1. ***FST 3104 FOOD QUALITY ASSURANCE***
2. ***COURSE INSTRUCTORS***

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1. ***COURSE TYPE:***

*Core course for Year 3 BSc. Food Science & Technology*

1. ***COURSE STRUCTURE***

***Course credits (CU):*** *3 CU i.e. 3 contact hours per week per semester*

***Course duration:*** *15 weeks (45 h) – 30 lecture hours; 30 practical hours*

1. ***COURSE DESCRIPTION***

*Concept of quality in the food industry; Quality assurance; Quality control; Quality characteristics of food; Quality changes in food affecting quality; specifications & quality defects; quality management concepts & systems; quality costs and statistical quality control; Food legislation, quality benchmarking; interactions of man, materials and systems in quality assurance.*

1. ***COURSE OBJECTIVES***

***General objective***

*This course is aimed at equipping students with competences and skills in food quality management*

***Specific objectives***

* **Introduce students to general concepts and principles in quality assurance**
* **Equip students with competences and skills in** application of the principles of food science and quality management in ensuring food quality and safety

1. ***RECOMMENEDED REFERENCES***
2. *Quality assurance in tropical fruit processing, Askar A and Treptow H, 1993; Springer-Verlag*
3. *Food chemistry 4th Ed. Owen Fennema*
4. *Food Science Norman Porter*
5. *Guidelines for drinking water quality 2nd Ed., Vol. 1 Recommendations, 1993; WHO*
6. *Quality control and Industrial statistics 5th Ed. Duncan AJ, 1986; IRWIN*
7. *Statistical quality control for the food industry, 2nd Ed., Hubbard MR 1996; Aspen Publishers*
8. *Quality attributes and their measurement in meat, poultry and fish products-Advances in meat research series Vol. 9. Pearson AM and Dutson TR eds., 1999; Aspen Publishers*
9. *HACCP: A practical approach; Mortimore S and Wallace C, 1994; Chapman & Hall.*
10. *HACCP: A Practical guide; Technical manual No. 38. HACCP Working Party. Leaper S, ed. 1992.Campden & Chorleywood Food Research Association.*
11. *Selected articles from the Journal of Food Science & Food Control,*
12. ***COURSE CONTENT, METHODS OF INSTRUCTION, TOOLS AND EQUIPMENT***

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| ***TOPIC*** | ***CONTENT*** | ***METHOD OF INSTRUCTION/ Time allocation*** | ***TOOLS/ Equipment needed*** |
| *Introduction* | *-Concept of quality in the food industry*  *-Quality assurance*  *-Quality control* | *-Interactive lectures coupled with homework and assignments*  *2 hr)* | *-LCD projector/White boards/flip charts* |
| *-Quality characteristics of food*  *-Quality changes in food after harvest*  *-Demonstration of different quality characteristics of food*  *-Demonstration of quality changes after harvest* | *-Interactive lectures coupled with homework and assignments*  *2 hr)*  *-Practical (3 hrs)*  *-Practical (3 hrs)* | *-LCD projector/White boards/flip charts*  *Various processed and unprocessed food samples, Plant and animal food samples at different maturity stages*  *Functional food quality assurance lab*  *Chemical reagents* |
| *Quiz* | | | |
| *Specifications & quality defects in food* | *-Specifications in QA*  *-Defects on foods*  *-Sources of defects*  *-Prevention and control*  *-Demonstration and preparing of specifications*  *-Identification of quality defects in food products* | *-Interactive lectures coupled with case studies and assignments*  *4 hr)*  *-Practical case study (3 hrs)*  *-Practical (3 hrs)* | *-LCD projector/White boards/flip charts*  *Case study materials*  *Various processed and unprocessed food samples,*  *Functional food quality assurance lab*  *Functional pilot plant*  *Chemical reagents* |
| *Mid semester test* | | | |
| *Quality Management systems* | *-GMP*  *-HACCP*  *Application of GMP and HACCP principles* | *-Interactive lectures coupled with case studies and assignments*  *4 hr)*  *-Pilot plant Practical (3 hrs)* | *-LCD projector/White boards/flip charts*  *Selected food raw materials,*  *Functional food quality assurance lab*  *Functional pilot plant*  *Chemical reagents* |
| *-TQC*  *-TQM*  *-ISO9000 systems*  *Industrial application of quality management systems* | *-Interactive lectures coupled with case studies and assignments*  *2 hr)*  *Industrial field trip (3 hrs) (to be assessed by attendance)* | *-LCD projector/White boards/flip charts*  *50 sitter bus* |
| *Quiz* | | | |
| *Quality costs and statistics* | *-Statistical Quality control*  *Variability in quality & its management*  *Pareto principle*  *Control charts*  *Ishikawa models*  *Flow charts*  *Industrial application of statistical quality control* | *-Interactive lectures coupled with case studies and assignments*  *4 hr)*  *Practical Case study (3 hrs)* | *-LCD projector/White boards/flip charts*  *Case study material* |
| *-Quality costs*  *-Elements of quality costs & their management*  *Identifications of quality costs* | *-Interactive lectures coupled with case studies and assignments*  *4 hr)*  *Pilot plant Practical (3 hrs)* | *-LCD projector/White boards/flip charts*  *Selected food raw materials,*  *Functional food quality assurance lab*  *Functional pilot plant*  *Chemical reagents* |
| *Food legislation* | *-National laws, regulations & standards governing the food industry*  *-National & regional standards governing the food industry*  *Review of some national & regional laws regulations and standards governing food industry* | *-Interactive lectures coupled with case studies and assignments*  *4 hr)*  *Practical Case study (3 hrs)* | *-LCD projector/White boards/flip charts*  *Sample laws regulations and standards* |
| *Quiz* | | | |
| *Benchmarking* | *-Process & product benchmarking*  *-Competitive & collaborative benchmarking*  *Product &/or process benchmarking* | *-Interactive lectures coupled with case studies and assignments*  *2 hr)*  *Pilot plant practical (3 hrs)* | *-LCD projector/White boards/flip charts*  *Two incubatee products or processes,*  *Functional food quality assurance lab*  *Functional pilot plant*  *Chemical reagents* |
| *Interaction of man and materials* | *-Nature of interaction between man, equipment and materials & its influence on quality*  *-Operating systems and/or procedures*  *-Standard operating procedures (SOPs)*  *Application SOPs* | *-Interactive lectures coupled with case studies and assignments*  *4 hr)*  *Pilot plant practical (3 hrs)* | *-LCD projector/White boards/flip charts*  *Functional food quality assurance lab*  *Functional pilot plant*  *Chemical reagents* |
| *Final exam* | | | |

1. ***SUMMARY OF T IME (as contact hours) NEEDED***

* *Lecture hours 30 hr*
* *Practicals 30 hr*

1. ***OVERALL COURSE EVALUATION***
   1. *Assignments (at least three assignments) 10%*
   2. *Practicals, & class attendance 10%*
   3. *Field trips & case studies (one trip, three case studies) 10%*
   4. *Quizzes (at least three quizzes) 10%*
   5. *Mid semester Course tests (one course test) 10%*
   6. *Final exam 50%*