

## Active Learning Techniques and Robust Assessment Methods in “Train the Trainer” Format

### Overview

Increasingly engineering schools are recognizing that technical competency alone is not sufficient for a graduating engineer to enter the workforce. To be truly competitive in a global market, the graduates need to be entrepreneurial innovative thinkers. The goal of the workshop will be for participants to realize how the innovative thinking can be emphasized, promoted, and assessed within the technical curriculum. Cultivating the mindset involves changing the delivery style and assessment methods. A weeklong course in Active Learning Techniques and robust assessment methods is proposed. The faculty will be engaged actively during the workshop to identify appropriate teaching pedagogies and learn assessment strategies for the courses they teach.

Traditionally in most Indian universities active learning and robust assessment methods may not be emphasized to the extent it is embraced in United States. The proposed course is anticipated to provide the attendees with a different perspective emphasizing not only the theoretical aspects of these courses, but also case studies, real world examples and open ended design projects to make the understanding of the course material interesting, relevant, and engaging. In addition, simple assessment techniques are described that provide meaningful feed back to the instructor and also assist in accreditation activities.

<b>Dates</b>	<b>10<sup>th</sup> July to 15<sup>th</sup> July 2017</b>	
<b>Location</b>	<b>Motilal Nehru National Institute of Technology (MNNIT) Allahabad, U.P., India.</b>	
<b>Course Schedule</b>		
	10 <sup>th</sup> July 2017 (Monday)	Inauguration: 4.00 PM-4.30 PM High Tea: 4.30 PM-5.00 PM Lecture-1: 5:00 PM –6.00 PM Topic: Active learning and problem based learning methodology. Tea Break: 6.00 Noon-6.15 PM Lecture-2: 6.15 PM-7.15 PM Topic: Case studies to illustrate active learning and problem based learning. Tutorial-1: 7.30 PM-8.15 PM
	11 <sup>th</sup> July 2017 (Tuesday)	Lecture-3: 4.30 PM –5.30 PM Topic: Entrepreneurial Mindset (EM)-why is it important in the class room and how do we introduce it? Tea Break: 5.30 PM-5.45 PM Lecture-4: 5.45 PM-6.45 PM Topic: Case studies to illustrate Entrepreneurial Mindset. Tutorial-2: 6.45 PM-7.30 PM
	12 <sup>th</sup> July 2017 (Wednesday)	Lecture-5: 4.30 PM –5.30 PM Topic: Course assessment in the context of teaching and learning. Tea Break: 5.30 PM-5.45 PM Lecture-6: 5.45 PM-6.45 PM Topic: Course assessment tools and rubrics. Tutorial-3: 6.45 PM-7.30 PM
	13 <sup>th</sup> July 2017 (Thursday)	Lecture-7: 4.30 PM –5.30 PM Topic: Introducing open ended problems / design assignments in courses. Tea Break: 5.30 PM-5.45 PM Lecture-8: 5.45 PM-6.45 PM Topic: Examples of simple design problems in statics, Mechanics



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		of Solids, Fluid Dynamics and Thermodynamics Tutorial-4: 6.45 PM-7.30 PM								
	14 <sup>th</sup> July 2017 (Friday)	Lecture-9: 4.30 PM –5.30 PM Topic: Examples of simple experiments to enhance learning. Tea Break: 5.30 PM-5.45 PM Lecture-10: 5.45 PM-6.45 PM Topic: Summary of course activities/questions and answers. Course evaluation by attendees. Tutorial-5: 6.45 PM-7.30 PM								
	15 <sup>th</sup> July 2017 (Saturday)	Evaluation of Learning Outcomes (Examination/Test, Feedback) & Certificate distribution. 9.30 AM-12 Noon.								
<b>Who should attend?</b>	UG and PG Students, Research scholars, Faculty members, Practicing Engineers, Scientists, Economists, Sociologists, Business management people.									
<b>Course Fee</b>	<p><b>One-Time GIAN Registration:</b> Please visit <a href="http://www.gian.iitkgp.ac.in/GREGN/">http://www.gian.iitkgp.ac.in/GREGN/</a> and register by paying Rs. 500/- (those who have already been paid, need not pay again).</p> <p>The participation fees for attending the course is as follows:</p> <table border="1"> <tr> <td><b>Participants from abroad:</b></td> <td>US\$ 200</td> </tr> <tr> <td><b>Industry/ Research Organizations:</b></td> <td>Rs. 1000</td> </tr> <tr> <td><b>Academic Institutions (Faculty members):</b></td> <td>Rs. 500</td> </tr> <tr> <td><b>Academic Institutions (Students/Research scholars):</b></td> <td>Rs. 100</td> </tr> </table> <ul style="list-style-type: none"> <li>The above fee includes all instructional materials, computer use for tutorials &amp; assignments (if any).</li> <li>Minimum 90% attendance necessary to be eligible for certificate of participation/attendance.</li> <li>Appearing for evaluations/examinations during the course is necessary for certificate of grades in the course.</li> <li>Accommodation in the campus can be provided subject to availability and on 'first come first served' basis. Payment for accommodation is extra.</li> </ul>		<b>Participants from abroad:</b>	US\$ 200	<b>Industry/ Research Organizations:</b>	Rs. 1000	<b>Academic Institutions (Faculty members):</b>	Rs. 500	<b>Academic Institutions (Students/Research scholars):</b>	Rs. 100
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<b>Bank Details</b>	<p><b>Account Name:</b> Train the Trainer-2017. <b>Account No.:</b> 718400301000266.  <b>Bank Name:</b> Vijaya Bank. <b>Branch:</b> MNNIT Allahabad. U.P. India.  <b>IFSC Code:</b> VIJB0007184.  <b>Last Date of Registration:</b> 9<sup>th</sup> July 2017.</p>									



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## International Expert



**Prof. K. Ravindra** is currently a professor at Parks College of Engineering Aviation and Technology, at Saint Louis University, USA. He served as the Associate Dean at Parks College of Engineering, Aviation and Technology at Saint Louis University from July 2012-June 2016. He served as interim dean from July 2010-June 2012. He served as the department chair of Aerospace and Mechanical Engineering from 1996-2009, and as Associate Dean and Interim Chair during 2009-10. Dr. Ravindra obtained a Ph.D., in Aerospace Engineering from The Pennsylvania State University, a Master of Engineering degree in Aeronautical Engineering from Indian Institute of Science, Bangalore, India, and a Bachelor of Engineering (Mechanical Engineering) from the National Institute of Engineering, Mysore, India. His teaching experience is diverse which includes a number of courses in aerospace and mechanical engineering stems. He is a fellow of American Society of Mechanical Engineers (ASME), an associate fellow of American Institute of Aeronautics and Astronautics (AIAA) and a member of American Society of Engineering Education (ASEE). He is a member of Indo US Collaboration for Engineering Education consortium (IUCEE). His research interests is in fluid dynamics, active control of structures, and engineering education. He has published several technical papers in these areas. He has served in various capacities in the Aerospace Division of ASEE and the Saint Louis section of ASME. As a member of the Academic Affairs Committee of AIAA he has organized many education related sessions in AIAA Sci Tech conferences. He has attended and participated in various workshops and conferences related to Kern Entrepreneurship Education Network (KEEN) since 2010. He is the recipient of the Missouri Society of Professional Engineers (MSPE) faculty of the year award. He is a registered professional engineer in New York State. He is an ABET evaluator.

### Host Faculty:



**Dr. Akshoy Ranjan Paul** is Assistant Professor in the Department of Applied Mechanics, Motilal Nehru National Institute of Technology Allahabad (India). Dr. Paul has 15 years of combined teaching and research experience and is actively involved in research in the areas of fluid mechanics, especially flow through complex ducts and conduits, and measurement of turbulent flows therein. He obtained his Ph.D. in Aerodynamics in 2013 from MNNIT Allahabad. He has published 16 papers in international journals including a few in refereed journals, and 50 papers in conferences at various national and international levels. Besides, he has written four textbooks on fluid mechanics and solid mechanics for undergraduate level students. Five Ph.D. students are presently working under his guidance. Besides, he has guided 30 M.Tech. theses. Dr. Paul is a panel reviewer of three international journals and is presently working in three research projects from various Govt. Agencies in the area of Fluid Dynamics as an investigator. Dr. Paul was the Organising Secretary of 6<sup>th</sup> International & 43<sup>rd</sup> National Conference on Fluid Mechanics and Fluid Power (FMFP-2016).



**Prof. Anuj Jain** is Professor in the Department of Applied Mechanics, Motilal Nehru National Institute of Technology Allahabad (India). He served as Head in this department during 2013-15 and as Dean (Research & Consultancy) during 2010-12. Dr. Jain has obtained his Ph.D. degree in multiphase flows through cyclone separators from IIT Roorkee. He has about 30 years of teaching and research experience. He has published over 80 research papers. Besides, he has co-authored one textbook on Strength of materials for undergraduate level students. Four students have been awarded Ph.D. degree under his guidance so far. He has guided 63 M. Tech. theses. Prof. Jain is presently working on two externally funded research projects in the area of Bio-Fluid Dynamics as the principal investigator. He conducts Faculty Development Programme on CFD regularly. His current research interests include application of CFD for various challenging problems. Prof. Jain was the Chair of 6<sup>th</sup> International & 43<sup>rd</sup> National Conference on Fluid Mechanics and Fluid Power (FMFP-2016) and is the Vice-President of the National Society of Fluid Mechanics and Fluid Power, India.



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**Contact:**

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