

Course	Research and Development for Agro-Biomedical Science I
Course No.	0AVC104
Credits	3 Credits
Grade	1 Year
Timetable	Fall AB : common laboratory activity (Fall A Mon 2, 3, and Tue 2, 3), Supervisor's laboratory (by appointment)
Instructor	Yoshito Kumagai, Yumi Abiko, Masahiro Akiyama, Masao Ichikawa, Osamu Ohneda, Kazuya Morikawa, Ryosuke Ohniwa, Hiroshi Ezura, Chiaki Matsukura, Yuichi Yamaoka, Peter Junichi Abe, Yutaka Kitamura, Zheng Ling, Lombardo Fabien Claude Renaud, Yasuhiro Shinkai, Norihiko Obayashi, Atsushi Ishii
Course Overview	In this course, students learn the principles and methodologies of research related to Agro-Biomedical Science through-working on specific research themes in the common laboratory for Agro-Biomedical Science (equivalent to 1.5 credits) and a lab managed by instructors (equivalent to 1.5 credits). The instructors from University of Tsukuba will nurture the fundamentals of Health and Food sciences, evaluating biotic effects and safety of substances, etc. Evaluation criteria is described in the following section 'Grading Philosophy'.
Remarks	Conducted in English.
Course Type	Practical training and experiments
Link between Course Objectives and Activities	To nurture the fundamentals for Agro-Biomedical Science such as ability to connect health and food resources, ability to engage in issues related to health security, and ability to engage in food security, through attending laboratory practices hosted by instructors.
Academic Goal	<ol style="list-style-type: none"> <li>1. To be able to survey the research topics of instructors.</li> <li>2. To be able to explain subjects and methods of each experiment/analysis.</li> <li>3. To be able to explain and discuss about results and interpretation of each experiment/analysis.</li> <li>4. To be able to explain the purpose of each experiment and analysis in the current research topic.</li> <li>5. To be able to explain the significance of the current research topic from the standpoint of Agro-Biomedical Science.</li> </ol>
Course Schedule	<p><b>Common laboratory activity</b> This course deal with the analytical methods related to Agro-Biomedical Science (i.e. extraction of phytochemicals, effects of the extract etc...). All of the experiments are held in the common laboratory for Agro-Biomedical Science. The course is organized by Yumi Abiko.</p> <p><b>Supervisor's laboratory activity</b> Students need to stay in the lab hosted by one instructor listed below, and participate in the practices in the lab.</p> <p>Theme 1: Environmental medical science (Yoshito Kumagai, Masahiro Akiyama) Theme 2: Stem cell biology (Osamu Ohneda) Theme 3: Global health (Masao Ichikawa) Theme 4: Bacterial genetics (Kazuya Morikawa) Theme 5: Integrated Study on Health Information (Ryosuke Ohniwa) Theme 6: Experimental Pathology (Ling Zhen) Theme 7: Plant parasitic mycology (Yuichi Yamaoka) Theme 8: Molecular genetics and breeding (Hiroshi Ezura) Theme 9: Plant molecular breeding (Chiaki Matsukura) Theme 10: Mycorrhizal fungi (Peter Junichi Abe) Theme 11: Food and biomass engineering (Yutaka Kitamura) Theme 12: Plant physiology (Lombardo Fabien Claude Renaud) Theme 13: Toxicology (Yasuhiro Shinkai) Theme 14: Cellular and physiological biology (Norihiko Obayashi) Theme 15: Water resources management (Atsushi Ishii)</p>

Course Prerequisites and Advisories	
Grading Philosophy (Percentage/ Criteria/ Methodology)	<p>The activities in the common laboratory (equivalent to 1.5 credits) and supervisor's lab (equivalent to 1.5 credits) will be separately evaluated, and finals score will be these total (as 3 credits).</p> <p>The common laboratory activities will be evaluated based on class participation (50%) and report (50%). Theme of this report is "Summary of your research results and discussion including introduction".</p> <p>The activity in supervisor's lab will be evaluated based on the activity report from supervisors and the additional report from students.</p> <p>Theme of student report is "Summary of your research in the lab, and its relation to Agro-Biomedical Science".</p> <p>Grading Criteria is A+ (Superior), A (Excellent), B (Good), C (Average) and D (Failure).</p>
Self-Directed Learning Other Than Coursework	Discussion with instructors and lab members
Textbooks, References and Supplementary Materials	Distributed by instructors in class
Office Hours	<p>Name: Yoshito Kumagai E-mail: yk-em-tu@md.tsukuba.ac.jp</p> <p>Name: Yumi Abiko E-mail: yumi.abiko@md.tsukuba.ac.jp</p> <p>Name: Masahiro Akiyama E-mail: akiyama.masahiro.ga@u.tsukuba.ac.jp</p> <p>Name: Masao Ichikawa E-mail: masao@md.tsukuba.ac.jp</p> <p>Name: Osamu Ohneda E-mail: oohneda@md.tsukuba.ac.jp</p> <p>Name: Kazuya Morikawa E-mail: morikawa.kazuya.ga@u.tsukuba.ac.jp</p> <p>Name: Ryosuke Ohniwa E-mail: ohniwa@md.tsukuba.ac.jp</p> <p>Name: Ling Zhen E-mail: zhengling8829@md.tsukuba.ac.jp</p> <p>Name: Hiorshi Ezura E-mail: ezura@gene.tsukuba.ac.jp</p> <p>Name: Chiaki Matsukura E-mail: matsukura.chiaki.fw@u.tsukuba.ac.jp</p> <p>Name: Yuichi Yamaoka E-mail: yamaoka.yuichi.gp@u.tsukuba.ac.jp</p> <p>Name: Junichi Peter Abe E-mail: abe.junichi.p.gn@u.tsukuba.ac.jp</p> <p>Name: Yutaka Kitamura E-mail: kitamura.yutaka.fm@u.tsukuba.ac.jp</p> <p>Name: Lombardo Fabien Claude Renaud E-mail: lombardo.renaud.gf@u.tsukuba.ac.jp</p> <p>Name: Yasuhiro Shinkai E-mail: ya_shinkai@md.tsukuba.ac.jp</p> <p>Name: Norihiko Obayashi E-mail: nohbayashi@md.tsukuba.ac.jp</p> <p>Name: Atsukhi Ishii E-mail: ishii.atsushi.fu@u.tsukuba.ac.jp</p> <p>By appointment only</p>

Other (i.e. Expectations on Classroom, Conduct and Decorum etc.)	
Related Courses	Agro-Biomedical Science Laboratory Seminar I Fusion of Field and Laboratory Studies Biomedical Translation Boot Camp Research and Development for Agro-Biomedical Science II Field to Laboratory Practices with Data Management & Data Mining Integrative Unit with Omic & Bioinformatic Tools
Keywords	Lab, Experiments, Analyses