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| Course Name [科目名] | Applied Physics Laboratory |
| Instructor Name [教員] | Kenzo Maehashi, Atsushi Hatakeyama |
| Office Hours and Contact Information  [オフィスアワー、連絡先] | Location: Building 4-522  Telephone: +81-42-388-7231  E-mail: [maehashi@cc.tuat.ac.jp](mailto:maehashi@cc.tuat.ac.jp)  If you need my assistance, please give me an e-mail or telephone call. |
| Course Structure [授業形態] | Experiments |
| Course Credits [単位数] | 2 |
| Course Overview [概要] | This course provides students the experimental training in measurement methods for detecting photons and luminescence of spectra line. Students also learn how to characterize the functions of model Stirling engine and heat pump through measurement of various parameters such as temperature, pressure, and rotation speed. |
| Course Key Words [キーワード] | LED, photoelectric effect, atomic spectra line, Rydberg constant, Stirlng engine, heat pump, thermodynamics |
| Academic Goal [目標] | 1. Able to learn the method for detecting photons and luminescence. 2. Able to learn the method for characterizing thermodynamic devices 3. Able to give an oral presentation about the results of the laboratory |
| Course Schedule [授業内容] | Week 1: Detecting photons using photomultiplier tube  Week 2: Observation of fluctuation for photoelectron appearance  Week 3: Measurements of luminescence from spectra line  Week 4: Measurements of Rydberg constant  Week 5: Basic measurement techniques for characterizing the apparatus of model Stirling engine  Week 6: How the apparatus works as an engine or a heat pump  Week 7: Characterization of the functions of the engine  Week 8: Characterization of the functions of the heat pump  Week 9: Discussion and preparation for presentation  Week 10: Presentation |
| Textbooks, References,  and Supplementary Materials  [テキスト、参考書、その他] | Handouts given before the lectures |
| Grading Philosophy  (Percentage / Criteria / Methodology)  [成績評価の方法] | Participation during experiments, an oral presentation and reports |
| Other  (i.e. Expectations on Classroom  Conduct and Decorum etc.)  [その他] |  |