

**Biomechanics of Joints and Orthopaedic Implants**  
**Professor Sanjay Gupta**  
**Department of Mechanical Engineering**  
**Indian Institute of Technology, Kharagpur**  
**Lecture 44**  
**Concluding Remarks**

Good afternoon everybody. Welcome to the final lecture of the eighth module on Concluding Remarks of the NPTEL Online Certification Course on Biomechanics of Joints and Orthopaedic Implants. It has been a great experience delivering this online course on Biomechanics of Joints and Orthopaedic Implants.

So as discussed earlier, we had eight modules out of which the first four modules were based on structure and function of the joints of the human body, Gait analysis and joint kinematics and kinetics. In the second part of the course, we concentrated primarily on bone mechanics, implants, bone remodelling, and tissue differentiation.

Now I have tried my best to give it a comprehensive course on Biomechanics of Joints and Orthopaedic Implants, and I believe that this course would be helpful for all of you to start working in the area of biomechanics and related areas.

Now, this course was based on the contribution of several research scholars, past and present, who had worked or is still working in the Biomechanics Laboratory at the Department of Mechanical Engineering IIT Kharagpur.

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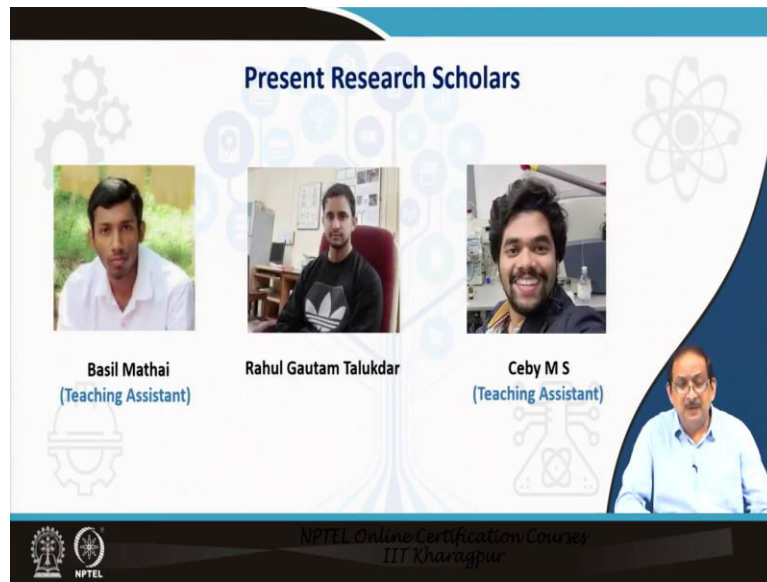
Now let me introduce to you the past research scholars who worked in this laboratory. To start with, Dr Bidyut Pal worked in the area of Hip Resurfacing Arthroplasty. His research topic was Biomechanical Investigation of Failure Mechanisms and Design of Femoral Resurfacing Implants based on Numerical and Experimental Analysis.

Dr Pal was followed by Dr Rajesh Ghosh, who worked extensively on the Modeling and Analysis of Pelvic Bone and Design Considerations of Acetabular Components. He used both Digital Image Correlation DIC and Strain Gauge Techniques to conduct experimental strain measurements in natural and implanted Hemi-pelvises.

Dr Souptick Chanda worked in Multi-objective Shape Optimization of Femoral Implants using Genetic Algorithm, and he developed the Computational Framework for the optimization procedure. He also worked with DIC and Finite Element Analysis.

Dr Kaushik Mukherjee worked in the area of Bone Ingrowth and Bone Remodeling based on Mechano-Biology Principles and he specifically worked in the area of Acetabular Component.

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The present research scholars are Basil Mathai who is also a Teaching Assistant of this course. Basil worked in the area of Musculoskeletal Modeling, Bone Ingrowth and Remodeling around Uncemented Femoral Implant.

Rahul Gautam Talukdar works in the area of the Lumbar Spine and the Development of Interbody Cages and Spinal Implants. Ceby M S, a Teaching Assistant of this course, has started working on Functionally Graded Porous Acetabular Implants.

Now, based on their contribution, this course has been developed, and I take this opportunity to thank their contribution, which has eventually been useful in developing this course. So I thank all my past and present research scholars for their contribution.

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**International Collaborators**

Prof. Martin Browne, School of Engineering Sciences, University of Southampton, United Kingdom.

Dr. Alex Dickinson, School of Engineering Sciences, University of Southampton, United Kingdom.

Prof. Nico J.J. Verdonschot, University of Twente and Radboud University Medical Centre, Nijmegen, The Netherlands.

Dr. Andrew New, School of Engineering Sciences, University of Southampton, United Kingdom.

Dr. Ulrich Hansen, Biomechanics Group, Department of Mechanical Engineering, Imperial College London, United Kingdom.

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Apart from the contributions of the past and present research scholars, there have been some active international collaborators who contributed in the development of Biomechanics Research at the Department of Mechanical Engineering IIT Kharagpur.

So I would like to highlight the contribution of Professor Martin Browne, Dr Alex Dickinson, and Dr Andrew New, all from the University of Southampton, United Kingdom, who had taken part in collaborative projects and actively contributed to the development of Biomechanics Research in this Institute.

Apart from them, Professor Nico Verdonschot of the University of Twente and Nijmegen University Medical Centre from the Netherlands also contributed to some laboratory research activities. Doctor Ulrich Hansen from Imperial College London also had some collaborative research with me, and I also acknowledge their contribution in this regard.

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**National Collaborators**

Dr. Joydeep Banerjee Chowdhury, Joint and Bone Care Hospital, Salt Lake, Kolkata.

Dr. Kiran Kumar Mukherjee, Department of Orthopaedic Surgery, NRS Medical College, Kolkata.

Prof. Dilip Kumar Pratihar, Department of Mechanical Engineering, IIT Kharagpur.

Prof. Santanu Dhara, School of Medical Science and Technology, IIT Kharagpur.

Dr. Mangal Roy, Department of Metallurgical and Materials Engineering, IIT Kharagpur.

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Well, apart from the international collaborators, we have the national collaborators. So I would like to acknowledge the contribution of Doctor Joydeep Banerjee Chowdhury from the Joint and Bone Care Hospital in Kolkata. The active participation of Doctor Kiran Kumar Mukherjee, Department of Orthopaedic Surgery, NRS Medical College, is also acknowledged in this regard. Apart from the outsiders, the inhouse contributors were Professor Dilip Pratihar, Professor Santanu Dhara and Dr Mangal Roy within the different departments of IIT Kharagpur.

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~ Wish you all the best for your future endeavours ~

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Now I hope you enjoyed the content of this course. If you have any problems related to the specific topics, please feel free to contact me. I would be most happy to help you with some answers, and I take this opportunity to wish you all the very best in your future endeavours. Thank you all for listening.