

Instructor: Chao-Min Cheng
Office: 台達館 309
Telephone: X62402
E-mail: chaomin@mx.nthu.edu.tw
Office Hours: By appointment
Lecture: W5W6W7

Course Goals: This course will provide students with an introduction to nanomaterials and biomaterials used in different kinds of applications. We will survey important classes of nanomaterials (e.g., carbon-based nanomaterials and quantum dots) and biomaterials (e.g., naturally-derived biomaterials and polymeric biomaterials), discussing materials preparation, processing, properties and applications. We will also offer at least two experimental sections about the preparation of paper diagnostic devices and the cell culture.

Textbook: N/A; class notes/journal papers/magazine articles

Grade:

Report (assignment) (5) 40%; **500 words (in English)**

Report (experiment) (1) 10%; **500 words (in English)**

Exam 20%

Final Report & Presentation 30%; **1000 words (in English)**

Tentative Schedule:

Week 1 (9/14): Reading assignment **[Report]**

Week 2 (9/21): Introduction to nano-bio-materials

Week 3 (10/5): Introduction to nanomaterials

Week 4 (10/12): Introduction to biomaterials **[Report]**

Week 5 (10/19): Naturally-derived biomaterials (e.g., collagen)

Week 6 (10/26): Experimental (paper diagnostic devices) **[Report]**

Week 7 (11/2): Invited Lecture – Microfluidics **[Report]**

Week 8 (11/9): Naturally-derived biomaterials (e.g., collagen)

Week 9 (11/23): Polymeric biomaterials (e.g., PE/PDMS) **[Report]**

Week 10 (11/30): Midterm

Week 11 (12/7): Application (1) Tissue Engineering

Week 12 (12/14): Application (2) Chemical-/Biological-sensing

Week 13 (12/21): Application (3) Nano-/Micro-fluidics

Week 14 (12/28): Application (4) Point-of-Care Diagnostics **[Report]**

Week 15 (1/4): Project presentation **[Report]**