CEPT University focuses on understanding, designing, planning, constructing and managing human habitats. Its teaching programs aim to build thoughtful professionals and its research programs deepen understanding of human settlements. CEPT University also undertakes advisory projects to further the goal of making habitats more liveable. Through its education, research and advisory activities, CEPT strives to improve the impact of habitat professions in enriching the lives of people in India’s villages, towns and cities.

The University comprises five faculties. The Faculty of Technology, which concentrates on engineering and construction, was established in 1982 as the ‘School of Building Science and Technology’. The teaching programs at CEPT University focus on building professional capacities and are therefore, centered on ‘studios’ or ‘labs’. Here, students engage with well-designed life-like problems. Coursework, seminars and research assignments, aimed at developing conceptual and analytical abilities of students, and skill-enhancing workshops support learning in studios and labs. Students must enrol in travel and documentation programs and intern in professional offices to widen their exposure.

The Master of Technology in Building Energy Performance is a unique program that uses the tropical climate as the context to prepare professionals who will work towards design, construction and operation of buildings to ensure a low energy performance. CARBSE (Centre for Advanced Research in Building Science and Energy), a world-class research facility in a net-zero-energy building on campus is recognized internationally for high quality research and practical experience in energy efficiency and net-zero energy buildings. It provides an array of latest testing and measuring equipment to assist in the learning of thermal and luminous effects in buildings. The faculty consists of industry experts, experienced practitioners and researchers who have a solution oriented approach. Ten students with a background in architecture and engineering form the cohort.

The coursework enables students to:
• Tackle complex technical problems and participate in a multidisciplinary environment.
• Use state of the art tools to conduct simulations and assess building energy performance.
• Contribute to and influence the design of energy-efficient buildings, while considering the architecture and environment, occupants' behaviour, their health and comfort.

Image Source: Rajesh Vora for RMA, India
**Course Faculty**

**Permanent Faculty**

**Prof. Sanyogita Manu**  
Adjunct Assistant Professor,  
Program Chair - Building Energy Performance

*Area of expertise:* Building energy efficiency; Occupant thermal comfort; Climate responsive design; Passive buildings; Energy performance; Performance evaluation; Energy codes and policy; Research design and methods

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**Prof. Prasad Vaidya**  
Professor - Building Energy Performance  
B. Arch, Sir JJ College of Architecture, Mumbai  
M.Arch, University of Minnesota  
LEED Fellow

*Area of expertise:* Energy policy, Energy efficiency program development, Net-zero-energy building projects, Daylighting

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**Prof. Rajan Rawal**  
Assistant Professor - Building Energy Performance  
Executive Director, CARBSE, CEPT University  
B. Arch., APIED, Vallabh Vidyanagar, Gujarat, India


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**Prof. Dr. Rashmin Damle**  
Assistant Professor  
BE., University of Bombay, Mumbai  
M. Tech, IIT Mumbai  
M.S and Ph.D., Universitat Politecnica de Catalunya (UPC), Barcelona, Spain

*Area of expertise:* Heat transfer, Cryogenics, Refrigeration and Air-conditioning

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**Ms. SK Dharini**  
Academic Associate  
M.Tech BEP, CEPT University, Ahmedabad  
B. Arch, School of Architecture, MCE, Chennai

*Area of expertise:* Architecture, Passive Design, Daylighting and Lighting, Teaching and Training

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**Ms. Pooja Mundhe**  
Academic Associate  
M.Tech BEP, CEPT University, Ahmedabad  
B.Arch. (Interior Design), Sinhgad College of Architecture, Pune

*Area of expertise:* Natural ventilation, Lighting and Daylighting Analysis, Whole Building Simulation

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**Visiting Faculty**

**Dr. Yashkumar Shukla**  
Technical Director (Energy Systems), CARBSE, Ahmedabad

**Michael G. Apte**  
Ex-Faculty, Lawrence Berkeley National Laboratory

**Swati Puchalapalli**  
Director, Terra Virdas, Hyderabad

**Neeraj Kapoor**  
Director, Kalpakvill Sustainable Environment P. L, Delhi

**Aalok A. Deshmukh**  
Head, Energy Efficiency, Schneider Electric India

**Anamika Prasad**  
Director, Environmental Design Solutions, Delhi

**Aakash Patel**  
Director, Volpak systems, Ahmedabad

**Ashok Patel**  
Director, Volpak systems, Ahmedabad

**Jiten Prajapati**  
JP architects, Mumbai

**Parag Rastogi**  
Lead Building Physicist, Arbnco, Glasgow

**Harshul Singhal**  
Senior Sustainability Specialist, Skidmore, Owings & Merrill LLP (SOM), San Francisco

Image Source: Rajesh Vora for RMA, India
The coursework is designed to be very hands-on. During the first three semesters the students take one 12-credit Lab course, and one 3-credit Seminar Course. The Lab course combines three types of modules: Core/Lectures for discussing Concepts and Practices, Simulation for Virtual Experimentation, and Measurements for Physical Experimentation. The seminar courses handle topics that require less immersion.

### Passive Comfort Lab
- Basics of building physics
- Thermal comfort
- Shading device design
- Climate response
- Passive comfort strategies
- Energy simulations

### Building, Energy and Environment
- Overview of the energy sector
- Introduction to building energy use
- Strategies for reducing use, and integrating renewable energy in the building stock
- Supply and demand and potential of renewable energy deployment
HVAC Lab

The course provides exposure to both physical design and measurements and whole-building-system simulation through lectures, measurements and evaluation modules.

- Introduction to systems and components
- Load calculations
- Efficiency strategies

Business Communication for Energy Efficiency Professionals

- Basic communication skills for professional energy efficiency work
- Techniques for reading early design documents
- Communicating the potential for low energy strategies
- Reading construction documents
- Communicating errors and omissions
- Preparing compliance reports
- Writing project proposals

Lighting, Daylighting and Integrated Design Lab

- Visual needs and climate response
- Lighting and daylighting concepts and strategies
- Shading analysis technologies
- Lighting controls
- Energy code interpretation
- Integrated design and whole building design

Renewable Energy Systems

- Different types of renewable energy systems and their economics.
- Field trips to review installations
- Monitor the performance of an installed system
- Learn to assess on-site generation potential and review integration issues for renewable technologies.
Research Thesis

Research Thesis

The students take up independent quantitative research in a topic of their interest under faculty guidance with a clear outline of research problems and objectives.

The goal of the research is to study a specific area and to provide an addition to existing knowledge or produce a new interpretation and approach towards the field of building energy performance.

The research involves extensive literature review, pilot study, data gathering and analysis. The topics range from building new instrument prototypes, evaluating building performance parameters, DRPs, investigation on current practices and technologies in the industry.

Elective Courses

The students took up various elective courses offered on campus by other faculties to widen their exposure in diverse fields. These include:

- Climate responsive design
- Construction cost management
- Enforcing sustainability: Codes, standards and rating systems
- Environmental modelling
- Environment Impact Assessment
- Environmental studies and engineering
- Entrepreneurship in design
- Cities, climate change and sustainable development goals
- Programming with C++ and Excel
- Sustainable resource conservation system
- Environmental studies and engineering
- ERP for construction industry
- Critical thinking and augmentation
- Innovative Business models for city branding strategies
- Fundamentals of accounting and finances

Race to Zero student design competition

Race to zero is an international competition for student teams to design affordable Net Zero Energy buildings.

The CEPT team (Team Kill Bill II) designed a Kendriya Vidyalaya elementary school in Jodhpur. This school, an affordable model for a building that is regenerative for the environment meets the Living Building Challenge goals. It is zero energy, zero water and has improved indoor air quality beyond ambient air in Jodhpur to meet WHO standards. The team was amongst the finalist in Elementary school category. Four students traveled to NREL, Colorado to present this work.
Student Profile

Ankit Debnath

Educational qualification
B.E (Construction Management), Dayananda Sagar College of Engineering, Bangalore

Work Experience
• Intern Energy Analyst, JLL Bangalore (May 2018 - July 2018)

Software skills
DesignBuilder, EnergyPlus, eQuest, Adobe Photoshop, AutoCAD, SketchUp, DIALux EVO, LightStanza

Thesis topic
Air Infiltration in Star Rated Hotels

Email ID
ankit.debnath.mbep17@cept.ac.in

Nidhi Rai Jain

Educational qualification and Certifications
B.Arch., Shivaji University, Kolhapur, Maharashtra; CII IGBC Accredited professional

Work Experience
• Founder Partner at HN Studio, New Delhi (Oct 2015 - June 2017)
• Project Architect at Chapman Taylor India LLP (April 2015 - Oct 2015)
• Project Architect at Neha Consultants (May 2014 - Jan 2015)

Software skills
AutoCAD 2D, Sketchup, Adobe Photoshop & InDesign, MS Office Suite, Energy Plus, DesignBuilder, eQuest, Open Studio, DIALux EVO, LightStanza

Thesis topic
Correlate the cooling capacity, thermal comfort it provides and the environmental impact of room ACs.

Email ID
nidhi.jain.mbep17@cept.ac.in

Sanchi Pathella

Educational qualification
B.Arch., L. S. Raheja School of Architecture, Mumbai

Work Experience
• Consulting Architect at Design Palette, Mumbai (June 2016 - May 2017)
• Architectural Intern at Design Palette, Mumbai (October 2015 - January 2016)

Software skills
DesignBuilder, EnergyPlus, eQuest, OpenStudio, LightStanza, DIALux Evo, SketchUp, AutoCAD, Photoshop, Air Pollution Modelling, Microsoft Office Suite

Thesis topic
Validation of BQET (Building Quick Energy Estimation Tool) that quantifies the reduction in cooling energy due to passive strategies for Indian cities

Email ID
sanchi.pathella.mbep17@cept.ac.in

Garima Kamra

Educational qualification and Certifications
B.Arch, Mumbai University; CII IGBC Accredited professional; GRIHA Certified Professional

Work Experience
• Intern energy analyst, Grune designs, Mumbai (May 2018 - July 2018)
• Consulting Architect at Abhikalpan Architects and Planners, Mumbai (July 2016 - July 2017)
• Architectural Intern at Dhumal and Associates, Navi Mumbai (Dec 2015 - April 2016)

Software skills
DesignBuilder, EnergyPlus, eQuest, LightStanza, DIALux Evo, Adobe Photoshop, AutoCAD, SketchUp, Vectorworks, Revit, Rhino + Grasshopper,

Thesis topic
Study on building envelope, occupant thermal comfort and energy monitoring of low cost housing.

Email ID
garima.kamra.mbep17@cept.ac.in
Sahil Verma

**Educational qualification and Certifications**
- B.Arch, DCRUST Murthal, Sonepat, Haryana; CII IGBC Accredited professional; GRIHA Certified Professional

**Work Experience**
- Intern Architect at Kalpakrit Sustainable Environments Pvt. Ltd., New Delhi (June 2015 - Dec 2015)
- Architectural consultancy, construction management, technical document reviewer at Navyug Infrastructure Developers, Haryana (Jan 2016 - May 2018)

**Software skills**
- DesignBuilder, EnergyPlus, eQuest, DIALux evo, LightStanza, Open Studio, AutoCAD, Revit, SketchUp, Adobe Photoshop, MS Office suite, PVsyst, Caline & Serfer

**Thesis topic**
- Evaluating the “Building Performance Evaluation” methodology for Residential Building in India

Email ID
sahil.verma.mbep17@cept.ac.in

Chawan Vijay Kumar

**Educational qualification**
- B.Tech., JNAFAU - School of Planning and Architecture, Hyderabad

**Work Experience**
- Teaching Assistant, CEPT University (Jan 2018 – April 2018 and July 2018 – December 2018)
- Intern at Nagarjuna Construction Company (NCC), Hyderabad (Mar 2017 - Jun 2017)

**Software skills**
- DesignBuilder, eQuest, OpenStudio, LightStanza, DIALux Evo, SketchUp, AutoCAD, Revit, Microsoft Office Suite

**Thesis topic**
- Refining of Water Table Apparatus for Natural Ventilation analysis.

Email ID
vijay.chawan.mbep17@cept.ac.in

Saranya A

**Educational qualification**
- B.Arch., TCE, Madurai, Tamil Nadu
- PPGCM, NICMAR, Pune

**Work Experience**
- Associate architect, The Neverland Studio, Vellore (May 2016-July 2017)
- Architectural Intent at Sathya Consultants, Bangalore (June 2013-April 2014)

**Software skills**
- DesignBuilder, EnergyPlus, eQuest, OpenStudio, LightStanza, DIALux Evo, SketchUp, Autocad, Photoshop, Primavera, Microsoft Project, Revit

**Thesis topic**
- Development and evaluation of control algorithms for NV-AC switching operations in mixed mode buildings

Email ID
saranya.a.mbep17@cept.ac.in

Shoumik Desai

**Educational qualification**
- B. Arch., Gujarat university

**Work Experience**
- Summer internship at CARBSE, Ahmedabad (May 2018 – July 2018)
- Architect and Intern at Studio 3087, Vadodara Design firm (Jan 2014 – Sept 2015)

**Software skills**
- AutoCAD, Vectorworks, DesignBuilder, SketchUp, eQuest, Corel draw, LightStanza, DIALux evo, DesignBuilder, MS Office

**Thesis topic**
- Evaluation of low energy cooling technology

Email ID
shoumik.desai.mbep17@cept.ac.in

Student Profile

**Email ID**
- Sahil Verma: sahil.verma.mbep17@cept.ac.in
- Chawan Vijay Kumar: vijay.chawan.mbep17@cept.ac.in
- Saranya A: saranya.a.mbep17@cept.ac.in
- Shoumik Desai: shoumik.desai.mbep17@cept.ac.in
Amanda Thounaojam

**Educational qualification**
B.Arch, Dayananda Sagar School of Architecture, Bangalore

**Work Experience**

**Software skills**
MS Office Suite, AutoCAD, ArchiCAD, SketchUp, Photoshop, Lightroom, 3DsMax, DesignBuilder, EnergyPlus, eQuest, OpenStudio, DIALux EVO, LightStanza

**Thesis topic**
Evaluation of daylight performance using HDR photography

Yashima Jain

**Educational qualification**
- Post Graduation Diploma in Renewable Energy, TERI University, New Delhi
- B.Arch., Chitkara School of Planning and Architecture, Chandigarh

**Work Experience**
- Graphic Designer at Frwrd labs, New Delhi (part-time)

**Software skills**

**Thesis topic**
Identify and develop simulation representation approaches for high-performance buildings

“Knowledge is of no value unless you put it into practice.”
- Anton Chekhov
Alumni Testimonials

Jaydeep Bhadra

With a focus on comfort and low energy, the graduates of the M.Tech program can work on the problems in India and other countries in South-east Asia and the Middle-east. The students learn building performance simulation over a two-year period in an immersive curriculum for building energy systems, technologies, and design approaches. My Master’s program has helped me build my knowledge and focus in energy efficiency, sustainability initiatives, and research & analytics-driven solutions. It gives a better insight into the whole building performance. Simulations and integrated design solutions help me deliver every stakeholder with a better understanding of the building and hence it is easier to develop strategies and make the correct choice to reduce overall energy consumption. The graduates solidify their understanding with exposure to realistic situations, researchers and professionals. Their simulation learning is built upon a foundation of theory and physical experimentation. In my current role as an Associate in PricewaterhouseCoopers Pvt. Ltd., the implementation of sustainable design practices and energy efficient design helped me take a holistic approach for decision making and ultimately help in reach our goal towards sustainable built-environment.

Dharini Sridharan

I am an architect by profession and joined M.Tech BEP with the hopes of learning more on green buildings and sustainability. I ended up learning much more than just that and realized that there are various components to make an energy efficient building like passive and active strategies, conceptual understanding of HVAC systems, electric and daylighting strategies and many more. What sets us apart from many other professionals in this field is the organized way of learning fundamentals and concepts with technical understanding which is the backbone of solving/ troubleshooting any problem that arises during any stage of a building design or construction. I was an Academic Associate for the same course after my completion and this made me empathize with the students and their level of understanding at every stage. BEP has also made my level of communication better and increased my confidence level while teaching Master level students. The unique method of hands-on learning and teaching has opened up lots of avenues in research, consultation as well as teaching. Personally, I am convinced that conserving energy is the future and that professionals like us are like early bird registrants with an edge over the others!

Maaz Dixit

Masters of Building Energy performance, has revolutionized my views as an architect. When I joined this course I thought of a building from the perspective of an architect: living and commercial spaces to be designed with unfettered imagination. The energy that goes into building a building was something that I hadn’t calculated before. Heat load calculations, the impact of climate on building and how can a building’s behavior be changed all depends on the architect and the building physicist. Impact of interventions at every design phase has tremendous impact on the overall energy consumption. BEP has given me a lot of knowledge and at the same time filled me with the caliber and confidence to implement that knowledge in practice. Thanks to the motivation of faculties at BEP, my family and friends I took the brave step of starting my own energy consultancy firm. It’s been three months since then and we have not stopped. I feel responsible to implement my knowledge into this industry to make this world a greener place. If I had to put it in one line, I would say this: “Architecture was always cool; but now I look at it with extremely smart glasses on.”

Vasudha Sunger

The building energy performance (BEP) program from CEPT University has helped me in building up my technical and professional skills with hands-on approach. This post-graduate program gave us a thorough understanding of the ongoing research and technology using state of the art tools in the field of building energy efficiency. With limited resources and education programs on building science in our country, I feel privileged to be a part of this program and having learned from such eminent faculty members which includes both academicians and practitioners.

The CEPT University offers an altogether different environment and a unique culture. Every architect wishes it’s name to be associated with this organization for the exposure and programs it has to offer. The students here believe in working as an integrated team which leads to exchange of knowledge, ideas and thoughts.
Co-curricular Activities

American Society for Heating, Refrigeration and Air conditioning Engineers (ASHRAE)

The students of M.Tech BEP are all active student members of ASHRAE Western India chapter. They participate in the various site visits and technical sessions organized. The students visited the Citizen and Hitachi manufacturing unit and GIFT city to fill the gaps between theoretical and practical understanding of air conditioning systems. Students attended various technical lecture sessions on District Cooling System, Basics of clean room, VAV systems by industry experts.

Research paper selected at IIT BCP Symposium, Chicago, Illinois

M.Tech. BEP student received the Linda Latham Scholarship to attend international conference ACEEE Summer study in California, USA.

Past Placements

For Queries Contact,

Mrs Reshma Shah
Placement Co-ordinator
Faculty of Technology
Email: reshmashah@cept.ac.in

Ms Garima Kamra
Student Placement Co-ordinator
M.Tech BEP 2017 – 19
Email: garima.kamra.mbep17@cept.ac.in

Image Source: Rajesh Vora for RMA, India