S0933 生物物理導論 (Introduction to biological physics) (0,3)

DNA、RNA 及蛋白質等生物大分子的功能與結構。細胞，細胞器與細胞內重要生物分子簡介。基因與基因體的研究簡介。物理學的方法和技術在生物學中的應用。機率與統計基礎。能量、力與化學鍵、熵、溫度與自由能等物理概念在生物學中的基本應用。生物體中的擴散、耗散及驅動現象。生物高分子的構型與力學性質基礎，熵彈性

Structures and functions of DNA, RNA and proteins. Introduction to cell, organelles and some important molecules inside cell. Applications of physical method and technique to biology. Fundamental of probability and statistics. Applications of physical concepts, such as energy, force, entropy, temperature and free energy, to biological system. Diffusion and dissipation in biomaterials. Conformation and mechanical property of biopolymers, entropic elasticity.

S0935 科技英文 (English for Science and Technology) (2,0)

科技英文、英文科技報導摘要解析、英文科技報導摘要修訂、英文科技報導標題修訂、英文科技報導圖示摘要修訂

Science and Technology Terms, Comprehension of Science and Technology Writing, Modifications of Science and Technology Abstracts, Modifications of Titles of Science and Technology Reports, Composing Graphic Abstracts of Science and Technology Report

S0955 細胞生物學概論 (Introduction to Cell Biology) (3,0)

生物能量與代謝，細胞膜，粒線體與有氧呼吸，葉綠體與光合作用，細胞與環境之交互作用，細胞質膜與膜運送功能，細胞骨骼與運動性，基因與基因組，基因表現與調控，基因複製與修復，細胞分裂，細胞訊息傳遞，癌症，免疫反應，細胞生物學研究方法

Bioenergetics and metabolism, Cellular membranes, Chloroplast and photosynthesis, Cell-environment interactions, Membrane trafficking, Cytoskeleton and motility, Genes and genome, Gene expression and regulation, Gene replication and repair, Cell division, Cell signaling pathways, Cancer, Immunity, Methods in cell biology

S0980 光電材料概論 (Introduction to optoelectronic materials) (0,2)

電磁波性質，量子化學概念，分子能量量子化，分子間作用力與極化，螢光與磷光，雷射，發光二極體，太陽能電池，染料敏化太陽能電池。

Electromagnetic wave property, Concept of quantum chemistry, Quantization of molecular energy, Intermolecular force and polarization, Fluorescence and phosphorescence, Laser, Light emitting diode (LED), Solar cells (SC), Dye-sensitized solar cells (DSSC)

S0981 綠色材料 (Green Material) (0,3)

綠色材料簡介、太陽氫能材料、智慧薄膜、新世代儲能材料、奈米熱電材料、奈米催化材料。

Introduction to green material, solar hydrogen generation material, smart film, advanced energy storage material, nanostructured thermoelectric material, nanocatalyst.

E0979 能源材料 (Energy Material) (3,0)

能源材料簡介、水分解材料、智慧材料、儲能材料、熱電材料、催化材料、光伏材料。

Introduction to energy material, water splitting material, smart material, energy storage material, thermoelectric material, catalyst, photovoltaic material.

E0034 工程數學(Engineering Mathematics) (3,0)

常微分方程式(一階, 二階微分方程, 初始值問題), 拉普拉斯轉換, 矩陣, 特徵值, 特徵向量, 線性聯立方程組. 傅利業級數, 向量分析(向量場, 線積分, 梯度, 格林定理, 散度及散度定理, 旋度及斯托克斯定理)

Ordinary differential equation(first and second order differential equation and initial value problem), Laplace transformation, matrices, eigenvalue, eigenvector, linear system of differential equation, Fourier series, vector analysis(vector field, line integral, gradient, Green's theorem, divergence and divergence theorem, curl and Stokes' theorem)

E2342 高分子材料 (Introduction to Polymeric Materials) (3,0)

高分子科學概論、高分子合成、結構與分子量、固態性質、黏彈性力學、高分子裂解與環境、添加物與合成物、熱塑與熱固型高分子、高分子之應用

Introduction to Polymer Science, Polymer Synthesis, Confirmation, Solutions, and Molecular Weight, Solid-State Properties, Viscoelasticity and Rubber Elasticity, Polymer Degradation and the Environment, Additives, Blends, and Composites, Thermoplastics, Elastomers, and Thermosets, Polymers for Advanced Technologies

M0366 電腦模擬 (Computer Simulation) (3,0)

程式語言及繪圖指令（複習）、力學問題模擬（落體與空氣阻力）、分子動力學模擬（物質的三態）、電力線與電磁波、隨機過程與蒙地卡羅方法、量子力學問題模擬、動態系統的混沌現象、類神經網路與人工智慧、碎形、（結語）科學運算的契機與挑戰

Programing language and plotting commands (review), mechanical problems (falling objects and air drag), molecular dynamics simulation (phases of matters), electric force lines and EM wave, random processes and Monte Carlo Method, quantum systems, chaos in dynamical systems, neural networks and AI, fractals, (epilogue) opportunity and challenge of scientific computing.