The Doctor Degree Course Syllabus for Overseas Postgraduate Students

Course code: 083200c1801

Special theme on food science and technology

Ⅰ. scheduled total credits：36 credits：3 term：Ⅰ

Teaching method： PPT and cases discussing Assessment method ：homework report

Ⅱ.Compatible Major：Food Science and Engineering

Ⅲ.prerequisite course：Food processing machinery and equipment, Food technology, Biochemistry, Food physical processing

Ⅳ.OBJECTIVE：

The main contents of the course is to make the students understand the main research progress in the field of food science and technology, especially on the development course and the present situation of the four main research directions: food physical processing technology and equipments, rapid nondestructive testing technology and equipments, food nutrition and safety food, and biological technology and equipments. And with these study, to make students master the theoretical basis and provide basic technical methods for the related fields of scientific research, technology and new product development work.

Ⅴ.Content of the Syllabus and the Scheduled Study Hours:

The topics of Special theme on food science and technology include four aspects: food physical processing technology and equipments, food non-destructive testing technology and equipments, food nutrition and safety, and food biotechnology and equipments. Food physical processing technology and equipments includes ultrasonic, electromagnetic field, microwave, laser, high pressure and other physical methods. Nondestructive testing technology and equipment refers to testing of the original premise of subject physical and chemical properties without the destruction, which is based on various properties of sound, light, electricity, magnetic etc. The main content of food nutrition and safety includes research progress of food nutrition and safety indicators of nutrition and safety indicators affecting human health, and food processing control technology. The main content of food biotechnology and equipments includes the research progress and application in food industry of microbial engineering, enzyme engineering, cell engineering, gene engineering, protein engineering, and biological control of postharvest diseases of agricultural products.

Chapter One Basic concept of food physical processing technology and the development trend at home and abroad （2 credit hours）

Chapter Two Food physical processing technology and equipments （8 credit hours）

1．Progress on food ultrasonic processing technology and equipment

2．Progress on food electromagnetic field processing technology and equipment

3．Progress on food infrared processing technology and equipment

4．Progress on food physical mutagenesis technology and equipment

5．Progress on food ultra-high pressure processing technology and equipment

6．Progress on food microwave processing technology and equipment

Chapter Three Food fast nondestructive testing technology and equipments （10 credit hours）

1. Progress on nondestructive testing technology and equipments based on the basic characteristics of photoacoustic power

2. Progress on electromagnetic and ray detection technology and equipments

3. Progress on visual information detection technology and equipment

4. Progress on olfactory sense taste information detection technology and equipments

5. Progress on new sensing technology and equipments

6. Progress on multi information fusion detection technology and equipments

Chapter Four Food nutrition and safety (8 credit hours)

1. Summary of food nutrition and safety

2. Progress on food nutrition and human health

3. Progress on food borne diseases and food safety control

4. Progress on food processing and food nutrition and safety

Chapter Five Food biotechnology and equipments (8 credit hours)

1. Basic composition of biotechnology and research progress at home and abroad

2. Progress on application of microbiological engineering in the food industry

3. Progress on enzyme engineering, cell engineering, gene engineering and protein engineering in the food industry

4. Progress on biological control of postharvest diseases of agricultural products

Ⅵ.Teaching Materials and Reference Books：

1. Jia Jingdun, Ma Haile, "food physical processing technology and equipment", Science Press, 2015

2. Gu Ping. Introduction to bioengineering, Chemical industry press, 2010

3. Rafael C. Gonzalez & Richard E. Woods, Digital Image Processing. (Third Edition), Publishing House of Electronics Industry 2010.

Ⅶ.Lecturers：Ma Haile, Huang Xingyi, Zhang Hongyin, He Ronghai，Xv Bin

Ⅷ.the Author who write the Syllabus：He Ronghai, Huang Xingyi, Ma Haile