

STRENGTHS

February 2008

PhD research
c/o CE, IITK

gotta look out of the box... into the surroundings

Internship...an ever lasting fantasy!
DO...is it all important?
Class committees- a new concept
StimuluS- The department day
and much more...

a novel idea...

interaction engineered!

for the first time in IIT Kanpur

Society of Civil Engineers (SOCE), IIT Kanpur proudly presents

STIMULUS

THE DEPARTMENT DAY

THE DEPARTMENT DAY

SOCE, which has been relatively inactive this year, came up with a novel idea of a department day. A need for such a day has been long felt and is now fulfilled.

The idea is to get together the students, faculties and their families to a common interactive place and provide a reason to celebrate. Attempting on a large scale, the day would involve competitions (sketching, clay model making, quiz etc), student and faculty talks, combined dinner, movie show and much more! The first Stimulus would be on 23rd February, 2008.

Events like this are very much needed in today's scenario where young students do not understand how important it is to interact not only with their fellow students but also the faculty. It brings out the feeling that after all we all are the members of one family called Civil Engineers. Such events must be encouraged and organized in all the departments for a healthy and interactive environment in the academia.

A few words from the head...

The face of civil engineering is fast changing. Higher technology in use, more quality technical manpower required and unusually large financial outlay available are some major factors that civil engineering education needs to appreciate and prepare the graduates for. But one aspect of a civil engineering graduate that can help realize all of the above is a balanced personality of the graduating engineer. The "Strengths" magazine and "Stimulus" event are small steps to build that balanced personality in the graduates. At the same time, these are also occasions for faculty members to understand the minds and emotions of the present-day students, to be able to prepare them better to face the real world. I congratulate the team of students and faculty members behind the "Strengths" magazine and "Stimulus" event for breaking the silence and letting-in some fresh air.

With warm regards...
C.V.R. Murty





P21...

Internships...when, where and how
 Students are always puzzled over this one word! Bagging an intern at a good place is getting tougher and tougher with increasing spamming. Now how do you define a 'good' intern...



P6

Class Committees

the department has started a novel concept of class committee for the UG II, III and IV years. The purpose of these class committees is to get feedback from the students, regarding their...

Cover Story...P13

PhD? What does he do !%\$%

Civil Engineering department at IIT Kanpur has always been a leader when it comes to solving the engineering challenges being faced by the country. Here the Strengths team presents some of the high quality doctoral....



P32

Want a solution? Board a train!!
 After sleepless nights before IIT JEE, I had been on a month long vacation, and on my way back to my home town aboard the Brand New Indian Railway. Deep down in my heart I had buried many questions, questions from which I was running away ever since I...



P30

CE100000!!! But why???

It has been seen that students usually do not take this course seriously and sometimes do not succeed in getting out of it. In this interview, Dr. Chandra explains the....



Other articles...

Recent Electricity Consumption patterns within....	P8
Stress and its Management	P10
Pseudo Dynamic Testing Facility: Article	P16, P33
Civil Engineering Survey and Geology Camp	P18
Compressed Air	P24
Summer Camp	P28
When we look at our surroundings	P32

Other Features

P17, 20
Happenings at CE, IITK, in pictures

Lost Forever...P12

Placement patterns...P7

Zindagi...P29

Strengths team...P35

Class Committees

Ravi Goyal and Amit Kumar |

From the year 2007, the department has started a novel concept of class committee for the UG II, III and IV years. The purpose of these class committees is to get feedback from the students, regarding their academic curriculum, instructors, problems that students are facing. The committee members would then focus on these and try to resolve them in the best possible way. It is designed to be an informal committee, so its functioning is not limited to academic related problems. The first semester has seen two meetings with second and third years and one with the fourth year.

The Need

Dr. Partha Chakravorthy says, "This committee is formed to provide students some experienced friends who can talk to them about their troubles and can advise them. Thereby, whatever is discussed in the committee is solely the concern of its members and nobody else, it's like some wing mates sitting together and discussing their problems. IITK has a kind of system where students do not talk enough with each other. This committee is simply about talking to students and understanding any problem of them. The members of this committee are some professors and all the students of 2nd, 3rd and 4th year. Generally, in a committee we have those professors who are not teaching any course. We are here not as professor, but we are like friend having more experience than

students. I am related with this (IITK) system for 20 years, so this experience is going to help students. This committee encourages student to see the changes from other's perspective. Committee is not to discuss any particular issue as it is very informal. Students will have fun and talk freely. We have had *chai* and *samosas* with them and we enjoyed this. This is a single platform where all the 60 students of the batch meet together after the lectures, so it has enriched the interaction between them."

It is important to evaluate a course in its run time, not at its end and that is what we try to do here.

- Dr. Mukesh Sharma

According to Dr. Bithin Dutta, there are cases where students stop attending the classes. The reason might be the course being boring. Watching the reducing strength of students, teacher also loses interest in the course. Actually, students don't go and talk to teacher directly. So, on their behalf, the faculties will convey their message to the instructors about problems faced by the students in the course.

"Some students don't like teaching by power point as these things are uninteracting. Some instructors copy everything onto the board and don't look much towards the students, which is not so interactive. There are many such subtle issues faced by the students. In some other colleges instructor only has to teach, question is being set by somebody else and grading is done by somebody else, students can't question their grading, but in IITK instructor is the boss. He teaches, sets the questions and grades also, so he can make the course content flexible. This system is from the beginning and working well, so this is not going to change. Also, some students feel that this flexibility is being misused," says Dr. Purnendu Bose.

Power

Since it is an informal committee, it has only advisory power. We can't do much about core courses but departmental courses can be made a bit flexible in terms of course content as required by the student. In case of departmental courses action can be taken immediately but in core courses it will take time.

The first semester has witnessed a decent turnout from the students. A special mention has to be made about the third year students who came in huge numbers to discuss their problems. The faculties were successful in winning the trust of the students. The second semester so far had no meeting which is a bad sign from both the sides. It has now to be seen how efficient the committees would turn out to be to carry over their intended purpose in the future.

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For those placement junkies....

The placement patterns for the years 2006-2007 and till January 2007 have been collected and analyzed by the Strengths team. The trend has been observed to be gradually shifting from noncore jobs to core jobs. Around 56% of the on-campus placements in the year 2006-2007 were in core companies with an average initial package of 4.0 lacs per annum. The overall average in the year reached the mark of 4lacs pa. The data for the number of people opted to study further has not been made available.

In 2007-2008, till 4th February, 65 students (B.Tech+M.Tech) got placed (43 B.Tech, 22 M.Tech). The average packages have been much higher the previous year(4 lacs pa), with 5.35 lacs per annum (B.Tech +M.Tech) this year. Not so surprisingly, core and similar areas have dominated the student's choice. Another analysis showed that the core jobs and related areas of work provided an initial average package of 5 lacs pa with 47 students placed in them and 18 were placed in non core ones(mostly software or finance) with a average package of 6.34 lacs pa.

Courtesy: Students Placement Office, IIT Kanpur.

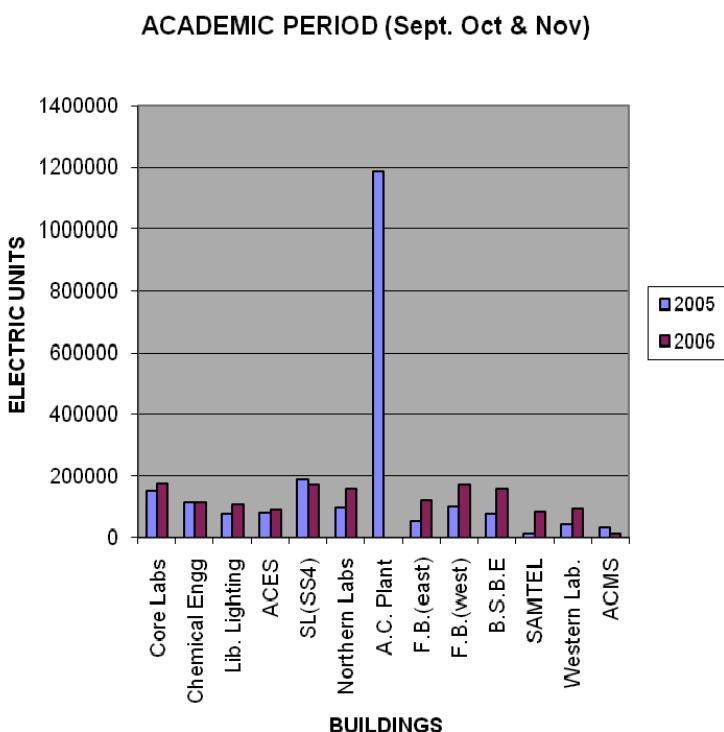
Recent electricity consumption pattern within IITK academic area

Anoop Diwaker and Rajesh Kumar |

As a part of our summer training in 2007, we conducted a short study with two objectives namely, (a) to study the electrical consumption patterns within IIT-K academic area for the past two years and, (b) short survey to study various trends of electricity consumption in different labs/offices within these buildings including collection of suggestions for ways to reduce the consumption.

The required data was collected from the Electric Substation, after taking permission from the authorities. Mostly M-Tech and PhD students were surveyed as they spend more time in the labs. In most of the labs/offices visited, the persons contacted for survey provided full co-operation. The electricity consumption data (in KWH) for year 2005 and 2006 was sorted and compared for 3 different seasons. The figure below shows results from the academic period covering Sept-Nov.

Academic Period (Sep, Oct and Nov): The major consumption was for AC plant. As visible from the figure, buildings for which electricity consumption has increased in the year 2006 as compared to that in 2005 are: Core Labs, Library Lighting, ACES, Northern Labs, FB East, FB West, BSBE, SAMTEL and Western Labs. Whereas, buildings for which electricity consumption has decreased in the year 2006 as compared to that in 2005 are: Chemical Engg., SL (SS4) and ACMS.



Winter period (Dec, Jan , Feb): Similar graph was observed for this period and Northern lab, FB East, FB West, BSBE, Western Lab and ACES showed increased electricity consumption in year 2006 as compared to year 2005. However, the electricity consumption decreased for the rest surveyed.

Academic period (Mar, Apr, May): Here too, AC plant emerged as the biggest consumer. Following buildings showed increased consumption pattern for 2006 as compared to previous year: Core lab, Chemical Engg., ACES, FB East, FB West, BSBE, SAMTEL and Western Labs. Whereas, SL(SS4), Northern Labs, AC Plant, ACMS and Library Lightings showed decrease.

Due to the lack of complete data, we skipped the comparison for the summer period.

Major Results from the Survey:

Library: Dr. P. K. Kelkar Library, being one of the biggest in the country is also one of the highest consumers of electricity within the academic campus. There are many zones in the Library where lights and fans are kept on even when no one is studying. The total number of tube lights and fans is far more than sufficient. Many copy machines are kept on even while not in use. AC system remains working on each floor everyday as a rule, though the staff always makes sure to switch off the lights and fans before closing the Library.

Computer Center: It is also amongst highest consumers of electricity. Intensity of AC system is very strong at the ground floor. Several desktop computers are kept on throughout the day, without being used. Number of lights is definitely more than sufficient.

Southern Labs: A large number of labs are functioning there. In most of the labs we visited in Southern Block there is almost no scope of reducing electricity consumption. In Laser Lab there is no scope of avoiding use of lights even in day time. In rest of the labs the use of electricity is quite efficient.

Faculty Building: Some of the faculty members seem to forget to switch off their AC and lights before leaving their offices.

Overall Suggestions

Library: In Library there are many scopes of reducing electricity consumption. Library can be divided into a number of zones (cabins) which will have motion sensors attached to automatically switch on/off the fans and lights as one enters and exits them. During summer and winter vacations number of students utilizing the library facilities is comparatively very less. So maybe we can restrict the Library to some particular zones where fans and tube lights remain open. Whereas, in rest of the places only little number of lights remain open just to let students pick their required books and study them in the allotted zones. During semesters maybe the library can be divided into some zones which have suitable lightings for a large number of students to sit there. Remaining places can be provided with minimal number of lightings.

Computer Center: There is a considerable scope for improvement. Number of lights can be reduced. Instead of Tube lights, CFL lights should be preferred. Intensity of AC system can be reduced, especially in the ground floor. The PC monitors should be either on power saving mode or switched off when not in use.

Lecture Halls: For future, they should be designed so as to utilize sufficient sunlight during day time. This way we can minimize use of lights during day times.

Health Centre: This building can be accepted as ideal in that case. It is designed to use sufficient sunlight during day time. Hence the counter remains illuminated without switching on the tube lights. Also, it has the provision of near-roof ventilation that keeps it relatively cool during summer period with the aid of exhaust fans.

Upcoming Buildings: They should be designed so as to encourage electricity conservation. The portion of the walls near roofs can be preferred to be made of glasses. This will also keep the building warm during winters.

In general, employing centralized AC system in all the labs and academic buildings, wherever possible, can reduce the electricity consumption to large extent. AC must be switched off, when not in use. PC monitors should be switched off/kept in standby mode, when not in use. Proper ventilation and provision for natural light should be made in the buildings so that lights can be kept off during day time. Fans and tube lights should always be turned off before closing the labs/offices. Proper incentives for energy saving including awareness seminars should be organized in the campus.

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Stress... and its management

Anirudh Sharma

We all know or at least realize at some point of time in our lives, what stress is, but most of us do not know what it can lead to! Previous issue of Strengths had an article on Stress and its features. Here Mr. Anirudh Sharma presents the tips on Stress and its management in his concise article.

"I am too tired to continue..."

"Oh man, I'm sick of this perennially aching neck."

"I'm not hungry; I guess I'll skip lunch today."

I'm sure you have heard these lines many times in your life. The person at the other end could be a family member, your best friend from college, or even you yourself. Most of the times, we tend to forget about these symptoms as soon as they disappear. But beware; these are but a few of the classical symptoms of a serious physical and psychological problem... 'Stress.'

Stress can mean different things to different people. To an engineer, it is the force per unit area of an element, to a linguist, stress is the emphasis given to certain syllables, while to a doctor, stress is the response of the human body to strong external or internal stimuli. As long as we are in the domain of this article, the last definition is good enough.

This brings us to the point...is all stress bad stress? The answer is no. Some amount of stress is necessary in our lives. Stress is the body's way of preparing itself for a fight or flight reaction, it is what keeps us on our toes while preparing for an important exam. Instead of wilting under stress, we can use it as a positive impetus to achieve success. Under stress, the brain is biochemically and emotionally sharpened to give its maximum performance. Then why see stress in a negative light at all? Well that's because like most things in this world, too much of stress is bad, and that is what we have to safeguard ourselves from.

As stated above, stress is the response of the body to strong stimuli. Let us see what exactly we mean by this. When the brain perceives a stressful situation developing, it releases stress hormones like adrenaline, the heart rate and blood pressure increase, the blood vessels below the skin constrict to prevent loss of blood in case of injury, our pupils dilate to give us clearer vision and the blood sugar level goes up giving us an energy boost. But the problem once again is that the more this response is activated, the harder the body finds to switch it off. Even after the stressful situation is over, the blood pressure and heart rates remain high along with the concentration of stress hormones in the blood. You don't need to be a medico to figure out that this is not good for anyone.

One may feel that the above lines pertain to a situation where there is some amount of physicality involved, which we as intellectuals would rarely have to face. This is not false, but we intellectuals are exposed to a lot of

STRENGTHS- February 2008

other situations which cause stress, like appearing for an exam, making a presentation, waiting for the results to come in etc. The body's reaction to each of these situations is the same as it would be if we were confronted with a knife wielding thief. Haven't you noticed your heart beating faster just before stepping onto the stage to deliver a speech? That is why understanding stress is so important to us all.

Going a step further, learning how to control stress is equally important. Here are a few pointers to identify if someone is suffering from stress:

1. Inability to concentrate
2. Desire to escape or run away
3. Moody and irritable behavior
4. Lack of confidence
5. Headaches
6. Sleep disturbances
7. Eating too much or too little
8. Isolating oneself from the others
9. Fatigue
10. Nervous Habits like nail biting, fist clenching etc.

So now that we have learnt how to identify stress, let's look at a few very simple methods to alleviate it:

1. Breathing exercise: Make sure you are in a comfortable position. Inhale slowly through your nose for a count of four. Exhale to your mouth for a count of eight (or longer than the time you took to inhale). Relax your shoulders, neck and stomach muscles as you exhale.
2. Arm Stretch: Raise your hands above your head, fingers interlaced, and palms facing up. Push up as far as you can, but don't strain yourself too much. Hold for 10 seconds and let go. Repeat 5 times.
3. Head and neck roll: Relax your shoulders, and let your chin drop towards your chest. Slowly rotate your head in circles without straining the neck. Repeat 5 times. Change the direction of rotation and repeat 5 more times.

Apart from these simple exercises, the following pointers are also useful for the control of stress:

1. Don't over schedule: Take up only that much work which you can finish within the deadline. Drop the unimportant tasks.
2. Ask for help: In case you get stuck with your coursework, never hesitate to ask for help. Nobody is perfect. Make mistakes and learn from them instead of worrying about getting everything right at the first shot.
3. Sleep: Getting a good night's sleep recharges the body and prepares it well for the rigors of the coming day. You must sleep for 6-8 hours per day.
4. Relax: Include at least one relaxing activity on your daily schedule. For example, play your favorite musical instrument or your favorite sport, read comics, sketch something etc.
5. Eat well: Give your body the fuel it requires to function at its best. Try and avoid junk food while stocking up on the nutritious food like cereals, green vegetables, fish, sprouts etc.
6. Manage your time: As a rule, *give up procrastination*. You will be amazed to find how relaxed you are when your work is completed in time.

In conclusion, we must realize that both, factors causing stress and methods to overcome it are present within us. It is up to us to recognize the factors which lead to stress and work on overcoming them, or, to identify the activities which relax us and include more of them in our daily lives. We have to learn to be optimistic and use stress in a positive way to get motivated and reach our goals.

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LOST FOREVER

Shashank Kumar |

What should be the first line?
Neither I know, nor you over there
Soliloquy, with a glass of wine
Where has all gone: life, love and care?

Alone, lone and shattered yet alive
Gusts I have seen, blows taken aback
Still I walk, my breaths do thrive...
But are there reasons, a cause to crack?

Life is but a mist of the gloomy
Until seen unlike, in the shade of a hand
A gesture which cared, and did love me
But nothing left now, so alone I stand...

Loneliness casts a deep penumbra
Eyes become static, and hopes so numb
Blood follows such a static orchestra
Nothing feels rhythmic, all so dumb

Perhaps time is only what I pass
Killing it thereby, and moving some place
Don't remember when I peeped into the glass
Forgetting who I am, what is my face...

What should be the ending stanza?
Neither I know, nor you over there...
Soliloquy, with a glass of wine
Where has all gone: life, love and care?



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PhD Research, c/o CE- IITK

Salil Goyel, Mohit Agarwal |

Advances in science and technology help in improving the living standards, at the same time, they deteriorate them. Engineering research is supposed to direct these advances for a better cause. A PhD work has a great importance in performing any good research, in fact, the beginning of it. Civil Engineering department at IIT Kanpur has always been a leader when it comes to solving the engineering challenges being faced by the country. Here the Strengths team presents some of the high quality doctoral research currently going on. A mere glance over the next few pages gives an idea of the diversity of the topics being pursued.

...towards a pollution free Ganga

Name: M. Abdur Rahman Quaff
 Guide: Dr. Saumyen Guha

The aim of this research is to prevent pollution of water bodies like river Ganga by treating low strength waste-water with anaerobic bacteria. This research is concerned with the optimization of USAB for low strength waste-water. At lab scale waste-water has already been treated with an efficiency of 80%. At present a pilot plant has been installed in Gujarat, from where treated sample is collected after every 20 days. If extended to a large scale, the method would result in negligible power consumption, less land usage and labor cost.

...using the useless land

Name: Arindam Dey
 Guide: Dr.P.K.Basudhar and Dr.Sarvesh Chandra

Mr. Dey deals in analytical work on improving the land area for construction & to recover the land which was previously lying useless. The aim of the research is to improve the land area so that the land may be brought under construction. The land can be improved by using pile foundations & deep foundations & using some chemical methods. This research deals with prediction of the behavior of the soil when subjected to static loads. There are two approaches to this theoretical work, one is the lump parameter approach & the other is the continuum mechanics approach. The first approach deals with idealization of the (derived parameters) properties of the soil to those of spring & dashpots, while the latter deals with the actual parameters of the soil. The two approaches are clubbed together and the properties are studied. This research work also predicts the condition of the land & their settlement after 10-15 years after construction. It has been found that geosynthetics increase the land capacity to about 60% & reduce the settlement to about 45-50%. The significance of the research is that the behavior of the land & soil can be predicted which is very important in today's world because the decreasing availability of the land is day by day. If we know the behavior of the land beforehand then we can adopt several measures to make it suitable for construction. Also, the land which could not be used for construction earlier due to undesired properties of the land (like the settlement problem of the land) can now be brought under construction. This research is very beneficial for our future generation too.

...optimal management of water bodies

Name: Mr. Anirban Dhar
Guide: Dr. Bithin Dutta

The objective of this research is to help in better optimization of contaminated aquifers. Mr. Dhar deals in theoretical work related to management of contaminated aquifers. Aquifers are water bearing strata which get contaminated due to some natural or human activities like dumping of wastes near water bodies, etc. He deals with the development of methodologies for the optimal management of aquifers & also the management of salt water intrusion in coastal areas like in Chennai where encroachments are going up to about 10-15 km, along the coastal region. He deals with monitoring the network design for contamination detection in ground water which includes optimization procedures & the effect of pumping on the ground water contamination. This research is very helpful for the society as it aids in providing pure water by treating it properly prior to its consumption. This research is surely the need of the hour & will help to solve many upcoming problems related to water & also the problems which our society may face in the near future due to availability of very less amount of pure water.

...a more firm base for taller structures

Name: Dr. Hemant B Kaushik
Guide: Dr. Sudhir Jain and Dr. Durgesh Rai (completed PhD in May 2007).

Dr. Hemant Kaushik completed his PhD thesis in May 2007. Currently, he is busy with TATA project for testing the strength of newly developed steel. He is also working as an associate scribe in NICEE (National Information Center for Earthquake Engineering). His research is aimed at development of the seismic design for open storey buildings. During his research he has proposed a new formula for calculating strength of ground storey building relative to a first storey building, which according to him in IS1893 is **2.5** times the latter, for every type of building. But in the research he found that his formula works better. He has proposed four options which include the use of beams & columns, lateral bitraces along with his formula. If applied, it could improve the performance of the building during an earthquake. This research is of a great importance to the society because it will help in saving the lives of many people by making the buildings more efficient and give better performance under shaking. Though it will cause a slight increase in the cost of construction but investing some more money to save one's life is not a bad investment!

...how perennial is our Ganga

Name: Mr. Nandgopal Roy
Guide: Dr. Rajiv Sinha

In this research Mr. Roy studies the litho-static units that include clay minerals & magnetic materials obtained by digging bore wells of about 30 meters depth in the valley region & about 100 meters depth in the region between the two rivers. The discharge flow of the river is affected by two factors: tectonic activities & the climate. These two factors are studied separately. The deposits found within the depth of 30m were deposited during the past 10,000 years (called hollow sink period) & the effect of the climate on the Ganga River is studied during this period. The climate affects the river by affecting the discharge flow of the river which is dependent on the precipitation & thus, the monsoon pattern is also studied. It has been observed that the discharge of the river has shown a tremendous decrease during 1970-1997 & then a sudden increase after 1997. According to this research, it may be due to human interventions or mainly due to global warming which resulted in the abrupt increment in the melting of glaciers. **There is a possibility that the perennial rivers like Ganga may not remain perennial in the future & may depend on monsoons which will affect the upcoming generations.**

...LiDAR- 3D world on a 2D paper

Name: Mr. Suddhasheel Ghosh
 Guide: Dr. Bharat Lohani

Mr. Suddhasheel Ghosh is a research scholar in the Geo Informatics Division and is working on a technology called LiDAR (Light Detection and Ranging). This recent technology enables the user to create a three dimensional model of the terrain. This data is in the form of dense point clouds. Contemporary research practices indicate that the major area of interest is to extract features from LiDAR data, especially buildings. Coming to his research area, he is working on the immersive Visualization of LiDAR data overlayed with texture information. The user of the system would be able to walk or fly through the terrain and would also be able to measure distances between features. Remote sensing data gives only an aerial view of the terrain. This kind of view requires training for interpretation of the features. When a system which can generate views in the usual perspective is designed, and more in an immersive environment, the ability of the user to interpret the scene becomes more. "Imagine that there is a situation when there is a fire, or there has been a landslide, a three dimensional model of the terrain would be helpful for the rescuers to provide immediate help to the trapped people. Suppose that such a system is integrated with an expert knowledge and psychology, we may deal with a situation wherein hidden terrorists in an area need to be eliminated. But then of course there is a need to interact with the people from humanities to deal with such situations," says Mr. Ghosh.

...safety for public places

Name: Mr. Ujjal Chattaraj
 Guide: Dr. Partha Chakraborty

Mr. Ujjal Chattaraj is doing research for the last four years as to how to improve designs in civil structures such as malls, airports, auditoriums etc. so to make them efficient during emergency exists, overcrowded situations etc. For this he tries to capture the psychology of human being as how he can walk and run in various situations. Based on fuzzy logic he also had done various experiments in outreach auditorium of the institute and other places where students were asked to react to the evacuation situation passing through various obstacles. This will help the nation in better designing of public places with less cross cuts on the path.

Salil Goyal is a second year undergraduate student. Apart from being a good student, he is interested in videography, films etc. He could be contacted at salilg@iitk.ac.in.

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खुशी

नहीं जानता हूँ
 किसको खुशी है।
 पूछा था सबसे
 हर एक ने कहा हम को
 खुशी है।

शायद यही कारण है दुख का
 और दुनिया में बहुत कम
 ही खुशी है।
 और रहना है सबको खुश
 तो समझना होगा

आपकी खुशी में ही मेरी खुशी है।

Sumit Verma
 Y7117014

Pseudo Dynamic Test Facility

Mohit Agarwal |

The most awaited project at the department of Civil Engineering at IIT-K has begun to take final shape. The one of its kind in Asia, the Pseudo dynamic test facility, is an extension to the structural engineering laboratory. The 48.3 million (INR) project aims at improving the structural design methodologies on the basis of evaluation of seismic performance. Until the first testing, the project is expected to cost around 140 Billion(INR) including the machinery and other expenses.

The project can recreate the Kobe(Japan) Earthquake which hit Kobe in 1995. The idea behind taking this as the reference is that it was this earthquake in which the seismic waves took the worst proportions. Thanks to the designs made by the Civil Engineering department IITK, the facility is expected to attain responses far more than the ones that hit Kobe in 1995.

This facility is capable of generating both 2D as well as 3D vibrations and these vibrations can be static or real time dynamic. These vibrations will be generated with the help of 3 dynamically rigid walls. The tables and the actuators are designed by the Civil Engineering Department IIT Kanpur, this has not only saved 11.8 Billion (INR) (for the uniaxial shaking table alone!) but also increased the seismic response which otherwise would not have been possible with company based design.

The special features of the project are:

- The project can test 3 storey (Full Scale) building and 10-15 storey (Reduced Scale) Civil Structures.
- The Civil structure is being made using 32mm diameter rods, M45 concrete and the table is made up of stainless steel of very high stiffness.
- A Strong floor (of reinforced / Post tensioned concrete) to support the test specimen and the loading devices.
- Servo hydraulic actuators(of higher capacities up to 1000kN with fatigue rating) for lateral cyclic loading of large scale test specimens.
- A reaction wall (of reinforced/post tensioned concrete) to react the lateral loading devices.
- The most interesting part is that the table by itself would not vibrate; only the structure would vibrate!
- The actuators were designed by Civil Department IITK and manufactured by MTS (U.S.A).
- An overhead handling facility (electrically operated traveling crane of 200kN capacity) and
- Reaction blocks and frames to be fixed on the strong floor for offering restraints to the specimen and the actuators.

This research facility is meant for IITK, and Since the Project is one of its kind researchers from outside IITK interested in using the facility will have to carry out their research in collaboration with IITK.

Although the civil structure was scheduled to complete by 22 October, 2007 but because of few difficulties faced in post tensioning of the walls the civil structure is expected to be complete by 15 March, 2008.

Refer to page 15 for the information of the writer



Civil Engineering Survey and Geology Camp

Kaladhungi- Nainital (29th November-10th December, 2007)



Survey camp is first experience of field work for Civil Engineering students. The geology camp for the first four days included some basic geophysical observations of rock strata structures, folds and some of their quantitative measurements. A study of river past, avalanches, suitable dam sites etc was also performed. The fourth day involved a trip to one dam and one barrage site which best displayed the difference between them. The Geology part of the camp ended with an intensive four hour report writing session

In this camp, students were exposed to three Survey techniques Triangulation, Total Station and Global Positioning System (GPS). Work also included adjustment of a Braced Quadrilateral formed by the five Control Stations set up at approximately 200m distance from each other and different elevations. Secondly, Plane Table technique is used for map making of a given area. Problems like inter-visibility, multiple stations, higher altitudes were encountered and solved by the students.



During the survey camp, students have to form their own groups of 5-6 students. Then a schedule is made for each group according to which they have to perform the different camp activities. For activities like Triangulation, coordination among the groups is very important, while coordination among group members is required for the Plane Table activity and later in computation and report writing.

Camp planning

Planning is very important for the smooth functioning of camp. There must be a proper schedule for every activity keeping in mind every possible factor and it should suit all the campers. For this, coordination among students and students and faculty members is fundamental. The camp is conducted in Winter Holidays but its arrangements like booking of train tickets, booking the accommodation, hiring buses etc. begin around October. All the arrangements are to be done by students under the supervision of the faculty members.

Survey camp: report writing

Report writing is another essential part of camp. This is probably the first experience of a comprehensive report writing to most of the students. The report begins with an abstract, then introduction to the report, followed by description of work done in the camp, the description of instruments used, and a detail procedure of all the activities carried during the camp. Then comes the calculations and observations part for the individuals followed by group calculations and finally the all calculations. In the end, considering the average triangulation result of all the groups as most accurate, the accuracies of results of Total Station and GPS Survey are determined. The idea is to compare these survey techniques and how each could be used in field.



Some tips for the camp

- No beddings will be provided in the guest houses, so you have to carry your own beddings and blankets.
- Don't forget to carry your Calculators & Laptops; you will be requiring these for the calculations during report writing. You may use MS Excel or MATLAB programs for some matrix calculations.
- Take some medicines along if you are often prone to stomach aches, nausea etc...

lots of learnings... lots of memories- Winter camp



Sweet memories (uncensored)

- ❖ Saawariya a aa a aa(Rouriya), the mess secy 😊
- ❖ First time river crossing 😊
- ❖ Open top *****s 😢 😊
- ❖ SIS Guards- a continuous protection force!!! 😢
- ❖ Bath in Nehar 😊
- ❖ Kheti (sandeep) ko jheel pe bhooooot dikha!!! 😢
- ❖ Jim Corbett national park me sher(lion!) ke panje dikhe 😢
- ❖ Nainital trip 😢
- ❖ Filmi climax to the beloved 'baba' (sanyam)...train caught by 30sec gap after a fierceful ride of 45 mins down Nainital 😢 😊
- ❖ Friendly fight between Kshitij-The versatile & Sachendra-The bakait, a perfect end 😊

*"yaar, kya tumhe woh
do aadmi dikh rahe
hain jo mujhe nahin
dikh rahe hain??!!!"*

Words from experience...

- ❖ Life would be miserable without Haldirams and Lays.
- ❖ Want to do well in this 3 credit course??? Don't team up with gals, they have a half life of half an hour (from those experienced)!!!
- ❖ Don't eat toooo much before steepy bus travels
- ❖ Don't go to lonely places in nights... you might be conquered by the demon!

facts collected and compiled by V.N.Srinivas



Society Of Civil Engineers (SOCE) presents

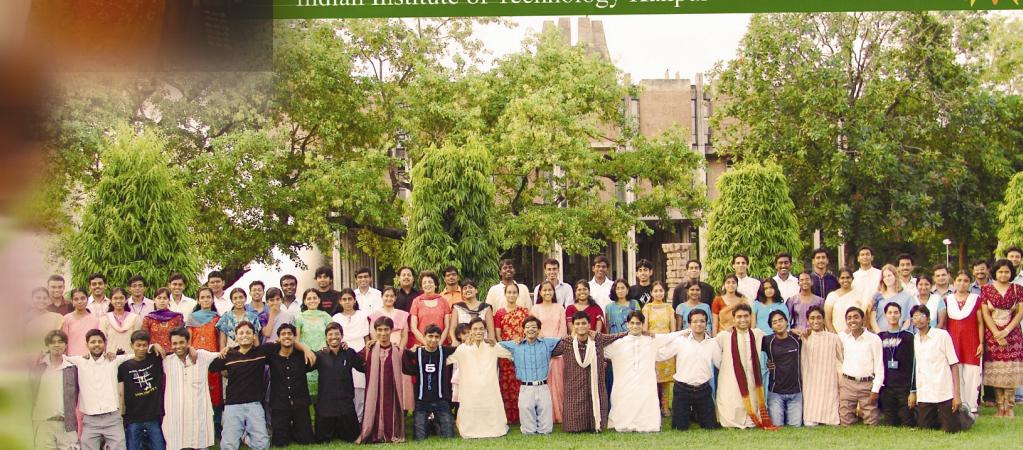
STIMULUS

THE DEPARTMENT DAY



Summer Camp 2007

Department of Civil Engineering
Indian Institute of Technology Kanpur



Internship... an everlasting fantasy

Ashish Awasthi, Abhinav Gupta

Students are always puzzled over this one word! Bagging an intern at a good place is getting tougher and tougher with increasing spamming. Now how do you define a 'good' intern? Some define as a place where they are exposed to the real world scenarios. Others (these guys form a majority here) define it as a place where they could enjoy a lot with a handful of stipend. We are in the days where stipend paid defines the quality of an internship. Let's see how actually some of our fourth yearites got their internships and what they did there! Similar questions were asked to three teams of students who did their internships in a) Indian Industry, b) Foreign University and c) Foreign University. We also got from them some valuable suggestions for the juniors who see a prestige in getting an internship!

Ravi Sachdeva (ravisach@iitk.ac.in) and Shivendra Singh (ssingh@iitk.ac.in), 3rd yr internship- Consultancy Engineers Group Ltd. (Jaipur)

Q) How did you manage to bag the intern?

A) It was the usual way of sending emails in which we mentioned our area of interest. We managed to get the ids either by googling or from our seniors. Besides IIT brand name really added value to our name. We were really lucky in bagging the intern as we got an affirmative reply on the very second day of sending the mail.

Q) What kind of work was done by you there?

A) On our very first day we were given the whole intern's i.e. two months schedule. Firstly we learnt few Civil engineering helping softwares like AutoCAD. The initial one month we were told about the process of opening a new company managing different assignments etc. After that we were given a real project under the company to work on. This project was at Jodhpur where we had the work of estimating road construction cost and analyze and study other design complexities about the project and suggest our own designs too. Thus we were exposed to the real civil engineering practices and we learned a lot as theory is meaningful only if one knows its application. We also studied some foreign projects of consultancy they were undertaking.

Q) Advantages of doing intern in an industry?

A) The biggest advantage was that we got to see everything in practical which is not possible otherwise. In the meanwhile we developed good communication skills and moreover if you do good work on your intern in an industry you are likely to get a PPO from the company which really helps in adding to your confidence.

Q) Final advice for juniors.....

STRENGTHS- February 2008

A) I think that 2nd yr students must try for interns in Indian industry. 3rd yrs should start trying right from October and one more thing, one should always have a good academic record. Now circumstances have changed and it is preferred that a Civil student should go for Core jobs as the opportunities have increased manifold. Package wise also, though initially one gets a relatively average type of package it really pays heavily in the longer version of life and career.

Shiv Kumar Seth (shivk@iitk.ac.in), 3rd yr internship- Katholieke University, Belgium,
Rajil Jain (rajil@iitk.ac.in), 3rd yr internship- University of New Lisbon, Portugal.

Q) How you managed to bag the internship?

A) Mainly, we had applied through emails which we had managed to obtain by searching sites like Google, Science Direct, all about college etc. One golden rule is never to send emails from IITK address as at many place it is blocked rather use Gmail or Yahoo ids. We searched for universities and then the faculty there who were involved in our area of interest and finding out the types of projects which they were doing and then applied accordingly where we thought we could be of use and be able to apply our knowledge.

Q) What did they demand from you?

A) They wanted to know how interested we were and what courses had we done in that relevant field .They might even ask you for your academic record and some extras like projects and all. Apart from this IITK brand name had made our way a lot easier. They usually demand for longer period of stay so that they could get the most benefit out of us. We should not go for luxurious countries but apply in our area of interest as otherwise it wouldn't help you as one cannot then use the knowledge which one has gained from the courses done here. Apart from these, recommendations from professors are also required in few cases. Only 1% of all the emails are usually ready to negotiate financial terms which are a very vital part indeed!!!

Q) What is the ideal time to apply?

A) It's not of much use in the 2nd yr as only 3 dept courses have been done and thus you will not be able to meet their expectations which would bring down the institute's respect. Ideal time is the end of 5th semester. The duration of the intern is generally 8-10 weeks. In our batch 22-23 people got foreign interns.

Q) Could you share a few of your experiences there?

A) It was a very enriching experience for us. English was the language used in the university so we had no language problem and there were no adjusting problems there. Altogether the people were very cooperative and it was a lifetime experience. The work was given not on the number of hours to complete it but it had to be completed in a given time so our schedule was quite flexible and we managed to take out time for sightseeing and other masti.

Q) How would you compare the IITs and the universities abroad?

A) I would not like to comment much on this topic. Although they still have better funding for research and their Labs are much advanced than ours.

Q) Your final words for upcoming batches regarding the interns?

A) First thing- no foreign interns should be done in the 2nd yr. Secondly we should not apply in top 20 universities as they do not prefer us for interns but want us for longer course of study like MS. Thirdly, the intern should be done in your field of interest and related to your learned courses.

Vikas Saxena (vsaxena@iitk.ac.in), 3rd yr internship - Becca Consultancy, New Zealand.

Q) How were you able to bag the internship?

A) Becca Consultancy Company comes to IIT Kanpur every year for selecting students solely for interns. In our time 27 people were shortlisted and 3 were selected and I was one of them. They were mainly asking simple, common sense and non technical questions in my area of interest. They were looking for good communication skills and overall personality and were trying to find if I would be able to adjust there. One should talk to them honestly and openly. They were even asking that if I would join their company after B.Tech if I get a PPO during the intern. Then I answered that I would consider the offer at that time and not sure at this time, and thus I was quite honest.

Q) Could you share a few of your experiences at Becca?

A) A handsome stipend was offered to me in which I was able to manage my accommodation, food and other requirements. The atmosphere of the company was very friendly. Doing internship in a company teaches you to become organized. It was an 8 hour job and the duration of intern was of 10 weeks although it was extended to 11 weeks in my case. I also enjoyed the difference between an Indian and a foreign industry as there were less working which extend to even 11-12 hrs in some industries and also there was no tension of work at home.

Q) What are the advantages of doing an intern in an industry?

A) Doing an industrial intern not only gives you good working experience but also helps you to inculcate skills like communication, leadership qualities and team spirit which after all helps in the long run.

Q) Advice for juniors...

A) I would advise you not to apply for foreign interns in the 2nd yr as you haven't done much of dept courses till then but to get some exposure you can try for a project under the professors here or simply a good Indian industry where you can learn how to become a professional. For 3rd yrs, I would like to tell them that they should avoid spamming and chose and apply in their area of interest. But I do think that doing an intern in an industry is much beneficial if you want to do a job after B.Tech and in a university if you want to opt for higher studies.

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Abhinav Gupta is a second year undergraduate student. Being a sincere and hard working student, he finds his interests in Robotics, Web designing etc, though his present academic interests are in Structural and Geotechnical Engineering. He could be contacted at abhinavg@iitk.ac.in or abhinav.gupta.18@gmail.com.

Cont.d from P32...

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Amit Kumar, refer to page7.

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Compressed air:

the most sustainable energy carrier for commuting vehicles

| Indramani Dhada

"If wishes were horses, beggars would ride, and cars would run on fresh air." But Guy Negre, a French inventor, is the kind of bloke who doesn't think much of clichés. Negre's family-owned company is Moteur Developpement International (MDI).The air-powered engine is modeled on the conventional internal combustion engine. However, instead of fossil fuels like petrol or diesel combining with air and generating energy, this engine will produce momentum by releasing compressed air. Although a car that generates momentum from compressed air is an interesting concept, the critical question is how efficiently and conveniently can you store the power generated?

It sounds impossible, but a car that runs on air has been presented in London on 5th September 2007. Developed by Guy Negre of French-based company MDI, this city runaround is fuelled by compressed air, as supplied from petrol stations to pump up your tyres. Negre claims that his car can reach a top speed of 68 mph and has a range of around 124 miles on a single 2-minute filling from a petrol station air pump, and that one can refuel the car via its own electric air compressor by plugging it into a mains socket for 3-4 hours.

How does it work?

The compressed air is stored in fiber tanks, and its expansion pushes the engine's pistons. There is no combustion involved, so there are no harmful emissions or pollution. The only by-product is expelled air, which is channeled into the air conditioning/heating system. The absence of combustion also means that the engine does not get hot or so stressed, and MDI claims that an oil change is necessary only every31,000 miles. The company has so far made three models, a city car, a five-seat taxi, a pick-up truck and a van. It has signed deals with 50 factories in Europe, America and Asia to produce the car, and it is looking for production and distribution partners in the UK. Ultimately, it intends to offer the car on the UK market at a price of around £5,500. Tata Motors, in keeping with its role as the leading company in India for automotive R&D, has signed an agreement, in yet another exciting engineering and development effort, with MDI of France for application in India of MDI's path-breaking technology for engines powered by air

An overview of the air car

The technology that MDI vehicles use is not new; in fact it had been around for years. Compressed air technology allows for engines that are non- polluting and economical. Unlike electric or hydrogen powered vehicles, MDI vehicles are not expensive and do not have a limited driving range. MDI cars are affordable and have a performance rate that stands up to current standards. To sum it up, they are non-expensive cars that do not pollute and are easy to get around cities in. Two technologies have been developed to meet different needs:

- Single energy compressed air engines
- Dual energy compressed air plus fuel engines

The single energy engines will be available in both Minicats and Citycats. These engines have been conceived for city use, where the maximum speed is 50 km/h and where MDI believes polluting will soon be prohibited. It is already possible see examples of this in some places, such as London, where you want to enter the city center

with gasoline powered vehicles, you must pay a fee.

The dual energy engine, on the other hand, has been conceived as much for the city as the open road and will be available in all MDI vehicles. The engines will work exclusively with compressed air while it is running under 50 km/h in urban areas. But when the car is used outside urban areas at speeds over 50 km/h, the engines will switch to fuel mode. The engine will be able to use gasoline, gas oil, bio diesel, gas, liquidized gas, ecological fuel, alcohol, etc.

Both engines will be available with 2, 4 and 6 cylinders, When the air tanks are empty the driver will be able to switch to fuel mode, thanks to the car's on board computer.

- Urban vehicles: Minicat's
- Longer distance vehicles: Citycat's
- Taxis: Apart from applying its technology to CAT's vehicles, MDI is also developing other fields, such as electric cogeneration and energy accumulation.
- Other applications
- The end product is a light weight vehicle that can reach speeds up to 220 km/hr (though the legal limit is 120!), a product that does not pollute like twentieth century vehicles and does not take a lifetime to pay off. Essentially, MDI has developed a modern, clean, and cheap car that meets most people needs. That is to say that 60% of drivers drive less than 50km a day, and 80% of those 60%, never leave urban areas.

Welcome to future!

Compressed air is a new viable form of power that allows the accumulation and transport of energy.

Indramani Dhada is a second year postgraduate student. He could be contacted at dhada@iitk.ac.in or



Want a solution...? Board a train..!

| Vivek Agarwal

After sleepless nights before IIT JEE, I had been on a month long vacation, and on my way back to my home town aboard the Brand New Indian Railway. Deep down in my heart I had buried many questions, questions from which I was running away ever since I started to prepare for JEE, WHY ENGINEERING ONLY, WHAT BRANCH WILL I TAKE UP, WHY AM I DOING THIS.... and many more?

When my co passengers realized that I had cleared JEE it didn't take them long to come to all of those questions, of course it came after a long enquiry about the mode of preparation and the competition involved in JEE. My answer was an honest "I DON'T KNOW!!!" One of them was quick to react "How can that be???" I knew right away he had to be Mr. MORALIST. What did I do...??? Gave a sheepish smile and said "Goal of most of the student preparing for IIT JEE is not to pursue engineering but to get into the IITs !"

Mr. MORALIST took no time to blame the Government and the System. True to some extent, the system does little or nothing to generate interest among the students, to explore their interest areas, to make them think of what they want to do...

But then until when will we blame the system and the government? What has the society done? The actual Culprit is the society. The motive of most of the students is to earn money! By hook or by crook. Thanks to the kind of pressure the parents put on the children to get a good job and also to all those social kudos one gains when he / she is rich. This is an alarming situation. Well this is not what I said but this was the view of Mr. Manager, must have been an excellent manager...knows his job very well to pass on the blame....!

He added to this by saying..."No wonder that the IIT pass outs today who are SUPPOSE to be the cream of the nation prefer to take up a lucrative JOB or an MBA over research. If the best don't get into research then who will do all the research? And the fact is that the kind of job that most of the IITians end up doing are the ones that do not require any kind of super intellectual abilities that they are known for.

Mr. Practical had to speak and he spoke "It is impossible to change the way the system works and the way the society thinks." "So what's the solution?" was the question popped by a beautiful girl sitting on the upper berth.

Then came a reply from yet another corner...Mr. COOL, yes it was him... While unplugging his earphones he said...All of you have talked about the GOVERNMENT, SOCIETY and INDIVIDUAL, but nobody realizes it is the Colleges and the universities who can do the most to correct the situation.

Most of the people who didn't pay attention to his thoughts initially....all of a sudden started at him as though he had just answered the question raised by the pretty girl! All eyes were wide open and waited MR. COOL to resume his argument or rather Answer.

STRENGTHS- February 2008

Yes, he continued, the studies in the first 2-3 semesters have nothing to do with ones branch. Then why not allot branches to the students after the first 2 semesters..? Based on ones performance in the first 2 semesters...?

What this would do is firstly; reduce the pressure on the students with respect to the Entrance exams. Secondly, in the entrance exams where a couple of bubbles can translate into a rank difference of 100-200, a system that considers performance over 2 semesters stands a better and fair chance to judge the performance of a student.

Finally the most important point instead of selecting his branch on the basis of his/her rank or the view of a counselor or a handful of colleagues, one gets the time of one complete year and with the people in the business. College environment is absolutely perfect period for one to discover in where his/her interest lies. The kind of inputs a student will get from the professors directly and from their seniors is incomparable.

Sound's GOOD???

How could Mr. Practical be quiet! He yelled, if that was the case then the students with good ranks would may be opt for the best IIT, in short it would lead to polarization of students where the students with better ranks opt for the better IIT.

Mr. COOL, replied lightning quick ... "That means that general public feels that one IIT is better than the other! Well if that is the case then this would promote a healthy competition amongst the IITs to raise their standards and attract the best"

Ohh My God....! This guy is a stud....Cool looks, Razor sharp Brain and an I-pod....what else do you need in life...?

Mr. Moralist broke his silence, "then why not do something like this, ask the students for their choice of college in a preference order and then allot them their college without disclosing their ranks...?" WHY??? Every eye in the compartment seemed to ask the same question...!

Mr. Moralist echoed, because practically if 2-3 bubbles decide what you rank is going to look like then what is the use of such rank..? Also, that would eliminate the need of a counseling session.

POINT, Mr. Moralist for once made some sense.

Mr. Manager announced ... "Okay people, we have come to a solution... The plan is something like this, A student fills up the choices of the colleges in a preferential order at the time of filling his/her application form for the entrance exam and then the result only gives the name of the college if the student has qualified the exam, and then at the end of second semester the student gets to choose the branch of his choice, the basis for allotment would be the performance in the first two semesters and may be a part of the score in the entrance exam."

What a manger quick to pass the blame and double to quick to claim all the kudos!!!

As Mr. Manager acknowledged the claps and cheers the train sounded the horn...that meant the final station had come...guess what the train was on time....at such instances one feels why the Indian trains don't get back to their old status... ALWAYS LATE!!!

Hmm... it was time to go, though no body answered my questions they probably eliminated the need to answer these questions for the generations to come... i.e. only if this idea gets implemented.

However cheap the Airfares might get they will never be able to replace the Joy of traveling by a train!!!

Vivek Agarwal is a first year undergraduate student. He could be contacted at agvivek@iitk.ac.in or

Summer camp 2007

The Summer Camps organized by the Department of Civil Engineering (<http://www.iitk.ac.in/summercamp>), IIT Kanpur over the last seven years have been designed to provide an opportunity to budding Civil Engineers to appreciate that Civil Engineering is not a 'dying' branch of Engineering but a 'happening' branch. The cornerstone of the camp is the Industry-Academia Interaction through which students meet successful professionals in Civil Engineering.

This year the Summer Camp, coordinated by Dr. Ajanta Sachan, IIT Kanpur, was held from 6th June to 3rd July 2007 and as in the past six years, was organized jointly by IIT Kanpur (IITK) and Tandon Consultants Pvt Ltd, (TPCL) New Delhi. 58 students were selected for the camp from across the country, including for the first time, a student from Cornell University, USA. A team of 19 motivated volunteers (Civil Engineering post-graduate students) was involved in handling the camp activities.

The participants this year were lucky to be invited to the Rashtrapati Bhavan to meet the Honorable President of India, Dr. Abdul Kalam on the 20th June 2007 for an hour long interactive session with him. The President spoke for twenty five minutes on Vision India 2020 and the role Civil Engineering in building the Nation.

A typical day for the participants began at 6:00 AM with the morning exercises. The pre-lunch session was dedicated to interactive lectures from practicing civil engineers invited from the industry and IITK faculty and project presentations by the participants.

Post-lunch the students watched interesting videos on historically important Civil projects and applied their mental agility and knowledge of Civil Engineering to games and quizzes. Evenings saw the participants on the field competing with each other in a variety of tournaments like badminton, football etc. Post-dinner the students gathered for cultural activities and light entertainment. The day ended at 10:30 PM.

A total of 37 lectures were presented by dedicated Civil Engineering professionals representing 24 organizations from the Industry and Academia during the 28 days of the summer camp 2007. Various disciplines of Civil Engineering were introduced and covered a wide range of topics that further showcased the current needs and challenges to build our nation. The students got an opportunity to participate in various Civil Engineering Games such as constructing a Bridge using wooden sticks, Construction of retaining Wall using Fly-ash and tissue paper.

The students made presentations on live civil engineering projects being executed at their respective states/areas of residence. All these presentations, games etc were evaluated and counted as a performance measure in identifying the best summer camper. Field trips are an integral part of all summer camps. Two trips were organized for the participants:



1. A short one trip to Lucknow to learn about the Historical Civil Engineering structures of India: Mr. Mukul Singh from Gov. College of Architecture gave a lecture on historical and architectural aspects of Imambadas of Lucknow, made in seventeenth century.
2. A week trip to Delhi in



to experience the current state of the art construction methodologies used in infrastructure projects. The students visited different project sites of PWD; such as Mukarba Chowk Interchange, Geeta Colony Bridge project, G.T.B Hospital Base Isolation project, and the office of Mr. R. Subramanian, Engineer-in-chief of PWD. A site visit to the Delhi-Gurgaon Expressway was arranged by NHAI and a lecture was also presented by Mr. A.K. Sareen from DDA on "Planning of Games Village for Commonwealth Games" to the summer campers. They also had an hour-long interaction with Mr. E. Sreedharan, Managing Director, DMRC who motivated students to take a career in Civil Engineering.

Communicative skills and assertive attitude are important in all walks of life as demonstrated by Ms. Rashmi Datt for a period of two days. Actual real life scenarios were presented which helped the understand nuances of positive and negative behaviour and their repercussions. The workshop thus focussed on the development of professional attitudes and the ability to work together as a team. Specialists organized the sports activities during for the summer camp, conducting various competitions for the volleyball, basketball, badminton, table tennis etc. The winners were declared at the end of the camp.

On the basis of the overall performance of the candidates in personality development sessions, quizzes, laboratories and games, best camper and 2 runner ups were selected from amongst the 58 students:

1. Mr Ujjawal Mehta (Best Camper) from School of Building Science and Technology, CEPT University, Gujarat.
2. Mr V. Pramod (First Runner up) from Hindustan College of Engineering, Tamil Nadu.
3. Mr. Rudrabir Ghanti (Second Runner up) from V.I.T, Vellore, Tamil Nadu.

जिन्दगी

-खुशी

जीवन की राह में बिना रुके ,
चलते जाना है जिन्दगी।
खुशी को तो सब बाटते हैं ,
पर हर गम को खुशी से सजाना है
जिन्दगी।
हमेशा के लिये गम को भुलाकर ,
दिल से मुस्कुराना है जिन्दगी।।।

दोस्त तो सभी बनाते हैं ,
पर दुश्मन को भी अपना बनाना है
जिन्दगी।।।

अपने तो अपने होते हैं ,
गैरों को अपना बनाना है

जिन्दगी।।।

दुख में तो सब रोते हैं पर ,

सुख में खुशी के आंसु बहाना है
जिन्दगी।।।

बिना उसे जाने एक अन्जान के साथ ,
नव बंधन में बंध जाना है

जिन्दगी।।।

इच्छाओं के समुद्र में ,

एक इच्छा की पूर्ति के लिये सारा
जीवन बिताना है जिन्दगी।।।

नफरत तो सब करते हैं ,

पर सब से प्रेम करके खुशी से जीवन
बिताना हैं जिन्दगी।।।

डरते तो सभी हैं ,
पर निडर होकर वीरता से मंजिल पा
जाना है जिन्दगी।।।

हारकर तो सभी जीतते हैं ,
पर कुछ पल जीतने के सब कुछ हार
जाना है जिन्दगी।।।

सबके लिये एक राज हैं जिन्दगी।।।
इस राज को जान जाना है
जिन्दगी।।।

DO... it is all important

| Abhinav Gupta, Ankit Srivastava

The D0 (Introduction to Profession) course for the year second semester in the academic year 2006-2007 was taken by Dr. Sarvesh Chandra and Dr. Ramesh. P. Singh. This year, it is being taken again by Dr. Chandra along with Dr. Sudhir Mishra. It has been seen that students usually do not take this course seriously and sometimes do not succeed in getting out of it. In this interview, Dr. Chandra explains the importance of the course and also gives the reason why many students could not make through this no credit course.

STR: In the view of students having little awareness of Civil Engineering, how important does this course become?

SC: The basic aim of the course is to give an exposure to the new students to the department which is divided into seven different fields, showcasing the challenges and developments in each one of these and thus motivating them that, after all they had made a right choice. This is the 'only' course which introduces the students, to all the seven fields of civil engineering without any bias and thus helps students in developing insight over what interests them. A Specialized interest in under graduation always gives an upper edge later. It thus helps students in focusing on a particular field, of their choice.

STR: As there is no prescribed framework of this course, how did you and Dr. R. P. Singh decide to introduce each of the fields?

SC: There is a lot of flexibility in the course. As we had to cover all the fields, we took help from the faculty of other fields as well. Moreover there were two instructors of the course from different fields. All the faculty members worked together to make the course as useful as possible. Guest lecturers were also there from different fields. Apart from this we also tried to motivate the students to ask questions and also to present before the class any innovations in the field of civil engineering which they came across and discuss it with us and whole class.

STR: Were you able to cover whatever you had planned to?

SC: Yes, more or less we covered the whole course which we planned initially.

STR: What were your experiences with Y6 in CE100?

SC: The Y6 batch was not up to our expectations. Students had a wrong mindset for the course. The course being a zero credit one was neglected by most of the students. Attendance of the students was very poor, which was very demoralizing for us. Even when they came to class they were not attentive. We did a lot of things for the students; we arranged field trips, invited distinguished persons to give lectures. But when students did not turn up, we were discouraged.

Interaction is a two way process. The students should feel free to ask the instructor any doubt or difficulty which they have.

STR: How important is this course in terms of faculty-student interaction?

SC: Interaction is a two way process. The students should feel free to ask the instructor any doubt or difficulty which they have. The most important thing is that students should be frank. They should feel free even to discuss with the instructor how they want to be graded as this course is very flexible.

STR: What do you think were the major drawbacks of the students because of which there were so many failures in the course which is really a serious issue?

SC: I know that there is a lot of hue and cry about the failures in this course. But we don't have any personal grudge against any of the students. The students didn't take classes seriously, they were not attentive and then that proxy thing! We had no other options left. They shouldn't feel bad, as this is how life goes as they did not even want to put in some basic effort the course required.

STR: What are the developments going on in the field of civil engineering?

SC: Recently a group of scientists found out a way to strengthen the base of the "Leaning tower of Pisa" which has been a matter of concern for many years. In foreign countries a lot of work is done in field of civil engineering but India is not up to the mark, though some good developments are taking place now. In Jammu and Kashmir an eleven kilometers long tunnel is being constructed which will be the longest tunnel in India. In addition to this many road projects have been granted. In UP an eight lane expressway has been granted which will cost forty crore rupees per kilometer. Many such things are going on. A lot of money is being invested in civil engineering projects these days and in the days to come.

STR: What should be the attitude of the students towards the course as they are completely new to the department?

SC: The most important thing is that the students should attend classes not for the sake of attending it, but to gain something from the course. They should be sincere. We are always there to help them and motivate them. They should try to make full use of the opportunity given to them. They should try to search other sources related to the things discussed in class because this is the only way they will learn and take interest.

STR: What is your message to the students of civil engineering?

SC: Make use of the opportunities given to you because there are not many opportunities which come your way. Be sincere towards everything you do. Don't think that you have chosen a wrong branch. Now everyone believes and even worries that Civil Engineering will be on top in years to come. There will be a lot of construction activity to develop the infrastructure of the country. There are a lot of challenges waiting for you in all the fields of Civil engineering. So get ready to face them. Thus utilize your four or five years to the best.

Abhinav Gupta, refer to page no. 23.

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When we look at our surroundings...

Rajveer Singh Rathore, Shefali Dubey, Harshita Jain, Amit Kumar, Bhalekar Santosh, Avinash Gupta

We students live in a relatively hygienic place when compared to many other parts of the *city*. We often say, "IIT not only feeds us with all the technical stuff but it also teaches us how to *live*." It is quite unfortunate that though the IIT curriculum has been teaching its students how to live for almost past half a century, it has apparently not yet succeeded much in spreading its richness to its surroundings.

The Strengths team made one such small survey in the **** village, around half an hour from the IIT Campus (opposite to the city side). The survey was intended to learn the standards of living in the village. Several families were surveyed and the conditions could be well described using the word 'pathetic'.

Several parameters affecting their health were tested in our labs by bringing the samples. Here presented are those results, the readers can clearly see how adversely the pollution today is affecting the common man.

Name of samples :	c. nil	f. 7.01
a- hand pump 1	d. 96	g. 7.17
b- hand pump 2		h. 7.41
c- canal		
d- well		
parameters & their measurements:		
↳ Ca hardness (mg/l)	↳ Electrical conductivity	↳ Alkalinity (mg/l)
a. 64	a. 0.417×10^3	a. 48
b. 48	b. 0.397×10^3	b. 68
c. nil	c. 0.981×10^3	c. nil
d. 40	d. 0.317×10^3	d. 72
↳ Mg hardness (mg/l)	↳ Fluoride (ppm)	↳ Total hardness (mg/l)
a. 64	a. 0.22 [hand pump 1]	a. 128
b. 92	b. 11.157 [hand pump 2]	b. 140
	c. 17.276 [well]	c. nil
	↳ pH	d. 136
	e. 7.21	

The most shocking anomaly found was the fluoride content in the hand pump-2 with a gigantic percentage of 11.157! This result was expected from the field survey where the team got to see various problems like tooth aches, bone bends/pains etc. in young children.

Will the conditions would improve. We need to wait, wait longer, perhaps much longer than we could think of. Well, who would improve it, who?

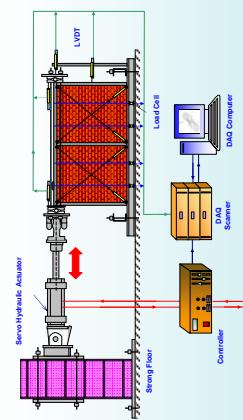
Pseudo Dynamic Test Facility for Simulation of Earthquake Loads

Structural Engineering Laboratory

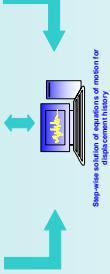
Department of Civil Engineering, Indian Institute of Technology Kanpur



Pseudo Dynamic (PsD) Test



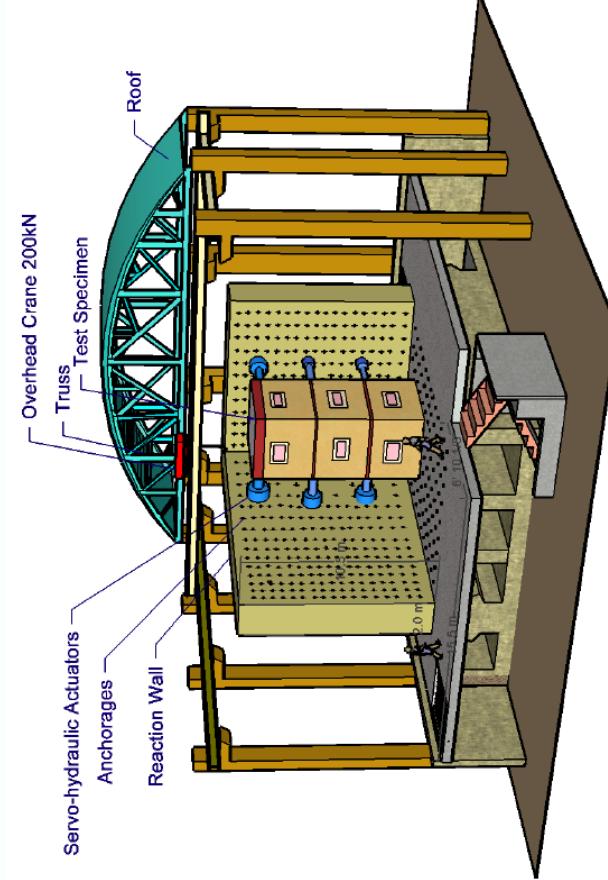
$$[M]\{\ddot{x}\} + [C]\{\dot{x}\} + [K]\{x\} = -[M]\{\ddot{x}_g\}$$



- Equations of motions are solved on-line for displacements to be applied in real time while updating the system parameters from on-line measurements of forces and displacements.

- Effect of inertia force is accounted for in approximate sense and strain rate effects are not considered as test is carried out at slow rate.

Pseudo Dynamic (PsD) Test Facility



Realistic earthquake type loading for prototypical structural systems

Components of PsD Facility

Servo-Hydraulic Actuators

- Non-yielding and stiff integrated reaction floor-wall assembly
- 10x15x4.0m three cell box girder floor and 10m high, 2m thick post-tensioned wall
- Anchorage at 0.6m grid capable of 2MN for axial load and 1.5MN for shear loads
- 200 kN EOT crane

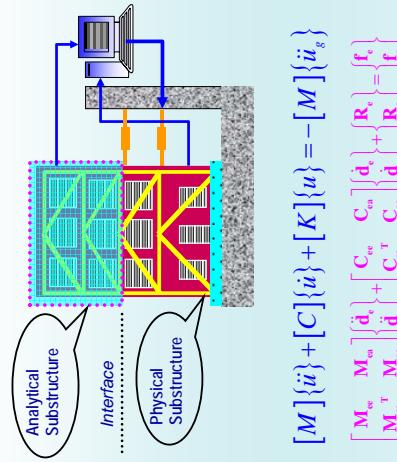
Control

- 6-Station, 16-bit PID Servo controller and interlocking
- Frequency range: 0.01-1000 Hz
- 6-channel simultaneous data acquisition and remote drive file play out.

Data Acquisition & Sensors

- Wired and non-contact sensors
- Fast and Synchronous data acquisition
- Telepresence and web-streaming
- Video images correlated with sensor data

Hybrid PsD using Substructures



$$[M]\{\ddot{u}\} + [C]\{\dot{u}\} + [K]\{u\} = -[M]\{\ddot{u}_g\}$$

$$\begin{bmatrix} M_w & M_w \\ M_w^T & M_w \end{bmatrix} \begin{bmatrix} \ddot{d}_w \\ \ddot{d}_s \end{bmatrix} + \begin{bmatrix} C_w & C_w \\ C_w^T & C_w \end{bmatrix} \begin{bmatrix} d_w \\ d_s \end{bmatrix} + \begin{bmatrix} R_w \\ R_s \end{bmatrix} = \begin{bmatrix} F \\ F_s \end{bmatrix}$$

- Parts of large structural systems tested using sub-structuring technique
- Synthesis of numerical modeling and experimental testing
- Require adequate simulation of boundary conditions at the interface

Going down the memory lane...

Dr. Tarun Gupta

This was the second time in a row that I had an opportunity to closely interact with the Strengths core team members. Except for couple of them, all the rest were new entrants. Right from the time of our first meeting with the core team, I was delighted to see more than 80% attendance for every single subsequent meeting. This is rare to find even in classroom lectures these days. Strengths 2008 members have carried out lot of their creative, report, scientific and investigational writing in a fairly planned and professional manner. I remember during the meetings, they were quite clear about what they wanted to do and went about it in a timely manner. I was glad to see them coming up with interesting ideas and a number of them culminated into actual articles. Therefore, my role was merely trimmed down to advising them towards prioritizing and executing their plans in a concise and effective way.

I fondly remember the idea of going to a nearby village and conducting environmental sampling and collecting questionnaires in tune with the thought of environmental justice for all. This article you'll find in the magazine trimmed down to a single page from its original length of 6-7 pages. This is just one example highlighting the amount of time, hard work and commitment of students towards Strengths 2008. It is amazing to see how closely freedom of expression is related to the creativity of young minds even though some may argue against the freedom itself! Nevertheless, it was a wonderful experience for me to interact with such a diverse group of students and watch them coming together and working towards a common goal.

I must thank all the students who have contributed their articles, poems, photographs etc. for Strengths 2008. I hope more and more students would come forward in the future to express and share their thoughts with the Civil Engineering community. Last but not the least; I would like to thank all the faculty and staff members who have helped us in various ways towards publication of Strengths 2008.

Your concerns, comments and suggestions are welcome. Contact: tarun@iitk.ac.in



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STRENGTHS- the name

Structural Engineering

Transportation Engineering

Remote Sensing

ENvironmental Engineering/ **EN**gineering Geosciences

GeoTechnical Engineering

Hydraulics Engineering

This is how the name STRENGTHS was coined by our seniors (Y1 batch)
Amit Thakur and Dibyesh Lal, editors of the magazine's 2004 issue!