

## **Advanced Chemical Biology II**

**(The theme of this course is drug discovery and development)**

For the next semester, the teaching schedule is only 16 weeks as shown below:

### **A. From Natural Products to Drug Discovery**

1. Feb. 24 **Antibiotics and their resistance**
2. Mar. 2 **Building blocks and construction for natural products**
3. Mar. 9 **Natural product chemistry at a glance**
4. Mar. 16 **From natural products to pharmaceuticals: case study**

### **B. NMR as tools in drug development**

5. Mar. 23 **Principles of biomolecular NMR spectroscopy and its applications**

#### **Part I**

6. Mar. 30 **Principles of biomolecular NMR spectroscopy and its applications**

#### **Part II**

[Apr. 6 (Friday) will be a holiday for students according to the University schedule of this year.]

### **C. From Theory of Activity-based Probes and Transition State Analogues of Enzymes to Drug Discovery**

7. Apr. 13 **Theory and applications of activity-based protein profiling**
8. Apr. 20 **Theory of Transition-State Analogue and Drug Discovery**

### **D. Organic Synthesis as Tools in Drug Development and Activity-based Probes**

9. Apr. 27 **Combinatorial and Parallel Synthesis**
10. May 4 **Organic Synthesis and Drug Design**
11. May 11 **Natural product-like library synthesis and High-throughput synthesis**
12. May 18 **Small molecules as probes for chemical biology study**
13. May 25 **Case Studies in Drug Optimization**
14. Jun. 1 **Carbohydrate-based Drug Discovery**

### **E. Drug Development in Cancer and Alzheimer Disease**

15. Jun. 8 **Development of anti-cancer agents from activity-based probes**
  16. Jun. 15 **Alzheimer disease and its drug development**
- Jun. 18-22 (This week is for final test of this semester).