# 2023 Osaka University International Certificate Program Details(Continuing)

24/03/2023

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| Course Name | Nanoscience and Nanotechnology as Manufacturing Core | | |
| Course Affiliation | $R^3$ Institute for Newly-Emerging Science Design | | |
| Course Manager | Prof. Yasufumi FUJIWARA, Graduate School of Engineering,<br>Director of $R^3$ Institute for Newly-Emerging Science Design, | | |
| Cooperative Schools | Graduate Schools of Science, Parmaceutical Sciences, Engineering and Engineering Science,<br>Center for Global Initiatives | | |
| Eligibility | ・Graduate students of ASEAN Campus Partner Universities<br>・Working people who have received at least a bachelor’s degree from the countries where ASEAN campuses are located. | | |
| Requirements for completion | 6 to 8 credits | Capacity | inbound and outbound<br>15, respectively |
| Course Objective | To study and understand the wide range of knowledge on nanoscience and nanoengineering in various fields, such as physics, chemistry, biology, electronics, machanics, measurement and analysis technology. To develop ability of basic research and also ability of practical application on manufacturing. As a result to foster human resourses of researchers and engineers both in academia and industry having excellent ability of producing additinal values by applying nanoscience and engineering. | | |
| Learning Goals | 1. To understand importance of contribution to basic science and technology in nano-science & engineering<br>2. To understand role of physics, chemistry and biology in nano-science & engineering<br>3. To understand relationship between nano-science & engieering and science & technology for manufacturing<br>4. To understand application of nanotechnology to electronics, mechanics and measurement & alalysis technology<br>5. To understand industrial technologicalinnovation based on nanotechnology<br>6. To understand relationship between nanotechnology and real society<br>7. To understand relationship between nanotechnology and SDGs<br>By understanding the above items, one can obtain ability of practical application to manufacturing core | | |
| Components | 【Required Subjects】<br>Common Subject ：Nanoscience and Nanotechnology, SDGs and Asia-Pacific Region I<br>Practical Study Abroad (PSA) Subjects: Laboratory Study I, Laboratory Study II Or Internship I<br>【Elective Subjects】<br>International Exchange Lecttures on Nanoscience and Nanotechnology A, B and C<br>Special Lecture on Quantum Simulation, Tutorial on Computational Nano-material Design, Industry and development in the modernization of Japan: university-industry collaboration, Laboratory Study III | | |
| Requirements | To have knowledge of physics or chemistry at the undergraduate level.<br>Students will be selected after screening.<br>We welcome students who are interested in basic and applied science and engineering on the fields of nanoscience and nanoengineering. | | |
| Prior knowledge | It is recommended that the students have a unergraduate level of knowledge regarding science and engineering in any fields. | | |
| Special Note | All the courses in this program will be given in English. | | |

*ASEAN Campus Partner Universities
https://www.osaka-u.ac.jp/en/international/action/asean/asean_cci_n

Components

| Course Numbering Code | 対象 | Course Name | Credits | | | Course Term | Study Hours | Course Affiliation | Notes |
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| | | | Common | PSA | Elective | | | | |
| 88B010 | common | Nanoscience and Nanotechnology | 1 | | | winter | 15 | International Exchange Subjects (GI) | online course |
| 88A021/88A022 | common | SDGs and Asia-Pacific Region Ⅰ/Ⅱ | 1 | | | spring to summer | 15 | International Exchange Subjects (GI) | |
| 88A201 | common | Laboratory Study I (SS) | | 1 | | spring to summer | 45 | International Exchange Subjects (GI) | intensive course |
| 88A202 | common | Laboratory Study II (SS) | | 1 | | spring to summer | 45 | International Exchange Subjects (GI) | intensive course |
| 88A203 | inbound | Laboratory Study III (SS) | | 1 | | spring to summer | 45 | International Exchange Subjects (GI) | intensive course |
| 88A213 | inbound | Internship I(SS) | | (1) | | spring to summer | 45 | International Exchange Subjects (GI) | interchangeable to Laboratory Study II |
| 88A509 | common | International Exchange Special Lecture 2 (International Exchange Lecture on Nanoscience and Nanoengineering A) | | | 1 | spring | 15 | International Exchange Subjects (GI) | online and on-demand Provided by Graduate School of Engineering Science |
| 88A510 | common | International Exchange Special Lecture 2 (International Exchange Lecture on Nanoscience and Nanoengineering B) | | | 1 | summer | 15 | International Exchange Subjects (GI) | intensive course Provided by Graduate School of Engineering Science |
| 88A511 | common | International Exchange Special Lecture 2 (International Exchange Lecture on Nanoscience and Nanoengineering C) | | | 1 | summer | 15 | International Exchange Subjects (GI) | intensive course Provided by Graduate School of Engineering Science |
| 281559 | common | Special Lecture on Quantum Simulation I | | | 1 | spring | 15 | Graduate school of Engineering | online |
| 281503 | common | Tutorial on Computational Nano-material Design | | | 1 | winter | 15 | Graduate school of Engineering | intensive course online |
| 88A038 | common | Industry and development in the modernization of Japan University-industry collaboration | | | 1 | winter | 15 | International Exchange Subjects (GI) | intensive course online |

*Participants have to choose two or three PSA courses