



**ARYA** Institute of Engg. & Technology (AIET)

(Affiliated to RTU | Approved by AICTE, New Delhi)

- SP-40, RIICO Industrial Area, RIICO-Kukas, Jaipur-302028
- Ph. 0141-2820700, 5148801

- [www.aryainstitutejpr.com](http://www.aryainstitutejpr.com)
- Toll Free: 1800 102 1044

# Material Testing and Concrete Technology



**OFFICE OF THE DEAN ACADEMIC AFFAIRS  
RAJASTHAN TECHNICAL UNIVERSITY**

**AKELGARH, RAWATBHATA ROAD, KOTA-324010**

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**RTU/Acad./F(17)14/2022/ 7856**

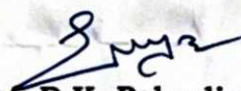
**Date: 04.08.2022**  
**25.**

Principal/Director  
Arya College of Engineering & Research Centre  
SP-40, Kukas Industrial Area (RIICO), Delhi Road  
Jaipur-302028 (Raj.)

**Sub: Recognition of Centre of Excellence in Material Testing and Concrete Technology from session 2022-23.**

- Ref.:** 1. University guidelines for Establishment, Recognition and Operating of COE dtd. 03.02.2022.  
2. Your proposal dtd. 23.03.2022.

With reference to University call for proposals for establishment of Centre of Excellence, your application for recognition of Centre of Excellence in the area of **Material Testing and Concrete Technology** was considered. On the recommendation of Expert Evaluation Team and subsequent approval of 74<sup>th</sup> Board of Inspection vide agenda no. 74.4, University has recognised the Centre of Excellence in the area of **Material Testing and Concrete Technology** at your institute from 2022-23.

  
**(Prof. D.K. Palwalia)**  
Dean, Academic Affairs



## Centre of Excellence in Civil Engineering for Material Testing & Concrete Technology

### Vision and Mission of Propose COE:

#### Vision:

Innovative leadership in education and research, and by integrating systems thinking and new technologies.

Empowering a diverse community of socially conscious problem solvers to lead the world to a sustainable, resilient, equitable, and inclusive future.

#### Mission:

- To Conduct technical programme such as training, workshops, internships, seminars, conferences, expert talks, schools and FDPs in relevant areas.
- To produce Civil Engineers of high caliber, technical skills and ethical values to serve the society and nation.
- To make the department a centre of excellence in the field of civil engineering and allied research.
- To provide knowledge base and consultancy services to the community in all areas of civil engineering.
- To promote innovative and original thinking in the of budding engineers to face the challenges of the future.

### Objectives and Relevance of the Proposed COE:

- Creating a strong association of expertise with verity of experiences and facilities for Research and Innovation to exchange knowledge, ideas, solutions to Industry and Academia.
- Conduct technical programme such as training, workshops, internships, seminars, conferences, expert talks, schools and FDPs in relevant areas.







- Implement NEP (National Education Policy) and filling the gap between Industry and Academia.
- COE will provide the best world-class practices for Design, Research & Prototyping

## Technical Novelty and Utility:

1. State of the art Material testing laboratory with modern machinery like UTM of 100 Tonne capacity, CTM etc.
2. Concrete testing Lab for advanced research works for B.Tech as well as M.Tech courses
3. Designing Structures with Industry Ready Software (AUTO-CAD, STADD-PRO, E-TABS, 3ds-MAX, PRIMAVERA)

The tools of today's civil engineers are far more advanced than the tape measures and graph paper they used in years past. The work has also become much less tedious with time, thanks to computer-aided design software.

With state-of-the-art CAD software, civil engineers can design structures that are more efficient and cost-effective. Auto-Cad, Stadd-Pro for Building load calculation, E-Tabs for BIM, it is the perfect support for clash detection and problem-solving during design which improves planning and increases efficiency.

These highly sophisticated tools allow users to plan out their creations and prototypes digitally in a 3D space that gives them complete control over every detail from start to finish - including making changes on the fly as they please without having any fear of destroying materials or wasting time by needing physical prototypes first.

## Specific Thematic Focus:

Conceptual Framework and scientific Strategies of the above thematic Focus:

Current Status of Research and Development in the Area (Both National and International):

Civil engineering encompasses the conception, design, construction, and management of diverse structures built to maintain or improve the quality of life and to control the environment.





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We are working in the field of research in B.tech & M.tech Programme. We have done eight dissertations of the M.tech structure in RTU Kota on the behalf of the results found in our Material testing and Concrete testing labs.

We will be working for Structural industry tie-ups for third-party PMC construction works and to provide research consultancy services for PhD scholars also.

We are using industry-oriented updated software's for design structures that are more efficient and cost-effective e.g. Auto-Cad, Stadd-Pro for Building load calculation, E-Tabs for BIM, it is the perfect support for clash detection and problem-solving during design which improves planning and increases efficiency. 3ds-Max render drawings in photo-realistic visualization, Primavera assign resources to tasks and track the progress of the project.





## **List of Proposed Training Programs for Proposed Centre of Excellence**

S.No.	Name	Duration	Objectives
1	Construction Management program	7 Days	Analyze professional decisions based on ethical principles & create construction project schedules.
2	Mechanics of Material – Stress, Strain & Axial loading	7 Days	To analyze the structural steel & material's Serviceability requirement
3	Advance Concrete technology	7 Days	<ol style="list-style-type: none"><li>1. Characterise the engineering properties of cement-based materials</li><li>2. Recognise the effects of the rheology and early-age properties of concrete on its long-term behaviour.</li><li>3. Develop an advanced knowledge of the mechanical performance of cement-based materials and how it can be controlled</li></ol>
4	Program on Precast, Pre-stressed and Concrete Structures for Bridges	15 Days	<ol style="list-style-type: none"><li>1. Learn the manufacturing of cements, their hydration and microstructure.</li><li>2. use various chemical admixtures and mineral additives to design cement-based materials with tailor-made mechanical and durability properties.</li><li>3. understand the mixture design and engineering properties of special concretes such as high-performance concrete, self-consolidating concrete,</li></ol>







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			<p>fibre-reinforced concrete, sprayed concrete, etc.</p> <p>4. bridge the gap between materials science and structural engineering so that concrete can be used properly in structural concrete projects</p>
5	Advance Surveying Technology	15 Days	<p>1. Apply geometric principles to arrive at solutions to surveying problems.</p> <p>2. Analyze spatial data using appropriate computational and analytical techniques.</p> <p>3. Design proper types of curves for deviating types of alignments. 4. Use the concepts of advanced data capturing methods necessary for engineering practice</p>
6	BIM fundamentals by ETABS	30 Day	<p>The objective of the course is to provide the participant with the basic and advanced tools of the modeling program, not only will a Design of the structural elements of the building be reached, the building will also be analyzed based on the detailed plans, using the tool most powerful in the market in the development of structural projects software</p>
7	Construction Cost Estimating and Cost Control	30 Days	<p>This training introduces the types of cost estimation from the conceptual design phase through the more detailed design phase of a construction project. In addition, the course highlights the</p>





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			importance of controlling costs and how to monitor project cash flow. Students will work on a break-even analysis of construction tasks in a project.
8	<b>Mastering bitumen for better roads and innovative applications</b>	30 Days	Their main objective here is to share technical knowledge and experience to insure bitumen are being used in the most effective and efficient ways for their different applications in road works.
9	Geographical Information System	60 Days	It introduces participants to geospatial analysis. To enable participants, use GIS to identify, explore, understand, and solve spatial problems  demonstrate GIS modeling skills & formulate applications of GIS technology.
10	Renewable energy and green building entrepreneurship	60 Days	you learn to launch a new business in the energy, finance, real estate, design, engineering, or environmental sectors, while also helping you create positive environmental and human health impacts around the world. We will integrate tools, trends, and tips from the field of entrepreneurship as a career path for making a difference and generating wealth in the renewable energy and green building sectors.







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11	3-D printing in construction projects	60 Days	<p>Industry-ready training programs that enhance the quality and speed of Construction.</p> <p>3D printing may allow, faster and more accurate construction of complex or bespoke items as well as lowering labour costs and producing less waste. It might also enable construction to be undertaken in harsh or dangerous environments not suitable for a human workforce.</p>
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