Undergraduate Program in Department of Bioinformatics and Medical Engineering (BS), 2023

Accreditation

The department was accredited by The Institute of Engineering Education Taiwan (IEET) accreditation in 2013. Again, in 2016 fall, the department was accredited for the second time. IEET accreditation is a non-government, peer-review process with a student-outcomes based orientation.

Objective

Our mission is to develop frontier technologies facilitating research in biomedicine and improving public health through studies using: artificial intelligence algorithms, computational methods, 3D printing, and biomaterials.

For the undergraduate program, the course curriculum is designed to educate students to have the ability to manage and analyze biological as well as medical data. For the MS program, the course curriculum is designed to educate students to possess the ability to utilize advanced knowledge to analyze biological and medical information. For the Ph.D. program, the course curriculum is designed to educate students to acquire the ability of applying advanced knowledge, integrating diverse information, and conducting original biomedical research independently.

History

Founded in 2002, our department is the first institute in Taiwan that offers programs in biomedical informatics leading to BS, MS, and Ph.D. degrees, and prepares students for careers in academia, government and private sectors in bio-pharmaceutical technology, computer science, and healthcare.

Future development

Due to the recent advancement of personalizing mobile devices, 3D printing, biomedical informatics, artificial intelligence and data science, starting from August 2015 the Department was renamed as the Department of Bioinformatics and Medical Engineering to reflect the global technological changes and the department focus. Developing advanced biomedical materials is one of the major core areas of training and research in the department. In particular, the course curriculum is designed to educate students to analyze biomedical images, biomedical signals, maintain and develop healthcare electronic equipment. Graduates go on to develop their careers in the academia, government and private sectors in the biotech, information technology, 3D printing and healthcare industries.

Development focus

The global financial tsunami in 2008 and the economical regression demand the government to think of the urgency to adjust national industrial structure. In March 2009, Executive Yuan planned the "six emerging industries," which include "biotechnology," "green energy," "tourism," "medical care," "exquisite agriculture," and "culture creative," hoping the future industrial development in Taiwan can go with these directions. Later, in 2010, Executive Yuan promised to promote four emerging intelligent industries including "cloud computing," "intelligent electronic cars," "intelligent green buildings" and "invention patent industrialize". The purpose is to arrange long-term industrial development to transform Taiwan's industries from "Made in Taiwan" to "Create in Taiwan" with the brain and innovation and increase international competitiveness and added value. The development of the Department is in line with the biotechnology medicine industry and medical care, as well as the cloud computing industry in four intelligent industries. We train talents to meet with the demands of national important industry policies so that the students are provided with the proficiency for employment, and shorten the distance between practical and academic.

Close collaboration with medical university and affiliate hospital

In joining with the China Medical University (CMU) and the China Medical University Hospital (CMUH), the department has set up several research programs; including precision medicine, drug repositioning, and 3D printing. Our department has shown strength in information technology; whereas, CMU and CMUH are leading research centers in biomedical science.

112 學年生物資訊與醫學工程學系大學部全英語課程規劃

Course Curriculum for Undergraduate Program in Department of Bioinformatics and Medical Engineering 2023(English-Taught Program)

生物資訊與醫學工程學系學士學位學程

Undergraduate Program in Department of Bioinformatics and Medical Engineering

畢業總學分:128 學分 Approved by the University Curriculum Committee on 26/04/2023

Credits for Graduation: 128

Approved by the University Curriculum Committee on

	類 別 Category			別 科目名稱 CEFR 年 gory Course Title 等級 Yea t		修課 年級 Year of the Program	修課 學期 Semester	學分數 Credits	Hours p 講授	課時數 per week 練習 Practice	備 註 Remarks
				進階華語文會話與聽力(一) High-Intermediate Chinese Conversation and Listening I	B1	1 st	1 st	2	2	1	
			文類	Listening I 進階華語文會話與聽力(二) High-Intermediate Chinese Conversation and Listening II	B1	1 st	2 nd	2	2	1	
		修語	10 學	中級中文文法 Intermediate Chinese Grammar	B1	1 st	2 nd	2	2	0	
		文課	分	高階華語文會話與聽力(一) Advanced Chinese Conversation and Listening I	B2	2 nd	1 st	2	2	1	
		程 18		時事華語 Current Affairs in Chinese	B2	2 nd	1 st	2	2	0	
		學分	英文	English for General Purposes (1)		1 st	1 st	3	3	0	分級上課
	R			共通央語又(一) English for General Purposes (2)		1 st	2 nd	3	3	0	分級上課
(30) Ur	(12) Program Required Credits		學	共通專業英語文 English for General Specific Purposes		2 nd	1 st	2	2	0	依系院上 /下學期 開課
(30) University Required Credits	ram redits	核	歷史與文化	臺灣/中國文化導讀(二) Introduction of Taiwanese / Chinese Culture II	B2	1 st	1 st	2	2	0	
red Credits		課程	康保健	健康與生活 Health and Life		1 st	2 nd	2	2	0	
			法律與生活	 場樂、智慧財產權與法律 Entertainment and Intellectual Property Law 法律與生活 Law & Life 愛情、性別與法律 Love, Gender and Law 		1 st	1 st or 2 ^r	2	2	0	三選一 One Choice from Three
	(3) Program Elective Credit		科技類	資訊科技與華語表達訓練 Practice of Chinese Oral Expression through Information Technology	B1	1 st	2 nd	2	2	0	
	ctive C	6 學 ハ		進階華語文閱讀與寫作 High-Intermediate Chinese Reading and Writing	B1	1 st	2 nd	2	2	0	
	redit	分	類	學術華語文	C1	2 nd	2 nd	2	2	0	

	Chinese for Academic Purposes							
	*專業華語文 Chinese for Specific Purposes	B2	2 nd	1 st	2	2	0	專業 華語 華語 等
	高階華語文會話與聽力(二) Advanced Chinese Conversation and Listening II	B2	2 nd	1 st	2	2	1	
服務與學習	P(一)(二)—實作課 Service and Learning		1 st	1 st 、 2 nd	0	1.5	0	Time of class: (1) New student
	¹ (一)(二)-講授課 Learning(1)(2)-Lecture		1 st	1 st 、 2 nd	0	2	0	orientation, (2) arranged and announced by student services
Certificate of	春護照 (國際生畢業門檻、不計學分) Taiwan-Chinese Cultural Understanding Graduation Threshold)		$1^{st} \sim 4^{th}$	1 st or 2 nd	0	2	0	本不學於參次全國又化成報書, 業學學生與少活授參次全國學生活授參生期少多動, 課與文法之生生的動習。 權大須問,8,課與文完得
	有(不納入畢業學分) racy Series (non-credit)		1 st ~4 th	1 st or 2 nd	0	2		大部學少次康次力創次力完成估以過7 學須期參符力、1新及1成效, P/不分日於間與合1關次力卓次學評成(F/通。 19(不分),習續通過)
	基礎程式設計(一)~(三) Fundamental Computer Programming (1)~(3)		1st	1st	3	3	1	
心課程 12 學分	人工智慧與雲端應用 Artificial Intelligence and Cloud Applications		3nd	1 st	3	3	2	
Core courses of	進階程式設計 Advanced Computer Programming		1st	2st	3	3	0	
the College of	畢業專題(一) Special Projects (I)		3rd	2st	1	1	0	
Electrical	畢業專題(二) Special Projects (II)		4th	1 st	1	1	1	
(12 credits)	資訊研討 Information Technology Seminar		4th	2nd	1	1	1	
系核心課程	普通化學 General Chemistry		1st	1st	3	3	0	
36 學分 Core courses of the Department	生醫資訊與醫工概論 Introduction to Biomedical Information Engineering	an	1st	2nd	3	3	1	
of Bioinformatics	普通物理 General Physics		1st	2nd	3	3	0	

and Medical	微積分 (一)						
Engineering	Calculus I	1st	1st	3	3	0	
(36 credits)	微積分 (二)				_		
	Calculus II	1st	2nd	3	3	0	
	生物醫學工程倫理	1 4	0 1	2	2	0	
	Biomedical Engineering Ethics	1st	2nd	3	3	0	
	基礎生物化學	2nd	1st	3	3	0	
	Basic Biochemistry	2110	151	3	5	0	
	視窗程式設計	2nd	1st	3	3	0	
	Windows Programming	2114	150	5	5	0	
	生醫訊號處理	2nd	2nd	3	3	0	
	Biomedical Signal Processing				_		
	生物技術導論	2nd	2nd	3	3	0	
	Introduction to Biotechnology						
	生物統計學 Dis-statistics	2nd	2nd	3	3	0	
	Biostatistics 解剖學						
	Anatomy	3rd	1st	3	3	0	
	Anatomy 生理學						
	Physiology	3rd	1st	3	3	0	
	生物力學						
	Basic Biomechanics	2nd	1st	3	3	0	
	工程數學						
	Engineering Mathematics	2nd	2nd	3	3	0	
	電路學						
	Electric Circuit	2nd	2nd	2	2	0	
	電路學實驗						
	Electric Circuit Laboratory	2rd	2nd	1	1	0	
	生醫材料導論	0.1	0.1			0	
知 挂 殿 山 舆 们	Introduction to Biomedical Materials	2rd	2nd	3	3	0	
智慧醫材學程 27 學分	電子學	2 1	1 4	n	2	0	
21 字分	Electronics	3rd	1st	3	3	0	
Smart medical	高分子材料學	2 1	1 .	0	•	0	
devices Program	Polymeric materials	3rd	1st	2	2	0	
(27 credits)	醫學工程實驗	2.1	1 1	1	1	0	
(Medical Engineering Laboratory	2th	1nd	1	1	0	
	材料機械性質	241	11	2	2	0	
	Mechanical Properties of Materials	2th	1nd	2	2	0	
	醫學測量與儀表	2.1	0 1	2	2	0	
	Medical Measurement and Instrumentation	3th	2nd	2	2	0	
	生醫創新與商業化	4.1	1 .	•	2	0	
	Biomedical Innovation and Commercializatio	4th	1st	2	2	0	
	組織工程						
	Tissue Engineering	4th	2nd	3	3	0	
精準醫療學程	離散數學	2rd	1st	3	3	0	
27 學分	Discrete Mathematics						
_, , ,,,	資料結構與演算法						
Precision	Data Structures and Algorithms	2rd	1st	3	3	0	
medicine	<u> </u>						
Program	網頁系統開發 Web Base System Programming	2nd	2nd	3	3	2	
(27 credits)		01	21	3	2	0	
	資料庫應用	2rd	2nd	3	3	U	

	Database Application						
	基礎分子遺傳學	3th	1st	3	3	0	
	Basic Molecular Gentics	501	181	3	3	0	
	生物資訊軟體應用	3th	1st	3	3	0	
	Application of Bioinformatics Software	511	ISt	3	3	0	
	生醫資料擷取與探勘	241	21	3	2	0	
	Biomedical Data Acquisition and Mining	3th	2nd	3	3	0	
	體學導論(基因體、蛋白質體)	241	2 1	3	2	0	
	Introduction to Omics	3th	2nd	3	3	0	
	系統生物學	441.	1.4	3	3	0	
	Systems Biology	4th	1st	3	3	0	
	精準醫療	3th-4th		3	3	0	
	Precision Medicine	_	2nd	5	5		
名白山恐众拥	醫用金屬材料 Medical Metal Materials	3th-4th	1st 2nd	3	3	0	
示日田送修禄 程8學分	3D 列印建模	3th-4th					
	3D modeling for 3D printing	5m-4m	2nd	3	3	0	
Electives		3th-4th					
(8 credits)	醫療器材專利與法規		1st 、	3	3	0	
	Medical Instruments Patent and Regulations		2nd	3	3	U	

註:

、學生含通識課程應修畢 128 學分(含)以上始能畢業,其中含通識課程(必修語文課程、核心通 識及通識選修)30 學分,院基礎學程 12 學分、系核心學程 36 學分,餘不足 128 學分之學分 數,需另修習「系專業選修學程」、「系自由選修課程」課程學分補足其不足學分數,始得畢業。

Students must complete 128 credits including the standard curriculum in order to graduate. The standard curriculum (language requirements, core curriculum, and standard curriculum electives) includes 30 credits, the department standard curriculum includes 12credits, the department core curriculum includes 36credits and completion of the "school group professional curriculum" of 27 credits is required. Students lacking 128 credits are required to take "department professional electives" or "major electives curriculum" to make up for credits required for graduation.

二、 通識教育開授科目,請參考本校通識教育中心之課程計畫與規定。 For a list of standard curriculum courses, please refer to the school's standard curriculum education center's curriculum planning and regulations.

三、 有關國際生修習本校以全英語授課之博雅通識課程英語文能力規定,依語文教學研究發展中心 規劃辦法辦理。

International students enrolled in the university's standard liberal arts curriculum will be processed via the rules set forth from The Center for the Development of Language Teaching and Research.

四、 有關僑生、港澳生、陸生修習本校以全英語授課之博雅通識課程規定,比照國際生通識課程辦 理。

Students from Hong Kong, Macau, China, and overseas Chinese students enrolled in the university's standard liberal arts curriculum will be processed as international student standard curriculums.

Course Description

Course Title	Course description
	General chemistry encompasses the basic knowledge of chemistry. The
	teaching objectives are to introduce students to the basic principles of
General Chemistry	chemistry and to introduce students to the basic calculations and
	reasoning of the application of chemistry principles.
	Biomedical engineering is a multidisciplinary field at the interface
	between engineering and health science. Biomedical engineering applies
	engineering and science principles and methodologies to the analysis of
	biological and physiological problems and to the delivery of health care.
Introduction to Biomedical	Biomedical engineering encompasses a range of fields of specialization
Information and Engineering	including bioinstrumentation, bioimaging, biomechanics, biomaterials,
Information and Engineering	and biomolecular engineering. This course aims to provide an
	introduction to biomedical engineering principles using foundational
	resources from molecular and cellular biology and physiology, and
	relating them to various sub- specialties of biomedical engineering.
	This course provides a first introduction into the theory of differentiation
	and integration. The course mainly serves as a bridge between highschool
	mathematics and university mathematics. Its main goal is to make
	students acquainted with rigorous mathematical thinking. This is done via
	learning basic concepts such as limits, continuity, differentiability, etc. on
	the one hand and fundamental theorems such as the intermediate value
Calculus I	theorem, the extreme value theorem, the mean value theorem, etc. on the
	other hand. Moreover, the course is intended to train students problem
	solving skills as well as writing and oral skills. Finally, the
	course equips students with the basic tools needed in the more applied
	sciences and is the entrance door to more advanced courses on
	mathematics.
	This course provides a first introduction into the theory of differentiation and
	integration. The course mainly serves as a bridge between highschool
	mathematics and university mathematics. Its main goal is to make students
	acquainted with rigorous mathematical thinking. This is done via learning basic
	concepts such as limits, continuity, differentiability, etc. on the one hand and
Calculus II	fundamental theorems such as the intermediate value theorem, the extreme value
	theorem, the mean value theorem, etc. on the other hand. Moreover, the course is
	intended to train students problem solving skills as well as writing and oral skills.
	Finally, the course equips students with the basic tools needed in the more
	applied sciences and is the entrance door to more advanced courses on
	mathematics.

Basic Biochemistry	Biochemical knowledge is the connection between chemistry and biomedical phenomena. That is the important basis in the principles and application for biomedical science. The teaching objective is to equip students with the key concepts of modern biochemistry.
Anatomy	Anatomy is the study of internal and external structures of the body and physical relationship among body parts. This course introduce anatomical structures and the physiological processes that make human life possible.
Windows Programming	This course is designed to teach the most popular and modern programming language used for writing windows programs: C#. In the course, the concepts of object-oriented design, file access and exception processing, and various components used in C# programming will be introduced in detail. Students will have a deep understanding of Visual C# programming language.
Biomedical Signal Processing	This course is an introduction to the application of digital signal processing to biomedical signals and systems. The teaching topics include an overview of biomedical signals; Fourier/Z-transforms, and filter design. These knowledge are applied to the time-domain analysis and frequency-domain characterization of signals and systems.
Introduction to Biotechnology	This course will provide introduction to the current trends in Biotechnology researches and their application. At the end of this course students will gain basic level knowledge and skills in Biotechnology and applying these to their studies.
Biostatistics	Let students understand the significance of data based on statistical knowledge. Students can learn how to use statistical software (SPSS) and choose suitable and reasonable statistical method to evaluate data.
Biomedical Engineering Ethics	This course covers information literacy and ethics, social and personal values and ethics, and discusses practical issues such as intellectual property rights, cybercrime and privacy issues. Explore how to apply the courses to the fields of biomedical information and engineering. The content of the course emphasizes the application of the method and the discussion of the cases.
Physiology	Physiology course is a 3 credit hour course, which is designed to learn the knowledge about the functions of body from the level of the cell to the level of the organism. The content of this course includes the chapters related to the function of the body, cell respiration and metabolism, the nervous system, sensory physiology, and endocrine glands.

General Physics	General Physics is designed to teach concepts and applications of the following topics: kinematics, Newton's Laws of motion, gravitation, work and kinetic energy, waves, sound, momentum and heat. There are three hours of lectures each week.
Engineering Mathematics	This course introduces students of engineering to those areas of mathematics which are important in connection with practical engineering problems. Students shall be able to solve practical problems using the mathematical skills. To attract students' interest by providing practical examples.
Electric Circuit	Circuit learn basic courses allow students to complete a circuit can utilize circuit learn science, the science used in electronic circuits circuit analysis, linear systems, control and so on. Learning circuit analysis skills Kirchhoff's law (KCL, KVL), circuit elements, series and parallel circuits, a first-order circuit, second circuit. By practical application instructions for circuit analysis is important in practical applications.
Electric Circuit Laboratory	Course contents include Kirchhoff's law (KCL, KVL), circuit elements, series and parallel circuits, one order circuit, second circuit to achieve teaching objectives.
Introduction to Biomedical Materials	Biomaterials can be used within physiological environments over long or short periods of time. The materials are used to assist or replace organism tissue and organ functions, and they are directly in contact with organism cells, blood, tissues, and proteins. It is essential to synthesize professional knowledge in biology, medicine, materials science, and other sciences in order to master the design theory and application of biomaterials. This course is composed of two units. The first unit introduces material structures and properties. Mechanical properties can be understood through by the discussion of material structures. The second unit divides biomaterials into metal, ceramic, polymers, and the replacements of various types of tissues, to familiarize students with the development and application.
Electronics	This course introduces the basic physics and operation principles of semiconductor devices. Students could learn basic knowledge on semiconductor devices that includes DC characteristic, small signal characteristics and frequency characteristics. Students could also learn some well know useful circuits, and have ability to analyze or design the simple application circuits. Learning microelectronic can be fun. As we learn how each device operates, how devices comprise circuits that perform interesting and useful functions and how circuits form sophisticated systems, we begin to see the beauty of microelectronics and appreciate the reasons for its explosive growth. Over the past five decades, microelectronics has revolutionized our lives. While beyond the realm of possibility a few decades ago, cellphones, digital cameras, laptop computers, and many other electronic products have now become an integral part of our daily affairs.

	This course provides biomedical engineers with the premiere reference on				
	medical instrumentation as well as a comprehensive overview of the basic				
	concepts. Each progress includes new problems and updated reference material				
	that cover the latest medical technologies. The course also teaches with new				
Medical Measurement and	material in medical imaging, providing biomedical engineers with the most				
Instrumentation	current techniques in the field. This course allows students to study physical,				
	chemical and mathematical concepts and practical applications of medical				
	equipment. With the practical application of instructions to understand the				
	importance of medical measurement and instrumentation in practice.				
	A polymer is a useful chemical made of many repeating units. This course				
	introduces polymeric materials in terms of the classification, basic properties,				
Polymeric materials	structure, evaluation methods, and the medical related applications. Polymeric				
	biomaterials and biomedical polymers are also described.				
	Developing a new medical device for commercialization is a complex process.				
	This course is a practical, step-by-step approach on how to move a novel concept				
	through development to realize a commercially successful biomedical product.				
Biomedical Innovation and	Real-world experience cases and knowledgeable contributors provide lessons that				
Commercialization	cover the practices of diverse organizations and multiple products. This important				
Commercianzation	reference will help improve success and avoid innovation failure for translational				
	researchers, entrepreneurs, medical school educators, biomedical engineering				
	students and faculty, and aspiring physicians.				
	This course introduces the basic and foundation in discrete mathematics. The				
	range of topics to be covered include: logic, set theory, algorithms, graph theory,				
Discrete Mathematics	trees, combinatorics and algebra.				
	This specialization is a mix of theory and practice: you will learn algorithmic				
	techniques for solving various computational problems and will implement				
Data Structures & Algorithms	algorithmic coding problems in a programming language of your choice.				
	A database application is a computer program whose primary purpose is entering				
	and retrieving information from a computerized database. You will get following				
	skills: Design, create, modify, and maintain relational databases. Creating and				
Database Application					
11	modifying tables, relationships, queries, and forms. Add and modify data to the				
	tables. Database backup and recovery. Search, sort and query database. Database				
	maintenance.				
	This course provides an elementary introduction to the use of UNIX commands				
Application of Bioinformatics	to manipulate UNIX-based computer system. The following topics will be				
Software	covered: history of UNIX systems, basic commands, vi editor, sorting, pipeline,				
	process control commands, wildcard, regular expression.				
	This course is an introductory course on data mining. To study the concepts,				
Biomedical Data Acquisition	principles, and skills for biomedical data analysis. The teaching topics include				
and Mining	pattern discovery, cluster analysis, and classifier modeling. These topics will be				
	practice by application software and programming.				

Systems Biology	This course will cover the following topics, including network biology, graph theory, network perturbations, network motifs structures, and gene set enrichment analysis. At the end of the course, students will learn how to analyze biological					
	systems from a system level perspective.					
	Medical information management provides students with a comprehensive and					
	engaging look at the responsibilities and opportunities available in healthcare					
Medical information	management today. This course explores hospital information management roles					
management	in inpatient, outpatient, and specialty care settings, including long-term and					
management	rehabilitative care; offers up-to-date information on electronic health records; and					
	examines the impact of EHRs on the healthcare environment.					
	This course will provide an introduction to the technology and medical					
	applications of 3D printing. Through lectures and workshops, students can self-					
3D modeling for 3D printing	made the various products and understand the following topics, including 3D					
5D modeling for 5D printing	printing introduction, 3D printing technologies, 3D modeling and printing					
	software, 3D printing in medicine, and the future of 3D printing.					
	This course will start from patent claim interpretation, getting patent claims well					
	known, then following with introduction on the orientation of patent strategies,					
	and providing theory and practice on medical device patent strategies.					
	Developing a new medical device for commercialization is a complex process.					
	The FDA has guidelines that provide a framework for designing and					
Medical Devices Patent and	manufacturing medical devices. The course will cover design control under the					
Regulations	FDA Quality System Regulation (21CFR820.30) and international Standard ISO					
Regulations	13485 for Quality Management Systems, in addition to the practical application					
	in the design and development of electronic hardware, software, mechanical					
	elements and labels. The course will also cover related aspects of associated					
	Standards and Regulations such as Risk Management (ISO 14971), Usability					
	(IEC 62366-1) and Software lifecycle (IEC 62304).					
	Omics is a new area of study in molecular biology that examines the features of a					
	large family of biological molecules, such as DNA, mRNA, proteins, metabolites,					
Introduction to Omics	lipids, and carbohydrates (saccharides). This course is designed to give students a					
	general understanding of the genomes, transcriptomes, proteomes and their					
	integration, i.e. omics.					
	Interested in increasing your knowledge of the Big Data landscape? This course					
	is for those new to data science and interested in understanding why the Big Data					
	Era has come to be. It is for those who want to become conversant with the					
Big Data programming (R +	terminology and the core concepts behind big data problems, applications, and					
Python)	systems. It is for those who want to start thinking about how Big Data might be					
- ,,	useful in their business or career. It provides an introduction to two of the most					
	common programs, R and Python, that have made big data analysis easier and					
	more accessible.					

Basic Programming	Let students can understand and practice programming Java in the class; therefore, they can realize the programming steps: writing program, saving a program, compiling a program, executing a program and debug skills.
Advanced Computer Programming	Teach students Java programming. The contents of the class in this semester include function, array, pointer, structure, file handle, and malloc.
APP programming	Teach students design APP based on APP Inventor 2. The contents of this class include set up APP inventor 2 environments, using the interface of APP inventor 2, understanding the function of each element. Besides, the student can learn how to design the APP interface based on these elements. Further, students can write programs to carry out the function of the APP.
Mechanical Properties of Materials	In this course, the major goal is to train the students to understand the mechanical properties and deformation mechanisms of materials. Meanwhile, the standard of mechanical tests, dislocation theory, and the introduction about the deformation behavior such as elastic deformation, plastic deformation and failure will be also included.
Medical Metal Materials	In this course, the major goal is to train the students how to fabricate and apply the most suitable metal materials in different scenarios by the understanding of the physical and chemical properties of medical metal materials and its lattice structure, defects, thermodynamics, phase diagrams, and etc.
Precision Medicine	The main goal of this course is to understand the general trend of precision medicine. The course covers the introduction of precision oncology and learns how to obtain biomedical big data and its analytical methods, and apply it to precision medicine. Finally, the project is implemented to reflect the knowledge and skills learned.

Faculty Members

Instructor's title	Instructor's name	Contact Information
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