



**HE396 Jan. 2018 3:0**

## **Quantum Field Theory II**

### **Instructor**

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### **Teaching Assistant**

Email:

**Department: CHEP**

Course Time:

Lecture venue:

Detailed Course Page:

## **Announcements**

### **Brief description of the course**

Graduate students in CHEP and physics department, as well as advanced undergraduate students. Background material is elementary quantum field theory. The course will cover renormalization, effective field theory and advanced topics in QFT.

### **Prerequisites**

HE395 (Quantum Field theory I)

### **Syllabus**

Divergences in perturbation theory, renormalizability, renormalization of scalar field theory, QED and non-Abelian gauge theories, beta functions, anomalous dimensions, renormalization group equations, fixed points, effective field theory, relevant and irrelevant operators, chiral gauge theories, anomalies, chiral symmetry and its breaking, Wilson loops, introduction to lattice gauge theory, solitons and instantons.

### **Course outcomes**

Expertise in quantum field theory, which is the key ingredient and tool of high energy physics, both experimental and theoretical. Most of the material is also of key use to condensed matter physicists.

### **Grading policy**

50% for mid-term, 50% for finals.

## **Assignments**

## **Resources**