Education Plan for Academic Graduate in Biomedical Engineering

（Discipline Code:0831,Award Master Degree of Engineering）

Ⅰ Objectives

This program is designed to cultivate students with good moral, intellectual, physical and good scientific quality who is very competitive in the emerging discipline of biomedical engineering-related, interdisciplinary, new technological field. They will to be high-level and applicable specialized persons with innovative spirit and practical ability in biomedical engineering basic research or high-tech research and development field. The requirements are:

1.Grasp the theories of Marxism and establish a scientific world outlook, adhere to the basic lines of the Party, love the motherland, abide the law, form a good character, behave honestly and trustworthy, strictly and cooperately, and maintain good research ethics and professionalism.

2.Master the solid theoretical foudation and systematic professional knowledge of the biomedical engneering specialty, understand the frontier trends of this specialty. Master the experimental skills, testing methods and evaluation techniques in biomedical engineering and possess the ability of engaging in research, teaching and solving local problems in engineering. Possess the engneering consciousness, strong awareness of management and development and management and development.

3.Master a foreign language, can skillfully read professional foreign language materials and write papers. Proficiency in computer application technology.

4.Actively participate in physical exercise ， Maintain a good physical and mental health quality.

II Disciplinary Research Areas

1.Biomedical materials and regenerative medicine
2.Nanobiomaterials and nanomedicine
3.Surface and interface of biomaterials
4.Design and application of biosensors
5.Controlled drug release system
6.Interaction of the cells and tissues with biomaterials and safety evaluation

III Educational System and Years of Study

The educational system for a full-time academic graduate is three years and the study period lasts generally three years, no more than five years. Total credits for academic graduate should be greater than or equal to 27 credits,among which the courses credits should be greater than or equal to22 credits (Public degree courses credits should be greater than or equal to 11 credits, Professional Degree Course credits should be greater than or equal to 6 credits, Elective credits should be greater than or equal to 5 credits), Compulsory courses is 5 credits.

IV Curriculum System and Credit Requirements

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
Public Course	003281001	First Foreign Language(Chinese)	108	6	12	School of Internation Education	
	003281002	Introduction to China	54	3	1	School of Internation Education	
	02121007	Dialectics of Nature	18	1	1	School of Marxism	
	01421061	Methods of Mathematical Physics	36	2	1	School of science	
	01421062	Matrix Theory	36	2	1		
	01421063	Applied Mathematical Statistics	36	2	1		
	01421064	Stochastic Process	36	2	2		
	01421065	Numeral Calculations	36	2	2		
	01421066	Mathematical Model	36	2	2		
Specialized Course	00121001	Progress in Materials Science	36	2	2	School of Material	
	00121002	Contemporary Analytical Techniques for Materials Characterization	54	3	2		
	00121013	Introduction to Biomedical Engineering	36	2	1		
	00121014	Biomedical Materials	36	2	2		
	00121025	Molecular Biology	36	2	1		
	00121026	Cell Biology	36	2	1		
	00121016	Advanced Synthesis and Processing Technology of Materials	36	2	1		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
Trans-Disciplinary selective course	02223001	Taijiquan and its	18	1	1	Department of Physical Education	At least choose one course
Optional Course	00122001	Security in Laboratory	18	1	1	School of Material	Compulsory
	00122002	Writing and Specification of Research Paper	18	1	2		Compulsory
	00122068	Specialized English for Biomedical Engineering	18	1	2		Compulsory
	00122005	Glass and Amorphous Materials	36	2	2		
	00122007	Cementitious Materials Science	36	2	2		
	00122016	Polymer Processing Engineering	36	2	2		
	00122021	The Development of Composites Process	36	2	2		
	00122023	Composite Materials Design	36	2	2		
	00122025	Bioceramics	36	2	2		
	00122026	Science and Technology of Nano-sized Materials	36	2	2		
	00122028	Surface and Interface of Materials	36	2	2		
	00122040	Functional Thin Film Materials	36	2	2		
	00122041	Forming Technology of Advanced ceramics	36	2	2		
	00122046	Microstrusture and Properties of Materials	36	2	2		
	00122052	Electron Microscopy Of Materials	36	2	2		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
	00122056	Superfine Powder and Processing Technology	36	2	2		
	00122060	Magnetic Materials	36	2	2		
	00122064	Experiments of Materials Research and Testing Methods	36	2	2		
	00122065	Living Materials	36	2	2		
	00122066	Fiber Optic Chemical Sensor and Biosensor	36	2	2		
	00122067	Fiber Optics	36	2	2		
	00122069	Histology	36	2	1		
	00122070	Experimental Technology of Cell Biology	36	2	2		
	00122071	Experiment Technology of Biochemistry and Molecular Biology	36	2	2		
	00122072	Nanaomedicine & Nanobiology	36	2	1		
	00122073	Biomedical Polymers	36	2	1		
	00122074	Biomedical composite materials	36	2	2		
	00122075	Principles of Biochemistry	36	2	1		
	00122076	Fiber Optic Sensor Technology	36	2	2		
	00122077	Experiment of Optical Fiber Sensing Technology	36	2	2		
	00122078	The Electronic Circuit Used for Photoelectric Conversion	36	2	2		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
Compulory Activities	00124004	Materials Science and Engineering Graduate Practice		2		School of Material	
	00124002	topics and interim assessment of SMSE		1		School of Material	
	00124003	academic activities of SMSE		1		School of Material	

V Compulsory Courses

Three credits for internship and practical training. Students, who complete one of the following activities like professional practice, social practice, innovation and entrepreneurial activities, competitions and high-level papers, awarding achievements, and getting a patent, will be rewarded with 1 credit; the professional practice shall be special training material testing technology targeted selection of at least one large-scale sets of advanced equipment combined with the research direction and be carried out in a public platform, relevant base test centers or engineering centers for testing centers.Social practice can be "managing or teaching assistants" and other forms. All graduates participated in the practice shall write prctice report and will get 1 credit after inspection and examination by the supervisor (Group).

complete a simulation application form and 20 minutes presentation on provincial (city) level or natural (social) science funds project. After inspected and reviewed by the supervisor (Group), those who passed will get two credits.

One credit for thesis proposal and interim assessment.Under the guidance of supervisors, candidates shall pinpoint their research areas, look up relevant literature at home and abroad, conduct extensive investigations, make report on the selection of dissertation and submit to the school in March or October each year. After examination, the research topic will be definite. After passing thesis proposal defense, the candidate will get one credit.

Graduates must participate in the medium-term assessment. Specific requirements for the report on topics selection of the thesis and interim assessment shall be carried out in accordance with the relevant provisions in graduate students' manual.

One credit for academic activities. In order to encourage candidates to take concern and understand the state of art at home and abroad, broaden their horizons and inspire their creativity, each candidate shall attend academic reports at least 5 times, and write 500 words or more each time after participating in academic activities. After examination by the supervisor (Group), those who complete it will get 1 credit of compulsory courses.

VI Scientific Research and Dissertation

Graduates applying for the degree must meet the relevant requirements of publication regulation in Article 12 Chapter 4 of the graduates' manual.

Thesis must pass the test by TMLC2 and reach the requirements of the Academic Degree Evaluation Committee for thesis before the defense.

Other work and request about dissertation shall be carried out in accordance with the relevant provisions in Graduate School.

VII Cultivation Mode and Method

Tutor or tutor-based instruction group is the mode of cultivation, with flexible and diverse, heuristic, seminar-style teaching methods demonstrating the leading role of the supervisor.

Supervisors should according to the principle of program requirements and individualized training, from the students specific circumstances are formulated according to a graduate program, strengthen graduate student scientific research ability, self-learning ability, hands-on ability, expression ability and the writing ability training and cultivation.

Combine the style of taking courses and dissertation for culturing graduates.

Implement the policy of theory with practice throughout the culturing process, graduates shall master basic theory, specialized knowledge and the basic methods of science research, possess the ability of practical knowledge and experimental designing.

Graduates` study shall emphasize “researching in learning, learning in researching”, the role of tutor lies in inspiring them to think deeply with right judgment, developing their independent analysis and problem-solving abilities.

Strengthening ideological and political work and moral character and civility education, graduates shall take the courses of political theory and events and policies andtake an active part in voluntary social works.

VIII Others

1. To examine the effects of instruction, ensure the quality, the items listed in the program must have an assessment. Assessment methods and performance assessment methods need to be clearly stated in the course syllabus.

2. Academic graduates are required to get the credits before thesis proposal. Students are allowed to take some of the other elective courses according to the dissertation after thesis proposal. All the courses shall be completed before the application of dissertation defense.

3. Each discipline shall make specific regulations and requirements in the amount of literature to be read for the students during the study period. Graduates should review more than 40 pieces of literature at home and abroad, in which foreign literature shall be no less than one third.

4. Academic graduates shall report their own learning and research work to the supervisor at least once a month at the course learning stage, and at least twice a month during the paper sessions, which shall be institutionalized and clearly clarified in the programs.

5. This program will enact from 2016.