# COURSE SYNOPTIS

## Faculty of Food Science and Nutrition

### BACHELOR OF FOOD SCIENCE WITH HONOURS

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**FACULTY CORE**

**NT10102 FUNDAMENTALS FOOD SCIENCE AND NUTRITION**
The course will be focused on food requirement, function and source of nutrients in food, and quality and safety aspects of foods. The selected core subjects will be discussed in brief in order to give the students an overview on what is the field of food science/technology and nutrition all about.

**References**

**NT10402 ANALYSIS CHEMISTRY**
Analytical chemistry is the branch of chemistry that deals with the measurement of chemical samples, both qualitative and quantitative. Analytical chemistry plays an important role in many aspects of chemistry, for example, medicinal, environmental, forensic, and manufacturing. In food, analytical chemistry finds many applications, for example, in the analyses for the essential nutrients, chemical composition, level of deterioration or contamination, and authenticity. Undoubtedly, analytical chemistry forms an important part of the competency that food scientists and technologists ought to develop.

**References**

**NT10202 GENERAL PHYSICS**
A clear understanding of the basics of physics, i.e. the study of physical quantities, theories and calculations in translational and rotational motions, types and concepts in energy. This course will expose some background on the behavior of fluids. It will also include sections in thermal physics as well as vibration and wave.

**References**

**NT10902 ORGANIC CHEMISTRY**
This course will discuss the principles of organic chemistry and the chemical reactions found in many applications including food systems. This course includes the naming, classification, structure, use and reactions of each class/group of natural and synthetic organic compounds. The mechanisms of reactions will be given attention.

**References**
NT11202 CALCULUS
This course provides a strong basic concepts and foundations in calculus. Thus, this course providing the necessary background knowledge for students. Student will be able to develop the ability to use analytic and graphic techniques to solve problems involving calculus.

References

NT10802 BIOCHEMISTRY
This course discusses the important biomolecules and their chemistries in reactions that facilitate the processes in living organisms. This includes amino acids, proteins, enzymes, and carbohydrates. The structures, functions, mechanisms, kinetics and control of these components are discussed. The ATP energy generation and the electron transfer chain in carbohydrate metabolism involving the glycolysis, the citric acid cycle, and the oxidative phosphorylation processes are also discussed.

References
Essex, United Kingdom: Pearson.

NT31103 FOOD SENSORY EVALUATION
Sensory evaluation of foods is widely used in the field of Food Science and Technology for food quality control, assurance and product development. It is the measuring of food attributes through a complex sensation that results from the interaction of our senses such as taste, smell, touch and hearing when food is eaten. In addition, the concepts, principles and protocol of widely used sensory evaluation techniques will be explained. These include discriminative tests, descriptive tests and affective tests. Data collection and statistical analysis will be discussed in order to obtain accurate

References

NT21103 STATISTICS
This course discusses basic statistical concepts including parametric and non-parametric tests. The practical component includes demonstrations and tutorials on statistical analyses using software. The software used is SPSS, version 14, which is one of the common statistical software used in academic research and industries. Students will be exposed to the use of syntax in statistical analyses.
References

NT21303 PHYSICAL PROPERTIES OF FOODS
A course discuss on those properties of foods that lend themselves to description and quantification by physical means. It is an introduction course exposing students to various physical properties of food, including the thermal, surface, optical, mechanical (rheological), electrical and geometrical properties. The definitions, theory and principles, methods of determination, as well as effects on food products are also discussed under relevant topics. This course also provides fundamental knowledge required in understanding advance courses, such as Unit Operation in Food Processing and Food Engineering.

References

NT20703 FOOD ANALYSIS & INSTRUMENTATION
This course introduces students to the importance of food analysis as chemical compositions of foods are used to determine the nutritive value, functional characteristics & acceptability of the food products. Students will be taught on preparation of chemicals & instruments to conduct the analyses. Analytical errors including those arising from impurity of chemicals, instruments & methods used will also be discussed. Students will learn how to report their laboratory results, findings & calculations. Proximate analyses, as well as the theory & suitable methods to determine moisture, ash, protein, lipid, carbohydrate, mineral and vitamin contents will also be explained. Students will also be exposed to specific instruments including AAS, GC, HPLC, etc., to analyse specific or basic components that make up our major food components.

References

NT20903 FOOD CHEMISTRY AND BIOCHEMISTRY
This course covers introduction to the major food components such as water, carbohydrate, lipid, protein and other minor components, namely vitamins and minerals. Students will be exposed to the chemistry aspect, classification, characteristics and functional properties of each of the components. Fundamental knowledge of enzyme and food pigments will be taught. Basic biochemistry reactions and metabolisms relate to the major food components will also be discussed.
References

NT30903 FOOD PROCESSING & PRESERVATION
This course will discuss about the principles and techniques of food processing and preservation such as freezing, drying, heat treatment, and so on. Students are required to understand the advantages and disadvantages for each of the preservation method. The effects of processing on food products (that affect the consumer acceptance) and the latest technology and development in food processing and preservation also being discussed.

References

NT20203 FOOD MICROBIOLOGY
The course discusses basic principles of food microbiology, which include scope of study, classification of microorganisms, existing of micro flora in various foods and their source of contamination. Factors affecting the growth of microorganism that lead to either food spoilage or food poisoning are also discussed. An understanding to these factors is helpful in designing methods to control or stimulate their growth. Students will have the opportunity to learn a wide variety of microbiological methods normally used in quality control and safety evaluation of foods. The control of microorganisms especially food borne pathogens by various food preservation techniques and processing are also being highlighted. Apart from the detrimentally effects to food and human health, many of these microorganisms are used in the production of food and food ingredients. A series of laboratory exercises are designed to provide student with the opportunity to develop skills in isolation, identification and enumeration of the major groups of microorganisms associated with foods and food products.

References

NT20803 POST HARVEST HANDLING TECHNOLOGY
The course teaches subjects related to the causes, principles and practices that result in food losses and appropriate methods to reduce post harvest losses in both the developed and developing countries in terms of technologic usage. The structure, composition and biophysical and biochemical changes in fruits and vegetables will be discussed. Factors that influence the quality of fruit and vegetable during storage will also be discussed. This course will also provide exposure to students on the technology of post harvest handling of cereals, koko, legumes, dairy products, meat, chicken and fish.
References

NT30503 RESEARCH METHODS AND SCIENTIFIC WRITING
This course discusses various experimental designs, and various stages in research studies from proposing a study to presenting its findings. Health and safety, study information, volunteer consent and ethics would also be discussed. This course should preferably be taken after NT10003 (Statistics).

References

NT30703 FOOD SAFETY AND QUALITY CONTROL
This course emphasizes the importance of food safety and quality assurance in the food industry. Foodborne diseases and threats to food safety constitute a growing public health problem worldwide. Thus, food professional should be provided with up-to-date information and skills as part of the strategy to reduce contamination of food, ensuring foods sold in the market are safe. Food safety and quality education form the backbone of the food science and technology programs. It is also true that more standards and certification on food safety programs will be established to facilitate national and international food controls and risk management.

References

NT40103 FOOD LEGISLATION & STANDARDS
The course is focused on food legislation and standards that are commonly practiced by the food industry to ensure their products are safe and fulfilling the standard specifications. Students are taught about food regulations in Malaysia (Food Act 1983, Food Regulations 1985 and Food Hygiene Regulations 2009) and several international standards or guidelines pioneered by the expert committees or international organizations such as Codex Alimentarius Commission (CAC), World Health Organization (WHO), Food & Drug Administration (FDA) and Food Agriculture Organization (FAO). The course will emphasize on the importance of safety and quality issues related to all types of foods in the international business. Other aspects to be discussed include quality management systems which are used by the food industry such as ISO 9000, halal certification and Total Quality Management (TQM).
**References**


**NT11403 FUNDAMENTALS OF MARKETING**

This course aims to provide exposure on the basic concepts of marketing as an important function in business to students. This course introduces the marketing concepts and elements of marketing mix in one practical framework in order to achieve understanding on the importance of marketing strategy in fulfilling customer needs so that a business organization is capable to maintain its position in a competitive environment. This course focussing on introduction of marketing, consumer behaviour and the marketing mix, especially on menu, the food retailing, wholesaling, promotion and marketing ethnics.

**Reference**


**NT11503 PRINCIPLES AND PRACTICES OF MANAGEMENT**

This course is about management and managers in organization. It is about managing people towards mutual needs and organizational goals. Furthermore, with globalization and the changing world that faced by managers understanding theright management process and strategic management is important to ensure organizational goals achieved effectively. Course covers the core management function of planning, organizing, leading, and controlling in an organization.

**Reference**


**NT11603 BASIC FINANCIAL MANAGEMENT**

This course is an introduction course in the field of finance. It covers the main idea in finance that starts with a general background, conceptual framework and techniques to assist in managing financial decision. The main focuses are towards fundamental principal, exercises and modern financial management procedures.

**Reference**


FOOD TECHNOLOGY AND BIOPROCESSING PROGRAMME (HY07)

NB20003 UNIT OPERATIONS IN FOOD PROCESSING
This course introduces basic units in food industry, which involves various food processing operations. Students will be exposed to important unit operations in food processing such as material and energy balances, fluid flow, heat transfer, drying, evaporation, mechanical separations, size reduction processes, and mixing. This course will be a basis for food engineering process where selection of reasonable raw material can be carried out, plant can be conducted efficiently, safely and cost effectively as well as able to meet requirements by consumers.

References

NB20403 BIOPROCESSING TECHNOLOGY
Bioprocess Technology, a sub-discipline within biotechnology that combines living matter, in the form of organisms and or enzymes, with nutrients under specific optimal conditions to make a desired product. The topics herein deal with fermentation technology, bioreactors and downstream process technology. The important feedstocks used in bioprocesses and the functional food ingredients derived from the feedstocks will also be addressed.

References

NB20502 FOOD ENZYMEOLOGY
The historical uses of enzymes to make beer, wine, cheese and bread are fine examples of the industrial exploitation on its catalytic function and selectivity. This course covers the basic and applied aspects of the enzymology important to food systems. The basic aspects of the course include the basic enzyme properties, factors that affect enzyme activity and methods of measuring enzymatic activities. In the other hand, the applied aspects focusing on the enzymes used by the food industry and methods or controlling endogenous enzyme activities.

References
NB20603 FOOD PACKAGING
Packaging is a very important aspect in preservation and marketing of food products. Knowledge acquire from this course will increase the students’ capability in evaluating the suitable type of packaging for a particular type of food product, particularly the extension of shelf life and marketing aspect. Students could keep abreast with the development of innovative and creative concepts, the latest science and technology in food packaging to add value to their level of competency. Ethic values and responsibility towards environment and society are embedded through discussion on safety of food packaging, food packaging disposal problems, recycling of food packaging and so on.

References

NB40012 INDUSTRIAL TRAINING AND SEMINAR
Students are required to undergo industrial training at food industry or selected research institution to gain experiences relevant to students’ education programme. Students will be able to gain work experience in real work environment during the training. Duration of training is twenty four weeks, which is one semester. Students are required to prepare a written training report and present in seminar after completion of training. Students’ performance will be evaluated by industrial supervisor, and also by academic supervisor via discussion with industrial supervisor and visitation during students training. Students’ assessment marks for this course will consist of evaluation mark from industrial supervisor, academic supervisor who pay a visit to place of training, industrial training report, daily activity log book and also marks from presentation of training in seminar.

References

NB31003 NOVEL FOOD PROCESSING
This course will discuss an overview on several thermal and non-thermal novel processes such as Pulsed Electric Field (PEF), High Hydrostatic Pressure (HPP), ionizing irradiation, UV light and etc. Their respective principles, potential applications, advantages and disadvantages of each technique will be discussed.

References

NB30804 FOOD PRODUCT DEVELOPMENT
The importance of development of industrial food products from the aspect of consumer and manufacturer needs to be learnt. This course encompasses the study of basic strategies in food products development, starting from idea generation, experiment, product tests in experiment, prototype production, product specification, manufacturing and marketing.

References

NB30703 FOOD FERMENTATION
The course covers a wide range of food fermentation processes applied worldwide either for product development or as a preservation method. Topics to be discussed in the course include importance and characteristics of microorganisms used in various fermented foods, their health benefits and microbial or enzymatic processing of food and food ingredients to achieve desirable shelf life and flavour. In addition, the microbiological consideration in the production of fermented foods, their natural antimicrobial by-products, application of genetic and recombinant DNA for starter improvement as well as their impact on functional properties of foods will be discussed. Equally important is the safety issues related to fermented foods and food ingredients. Students will have the opportunity to run fermentation process in laboratory to produce fermented food products and study the basic requirements for food fermentation.
References

NB00202 RESEARCH PROJECT
This course is specifically designed to allow final year students to gain experience in conducting research. Each student is required to take a total of eight credit hours for one research project (throughout two semesters) under the supervision of an academic; two credit hours will be evaluated in this course. Students are advised to contact their supervisors for detailed information regarding the research that they will be doing, and then determine the agreed work targets. Students are required to present their research proposals before starting laboratory work. This will give students opportunities to get feedback or alternative views about their proposed research, especially regarding study designs and analytical techniques.

References

NB30903 FOOD ENGINEERING
The course introduces basic food engineering principles which include of fundamental physics to several applications in food processing such as the concepts of mass and energy balance, thermodynamics, fluid flow and heat transfer. Based on the basic food engineering principles, student will be exposed to various applications in food processing such as refrigeration, food freezing and dehydration, evaporation and membrane separation processes.

References

NB00306 RESEARCH PROJECT II
This course is the continuation to NB00202 Research Project I, where students are required to complete their ongoing research project. In this course, students will focus on laboratory analyses and field work. At the end of the project, students will report their findings in the form of a final research project report which will be submitted for examination by two examiners (not including the supervisor) who will be appointed by the course coordinator. All submitted final research project reports for examination must adhere to the scientific writing style and standards approved by UMS. Each student will be called to defend his/her final research project report in an oral examination which will be conducted after submission of the final research project report.

References

NB40703 BIOSEPARATION
This course covers the essential and importance of downstream processing as part of bioprocess in food technology industry. A variety of bioseparation approaches, from conventional to sophisticated high resolution techniques will be described and discussed. The topics herein deal with isolation and extraction of desired products from a complex mixture of starting material, reaction products and by-products, and how to concentrate, recover and purify the desired products.
CONSUMPTION AND DEFICIENCY OF VARIOUS NUTRIENTS.

This course will cover nutrition standards and guidelines; nutrient importance, function and requirements in humans; digestion and absorption of each nutrient in relation to the intake of a well-balanced diet as well as health risks of over consumption and deficiency of various nutrients.

References

FOOD SCIENCE AND NUTRITION PROGRAMME (HS04)

NP20303 HUMAN NUTRITION
This course will cover nutrition standards and guidelines; nutrient importance, function and requirements in humans; digestion and absorption of each nutrient in relation to the intake of a well-balanced diet as well as health risks of over consumption and deficiency of various nutrients.

References

NP20003 NUTRITION IN THE LIFE CYCLE
This course discusses the changing physiology and nutritional requirements as well as related health and nutritional concerns occurring in the different stages of the life cycle such as in pregnancy and lactation, infancy, childhood, adolescence, adulthood and during the late years of life.
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References

NP20603 FUNCTIONAL FOODS
Functional foods are foods that deliver specific non-nutritive physiological benefits that may enhance health. The growing consumer interest in functional foods is transforming the food industry, and redefining the relationship between food, nutrition, and health. Nutritionists and other health professionals need to be better educated in this area in order to counsel and provide guidance to the public on the efficacy and/or risks associated with these functional food products. The course will cover the impact of functional foods on health and disease prevention.

References

NP30203 NUTRITIONAL ASSESSMENT
This course is about assessment of the nutritional status of individuals, households, and at the national level using various methods of nutritional assessment, i.e., anthropometry, biochemistry, clinical and dietary intake. Students will learn these methods in theory and practical (laboratory/field work).

References
Sauberlich HE. Laboratory tests for the assessment of nutritional status. 2nd ed. CRC Press LLC.

NP40012 INDUSTRIAL TRAINING AND SEMINAR
This course is to provide exposure to students to work experience and knowledge in areas related to the student's undergraduate programme. Besides, this course also provides opportunities for students to put to practice in a real work environment what had been learned during lectures, and to strengthen their communication skills as well as ability to work in a team. The students are given a platform to be independent, hold responsibilities and understand work ethics.
References
Panduan LI FSMTP
Industrial Training Report format Daily Activity Log Book format

NP30803 FOOD INNOVATION
This course emphasizes the importance of creativity and innovation in the food industry in respond to the needs of the consumers. It gives students industry relevant practical experience whilst exploring the local and global trends in food processing and food innovations. It also addresses the key drivers of food industry innovation - affordability, sustainability, and tightening government regulations. Innovation in developing new food products, processes and business models is recognized as a key requirement for achieving the future vision of food graduates for the fast growing R&D demands within the food and beverage industry. The course involves real problem solving projects, with strong practical links with industry. This provides a good grounding in the creative and practical aspects of food product development, gained through teamwork using local resources.

References

NP31003 FOOD TOXICOLOGY
This course aims to give students an overview of principles in food toxicology including the application of these principles to qualitative and quantitative toxicological testing of food products. The occurrence of various natural toxicants in food either from plants or animal origin will be discussed. Other topics include pesticides residues, food additives and contaminants, by products originating from food processing as well as implication of industrial waste on human health and environment. Today food toxicology relies heavily on the knowledge in chemical and biological field and assumes that the students have an understanding of the basic concepts of human physiology and biochemistry. Therefore it is important for the student of food science and nutrition that they should be aware of the properties and mode of action and methods of analysis for the various toxic compounds.

References
Stanley T. Omaye. 2004. Food and Nutritional Toxicology. CRC Press LLC. New York, USA.

NP00202 RESEARCH PROJECT
This course is specifically designed to allow final year students to gain experience in conducting research. Each student is required to take a total of eight credit hours for one research project (throughout two semesters) under the supervision of an academic; two credit hours will be evaluated in this course. Students will pick their research topic from a list of project titles which is given by all academics on the first week of semester. Students are advised to contact their supervisors for detailed information regarding the research that they will be doing, and then determine the agreed work targets. Students are required to present their research proposals before starting laboratory work. This will give students opportunities to get feedback or alternative views about their proposed research, especially regarding study designs and analytical techniques.
NP00306 RESEARCH PROJECT II
This course is the continuation to NP00202 Research Project I, where students are required to complete their ongoing research project. In this course, students will focus on laboratory analyses and field work. At the end of the project, students will report their findings in the form of a final research project report which will be submitted for examination by two examiners (not including the supervisor) who will be appointed by the course coordinator. All submitted final research project reports for examination must adhere to the scientific writing style and standards approved by UMS. Each student will be called to defend his/her final research project report in an oral examination which will be conducted after submission of the final research project report.

FOOD SERVICE PROGRAMME (HG09)

NF10002 FOOD SERVICE ENTREPRENEURSHIP
This course gives student the exposure of basic principal of entrepreneurship as well as emphasis on foodservice entrepreneurship. Students will learn on ways to prepare business plan.

Reference

NF10102 FUNDAMENTALS OF FOOD SERVICE
This Course teaches student the basic principle of food service management. Student would need to equipped with knowledge regarding the history of food service and how it may shape the future of food service, current trends, and other related aspects in managing a food service operation such as procurement, menu planning and food safety

Reference

NF10003 EASTERN AND WESTERN COOKERY
This course provides an opportunity for students to recognize and learn cooking recipies from different countries, including eastern and western cuisine. Students will also have the exposure in terms of theory and practice in the kitchen laboratory such as production area, basic cutting and cookery, baking and cleaning/hygiene

Reference

NF20303 HUMAN NUTRITION
This course provides students with a background in the basics of nutrition knowledge. The link between nutrition practices, health, disease and lifestyle were highlighted. Topics include nutrient requirement and function in human, digestion and absorption of each nutrient in relation to the intake of a well-balanced diet, the effect of nutrients excess and deficiencies towards body performance and health. Students also gain knowledge about nutrition standards and guidelines in Malaysia.
NF20502 MOLECULAR GASTRONOMY
This course explains the basic structural properties of food with the effects of methods and manipulation and types of ingredients. It explains phenomena that occur during food preparation in which the effects of physical and chemical influence on food can be identified. Students will be able to understand the science and principles behind food preparation, including the preparation of raw materials, cooking methods and the type of food commodities.

Reference

NF20202 INTERNATIONAL BUSINESS
International business introduces students to the concept and diversification component in international business. The topic of globalization, its impact and how it related to the local economy. Students will also be disclosed in the interests of international organizations and international financial policies. Students will be exposed to factors outside of control that affect the international environment and examine the changes that have occurred against the international business arena. This course also helps students to learn social and cultural factors that affect the business carried on around the world.

Reference
USA: Prentice Hall.

NF30103 MENU DEVELOPMENT
This course covers on planning, preparing and developing a menu to suit the organization. Students will be exposed to the menu which are available, standard recipes, its uses and cost calculation. This course will also introduces students to the menu designing.


Reference

NF00202 RESEARCH PROJECT I
This course is specifically designed to allow final year students to gain experience in conducting research. Each student is required to take a total of nine credit hours for one research project (throughout two semesters) under the supervision of an academic; three credit hours will be evaluated in this course. Students will pick their research topic from a list of project titles which is given by all academics on the first week of semester. Student is advised to contact their supervisors for detailed information regarding the research that they will be doing, and then determine the agreed work targets. Students are required to present their research proposals before starting laboratory work. This will give students opportunities to get feedback or alternative views about their proposed research, especially regarding study designs and analytical techniques.

Reference
Panduan Penulisan Laporan Projek Penyelidikan. 2015. Fakulti Sains Makanan dan Pemakanan, Universiti Malaysia Sabah.

NF30203 COMMERCIAL FOOD PREPARATION
This course is one of important areas in operation of foodservice establishment. It is to give exposure to the student in a dining service in commercial food preparation inclusive of technical skill and knowledge of service and kitchen operation. Students are given hands on experience on organizing foodservice event function from planning until event execution.

Reference
The Food and Beverage Service, John Cousins, Dennis Lillicrap and Suzanne Weekes. Hodder Education; 9 edition (2014)
A Perfect Waiter by Alain Claude Sulzer and John Brownjohn (Paperback - Jan. 19, 2009) Bloomsbury USA (April 1, 2008)
The Restaurant: From Concept to Operation by John R. Walker. Wiley; 5 edition (September 21, 2007)

NF30603 FOOD SERVICE SYSTEM AND OPERATION
This course provides an introduction about the system and operation of food service organizations. Students will be able to differentiate the type of food service operations, the model/design and its components. In addition, students will gain insight on the management function of food service operations such as marketing and leadership aspects. Theory is applied through group assignment whereby students identify and look into the system of a particular foodservice organization.

Reference

NF30403 ARRANGEMENT, DESIGN AND EQUIPMENT FOR FOOD SERVICE
These courses design to accommodate student with introduction of kitchen premises and its functionality. The student will be trained in planning and developed kitchen that is suitable for certain food service institution such as hospital, restaurant and others. Food preparation Safety and Sanitation will be infuse in the courses. Student will able to understand the important of building safety, equipment, energy conservation, the air and water ventilation been used, safety code and HACCP compliance layout.
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Reference

NF00306 RESEARCH PROJECT II
This course is the continuation to NP 4043 Research Project I, where students are required to complete their ongoing research project. In this course, students will focus on laboratory analyses and field work. At the end of the project, students will report their findings in the form of a dissertation which will be submitted for examination by two examiners (not including the supervisor) who will be appointed by the course coordinator. All dissertations submitted for examination must adhere to the scientific writing style and standards approved by UMS. Each student will be called to defend his/her dissertation in an oral examination which will be conducted after submission of the dissertation.

Reference
Panduan Penulisan Laporan Projek Penyelidikan. 2015. Fakulti Sains Makanan dan Pemakanan, Universiti Malaysia Sabah.

NF40302 QUANTITY FOOD PURCHASING
The courses introduce student on quantity purchasing aspects. Its emphasize principle and theory in purchasing on large quantity. Whereby, aspect such as specification is important when buyer or purchaser made selection on meat, fish, vegetables, fruits and others. Besides the purchasing method, the student will acquire method of receiving, method of selection and operational cost.

Reference

NF40703 SPECIAL TOPICS
This course is offered because it describes and explains the importance of various issues faced by the world in the area of foodservice. This course will discuss current issues/scenario facing the food industry, new technologies research, and recent changes trend in the foodservice industry.

NF40503 QUANTITY FOOD PREPARATION
This course exposes the student to prepare the food in large scale food production. This is the combination all food courses student learnt before. This course is to teach the student standard for planning production, carry out culinary technique, and justification of procedures and techniques involved in large-scale food preparation. It also gives the student the taste of real practices in enhancing their culinary skills and knowledge.

Reference
Food Production Competency Guide, National Restaurant Association Education. Prent1ce Hall; 1 edition (January 1, 2006)
Quantity Food Production, Planning, and Management, John B. Knight (Author), Lental H. Kotschevar Wiley; 3 edition (February 18, 2000)

NF40502 DIET THERAPY
This course emphasize on the etiology of nutrition related diseases and provides information on the role of nutrition in the prevention of different disease states. This course includes examples of the application of medical nutrition therapy and specific nutrition intervention techniques which can help students to understand the rationale behind the modification of dietary intake and how these modifications can be applied in the prevention, investigation and treatment of diseases.

Reference
Reference

NF40012 INDUSTRIAL TRAINING & SEMINAR
Students are required to undergo industrial training at food industry or selected research institution to gain experiences relevant to students’ education programme. Students will be able to gain work experience in real work environment during the training. Duration of training is twenty four weeks, which is one semester. Students are required to prepare a written training report and present in seminar after completion of training. Students’ performance will be evaluated by industrial supervisor, and also by academic supervisor via discussion with industrial supervisor and visitation during students training. Students’ assessment marks for this course will consist of evaluation mark from industrial supervisor, academic supervisor who pay a visit to place of training, industrial training report, daily activity log book and also marks from presentation of training in seminar.

NF30503 FOOD SERVICE ACCOUNTING
This course is an introduction to the basic concepts and standards underlying financial accounting systems. Several important concepts will be studied in detail, including: revenue recognition, inventory, long-lived assets, present value, and long term liabilities. The course emphasizes the construction of the basic financial accounting statements - the income statement, balance sheet, and cash flow statement - as well as their interpretation. Topics include the complete accounting cycle with end-of-period statements, bank reconciliation, payrolls, and petty cash.

Reference

ELECTIVE COURSES

NUTRITION MODULE

NE40002 NUTRITION EDUCATION
This course is designed to support the learning and practice of nutrition. Nutrition education, the pedagogy, technique and equipment used in communicating nutrition information to the public is important for public health nutrition.

References

NE40102 DIET THERAPY
This course discusses the modification and formulation of normal diet to the therapeutic diet. Also discuss the variance types of diets on require in healing process. The students will also be taught the calorie calculation or estimation of each therapeutic diet.
References
Health/Lippincott Williams & Wilkins.

NE40202 FOOD HYDROCOLLOIDS
This course provides an overview of the types, properties, functions and practices of the major food hydrocolloids in food industry. It is structured to allow the students to develop their in depth understanding of the food components, their interactions and the processes which are employed in their transformation into food products. This course emphasizes on the application aspects of food hydrocolloids. Students are expected to acquire the general practical concepts in the use of hydrocolloids in a few categories of food products. Despite the technological functionality, the health benefits of food hydrocolloid are also highlighted in the course. Several current issues and research trends on food hydrocolloids will be discussed.

References

NE40302 FOOD SECURITY
This course will review the effects of social, economic, political policies and climate change on the availability, accessibility, affordability, appropriateness, and sustainability of food production to allow for attainment of optimum nutritional status. An ability to critically read various literatures and a basic understanding of Malthusian theory is expected of students. Students are also expected to write very analytical assignments based on those readings.

References
Leathers HD, Foster P. The world food problem: toward ending undernutrition in the third world. 4th ed. Lynne Rienner Publishers Inc.

NE40402 NUTRITIONAL CONTENT OF FOOD
This course will look at nutritional properties as basis for food choices in achieving nutritious diets for healthy life, and as basis for food product development. Students will be tasked to criticise food choices and food products based on its nutritional content, ingredients, production and marketing strategies.

References
NE40502 MOLECULAR NUTRITION
This is an introductory course to nutrition at the molecular level, an emerging field in nutrition research. Students will be exposed to gene-nutrient relationships (nutrigenetics, nutrigenomics). In each topic of discussion, emphasis will be given to the latest scientific research findings.

References

NE40602 FOOD SERVICE

FOOD TECHNOLOGY AND BIOPROCESSING MODULE

NE40702 DAIRY SCIENCE & TECHNOLOGY
The course specializes in milk production from the farm through the distribution, storage, manufacturing and application of dairy products. Milk and dairy products play a key role in meeting the demand for natural, affordable, nutritional and well-tasting food for a growing global population. Students will be exposed to various milk production chains and the processes affect the product quality. Besides providing knowledge of the properties of milk itself, it forms the basis for understanding what happens during processing, handling and storage. The nutritional aspects of milk components covered in this course. Some common dairy products and their processing parameters will be discussed. Due to the increasing interest on the dairy derived biological active compounds, the physiological functions of these components to human body, as well as the developments of functional dairy ingredients will also be discussed. The technologies employed for dairy production and its environmental impacts are covered in the course. A series of exercises are designed to provide student with the opportunity to develop analytical skills that are associated with the quality and safety of dairy and dairy products.

References

NE40802 MEAT SCIENCE & TECHNOLOGY
This course stresses the importance of both the theoretical and practical aspects of meat products processing. Students will be acquainted with the composition and structure of meat, post-harvest chemical changes in meat, determination of quality of the meat and factors affecting it, equipment, technology and ingredients used in meat products. Factors which affect the carcass quality during processing will also be discussed. Issues like animal handling from an international perspective, slaughter, and management of processing wastes will also be scrutinized.

References
NE40902 BAKERY & CONFECTIONARY TECHNOLOGY
This course aims to introduce students to the bakery and confectionary technology been used in the food industry today. This involves knowledge of science and technology in bakery / confectionary process, the ingredients, popular produce product, manufacturing methods, the use of machinery and equipment, quality control, packaging, hygiene and sanitation and nutritional aspects. Students are given the opportunity to produce bakery and confectionary products during laboratory practice.

References

NE41002 HALAL FOOD PRODUCTION
This course will explain concepts and standard requirements used in halal food production in all food industries. The subjects will expose students on halal food industry development, halal food ingredients, halal food processing, halal meat, halal fats and oil and use of alcohol in halal food production. Students should be able to lead and maintain the Halal Assurance System in any production with technical knowledge in identifying haram raw ingredients besides implementing basics in sanitation procedure and hygienic practices in a factory.

References

NE41102 FATS & OIL TECHNOLOGY
This course consists general aspect of edible fats and oils composition and properties, extraction and fats analysis, trans fatty acid analysis method, fats and oils processing technologies, fats and oils modification such as interesterification and hydrogenation. Besides, lipid oxidation, fats deterioration mechanism, antioxidant and lipid biotechnology are discussed. Attention is given towards local fats and oils industry such as palm oil and cocoa butter processing. Current issues related on nutrition value of fats and oils and its implications towards health especially trans fatty acid will be highlighted.

Reference

NE41202 FUNCTIONAL FOOD

NE41302 FOOD TOXICOLOGY

NE41402 MARINE & AQUACULTURE PRODUCT
This course applied food science and technology to the processing, storage and handling of marine and aquaculture products. Knowledge acquired from this course will increase the students’ capability to determine suitable types of ingredients and processing technologies involved in the production of various types of marine and aquaculture products.
References