop, year drop, etc.**
- 4. Policy of sending grade card of students who get an F to their parents**
- 5. Policy that a student can hold a student-position only if the CGPA is  $\geq x$**
- 6. Approve the committee that will short list faculty applicants for interaction with the selection committee**
- 7. BTech Program in IT**

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## Academic Dishonesty Policy

Academic dishonesty seems quite prevalent in the colleges and Universities. Many students copy in home assignments, term papers, and even exams, and take copying very lightly. This type of academic dishonesty not only directly hurts the students as it hampers his/her training and development of proper professional values, but also negatively impacts the reputation and integrity of the Institute. IIT Delhi plans to take the issue of academic dishonesty seriously.

Academic dishonesty is any type of cheating that occurs in an academic exercise [Wikipedia]. Though it is not feasible to enumerate all possible ways in which academic dishonesty is practiced by students, some of the common acts of academic dishonesty are:

- **Cheating in exams.** Copying in whole or in part from others; providing such help; making changes after the exam paper has been returned; giving exam on someone else's behalf, etc.
- **Copying in term papers and reports.** Copying from sources in books, journals, internet sites and other archived material. There are two types of violations here – plagiarism (attributing someone else's ideas as your own), or copyright violation – copying verbatim someone else's expressions.
- **Copying in home assignments.** Copying from someone else's solutions; providing such solution.
- **Copying programs/code.** In whole or in part from another or allowing your own code to be used by another
- **Collaboration** when the instructor has explicitly disallowed it, and where the work is meant to be done individually.
- **Proxy attendance and impersonation.** Marking attendance for somebody who is not present in the class; impersonating someone in an exam; etc.
- **Having someone else do the work.** Outsourcing of homework, assignments, project report, term paper or even exams to another person or "service"

IIT Delhi wants to encourage its students to learn honestly and *act with academic integrity*. It plans to take suitable action against students indulging in acts of academic dishonesty. Faculty members can use any method they want for detecting use of dishonest means – randomly asking to explain answers, interviewing the students where cheating is suspected, using software tools to check copying from others &/or internet, giving another homework to judge if the earlier was done independently, etc. Though policies for dealing with academic dishonesty will evolve, currently the policy is broadly as follows:

- **First violation** - *At least* a zero in the relevant portion of the course (e.g. homeworks, exam), and one level reduction in final grade. The student will be asked to write a letter accepting his/her mistake and promising not to do it again. He/she may be asked to do some "service" work in the institute (without any payment).
- **Second violation** – Will result in *at least* an F in that course. It should be noted that this is second violation not in a course but in the institute in the entire program. This violation, along with the first one, will be reported to the parents.
- **Third violation** – The student will be expelled from the Institute, at least for a semester/year, but may lead to full termination also.

All punishments for academic dishonesty will be decided by a committee of faculty members.

## ***Structure of the “BTech in IT” Program at IIT Delhi – Draft***

### **1. Objectives**

IIT Delhi aims to encourage research and innovation (R&I) in the area of IT and some domain areas. The objective of the BTech program is to prepare students to undertake careers involving innovation and problem solving using IT, as well as undertake advanced studies for research careers in IT and the domain areas.

### **2. Background**

While Computer Science focuses on the foundations of computing, IT as a discipline focuses on satisfying computing technology needs of organizations. So, in a continuum between principles and application, IT is more towards application, with the goal being to apply knowledge of computing and mathematics for solving problems.

IT is now becoming a discipline that is distinct from Computer Science, and ACM has a special curriculum now for it. However, foundations of IT are still in Computer Science. Hence, it is desirable and feasible to have a CS-based IT program. Such a program will allow a graduate of the program to choose a career in CS or applied aspects of computing.

IIT Delhi aims to have such a curriculum which is CS-based, and which will develop in students skills for problem solving using engineering and research approaches, in the field of IT or some domains of IT. As the range of possible domain and specialization areas is large, it plans to have a strong foundational program, which can be built upon for specializing in different areas of IT or IT domains. In IIITD, this foundational program will heavily derive from Computer Science, and will be supplemented with suitable IT oriented courses.

### **3. The BTech Program**

For now, IIT Delhi plans to have one BTech program. Any program has to be designed such that an average student admitted into the program can complete it successfully in the duration for which it is designed. At the same time, a program must also challenge the brighter and more ambitious students. Clearly one uniform program cannot satisfy both these desired objectives.

To satisfy both these goals, the Institute will have the main BTech program which will be designed keeping the average student in mind. In addition, the institute will also have a system of Minors and Honors in the BTech program which a deserving student can do by doing extra courses and projects. So a student in the BTech program can graduate with a BTech, or a BTech with a minor in XXX, or a BTech with Honors. The requirements for Minors and Honors are similar except that the minor will focus on some non CS/IT area, while the Honors program will focus on specializations within CS/IT.

The program therefore allows students of different capabilities to remain challenged at a level appropriate for them. The main focus of the curriculum discussed below is the main BTech program, which is designed to ensure that a student gets a good education to successfully undertake a professional career and be a responsible and thinking member of the society.

The main BTech program can be divided broadly in two parts of 4 semesters each. The first 4 semesters will focus on providing the foundations of the computing discipline (as well as some other aspects). This part will be highly structured with more uniformity, due to its nature. The second part is for further developing the skills and knowledge of the students in various topics; the specializations will take place in this part. This second part will necessarily be not strongly structured and different students will follow different paths and take different set of courses in it. So the overall BTech program can be represented as shown below:

### 3.1 The Foundation Program

The foundations of computing will be covered mostly in the first half of the program. This foundation program provides the basic knowledge about CSE/IT, and can be viewed as consisting of four major streams in which capabilities of the students have to be built. These streams are:

- Software
- Hardware
- Theory
- Systems

The intent of the foundation program in CSE/IT is to develop certain level of knowledge and capability in students in each of these areas. This capability for each area can be expressed as the post condition for that stream, which specifies at a high level what capability and knowledge should be achieved by the end of the foundation program for the stream. The post condition for the foundation program for CSE/IT then becomes a combination of post conditions for each of these streams.

Given the desired post condition, the sequence of courses for each area is such that they provide the students the necessary education and training to develop their skills and knowledge to satisfy the post condition. (Hence, the design of the foundation program for CS/IT becomes identifying the stream of courses needed to satisfy the post condition of all the above areas.) A course may help satisfy post condition of more than one streams.

The tables below give the post condition of each of the streams, and then give the sequence of courses for that stream that will be taught to reach the post condition. Together these post conditions becomes the pre-condition for the second part of the BTech program. I.e. the courses in the second part can assume that all these post conditions hold for all the students. Before this, we specify the pre-condition we expect the students to satisfy before undertaking this foundation program.

**Precondition (weakest – satisfied by all students) for the foundation program:** Familiarity with computers and use of browser, email, etc (but no programming exposure); Some calculus, set theory, probability,...

<i>CSE Stream</i>	<i>Post Condition of different Streams in the Foundation Program</i>
<b>Software</b>	<ul style="list-style-type: none"> <li>• <b>Primary:</b> Ability to develop an efficient and good quality 1000 line program to solve the target problems</li> <li>• Above ability in at least two programming languages, and at least one modern programming environment.</li> <li>• <b>Desired:</b> Ability to integrate various components for providing a web-based solution</li> </ul>
<b>Hardware</b>	<ul style="list-style-type: none"> <li>• <b>Primary:</b> Ability to develop a digital circuits of 100 gates/memory elements, and firmware for small systems</li> <li>• Understanding of how instructions are executed using electronic signals</li> <li>• <b>Desired:</b> Ability to utilize machine provided features (e.g. cache, bus, etc) for improving program execution</li> </ul>
<b>Theory</b>	<ul style="list-style-type: none"> <li>• Ability to abstract out and manipulate mathematical structures from problems</li> <li>• Ability to formalize computation</li> <li>• Appreciation of the fact that problems are of varying complexity from linear time solvable to undecidable.</li> </ul>
<b>Systems</b>	<ul style="list-style-type: none"> <li>• Ability to effectively use APIs provided by an OS for developing system level programs</li> <li>• Ability to setup and manage a small modern computing setup</li> </ul>

<p><b>Software Stream</b></p> <p><b>Post Condition:</b></p> <ul style="list-style-type: none"> <li>• Ability to develop an efficient 1000 line program to solve the target problem.</li> <li>• Above ability in at least two programming languages, and at least one modern programming environment.</li> <li>• Ability to integrate various components for providing a web-based solution</li> </ul>
<p><b>Sequence of Courses, with post condition for each course</b></p> <p><b>Intro to Programming</b></p> <ul style="list-style-type: none"> <li>• Basic programming language constructs like sequencing, loops, conditionals, functions..</li> <li>• Syntax of one programming language</li> <li>• Capability to write a 100+ line program</li> </ul> <p><b>Data structure and algorithms</b></p> <ul style="list-style-type: none"> <li>• Ability to develop a 500+ line program using efficient DS and algos</li> <li>• Use of some IDE (to focus less on syntax, as well as learn the use of this env.)</li> </ul> <p><b>Advanced Programming</b></p> <ul style="list-style-type: none"> <li>• A new programming language (OO) with related concepts like common patterns</li> <li>• Good programming concepts – modularity, information hiding, cohesion, coupling, etc.</li> <li>• Use of techniques like unit testing, source code control</li> <li>• Ability to develop 1000 line program</li> </ul>
<p><b>Other Regular Courses in this stream</b></p> <p><b>Web Programming</b></p> <ul style="list-style-type: none"> <li>• Ability to do client and server side programming, use various tools and environments, integrate elements for providing web-based solutions</li> </ul> <p><b>Programming languages</b></p> <p><b>Software Engineering</b></p>

<p><b>Systems Stream</b></p> <p><b>Post Condition:</b></p> <ul style="list-style-type: none"> <li>• Ability to effectively use APIs in an OS for developing system level programs with good understanding of what is happening underneath</li> <li>• Ability to setup and manage a small modern computing setup</li> </ul>
<p><b>Sequence of Courses, with post condition for each course</b></p> <p><b>Computing system configuration and management</b></p> <ul style="list-style-type: none"> <li>• Ability to setup and manage the computing infrastructure</li> </ul> <p><b>Operating Systems</b></p> <ul style="list-style-type: none"> <li>• Ability to use OS APIs for systems programming</li> <li>• Ability to enhance an OS with some additional capability</li> </ul>
<p><b>Other Regular Courses in this Stream</b></p> <p><b>Computer Networks</b></p> <p><b>Compilers</b></p>

<b>Theory Stream</b>
<p><b>Post Condition:</b></p> <ul style="list-style-type: none"> <li>• Ability to abstract out and manipulate mathematical structures from problems</li> <li>• Ability to formalize computation</li> <li>• Appreciation of the fact that problems are of varying complexity from linear time solvable to undecidable.</li> </ul>
<p><b>Sequence of Courses, with post condition for each course</b></p> <p><b>Discrete Structures</b></p> <ul style="list-style-type: none"> <li>• Abstraction and manipulation of mathematical structure</li> </ul> <p><b>Theory of Computing</b></p> <ul style="list-style-type: none"> <li>• Formalizing computation and two extreme ends of problem complexity: regular languages and undecidability</li> </ul> <p><b>Algorithms design and analysis</b></p> <ul style="list-style-type: none"> <li>• Abstraction of mathematical structure from problems + problems of varying intermediate complexity</li> </ul>
<p><b>Other Regular Courses in this Stream</b></p> <p><b>Logic</b></p>

<b>Hardware Stream</b>
<p><b>Post Condition:</b></p> <ul style="list-style-type: none"> <li>• <b>Primary:</b> Ability to develop a digital circuits of 100 gates/memory elements and firmware for small systems</li> <li>• Understanding of how instructions are executed using electronic signals</li> <li>• <b>Desired:</b> Ability to utilize machine provided features (e.g. cache, bus, etc) for improving program execution</li> </ul>
<p><b>Sequence of Courses, with post condition for each course</b></p> <p><b>Introduction to Digital Circuits</b></p> <ul style="list-style-type: none"> <li>• Ability to design small digital combinatorial and sequential circuits up to 100 gates and memory elements.</li> </ul> <p><b>Computer Organization</b></p> <ul style="list-style-type: none"> <li>• Understanding of the instruction execution and firmwares, and ability to develop a small firmware</li> </ul> <p><b>Computer Architecture</b></p> <ul style="list-style-type: none"> <li>• Machine features for program execution and ability to utilize them to improve execution of programs</li> </ul>
<p><b>Other Regular Courses in this Stream</b></p>

### 3.2 Overall Program for the First Half

Using the foundation program of CSE/IT, the program for the first four semesters can be defined. Though the focus of the first four semesters is to develop the CSE/IT foundations, the program will also have courses for overall education and self development of students.

Keeping the overall load to about 9 full courses per year, there are slots for 4 more courses in the first half of the program. The courses for these slots will be: Communication skills, some advanced mathematics, some suitable humanities and social sciences courses, and a course on digital communications.

Together with these courses, the first half of the program gets fully defined. The desired advanced mathematics and HSS courses to be covered in the first half of the program will evolve with time though it is expected that one of the math courses will be on probability and statistics or stochastic modeling.

The courses for each of the streams have to be mapped to first four semesters in a reasonable manner such that the load is evenly distributed and the ordering is maintained. The following table gives when these courses are offered to students. In addition to CS, it also adds the stream “general education/self development”, which is important in any education program – it is towards this courses in sciences, humanities, maths are offered. They not only broaden the horizon of the students and make them more informed and thinking members of the society, but also perhaps see linkages between CSE/IT and other disciplines. Though the education for specific domains will be done in the second half of the program, some elements may get covered in general education.

	Sem 1	Sem 2	Sem 3	Sem 4	Later
<b>Software Stream</b>	Intro to Prog	DS+Algo	Adv Prog	[Web prog and sys]	SwEngg, Prog Languages
<b>Hardware Stream</b>	Digital ckts	Computer org		Computer Arch	VLSI, Embedded systems, Adv. Architectures
<b>Theory Stream</b>	Discrete Maths	TOC		Algo design and analysis	Logic, Modeling (queuing, Petri-nets, etc), Adv theory, Adv algorighms
<b>Systems stream</b>		Sys setup and mgmt	OS	[Sys mgmt II]	DBMS, Compilers, Networks, distributed systems
<b>General Education</b>	Commn Skills	HSS	HSS; Engg Science, Prob and Stat	Digital Communic ations	Tech Commn, Design, some more HSS, Sciences, Maths

### 3.3 Program for the Second Half

This will consist of various standard courses in CSE/IT that are no longer considered foundational but that are likely to be offered regularly. Such courses will form a “soft core”. In addition, it will consist of advanced courses in CSE/IT, as well as courses in domain areas (through OE). The second part is likely to have minimal structure in terms of defined courses. Whatever structure is needed will be defined later.

As one of the objectives of IIT Delhi is to have teaching and R&D in some domain areas as well, it will also focus on application domains like health, life sciences, finance and economics, E-Governance, etc. There will be courses from these domains, and students can do their projects in them. Besides these domains, there will also be specializations possible in some area of CS/IT, like networking, software engineering, security, etc. Most of these domains and specializations will be offered through courses and projects in this half. Minors in some areas may also be offered.

Details will be fixed later. In general, students will do a collection of electives from the set of courses offered, and projects. A regular student need do about 9 courses a year to satisfy the graduation requirements.

#### 4. Requirements for Graduation

For requirements for graduation, the concept of units is employed. A course can be:

- A regular course of 4 units. It will have 3 hrs lectures per week, with a total of 36 hours of lectures (12 weeks). In addition, one hour of interaction per week is expected which may be in form of structured tutorials or labs. A course may or may not have lab-based assignments or projects, depending on the course.
- A 2-unit course. Such a course will have 1.5 hrs lectures per week, or may have 3 lectures per week for half the semester. The total lectures hours will be 18. Intensive short-term courses of 2 units are also possible, though it is expected that the duration of such a course will not be less than 3 weeks. It may or may not have tutorials and labs.
- A 1 unit course. Such a course is likely to be run as a short course on a very specialized topic. Such courses may also be run during vacations. A 1-unit course will have a total of about 9-10 hours of lecture. For pedagogical reasons, such a course cannot be run over a period of less than 1 week; a period of 2-weeks or more is preferred.

It is expected that some 2-unit and 1-unit courses will be conducted by visiting faculty from across the world. Some courses (e.g. skill development, community work, and self growth) may also be designed as 2-unit courses.

The courses themselves can be grouped in Core Courses (CC), soft core (SC) courses, IT electives (IE), and open electives (OE). Core courses comprise courses that all students must do and that form the foundation of the whole program. SC courses are those, where from a basket of courses, a student must do a certain number. In some cases, for a SC slot, one of the courses from a specified set must be taken. IE are courses, generally on special topics in different areas of IT that will strengthen the student's breadth or depth in IT. OE are courses that will allow students to develop knowledge and skill in some related domain for IT, humanities, sciences, mathematics, etc.

For graduating, a student is expected to pass in courses totaling 144 units (equivalent to 9 full courses a year). In addition to meeting the overall credit requirements, the student must pass all the core courses, and must pass sufficient number of units of SC, IE and OE courses, as specified in the program. Currently, the requirements are as given below:

##### **Core Courses (Total: xx units)**

- Communication skills (4)
- Intro to programming (4)
- Introduction to digital circuits (4)
- Discrete Maths (4)
- Computer Organization (4)
- Data Structures and algorithms (4)
- Operating systems (4)
- Theory of computation (4)
- Advanced programming (4)
- Computer systems Mgmt (2)
- Algorithm design and analysis (4)
- Probability and statistics (4)
- Technical Communication (2)
- Digital communications (4)

##### **Soft Core (Total: 24 units)**

- Web-based programming (4)
- Data bases (4)
- Computer networks (4)
- Software Engineering (4)
- Compilers (4)
- Programming languages (4)
- System and network management (2)
- Adv. computer architecture (4)
- Logic (4)
- Algebra (4)



**Electives (at least 20 units)**

- Artificial intelligence
- Computer vision
- Computer architecture
- Data communications
- VLSI design
- Graphics
- Multimedia
- Independent study (1, 2, or 4)
- Minor project (1, 2, or 4)
- Btech project
- Advanced topics in computer networks
- Advanced topics in software engineering
- Advanced system and network management
- Etc.

**Open Electives (at least 20 units)**

- Mathematical sciences courses
- Humanities and social sciences courses
- Science courses (physical sciences, biology, etc)
- Domain courses
- Community work/self development
- Btech project
- Independent study (1, 2, or 4)
- Minor project (1, 2, or 4)
- Etc.

In addition, the following requirements must be fulfilled:

- At least 12 units of humanities and social sciences courses must be done in OE.
- 4 units OE must be Community work / Self Development. These OE courses are of 1 to 2 units each, and can be done anytime. Committed students may be allowed to do more.
- A Btech project (BTP) will be treated as a set of IEs or OEs. It is not compulsory. If a student opts for BTP, he/she must take it for 8 or 12 units in a semester, and should generally take it in two successive semesters.
- A student may take as IE/OE some Project or Independent study work of 1, 2, or 4 units. No more than 8 units of these courses may be taken in the entire program. Only students with satisfactory CGPA (at least 7.5) or with a strong interest in some area (UG advisor to determine this based on interaction with the student) can take these courses.

A student must register for at least 12 units in a semester. Lower load may be allowed with permission due to special circumstances. The load in a semester may not exceed 24 units. If there are course offerings with credits during the breaks/vacations, a student may also take them and they will be counted towards fulfilling the requirements.

## **5. Assessments and Grades**

To assess the performance of students in a course, different instruments may be used. These include, but are not limited to, home assignments, projects, term papers, exams. All assessments are entirely the responsibility of the instructor of the course.

There will be two scheduled exams each semester – mid-sem exams and final exams. The mid-sem exam will be held after about 7 weeks of classes, and the end semester will be held after full 13 weeks of classes. All courses will have at least a final exam.

For an exam in a course, the instructor in-charge is entirely responsible for setting the exam paper, maintaining its integrity and confidentiality, and conducting the exam. An instructor may also give home assignments, projects, term papers, additional exams/quizzes/tests etc. in a course, if he/she so wishes. Evaluation of home works, tests/quizzes/etc., as well as the answer scripts of all the exams is entirely the responsibility of the instructor. Marked answer scripts of all exams will be shown to the students for scrutiny, and a student can request rechecking. The rechecking will also be done by the instructor.

Grading will be based on performance in all the assessment instruments given by the instructor. The relative weight of the different assessment elements and the final criteria for grading

will be decided by the instructor, though general guidelines for some of the core courses will be specified. The grading will be relative in that grades will be based on performance of the overall class rather than absolute number of marks. However, an instructor may use absolute grading as well, provided the criteria are announced in advance.

Grades in a course will normally be A, B, C, D, and F. An instructor may give some A+ grades to recognize the special effort and excellence (though for CGPA computation, it will count as A only). In addition to these grades, there will be courses that will have only pass (P) or fail (F) grade. Incomplete (I) may also be granted, but an I grade must be converted to a regular grade before the start of next semester, otherwise it will automatically be converted to an F.

The instructor is responsible for deciding the grades, which will be finally discussed and approved through a process of moderation. Guidelines for grading as well as moderation will be developed by the academic senate. Within two weeks of the last final exam, the grades for the last semester, as well as the semester grade point average (SGPA) and the current cumulative grade point average (SGPA) will be sent to the student.

## 6. Minors and Honors

### Minors

IIT Delhi plans to focus on some domain areas. While courses and projects in domain areas will be offered to provide knowledge and exposure to students, Minors will be the key mechanism to provide a limited specialization in a domain.

Minors are therefore expected to be in domain areas. For a student to graduate with a minor in an area (i.e. with a BTech in CS/IT with a Minor in xxx), the requirements will be:

- Overall credit requirement will increase by 12 (three more courses)
- At least 8 credits of courses must be from xxx,
- A BTP of at least 12 units must be done in xxx area.

Possible areas for Minors will be specified later and will evolve with time as new faculty join and as new centers open.

### Honors Program

Honors program is similar to the minor program, but with a focus on CS/IT. The requirements are same as for minors:

- Overall credit requirement will increase by 12 (three more courses)
- Must do a BTP of at least 12 units, and at least 4 units of IE/OE (which puts some restrictions on who can go for Honors)

Through honors, a student can develop a limited specialization in some CS/IT area. In this case, the specialization may be mentioned in the degree. Details of this will be similar to that of Minors, and the areas of specializations will depend on the centers that come up.

## 7. Academic Calendar

A semester will have 13 weeks of classes, not counting vacations, exams, demo/presentation/preparation time, etc. The overall academic year schedule will broadly be as follows:

Calendar for Academic year nn – (nn+1)	
Sem I (Monsoon Semester)	Sem II (Winter Semester)
Aug 1: Classes start Sept end: Mid-sem exam week	Jan 2 or 3: Classes start Feb end: Mid-sem exam week

Oct: Mid-sem recess (one week) Nov 3 <sup>rd</sup> week: Demos/presentation wk Nov 4 <sup>th</sup> wk/end: Final exams	March: Mid-sem recess (one week) April 3 <sup>rd</sup> week: Demos/presentation wk April 4 <sup>th</sup> wk/end: Final exams
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**Notes:**

- All full courses must have a total of 13 weeks (39 hours) of lectures, and any loss due to any reason (e.g. national and other holidays) must be made up (perhaps by using Sat).
- Exact date of mid-semester recess will be decided keeping in mind the festivals, and it is likely that it may be aligned with Dussehra in Sem I and Holi in Sem II.
- Each semester, the week before the end semester will be kept primarily for project demos, presentations, preparation etc., and for making up any lost classes.
- A few days during the semester may be made free to accommodate other institute level activities like major conferences, seminars, functions, student functions, etc.
- So the sem duration is: 13 + 2 (exams) + 1 (recess) + 1 (demo) + 1 (misc) = 18 weeks (appx).

## **Options for Admitting Students to IIT Delhi**

The main aim of any admission test/criteria is to try to identify and admit those students who will do well in the academic program of the Institute. For IIITD, as it is an IT-focused institute, it needs to select those students who have a better potential in handling computing related subjects. Due to its more focused purpose, it is possible to devise a more focused exam. The main question, of course, is identifying the exam which will be a good indicator of performance in IIITD. Broadly, IIITD has two approaches, within which we have various choices.

### **Using an Existing Examination and Counseling**

This is the easiest method with least overhead. The options here will be AIEEE and CEE (the exam done by NSIT and DCE). AIEEE is based primarily on CBSE (and our data shows that performance in AIEEE is well correlated with perf in class XII).

- **AIEEE.** The main advantage is that it has state wise as well as combined ranking, which will allow IIITD to follow its 85% Delhi policy easily. Also, it is a well established exam. Main drawback is that we are likely to get in the start “lower ranking” students, as higher rankers will chose NITs.
- **CEE.** This is Delhi only test and if we use this we will still have to use AIEEE for outside the state. But in this exam, we will eventually have to become stakeholders and will have to help in making and conducting the exam.

### **Having our Own Exam with a Filter for Who can Appear**

This is the second approach. In our case, we do not want to use the exam to raise resources. Hence, we would like to first apply some filter, and allow only those who pass the filter to appear in our test.

If we do our own test, since we do not want to use the entrance test to “make money”, and would like the competition not to be too severe, we would like to have perhaps 10 to 20 X students appear in our test, if we want to select X students. As our seats for 2009 will be less than 100, we should be looking for having about 2000 students appear in the test. However, since students who will sit in IIT/AIEEE and get through there may not come to IIIT, if we do our test early, we must allow about 10K students to appear – something we should try to avoid. Besides the size of the test, it will also mess the counseling process.

This means, *if we want to have fewer students in our exam, we should ask for applications \*after\* JEE and AIEEE results are out.* This is the only way to ensure that we have only those students applying who are somewhat serious about joining IIITD. (In this case, we can even use AIEEE itself as the filter, but asking students to have taken AIEEE also for entering IIITD may not be a good idea.)

JEE results are out in May 3<sup>rd</sup> week, and AIEE results are out in May end. CBSE results are also out around that time. This means that we can have our test around June middle (as we want people to apply after the results are out, we need to give about 2 weeks for online applications, sending the admit card, etc. However, all this will be announced well before, so students know the dates in April/May, so we can keep the window of application relatively short.)

With this, the options for the filter are:

1. **AIEEE.** A clear possibility. I.e. only those students who get a rank above nn can apply. However, this means that we are using *two competitive exams* for admission, which does not seem right.

2. **Class XII.** This is probably a better choice than AIEEE – as it supports the school education. (And we have found good correlation with CS performance). The main difficulty is that if someone has not appeared in CBSE/ICSE, i.e. in some other neighboring board, they will have difficulty as their results may not be out by then.
3. **“Above xx% in Class XII OR in top three in your class”.** This will expand the base to consider toppers from those schools where the highest is not too high. This is better than just class XII, as it gives an opportunity to those coming from schools in weaker areas.
4. **Class X, i.e. “Above yy% in class X OR in top three in Class X in your class”.** The correlation with Class X performance is almost same as Class XII. If we use, class X as the filter, we can hold the test at any time, and do our counseling whenever we want. We can use class X as the primary filter for allowing students to take the test. Like BITS, we can also require that only those students can get admission who have secured above some % in some subjects (PCM) in class XII – thereby giving weight to Class XII also.
5. **Follow BITS model.** They allow students to appear in the test, but for admission the student must have secured above some % in class XII. This will make the exam size too big and difficult to handle.

This model allows us to have a “different” exam – test some different ability. I.e. use class XII (or some other test) for the PCM capability, and we can then test for aptitude. Last year we did an “aptitude” test. We can refine it this time and test those abilities which are a better predictor of performance in CS (need to do more R&D on this.)

So far a good option seems to be: Option 3 with the clause that if your class XII results are not out in time, then those who are above the rank of yy in AIEEE may also apply. So the eligibility criteria is:

***Eligibility Criteria: A candidate is eligible to appear in the admission test of IITD if***

***He/She has obtained in Class XII Board in PCM marks above xx%***

***OR***

***He/She is in top three of his/her school in class XII***

***In case a prospective candidate has appeared in a Class XII board whose results are not out two days before the last date of application to IITD, then he/she is eligible to apply if his/her all-India AIEEE rank is between 1 and 5000.***

## ***Structure of the PhD Program***

The PhD program at IIITD is like any other PhD program with a focus on research. A candidate with a BTech or MTech in CS/IT or a related discipline can be admitted into the PhD program. The following are the main requirements for successfully completing a PhD.

- **Sufficient Breadth:** The candidate must have satisfactory knowledge in CS/IT. The breadth expected is equivalent to the core program of the BTech. If an admitted candidate does not have sufficient breadth from before, the PG committee will recommend some courses to be taken, or other ways.
- **Advanced knowledge.** A PhD candidate must obtain advanced knowledge in the area of his/her study, and at least one allied area. This will generally be obtained through advanced courses. A student with sufficient breadth is expected to take at least 12 units of advanced courses for BTech (i.e. equivalent of 3 regular courses), and 6 for M.Tech. Four of these can be in the form of independent study / project. For candidates with work experience, relevant experience may be counted as advanced knowledge in the area of expertise(s) and experience(s) – the PG committee will determine if the experience is relevant to count as advanced knowledge, and how many credits it may be given.
- **Open presentation and viva.** A PhD candidate must give an open presentation in a chosen topic, which is related to (but not exactly the same) his/her thesis area. The student, in consultation with his/her advisor, will submit a short proposal about the topic and the list of papers/resources which will be used for this presentation. This presentation should generally be completed in the 2<sup>nd</sup> semester of the student enrolling the PhD program. The presentation will be followed by a viva by a committee formed for the candidate. Passing this viva successfully will formally make the candidate a PhD scholar. (This is equivalent to the Qualifiers or Comprehensive in many other places).

After this Open presentation, the focus is on the PhD thesis work. Though this is primarily between the scholar and his/her supervisor, a scholar must make a yearly presentation during the project/demo week about the work done in the last year. The PG committee will formally evaluate the progress and record the findings. It is expected that one of these will be thesis proposal presentation, where the scholar will present the problem on which he/she plans to work on in the thesis.

When a PhD scholar is ready to submit the thesis, he must give an open seminar in the Institute on his work. This open seminar can also serve as the final thesis oral defense, or may be different.

## **Thesis Evaluation and final thesis defense**

All PhD theses will be evaluated by experts and a thesis defense must be held. The thesis defense will be evaluated by the orals board which will comprise an external expert who was also the thesis examiner, an expert from within IIITD (or a neighboring Institute) who was also the thesis examiner, and the supervisor. The following guidelines will be used for thesis evaluation.

- If the student has two or more accepted papers in high quality conferences or journals, then the thesis is deemed to be suitable for a PhD. In this case, the thesis will be sent to two experts within India – one from within the Institute (or a neighboring Institute) and one from outside the institute. The experts will be invited for a defense (generally between 1 and 4 weeks after submission), and will be requested to submit their suggestions, if any, before the end of the defense. The scholar will have to address any issues raised by the experts, which will be validated by the scholar's advisor. Upon completing this, the PhD may be granted.
- If the student has one accepted paper in high quality conference or journal, then the thesis will be sent to three experts – two as before and third from anywhere in the world but outside IIITD. The oral defense can be scheduled after at least two reports recommending acceptance have been received. (If these are the first two reports, the third reviewer is suitably informed and requested to submit the report within 2 weeks). The oral board will examine if the issues raised by experts have been satisfactorily addressed. On passing the defense, PhD may be granted.
- If a scholar only has submitted papers, then the oral can only be held after reports of all three experts have arrived and all three have recommended acceptance. The oral board will examine if the issues raised by experts have been satisfactorily addressed. On passing the defense, PhD may be granted.

### **A Rough Schedule for PhD**

For a full-time student who enrolls in PhD program and who has sufficient breadth from before, it is expected that sufficient number of advanced knowledge courses will be done during the first and second semester. By the end of first semester, the student is expected to have finalized his/her supervisor. By the end of second semester, the open presentation and viva are expected to be finished. Thereafter, the student focuses on his/her research and getting the results published. At the end of year 2, the yearly presentation is expected to be the thesis proposal, and at the end of year 3 on preliminary results. The thesis and the final viva are expected to be completed in 4<sup>th</sup> year.

## ***Responsibilities and Expectations in a Course***

Courses are taught in an Institute with the goal of building the knowledge and skills of students taking the course. For achieving this goal, there are some responsibilities on students. There are, obviously, many responsibilities on instructors. This note briefly mentions some key responsibilities of students, and some things that students should expect from the instructors.

### **Students Responsibilities in a course**

- Attend the lectures and tutorials regularly – there is a lot of evidence (including some from IITD) which shows that regularly attending classes helps in learning and grades. Good attendance is also a motivator for the instructor – if students take the classes seriously, it adds a positive feedback to the instructor.
- Raise questions when material is not clear – unless this responsibility is taken seriously, classes will become passive, which is not conducive to learning.
- Take your responsibility to learn seriously – the instructor’s responsibility is to facilitate this learning
- Do the homework, assignments, and projects as assigned by the instructor.
- Maintain academic honesty and integrity.
- Maintain proper conduct in class, and proper computer etiquette and behavior

### **Student Should Expect the following from the Course Instructor**

- Course description at the start of the course - including contents, nature of homework/projects, evaluation criteria (i.e. weights for different elements), names of main text book/reference to be used, expected work load, etc.
- Classes and tutorials (if there) being held regularly
- Clarifications provided in lectures and tutorials, when asked
- Solutions for home works - discussed in class or given separately
- Graded assignments/projects/labs returned within a reasonable time
- Mid-sem exam copies with evaluation shown within a week
- End-sem exam copies with evaluation shown within a few days of the exam
- Right to appeal to the instructor to re-evaluate some parts of exam, assignment, etc
- Fairness in all evaluations



## ***Termination from the BTech Program***

Requirements of graduation are defined in the BTech program. Students who fail a course gets a “backlog” which he/she will have to clear by repeating that course (or an alternate course, where possible).

There will be situations where a student has accumulated many backlogs and seems incapable of graduating. In such a case, it is best to terminate the registration/enrollment of the student, so he/she can pursue some other career. This note proposes rules for terminating a student’s program, as well as issuing warnings.

A student may be terminated from IIITD, if his/her academic performance falls below the specified threshold. Guidelines for this are:

- If a student fails to clear at least two-thirds of units he/she is enrolled for in a semester, he/she is given a warning. This warning is sent to the parents also.
- After two warnings, the student is placed on probation.
- On getting the third warning, the students program and admission may be terminated.
- If after the first two semesters, a student has not passed courses totaling 18 units, he/she will be required to “repeat” the year. I.e. he/she will proceed in the program with one year junior batch. Some credits for the courses completed may be given.
- If in the third and fourth semesters of the academic program, the student does not pass at least 18 units, he/she may be asked to “repeat” that year.
- If the student gets a third warning, then his/her program will be terminated.
- The maximum duration allowed for completing a program is 7 years. If a student is not able to complete the graduation requirements in this duration, his admission is terminated.

## **Minutes of the First (1<sup>st</sup>) Senate meeting held on Mon, Jan 19, 2009, IIT (transit) campus in NSIT, Dwarka.**

**Members Present:** P. Jalote, V. Bansal, A. Kiehn, V. Goyal (IIITD), KK Biswas and P.K. Kalra (IIITD), R. Moona (IITK), P. Goyal (Adobe), C. Anantaram (TCS)

The meeting started with the Director giving a general background of IIITD, and its current state, to set the context.

### **1. Admission to IIITD in 2009 - how do we admit students**

After discussion, it was generally felt that using Class XII as a filter is the right way to go. Also, allowing top-3 from a class was considered as a good socially positive action, though logistics of these needs to be worked out. It was also agreed that it is a good idea for IIT to avoid having those students appear in its test that will make it into JEE or get high rank of AIEEE. Hence having applications after results of these are out is the right approach, even though announcement for the application will be made well in advance. It was felt that the xx% for XII should be such that it allows more than 20,000 students to filter through. Similarly, the yy rank for AIEEE should be suitably chosen. The final approach for admission recommended in the note was accepted.

**Action to be taken:** Find out how many students in Delhi are above given percentages in PCM in CBSE. Similarly, find out

### **2. Academic dishonesty policy**

The policy was accepted as the immediate measure. It will be refined later.

### **3. Policy for termination of program, semester drop, year drop, etc.**

It was felt that more work needs to be done before a policy can be adopted. However, the general idea of having a student with some backlogs to repeat year 1 was accepted.

### **4. Policy of sending grade card of students who get an F to their parents**

It was decided that the best policy is to send the grade card of all the students to their parents.

### **5. Policy that a student can hold a student-position only if the CGPA is $\geq x$**

It was agreed that student representative to the senate should have a CGPA of  $\geq 8.0$ , and representatives to other bodies should have a CGPA  $\geq 7.0$ .

### **6. Approve the committee that will short list faculty applicants for interaction with the selection committee**

The following committee proposed by the director was accepted: V. Bansal, A. Kiehn, PK Kalra, KK Biswas, and P. Jalote

## **7. BTech Program in IT**

There was a presentation on it and a lot of discussion and debate. It was decided that this item will be discussed again before firming up. Some key points from discussion were:

- The industry representatives will interact within their companies and suggest the post conditions that they want to see at the end of 4<sup>th</sup> year. This will then be factored into the curriculum design. [My view – besides our senate members, I will get such inputs from some other companies as well]
- Database should be made a compulsory course in an IT program
- Software engineering may also be made a compulsory course.
- TOC can be quite difficult in 2<sup>nd</sup> semester – the course contents should be carefully looked into to ensure that students are able to digest it.
- It was suggested that each semester there should be at least one non-CS course in the “general education” category.
- It was felt that the “Computer Architecture” course may be considered as “soft core”, and hence not-necessary.
- “Digital communications” need not be kept as a compulsory course.

## **8. Rest of the agenda items could not be taken up due to shortage of time.**

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