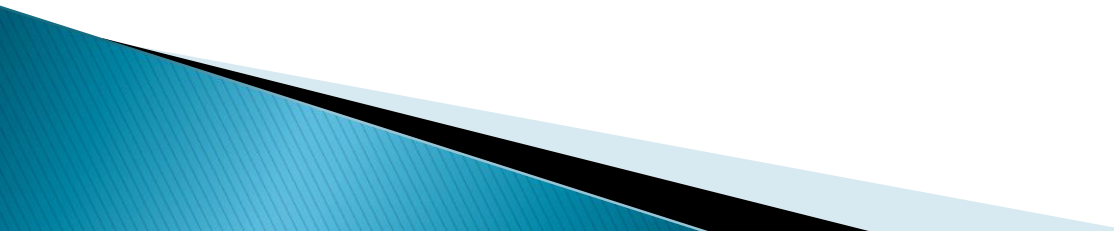


Modified Syllabus for Undergraduate Programme in Civil Engineering with focus on Core Subjects

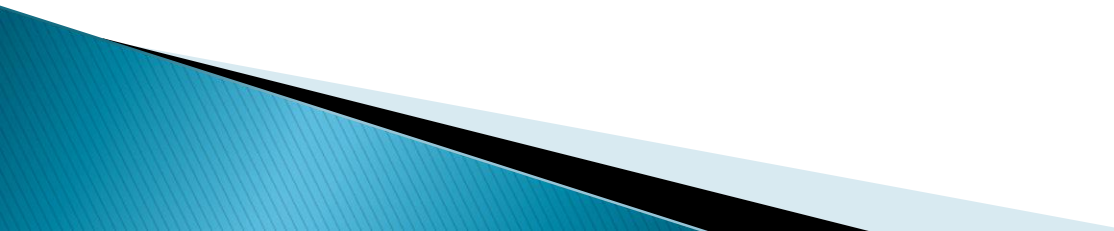
By
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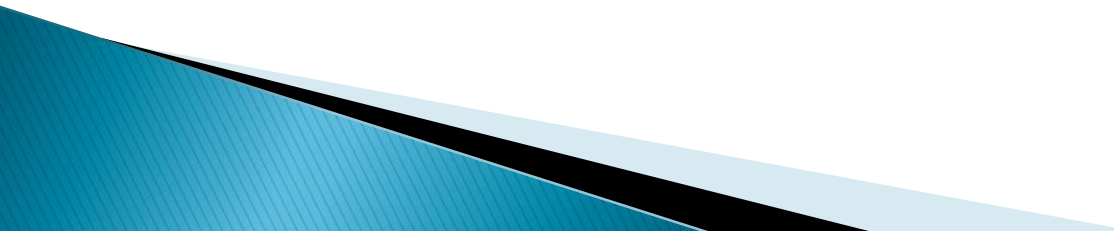
June 27th 2015, BIET Jhansi

BACKGROUND

- ▶ Civil Engineering, the oldest branch of engineering has undergone a massive technological change.
 - ▶ Especially in terms of changes related to construction methods/techniques, simulation tools etc.
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These includes:

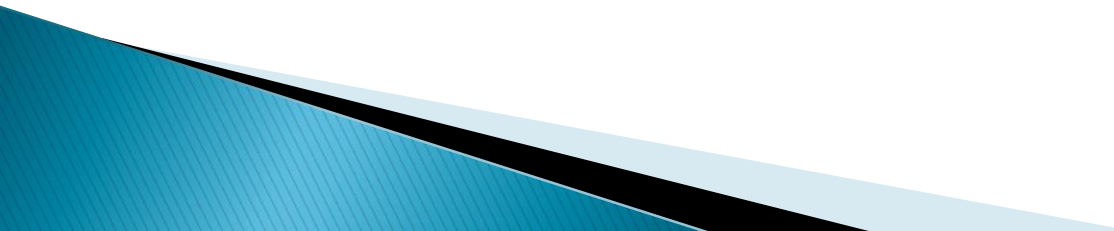
- ▶ Underground and overhead metro
 - ▶ Renovated airports
 - ▶ Tunnels
 - ▶ Skyscrapers
 - ▶ Sea-links
 - ▶ Earthquake resistant construction
 - ▶ Forecasting of floods, earthquakes, cyclones, tsunamis etc.
- 

- ▶ However, the syllabi in most of the engineering institutes (including IITs, NITs, State Colleges, private institutes etc) has failed to incorporate these technological changes in their syllabus/ course curriculum in an effective and fruitful manner.
- 


▶ In the last two decades majority of the institutes,

in some sort of compliance/copying of the model syllabus prescribed by AICTE

have focused on basic Civil Engineering courses along with subjects of basic sciences/interdisciplinary nature.

- ▶ Of course, these basic sciences or the interdisciplinary subjects are very important.
 - ▶ But given the limited four year time duration for the B.Tech course, it is difficult to include them in the course curriculum of civil Engineering.
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IMPACT

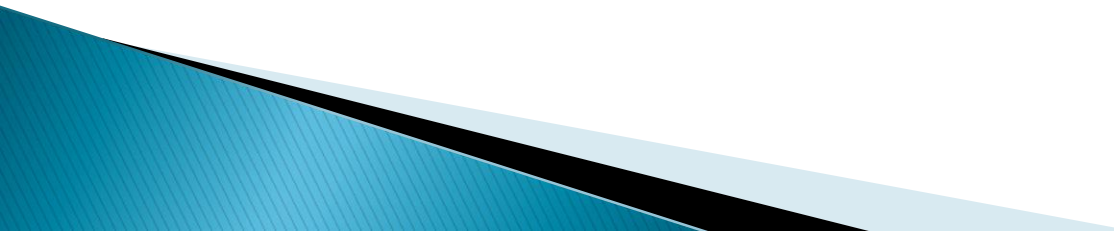
- ▶ This leads to civil engineering graduates with relatively shallow core knowledge, though with better communication skills, aptitude etc.
 - ▶ In some cases, it has brought down their employability for the core jobs.
 - ▶ This indirectly affects the development of indigenous technologies for which hardcore civil engineers are required.
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What could be done to address this serious problem so as to revive the Core Civil Engineering?

That's the premise of this paper.





Hypothesis


- a) Students are not going to join PG (M.Tech) studies
 - b) Core Civil engineering is to be strengthened
 - c) Fresh Civil engineering graduates should not be considered a burden by the industries.
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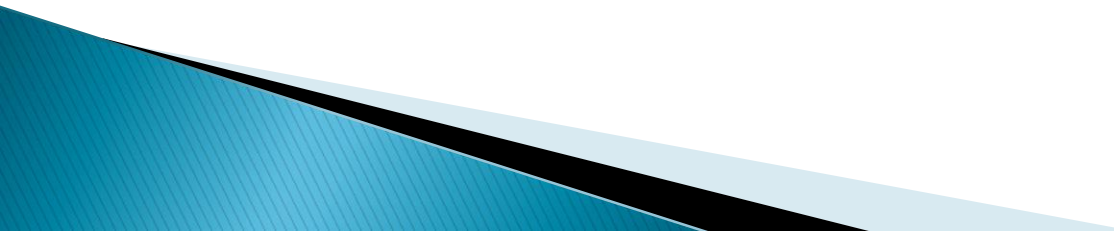
MODIFICATIONS/ SUGGESTIONS



- a) Removal of some subjects–Physics–II, Chemistry–II, Geology from existing curriculum
 - b) Add/Emphasize important practical oriented core subjects–ECM, EPC, Construction methods & Techniques etc.
 - c) Strengthen or make practical training more effective (with more involvement of T&P Cell)
- 

- d) Make choice of electives more effective and useful (Structures, WRE, EE, GE, TE, Survey and GI, RS)
 - e) Strengthen the B.Tech projects.
 - f) Cover all the main core subjects by 6th or 7th semester
 - g) All elective courses to be covered in 8th semester only
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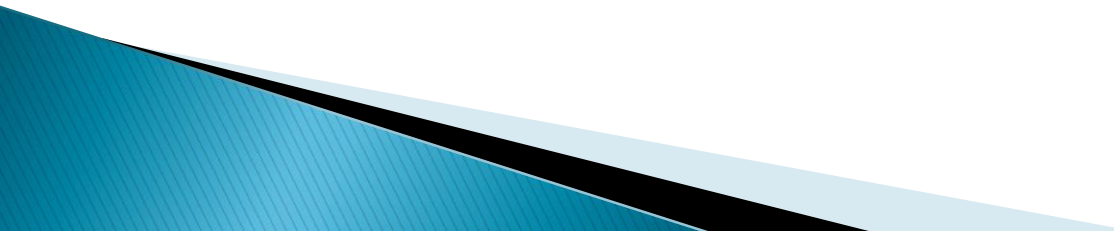
- h) Make a uniform combination of at least 5 theory and 4 labs in each semester (from 3rd to 6th)
 - i) Make practical training compulsory after 5th and 6th semester (with evaluation in 6th and 7th semester, respectively).
 - j) Include two separate B.Tech projects in 7th and 8th semesters covering different specializations (depending upon expertise available in the department)
- 

- k) Relax the provision of 30% non engineering subjects (applied sciences, humanities, other engineering) as suggested by AICTE etc.
 - l) Introduce integrated courses and dual degree programmes etc.
 - m) Increase the duration of B.Tech, if subjects cannot be removed (say to 4.5 years).
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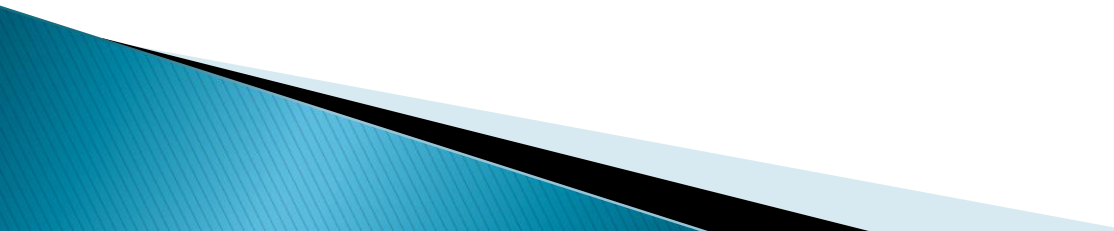
- ▶ Lastly a model scheme of B.Tech programme in Civil Engineering is presented.

Proposed Scheme

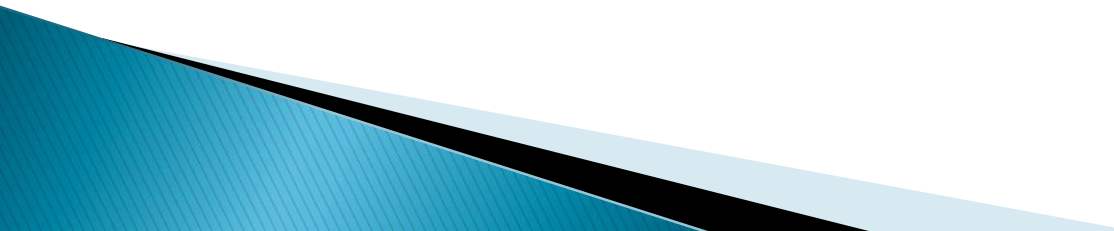
First Semester – (7T+4P)– 1250 marks

- ▶ Physics (T+P)
 - ▶ Chemistry (T+P)
 - ▶ Mathematics–I
 - ▶ Engineering Mechanics
 - ▶ Electrical Technology (T+P)
 - ▶ Engineering Graphics
 - ▶ Professional Communication
 - ▶ Language Lab (P)
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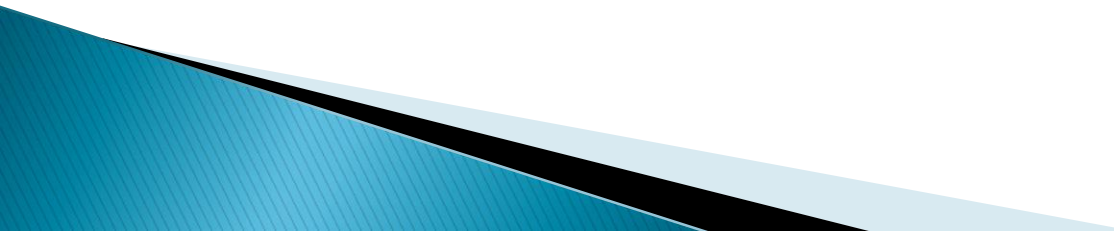
Second Semester (6T+4P)– 1100 marks

- ▶ Mathematics–II
 - ▶ Electronics Engineering (T+P)
 - ▶ Basic Mechanical System (T+P)
 - ▶ Computers and Programming (T+P)
 - ▶ Introduction to Civil Engineering
 - ▶ Environment and Ecology
 - ▶ Workshop Practice (P)
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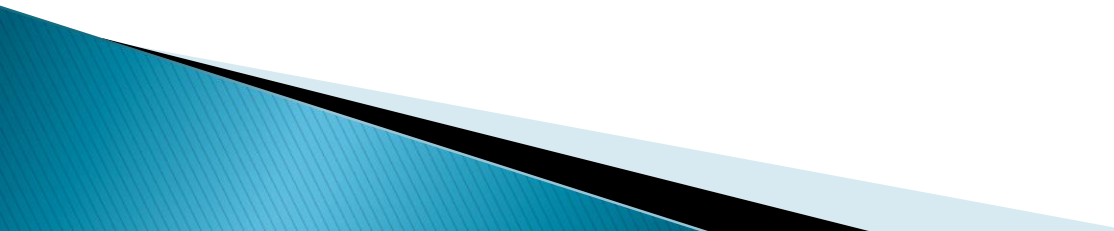
Third Semester– (5T+4P)– 950

- ▶ FM (T+P)
 - ▶ Survey–I (T+P)
 - ▶ BMC (T+P) (BPD Lab)
 - ▶ Mathematics–III
 - ▶ SOM (T+P)
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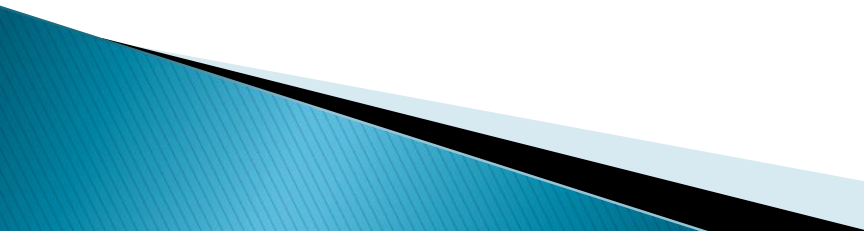
4th Semester (5T+4P) – 950

- ▶ HHM/C (T+P)
 - ▶ SA-I
 - ▶ Survey-II (T+P)
 - ▶ Concrete Structures -I (T+P)
 - ▶ CBNST (T+P)
- 

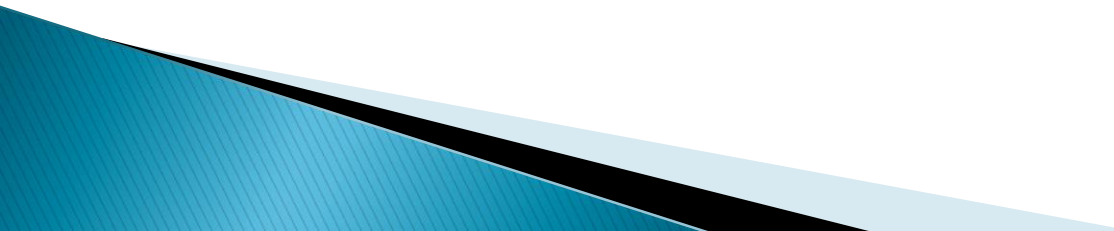
5th semester (6T+5P)– 1150 marks

- ▶ Hydrology and Irrigation Engineering
 - ▶ SA-II (T+P)
 - ▶ Concrete Structures-II (T+P) (SD Lab)
 - ▶ Soil Mechanics / GE-I (T+P)
 - ▶ EE-I (T+P)
 - ▶ TE-I (T+P)
- 

6th semester (6T+4P)–1100 marks

- ▶ Hydraulic Structures
 - ▶ EE–II (T+P)
 - ▶ Geotech–II
 - ▶ ECM
 - ▶ Transportation Engineering–II
 - ▶ Steel Structures (T+P)
 - ▶ Colloquium (P)
 - ▶ Practical Training (P)/ CACE Lab
- 

7th semester (5T+1P+1PT+2 Projects)

- ▶ EQRDS
 - ▶ EPC (Air and solid waste)
 - ▶ EEPM
 - ▶ EE-II* (T+P)
 - ▶ TE-II*
 - ▶ Practical Training
 - ▶ Project-I (75 marks)
 - ▶ Project-II (75 marks)
- 

8th semester

- ▶ Elective-I
- ▶ Elective-II
- ▶ Elective-III
- ▶ Elective-IV
- ▶ Project-I (200 marks)
- ▶ Project-II (200 marks)

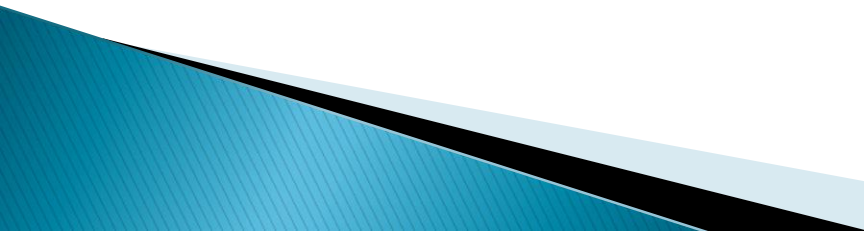
List of Electives

- ▶ Elective I:
 - Advanced hydrology
 - Matrix method of analysis
 - Advanced foundation design
 - Air Pollution and Control
 - Transportation system planning
 - Remote sensing and GIS
 - Advanced Concrete Design

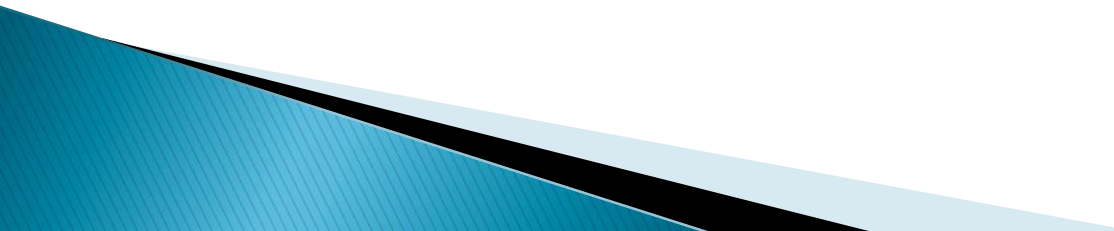
Elective II

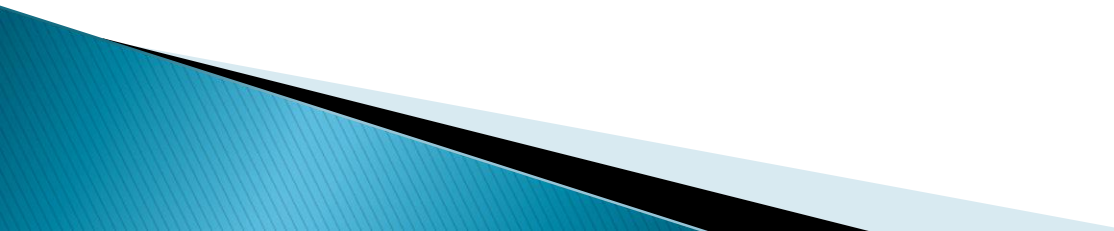
- ▶ -OCF
 - Pre-stressed concrete
 - Earth slope stability analysis
 - Solid and Hazardous waste engineering
 - Underground Engineering
 - Survey and Photogrammetry
 - Environmental Dynamics & Management/EIA and EA/Env. Legislation

Elective III

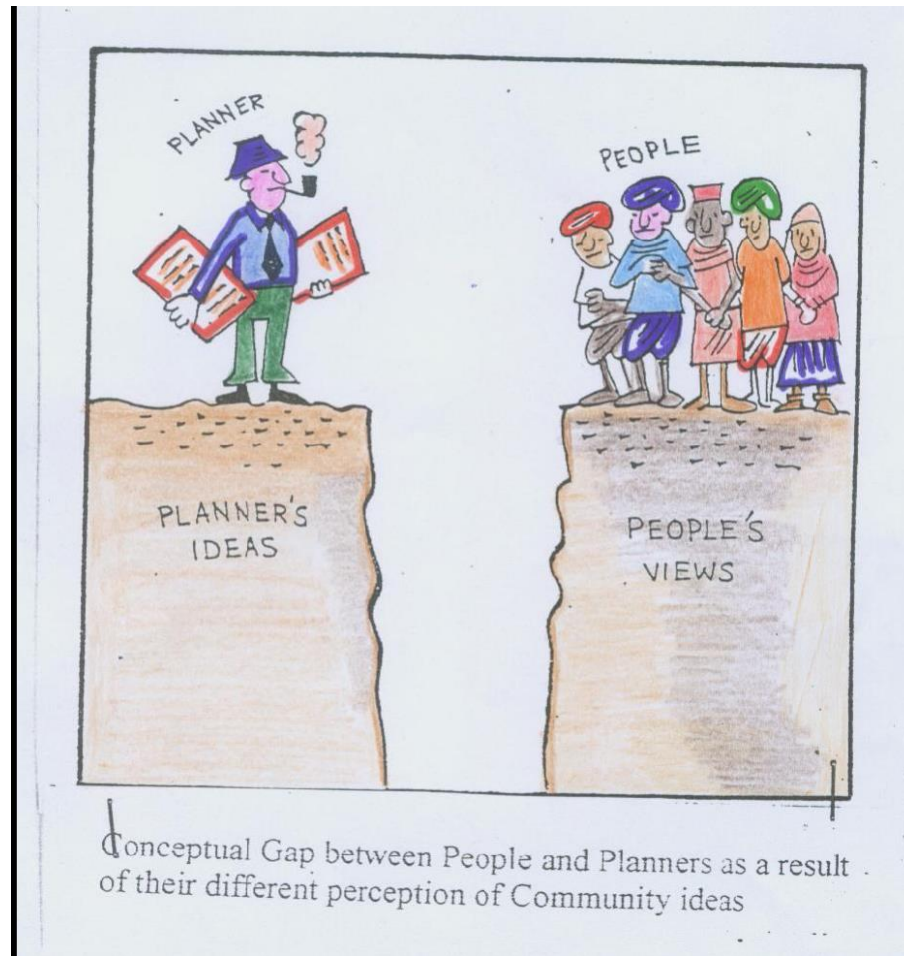
- ▶ Ground Water Hydrology
 - ▶ Advanced Structural design (tall structures, folded plates, shells and domes)
 - ▶ Water Quality Modeling
 - ▶ Design of Earth dams
 - ▶ Ground Improvement Techniques
 - ▶ Planning and Management of Buildings
 - ▶ Advanced Hydraulics (including Sediment Transport)
- 

Elective-IV

- ▶ Finite Element Analysis
 - ▶ Operation Research
 - ▶ Probability and Statistics for Civil Engineers
 - ▶ Numerical Methods and Solution Techniques
 - ▶ Introduction to soft computing tools
 - ▶ Computer Applications in Civil Engineering
 - ▶ Advanced Engineering Mathematics
- 

- ▶ It is opined that modifications suggested in this paper, if incorporated in the syllabus will pave the way towards making Indian Civil Engineering Graduates, a force to reckon with in this technology driven global world.
 - ▶ Otherwise, the future of core Civil engineering education seems far from satisfactory.
- 

Bridging the Gap



- ▶
- ▶ *“The views expressed in this paper are purely author’s personal opinion and are not meant to offend anyone”.*
- ▶ *In case if it does, heartfelt apologies.*

Thank You Very Much