Course Category	TBA	Credits	2
Subject Code	TBA	Taking Year	1st Grade, 2nd Grade
Course Title (Japanese)	統計科学論	Course Period	2nd Semester
Course Title	Theory of Statistical Science	Day of the week / Hour	Wednesday / The fifth period
Registration Code	TBA	Compulsory / Elective	Elective
Instructor(s)	Kanta Naito	Course Qualification	Students of Postgraduate Mathematics Course

Course Style	Lecture and Exercise
Course Aim	The aims of this course are to understand asymptotic theory of statistical inference and then to study the recent advances of statistical science in both theoretical and practical areas.
Goals and Objectives (Level of Achievement)	1. Understanding the convergence of random elements 2. Understanding asymptotic theory of estimation and hypothesis test 3. Understanding high dimensional asymptotics 4. Understanding asymptotics for curve estimation 5. Understanding recent important applications of statistics to practical areas
Course Plan	1. Introduction and overview of the course 2. Basic concepts of probability 3. Convergence in probability, weakly convergence 4. Empirical process 5. Arg-max theorem 6. Asymptotic theory for statistical estimation 7. Asymptotic theory for hypothesis test 8. Mid-term report 9. Recent development for high dimensional statistics 10. Kernel method 11. Curve estimation 12. Theory for smoothing 13. Regularization 14. Application to medical research (1) 15. Application to medical research (2) 16. Final report
Teaching Methods	Students need to tackle some problems related to the contents of lecture. In each class. Those exercise will be managed as a group work throughout the course.
Key Words	Convergence, Asymptotic theory, High dimension, Smoothing
Texts	None
Reference Books	To be introduced in the class
Other Teaching Materials	To be provided in the class if necessary
Performance Evaluation	Class participation, Mid-term report and Final report
Notes on the Course	Students are expected to have a platform of programming to implement statistical procedure.
Office Hour	Friday 16:15-17:15
Other Notes	None