

INVITATION AND COURSE OVERVIEW

**ASEAN + 5 Course on
Basic and Applied Nanotechnology in Bioceramics for
Health, Life Sciences, and Tissue Engineering**
(In Conjunction to Travel with Bioceramics Scholars)



Hosted by:
Universitas Gadjah Mada (UGM) and
Institut Teknologi Bandung (ITB)

A. Course Description

Bioceramics has been widely used and plays important roles for several decades in orthopedic, spinal, maxillofacial surgery, drug delivery technology, and vaccine adjuvant as well as cell delivery in regenerative therapies. The clinical success depends on the intensive research to optimize the synthetic bioceramics- based system and understand the biological behavior. Meanwhile nanotechnology has become an approach in health, life sciences, and tissue engineering.

As a Center of Excellence for Bioceramics and Tissue Engineering in Indonesia, Universitas Gadjah Mada aims to educate young scientist in a course in a forum that brings together researchers and clinicians to strengthen knowledge (while developing networking) to learn about fundamental, strategy, methods including the latest advancements in the field of tissue engineering and bioceramics research and their medical applications.

This course is jointly organized with Pusat Penelitian Nanosains dan Nanoteknologi or (Research Center for Nanoscience and Nanotechnology - RCNN) of Institut Teknologi Bandung. RCNN – ITB is known to be a center of excellence in nanoscience and nanotechnology in Indonesia. The experts, facilities, and productivities of the center will strengthen the quality of the course and allow participants to do practice under the supervision of world class researchers.

This course is targeted for Undergraduate, Master and PhD students, young researchers and investigators, young scientist and managers from industrial sectors who will apply tissue engineering and bioceramics principles and approaches or use tissue engineering and bioceramics principles as a reference for certain purposes.

The course will be transferable and equivalent to 3 credit units. During the course, participants will also be introduced to the richness of Indonesian culture. Participants will also enjoy the travelling by train from Yogyakarta to Bandung. The course will be jointly organized with 2 days Travel with Bioceramics Scholars wherein participants will have a journey to beautiful places rich with natural resources and discuss about the potential of the natural resources to be explored for education, research and other scientific purposes.

B. Learning Outcome

After completing the course, students/ participants are expected to be able to:

1. Understand fundamentals and principles of nanotechnology in bioceramics for the application in health, life sciences, and tissue engineering fields;
2. Understand enabling technologies nanotechnology in bioceramics for the application in health, life sciences, and tissue engineering fields, including synthesis of bioceramics, scaffolding system, protein production, coating and controlled release technology;
3. Identify and analyze animal and human trials in translational research process;
4. Identify application of ethics and standardization;

5. Formulate future challenges in nanotechnology in bioceramics for the application in health, life sciences, and tissue engineering fields;
6. Moreover, to be able to collaboratively learn and work in an international, transdisciplinary and intercultural settings.

C. Method and Output

1. The lecture will be delivered in a blended learning method involving lecture, discussion, hands on laboratory activities, and assignments in a Workshop Model combined by Webinar System;
2. For the discussion, students need to prepare mind mapping of their interests related to nanotechnology in bioceramics for the application in health, life sciences, and tissue engineering fields topics;
3. For the hands on laboratory activities, students/participants learn hands on experiences of characterization and modelling;
4. Journals reading and review are also provided during the course;
5. At the end of the course, students/ participants need to submit a summary of research plans, which will be discussed under supervisions, presented and reviewed;
6. Besides, joint capstone research design will be developed inter- culturally as the starting point for joint works;
7. Also during travel with bioceramics scholars, participants will also learn together the potential of natural resources in relation with the needs of the development for clinical applications;
8. Upon completing the course, students/ participants will be granted 3 credit units certification.

D. Time and Place

1. Time

The course will be held during the summer in Indonesia **from July 9 to 13 in Yogyakarta (UGM) Continued from July 15 to 20 in Bandung (ITB)** (Detail Schedule is Attached).

2. Place

The course will be done in Universitas Gadjah Mada, Yogyakarta, Indonesia. Yogyakarta is a center for Javanese culture, where the biggest Buddhist temple in the world is located and where Javanese culture was originated. It is known as a student city as well as a heart of Indonesia. Yogyakarta Special Province (one of small provinces in Indonesia) is also home for 3,400,000 inhabitants, in which 510,000 among them reside in the city of Yogyakarta. Its designation as a student city is marked by the existence of 120 state and private higher educational institutions, with around 300,000 student population.

Gadjah Mada University, officially named Universitas Gadjah Mada (UGM), is Indonesian leading university, established on December 19th, 1949. It is also the oldest and largest state university.

Beside having programs in Yogyakarta, students/ course participants will have time to enjoy Borobudur Temple, Prambanan Temple, Incubation Center, Java Man Museum and Visit to Coral Mountain in Yogyakarta and Geo Park as well as enjoying Indonesian cultures.

Participants can enjoy culture, places of interest, foods, music, and Yogyakarta beautiful and attractive spots along the downtown street while having fruitful scientific discussion during the courses.

The course in Yogyakarta will be continued to Bandung. From Yogyakarta to Bandung, participants will enjoy day train and Javanese panorama during the travel in the train. The program in Bandung will also be an enjoyable program to learn some techniques related to nanotechnology approach while enjoying Bandung and West Java Culture.

E. Technicalities

a. ASEAN Students and Young Researchers:

Students from ASEAN Countries will be eligible for

- (1) Scholarship for the Course (Free Course Fee), in competitive based for 15-20 students
- (2) Scholarship for Accommodation and Food during the Course, in competitive based for 15-20 students, including train ticket from Yogyakarta to Bandung.
- (3) Travel Grant of Economic Return Airfare Ticket for 3-5 ASEAN Students – To Be Confirmed, in competitive based
- (4) Non-scholarship participants have to pay IDR 3,000,000.00

All of the participants in the course are provided free accommodation and course fee waiver. Some ASEAN students are supported by low cost airfare.

b. Non-ASEAN Students and Non- ASEAN Young Researchers (Asian, Australian, European, African and American Students will be eligible) – up to 10 students:

Students from Non ASEAN Countries will be eligible for

- (1) Scholarship for the Course (Free Course Fee), in competitive based for 10-15 students
- (2) Scholarship for Accommodation and Food during the Course, in competitive based for 5-10 students
- (3) Non-scholarship participants have to pay IDR 3,000,000.00

All of the participants in the course are provided free accommodation and course fee waiver, including train ticket from Yogyakarta to Bandung.

- c. Other participants except students and young researchers (professionals, clinicians, industrial researchers, etc.) may join the course and pay for the course fee and travel during the course. The course fee (including meals and travel with bioceramics scholar) is USD850 (without hotel accommodation) or USD1200 (with hotel accommodation).

F. Course Schedule:

Time	Topic	Presenter	Notes
Tuesday, July 9, 2019 at Central Building, Multi Media Room, 3rd Floor North Wing			
08.30-12.00	Introduction About Bioceramics and Tissue Engineering Center UGM With Coffee/ Tea Break	Retno Ardhani	Central Building, Multi Media Room, 3 rd Floor North Wing
12.00-13.00	Lunch		
13.00-16.00	Visit Agriculture Innovation Center, Science Techno Campus, and University Farming With Coffee/ Tea Break	Anne Handrini, Retno Ardhani	PIAT, STC, Gama Giri Mandiri, KKN Location
18.00-20.00	Welcome Reception and Opening Remarks from the University Provost	University Provost	Center for Academic Innovation and Policy Room, 3 rd Floor South Wing
Wednesday, July 10, 2019 at Central Building, Multi Media Room, 3rd Floor North Wing			
09.00-10.00	Opening of the Course, Course Introduction and Learning Contract With Coffee/ Tea Break	ISCM (International Society for Ceramics in Medicine)	

10.00-11.00	Fundamentals of Bioceramics	Kunio Ishikawa	Kyushu University
11.00-12.00	Clinical Applications of Bioceramics	Ika Dewi Ana	Universitas Gadjah Mada, Indonesia
12.00-13.30	Lunch Break		
13.30-14.30	Fundamental of Tissue Engineering	Yasuhiko Tabata	Kyoto University, Japan
14.30-15.30	Drug Delivery and Synthetic Scaffold for Tissue Engineering	Ng Kee Woei	Nanyang Technological University, Singapore
15.30-16.00	Afternoon Refreshment		
16.00-17.30	Cellular Response to Bioactive Ceramics and In Vitro Evaluation of Bioceramics	Na Yu	National Dental Center, Singapore
18.00-21.00	Dinner and Networking	Any Lestari	Bakmi Jawa Mbah Gito

Thursday, July 11, 2019 at Central Building, Multi Media Room, 3rd Floor North Wing

09.00-10.00	In Vivo Evaluation of Bioceramics for Regenerative Therapy	Y. Liu	Academisch Centrum Tandheelkunde Amsterdam (ACTA), The Netherlands
10.00-11.00	Fabrication Process of Bioceramics and Its Characterization	T.S. Sampathkumar	Indian Institute of Technology Madras, India

11.00-12.00	Collagen- based Scaffold for Osteoarthritis and Cell Therapy	Fenghuei Lin	National Taiwan University, Taiwan
12.00-13.30	Lunch Break		
13.30-15.30	Enhancement of Antimicrobial Activity in Regenerative Materials	Farzaneh Moghtader	Nano- BMT, Turkey
15.30-16.00	Afternoon Refreshment		
16.00-17.30	Tissue Engineering for Skin Regeneration	Mohd Fauzi Mh Busra	Universitas Kebangsaan Malaysia
18.00-20.00	Dinner at Prambanan Temple	Any Lestari	Prambanan Temple

Friday, July 12, 2019
TRAVEL WITH BIOCERAMICS SCHOLARS: SANGIRAN (JAVA MAN MUSEUM) FOR COLLABORATIVE CAPSTONE PROJECT

07.30-11.00	Departure to Visit to Java Man Museum and Visit to Java Man Museum: The Origin of Bioceramics and Tissue Engineering	Didit Hadi Barianto	Sangiran of Pythecanthropus Erectus, Science Documentary is Made
11.00-12.30	Lunch Break (Java Man Museum and Site)		
12.30-17.00	Departure to Borobudur Temple and Borobudur Temple Tour		

16.00-18.00	Departure Back to Yogyakarta	Rosita Dwi Aprilia	From Borobudur
18.00-20.00	Networking Dinner	Retno Ardhani, Anne Handrini Dewi	Pelem Golek Restaurant
Saturday, July 13, 2019 at Central Building, Multi Media Room, 3rd Floor North Wing			
09.00-10.00	Gold Nanoparticles for Molecular Detection	Erhan Biskin	Nano-BMT, Turkey and Mugla Stki Kocman University, Turkey
10.00-12.00	Smart Responsive Materials in Drug Delivery and Tissue Engineering	Masaya Yamamoto	Tohoku University, Japan
12.00-13.30	Lunch		
13.30-14.30	Ethical Issues in Next Generation Regenerative Therapy	Gilson Khang	Chonbuk University, Korea
14.30-15.00	Afternoon Refreshment		
15.00-16.00	Wrapping Up: Introduction to Group Works	Retno Ardhani	Universitas Gadjah Mada, Indonesia
16.00-21.00	City Tour	Any Lestari – Rosita Dewi Aprilia	Universitas Gadjah Mada, Indonesia

Sunday, July 14, 2019

Departure to Institut Teknologi Bandung (ITB) by Executive Train from Yogyakarta Station (Morning)

Monday, July 15, 2019

08.30-10.00	Introduction About Research Center for Nanoscience and Nanotechnology	Brian Yulianto	PPNN – ITB
10.15-10.45	Introduction to Nano- bioceramics	Bambang Sunendar	PPNN – ITB
12.00-13.00	Lunch		
13.00-14.30	TBA	Nadhratun Naim Mubarak	University Kebangsaan Malaysia
15.00-16.30	TBA	Nadhratun Naim Mubarak	University Kebangsaan Malaysia

Tuesday, July 16, 2019

08.30-10.00	TBA	Nur Hidayah Azeman	University Kebangsaan Malaysia
10.15-10.45	TBA	Wang Zigang	Nanyang Technological University

12.00-13.00	Lunch		
13.00-14.30	Bioceramics for Drug Delivery	Heni Rachmawati	PPNN – ITB
15.00-16.30	Bioceramics for Drug Delivery	Heni Rachmawati	PPNN – ITB
Wednesday, July 17, 2019			
08.30-10.00	Zeolith for Biomaterial Application	Rino Mukti	PPNN – ITB
10.15-10.45	Material Characterization using Spectroscopy	Grandprix Thomryes Marth Kadja	PPNN – ITB
12.00-13.00	Lunch		
13.00-14.30	Material characterization using Spectroscopy	Grandprix Thomryes Marth Kadja	PPNN – ITB
15.00-20.00	City Tour/ Sight Seeing		
Thursday, July 18, 2019			
08.30-10.00	XRD, SEM, and TEM Analysis	Lidya Helena Wong	Nanyang Technological University

10.15-10.45	XRD, SEM, and TEM Analysis	Lidya Helena Wong	Nanyang Technological University
12.00-13.00	Lunch		
13.00-14.30	Computational Material Design – Hands On	Triati Dewi Kencana Wungu and Gandaryus Saputra	PPNN – ITB
15.00-16.30	Computational Material Design – Hands On	Triati Dewi Kencana Wungu and Gandaryus Saputra	PPNN – ITB

Friday, July 19, 2019

08.30-10.00	XRD, SEM, and TEM Analysis	Lidya Helena Wong	Nanyang Technological University
10.15-10.45	Recombinant Protein Production for Biomaterial Template	Karlia Meitha	PPNN – ITB
12.00-13.00	Lunch		
13.00-14.30	Microscopic and Spectroscopic Characterization Facilities – Hands On	Damar Rastri Adika	PPNN – ITB
15.00-16.30	Microscopic and Spectroscopic Characterization Facilities – Hands On	Damar Rastri Adika	PPNN – ITB

Saturday, July 20, 2019

08.30-10.00	Microscopic and Spectroscopic Characterization Facilities – Hands On	Damar Rastri Adika	PPNN – ITB
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10.15-10.45	Microscopic and Spectroscopic Characterization Facilities – Hands On	Damar Rastri Adika	PPNN – ITB
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12.00-13.00	Lunch		
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13.00-14.30	Post Test and Questionnaire	Brian Yulianto	PPNN – ITB
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15.00-16.30	Group Photo and Closing Ceremony	Brian Yulianto	PPNN – ITB
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