IOWA STATE UNIVERSITY
GRADUATE COLLEGE

Dual-Listed Courses

Departments must request permission to offer courses at the graduate level in conjunction with 300-400 level undergraduate courses. The request is made to the Graduate Curriculum and Catalog Committee. If the dual-listed courses are also experimental courses (400X/500X), submit the experimental course form to the Scheduling Office, 10 Enrollment Services, AND attach an approved copy of the experimental course form(s) to the dual –listed request.

> Dual-listed courses permit undergraduate and graduate students to be in the same class but to receive credit under two different course numbers. Credit in the graduate course is not available to students who have received credit in the corresponding undergraduate course. Both graduates and undergraduates receive the same amount of credit for the course, but additional work is required of all graduate students taking the course under the graduate-level course number. This extra work may take the form of additional reading, projects, examinations, or other assignments as determined by the instructor. The instructor must be a member of the Graduate Faculty or a Graduate Lecturer. Each dual-listed course is designated in the catalog with the phrase "Dual-listed with," although the student's official transcript of credits, both graduate and undergraduate, does not identify dual-listed courses as such. There is a limit to the number of dual-listed course credits that may be used to meet the requirement for an advanced degree. (For information about procedures for requesting permission to offer dual-listed courses, faculty should consult the *Graduate Faculty Handbook*.).

In reviewing proposals for dual-listed courses, this committee needs to understand the department's rationale for offering the course. When a department submits a request, an explanation should be given of the purpose served by the course and the criteria used by the department to determine if the course is suitable for dual-listing. Please submit the proposal in electronic form as a word attachment to grad_college@iastate.edu.

The following information should be included in the proposal:

1. Full catalog information for each course to be dual-listed, including the course numbers (or proposed course numbers), title, credits, semester offering (if applicable), prerequisites, and description. Dual-listed courses bear common numbers, e.g., 580 (480).
   FS HN 405. Food Quality Assurance.
   (2-3) Cr. 3. S.
   Prereq: FS HN 214 or FS HN 311; STAT 101 or STAT 104
   Basis of food quality control/assurance programs and establishment of decision-making processes using official (government and industry) instrumental, chemical, and sensory procedures. Statistical process and quality control procedures and their applications to various food systems. Development of hazard analysis procedures, specifications, grades, standards, and the procedures and processes which can affect the overall microbiological

safety of the food. Successful completion of the course will result in certification in Preventive Controls for Human Food.

FS HN 505. Food Quality Assurance.
(2-3) Cr. 3. S.
Prereq: FS HN 214 or FS HN 311; STAT 101 or STAT 104
Basis of food quality control/assurance programs and establishment of decision-making processes using official (government and industry) instrumental, chemical, and sensory procedures. Statistical process and quality control procedures and their applications to various food systems. Development of hazard analysis procedures, specifications, grades, standards, and the procedures and processes which can affect the overall microbiological safety of the food. Successful completion of the course will result in certification in Preventive Controls for Human Food.

2. Graduate faculty status of the proposed instructor. **Dr. Talbert is an assistant professor (tenure-track) in the Department of Food Science & Human Nutrition**

3. Number of the dual-listed course credits the department will permit to be used to meet the requirements for an advanced degree. This limit includes dual-listed courses taken in all departments.
N/A

4. The differential expectations for graduate students and undergraduates. What additional work will be required for graduate students enrolled in the course? Please describe this work, not in abstract terms (such as "more in-depth participation") but in terms of concrete measurable outcomes or other tangible evidence. Welcome inclusions: specific examples of the additional assignments with details about paper length; the number of additional readings; the length and frequency of oral presentations; portfolio expectations; indications of how these graduate requirements are weighted in the course grade (ex. 40% of final grade); comparisons with undergraduate expectations.
With respect to additional requirements, graduate students will be required to conduct supplementary work related to the development of a Preventive Controls Plan. Both undergraduates and graduate students will work in team to develop a Preventative Controls Plans using a pre-defined food/food product that will be assigned by the instructors (a separate product for each team). Students will work during the laboratory time to complete each portion of the plan (as required to enable FDA certification in Preventive Controls). This approach will assure that both graduate and undergraduate students are being properly educated to successfully develop such plans. Unlike undergraduate students, graduate students will be required to complete an additional Preventive Controls Plan. The student will select a product of their own choosing, and will apply the tools learned in lecture and lab to create a plan that addresses the specific needs of their chosen products. This work will be completed outside of class. Each graduate students will submit their written project plan (typically >20 pages) for evaluation and deliver an oral presentation (15 minutes) in class. As outlined in the draft syllabus, 20% of the undergraduate overall grade will be based on the team plan developed during the laboratory session. For graduate

students, 10% of the overall grade will be based on the team plan developed during the laboratory session and 10% will be based on their individual plan developed outside of class. This approach will enable graduate students to obtain a fundamental understanding of food quality assurance, while also promoting application of that knowledge—thus differentiating the undergraduate and graduate experience.

5. Reason(s) the course is considered sufficiently rigorous and of such an advanced nature as to challenge graduate students.
   This course requires students to integrate multi-disciplinary knowledge (chemistry, microbiology, statistics, and process engineering). As such, it is expected that the course will be challenging to graduate students without a Food Science undergraduate background—particularly in those disciplinary areas outside of the student's research strength/background. For those with a Food Science background, the course will build on their foundational undergraduate knowledge, and will challenge them to bridge their fundamental skills with practical application.

6. Academic advantages and disadvantages accruing to graduate students taking this course with undergraduates. **The interaction of Food Science undergraduates with graduate students (who often have a background outside of Food Science) will enable a greater diversity of perspective. However, as with all dual-listed courses, there is a challenge of assuring the pace of the class is appropriate for both graduate and undergraduate students.**

7. The place of the course in a graduate student's program of study and why it is not considered a "remedial" undertaking intended to overcome deficiencies in the student's preparation for graduate work. **As a number of undergraduate Food Science programs do not offer a Food Quality Assurance course, it is expected that students with a Food Science degree will be able to build on their background by taking the course for graduate credit. Additionally, students without a Food Science background will build on their training in Chemistry/Biochemistry, Biology/Microbiology, and Chemical/Biological Engineering by applying the knowledge to food quality assurance, while gaining a broader appreciation of the integration of these disciplines in modern food production systems. As many of our graduate students are accepting managerial positions in (or tangential to) Food Quality Assurance, we expect this course to help better prepare them for those roles.**

8. The role of the course in an undergraduate's degree program and the academic qualifications undergraduates must have to take this course. **The course is a senior level course, and requires that students have foundational knowledge in food composition, safety, and processing as well as statistics. Upon successful completion of the course, the student should be able to utilize appropriate tools and techniques to evaluate food quality and to create appropriate food quality management plans.**

9. The name of the person writing the proposal. **Dr. Joey Talbert**

FOOD QUALITY ASSURANCE
FSHN 405/505
SPRING 2018

Course Description:
FS HN 405. Food Quality Assurance.
(2-3) Cr. 3. S.
Prereq: FS HN 214 or FS HN 311; STAT 101 or STAT 104
Basis of food quality control/assurance programs and establishment of decision-making processes using official (government and industry) instrumental, chemical, and sensory procedures. Statistical process and quality control procedures and their applications to various food systems. Development of hazard analysis procedures, specifications, grades, standards, and the procedures and processes which can affect the overall microbiological safety of the food. Successful completion of the course will result in certification in Preventive Controls for Human Food.

FS HN 505. Food Quality Assurance.
(2-3) Cr. 3. S.
Prereq: FS HN 214 or FS HN 311; STAT 101 or STAT 104
Basis of food quality control/assurance programs and establishment of decision-making processes using official (government and industry) instrumental, chemical, and sensory procedures. Statistical process and quality control procedures and their applications to various food systems. Development of hazard analysis procedures, specifications, grades, standards, and the procedures and processes which can affect the overall microbiological safety of the food. Successful completion of the course will result in certification in Preventive Controls for Human Food.

Objectives:
To prepare you for success in the food industry by understanding the principals and applications of food quality and food safety systems from farm to table. We will use critical thinking and problem solving to address real world QA/QC situations and case studies.

Outcomes:
At the end of this semester you will be able to do each of the following:

- Work in team situations.
- Make important decisions relating to food quality and food safety.
- Set up a QA/QC Lab.
- Develop standards and specifications.
- Use sampling procedures to make decisions and solve problems
- Be able to setup, use, and evaluate GAPs, GMPs, SOPs, SSOPs,HACCP, QACCP, and SPC procedures.
- Give oral and written presentations to small groups and supervisors.
- Know the definition of food quality and food safety terms, which are important for successful job interviews and success in the workplace, and be able to apply them to food systems.
- Be certified in Preventive Controls for Human Food

Departmental Learning Outcomes:
All graduates from FSHN curricula should be able to demonstrate the general department learning outcomes in Communication (C), Critical Thinking and Problem Solving (P), Social Concerns and Ethics (S), and Technical Skills (T) and the FSHN Program-Specific Outcomes (grouped by curricula, Dietetics, Culinary Science, Nutritional Science, Food Science & Technology, Food Science & Industry, and Consumer Food Science. Details about these outcomes can be found at:

http://www.fshn.hs.iastate.edu/undergraduate-programs/outcomes/learning-outcomes/

In addition to communications, ethics, technical skill, and program specific FSHN outcomes, the Team HACCP report is being used to meet the Critical Thinking and Problem Solving Outcome P1: "Successfully solve multidisciplinary problems as part of a team". This artifact can be used in your portfolios and by the department as a measure of our meeting this specific outcome. Be sure to sign the department permission form, and submit both electronic and to the instructor.

Class Schedule:

Lectures: MF XXX
Labs: W XXX

Professors:

Dr. Joey Talbert
1547 Food Sciences Building
515-294-7015
jotalber@iastate.edu
Office Hours: TBA

Dr. Lester A. Wilson
2541 Food Sciences Building
515-294-3889
lawilson@iastate.edu
Office Hours: TBA

Lecture and Lab Notes:
Files are posted on the Blackboard FSHN 405 Website

Online Text:

Vasconcellos, J. Andres. 2004. Quality Assurance for the Food Industry. A Practical Approach. CRC Press LLC. ISBN 0-8493-1912-9.
Library: TB 372.5, V37. (http://www.crcnetbase.com/isbn/9780203498101)

Supplemental Texts:

Hubbard, Merton R. 2003. Statistical Quality Control for the Food Industry. 3rd Edition. Chapman and Hall, New York.

Scott, Virginia N., and Kenneth E. Stevenson, Editors. 2006. HACCP: A Systematic approach to food safety. 4th Edition. Food Products Association, Washington D.C

IFT Learning Outcomes:

National IFT used Outcome based Educational Standards as minimum standards to approve Food Science programs. Portions of those outcomes that relate to this class are listed below.

Applied Food Science	Integration and application of food science principles (food chemistry, microbiology, engineering/processing, etc.)	Be able to apply and incorporate the principles of food science in practical, real-world situations and problems.
	Computer skills	Know how to use computers to solve food science problems.
	Statistical skills	Be able to apply statistical principles to food science applications.
	Quality assurance	Be able to apply the principles of food science to control and assure the quality of food products.
	Analytical and affective methods of assessing sensory properties of food utilizing statistical methods	Understand the basic principles of sensory analysis.
	Current issues in food science	Be aware of current topics of importance to the food industry
	Food laws and regulations	Understand government regulations required for the manufacture and sale of food products.
Success Skills	Communication skills (i.e., oral and written communication, listening, interviewing, etc.)	Demonstrate the use of oral and written communication skills. This includes such skills as writing technical reports, letters and memos; communicating technical information to a nontechnical audience; and making formal and informal presentations.
	Critical thinking/problem solving skills (i.e., creativity, common sense, resourcefulness, scientific reasoning, analytical thinking, etc.)	Define a problem, identify potential causes and possible solutions, and make thoughtful recommendations. Apply critical thinking skills to new situations.
	Professionalism skills (i.e., ethics, integrity, respect for diversity)	Commit to the highest standards of professional integrity and ethical values. Work and/or interact with individuals from diverse cultures.
	Life-long learning skills	Explain the skills necessary to continually educate oneself.
	Interaction skills (i.e., teamwork, mentoring, leadership, networking, interpersonal skills, etc.)	Work effectively with others. Provide leadership in a variety of situations. Deal with individual and/or group conflict.
	Information acquisition skills (i.e., written and electronic searches, databases, Internet, etc.)	Independently research scientific and nonscientific information. Competently use library resources.
	Organizational skills (i.e., time management, project management, etc.)	Manage time effectively. Facilitate group projects. Handle multiple tasks and pressures

Student Evaluations:

Tentative Exam Dates:

- February XX
- March XX
- April XX
- May XX

Class presentations:

Team reports will be given in both oral and written formats. Teamwork tips/suggestions, evaluation procedures, and expected report formats are on our class Website. These documents will be discussed in class.

Laboratory assignments and problem sets:

- Will be assigned periodically throughout the semester. Late assignments will be penalized (10%/day).
- Some assignments will be individual assignments; while others will in groups/teams/shifts (each individual will receive the group grade).
- Each group member will participate in oral and written presentations. All assignments should be dated and signed by all group members.
- All equations, tables, etc. will be provided on exams.

Grades:

- Final grades will be determined using the following scheme:

ITEM	% of Grade (Undergraduates)	% of Grade (Graduates)
Exams (4)	60	60
Preventative Controls – Team Project	20	10
Preventative Controls – Individual Project (Graduate Students Only)	0	10
Lab assignments and problem sets	15	15
Lecture and Lab Participation	5	5
Total	**100**	**100**

- You are guaranteed the following percentages*:
  - 90% = A
  - 80% = B
  - 70% = C
  - 60% = D
  - 50% = F

  *+/- grading will be used

Course, Instructor, and TA Evaluation:
The course and instructors will be evaluated (anonymously) near the end of the semester. However, please feel free to discuss with the instructor any suggestions that you have at your convenience**.**

Disability Accommodations:
"If you have a disability and require accommodations, please contact the instructor early in the semester so that your learning needs may be appropriately met. You will need to provide documentation of your disability to the Disability Resources (DR) office, located on the main floor of the Student Services Building, Room 1076, 515-294-6624."

FSHN 405 SCHEDULE

January	XX	Lab Safety and Quality Evaluation of Foods
	XX*	Quality from Farm to Fork; Plant Tour
	XX	Quality Evaluation of Foods – Instrumental Methods
February	XX	Quality Evaluation of Foods – Standards and Grading
	XX	Quality Evaluation of Foods – Correlation
	XX	Monitoring Quality – Sampling and AQLs
	XX	Monitoring Quality – Attribute Control Techniques
	XX	Monitoring Quality – Variable Control Techniques
March	XX	Assuring Food Safety – On Farm Practices and GAPs
	XX*	Spring Break
	XX	Preventive Controls – Food Safety Plan Overview and GMPs
	XX	Preventive Controls – Biological, Chemical, & Physical Hazards
April	XX	Preventive Controls – Steps in Developing a Food Safety Plan
	XX	Preventive Controls – Hazard Analysis and Preventive Controls
	XX	Preventive Controls – Food Allergens, Sanitation, &Supply Chain
	XX	Preventive Controls – Verification, Validation, and Records

**January XX is a University Holiday (Martin Luther King; March XX is Spring Break*