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| Course Name [科目名] | Statistical Thermodynamics |
| Instructor Name [教員] | Yoshihiro MURAYAMA |
| Office Hours and Contact Information  [オフィスアワー、連絡先] | Location: Building 4-435  Telephone: +81-42-388-7107  E-mail: ymura@cc.tuat.ac.jp  If you need my assistance, please give me an e-mail or telephone call. |
| Course Structure [授業形態] | Lecture and Exercise |
| Course Credits [単位数] | 3 |
| Course Overview [概要] | The aim of this course is to understand the fundamental concept of statistical physics. The lecture will start from the definition of entropy in the sense of statistical physics. Based on the definition, Boltzmann and Gibbs factors will be derived, and its application to physical phenomena in equilibrium states will be discussed. |
| Course Key Words [キーワード] | Entropy, Thermal equilibrium, Boltzmann factor, Gibbs factor, Helmholtz Free energy |
| Academic Goal [目標] | 1. Students will be able to understand the principle of Statistical Thermodynamics.  2. Students will be able to apply the concept and the method of Statistical Thermodynamics to physical phenomena. |
| Course Schedule [授業内容] | Week 1: State of a Model System  Week 2: Entropy and Temperature  Week 3: Laws of Thermodynamics  Week 4: Boltzmann Distribution  Week 5: Helmholtz Free Energy  Week 6: Ideal Gas  Week 7: Thermal Radiation and Plank Distribution  Week 8: Chemical Potential and Gibbs Distribution  Week 9: Fermi-Dirac and Bose-Einstein Distribution Function  Week 10: Final Examination |
| Textbooks, References,  and Supplementary Materials  [テキスト、参考書、その他] | Thermal Physics (Second Edition)  Charles Kittel and Herbert Kroemer  W. H. Freeman and Company, New York,  ISBN13: 978-0-7167-1088-2 |
| Grading Philosophy  (Percentage / Criteria / Methodology)  [成績評価の方法] | Participation in discussions during the lecture, oral presentation, and final examination or reports. |
| Other  (i.e. Expectations on Classroom  Conduct and Decorum etc.)  [その他] |  |