Proposed Course “Master of Food Science”

The Faculty of Life and Physical Sciences proposes to offer a Master of Food Science in food safety and quality. The program will be a two year Master’s by coursework with a minor project component as a compulsory part. It will focus on several areas of Food Safety and Quality with core units in Chemical and Physical Contaminants, Microbiological Hazards and foodborne pathogens, Food laws and regulations, Quality issues and Emerging trends. The program is designed to be an inter-disciplinary/faculty collaborative program and thus students entering the program will formulate a course of study consisting of these core units and units offered by participating academic disciplines (School of Animal Biology, School of Agricultural and Resource Economics, Centre for Forensic Science, School of Biomedical, Biomolecular and Chemical Sciences, School of Plant Biology, School of Population Health and the School of Earth and Environment) in consultation with the program coordinator.

Purpose and Need

According to national and international food safety and health agencies, such as the World Health Organisation (WHO), the recent trends in global food production, processing, distribution and preparation are creating an increasing demand for food safety expertise in order to ensure a safer global food supply.

The food on our dinner table resembles the food that our parents ate only in form and shape. Most foods have evolved dramatically as a result of technology, consumer demands and global trends. An example is a loaf of bread. In the 1970’s and 80’s there was white bread and brown bread - simple products formed from flour, water and yeast. In the 2000’s, bread has become “super-bread”. That is, the majority of breads sold are now developed and marketed for their positive health benefits fortified with vitamins, or other functional additives such as Omega-3 fatty acids, phytoestrogens, extra calcium, high fibre, low GI etc.

While the trend in many Universities is to offer higher degree programs in Food Science and Technology to produce graduates to work in developing new “improved” versions of our foods, there is an ever increasing skill shortage in the area of food safety. In an era where food is rapidly changing, the shortage of workers able to provide correct analysis and assessment of the safety of foods (especially new innovative foods) is alarming. At a recent meeting, Australia’s regulatory body, Food Standards Australian and New Zealand (FSANZ) remarked that University graduates do not have the skill sets in order to work in Food Safety without further training.

To add more weight for the need for graduates with solid food safety training, a number of food safety issues have arisen in recent times that requires graduates with advance food safety training and knowledge of the most up to date technologies. For example:
1. Food derived from biotechnology needs to be carefully assessed to provide the scientific basis for decisions regarding its safety and human health. These include crops modified to resist pests or foods with allergens removed.

2. Functional foods. These are foods in which a component has been added (as in the bread example above) or one of its components modified. Due to their diversity all functional foods require a case by case evaluation for their safety.

3. New farming and agricultural practices such as the addition of low levels of antibiotics to animal feed in order to increase growth rate has raised concern about the transfer of antibiotic resistance to human pathogens.

4. Climate change – Eco systems changes lead to more pests and more vectors for microbes. Unseasonal weather points to humidity and fungal growth and water and soil contamination. Changes in aquatic life and formation of marine biotoxins in sea foods due to production of phytotoxins by harmful algae.

5. Nanotechnology. In 2008, the Project on Emerging Nanotechnologies (www.nanotechproject.org) already listed 80 food and beverage products that have a nanotech component. There is much discussion on the safety issues involved with nanofoods and nanotechnology.

6. Deliberate contamination of foods and the food supply in general, whether out of greed, revenge or terrorism requires an intimate knowledge of food safety and analysis techniques. The Chinese milk powder scandal, could have been averted much sooner if food scientists with knowledge of isotope analysis had been available.

7. Expertise in traceability and Country of Origin issues, especially related to fraud or a food scare is minimal in most countries. Food Science has evolved from the traditional food technology to encompass other disciplines. There is a need for food safety personnel to understand the issues within traceability.

8. Health and food scares. These include swine flu, bird flu, mad cows disease and foot and mouth disease. Some are food associated, others are associated by name only – yet they will have a crippling effect on the industry if not communicated properly.

The Benefits

**Benefits for the University and Faculty**

1. Faculty members across the University will have the opportunity to extend into new research areas into which they currently have little contact.

2. The program will foster new collaborations between staff within the University.

3. The program will build collaborations with Government, Industry and Industry Organisations and Faculty staff.

4. The program will raise the profile of the University amongst the community in general.

5. There will be a strengthening of the relationship between the Faculty and International organizations and institutions.

**Benefits for Students**

1. Students will be better prepared to enter the workforce.
2. Specifically the program will:
   a. Provide students with knowledge and skills to solve food safety research issues that are relevant in their field.
   b. Develop the students’ analytical capabilities and expose them to current analytical techniques for food analysis.
   c. Introduce students to sources of information and literature on food safety.
   d. Improve students’ written and oral communications skills, especially communication of scientific results to a non-scientific community.

3. There is an opportunity for students to advance to a research degree.

4. Students with research experience will be more attractive to employers.

The aims of the Master of Food Science

The Master of Food Science is an interdisciplinary collaborative program with a focus on graduate teaching and research in food safety and quality. The program is intended to prepare students for careers in food science, food engineering, public health, food toxicology, food safety monitoring and maintenance in the food industry and in government. Graduates will also be well prepared for work in various other fields including nutrition, chemistry, microbiology and research.

With the technological advance in our food supply and increasing understanding of how food affects our health, it is imperative that Graduates are able to examine and evaluate the complex interrelationships of food, food safety and nutrition issues of central importance to health. Our Graduates will be in an excellent position to examine and provide guidance on issues of food and health today and into the future.

Collaborations and External Partners

Discussions are underway with a number of organisations within Australia to contribute to the program in a lecturing capacity and/or to accommodate the students in a placement or research projects. Identified organisations are:

1. Food Standards Australian and New Zealand (FSANZ)
3. Australian Pork Limited (APL)
4. Australian Food and Grocery Council (AFGC)
5. Australian Quarantine Inspection Service (AQIS)
6. National Association of Testing Authorities (NATA)
7. Food Science Australia (FSA)
8. Australian Nuclear Science and Technology Organisation (ANSTO)
9. Craig Mostyn Group
10. Department of Agriculture and Food (WA)
11. Coles
12. Coca Cola Amatil
13. Arnotts
14. Nestle
15. George Weston
16. Robins Foods
17. Ward-Mackenzie
Already FSANZ, NMI and Robins Foods have expressed interest in the idea of a partnership where they will host students to complete a practicum. NMI, APL and FSA have also been approached.

Currently, some of these organisations are overlooking an advanced copy of the course structure to provide an industry perspective. Comments so far received have been highly positive indicating that the components designed are in-line with industry expectations.

The program has the support of the Western Australian Food Industry Association (FIA) and through it access to its members for student placements and projects.

**Anticipated Professional Recognition**

Discussions are underway to have the program accredited or recognised by the Australian Institute of Food Science and Technology (AIFST) and Food Standards Australia and New Zealand (FSANZ).

**International Partnerships (Students)**

Discussions are also underway with Institutions in China, Hong Kong, Singapore and Indonesia to form cooperative arrangements to be the main supplier for students interested in the Master of Food Science program.

Specifically, the Department of Food Nutrition and Safety, Guizhou University in China have already expressed interest in sending students and have requested information on course content, application procedures and entry fees. They have indicated that there may be 4-5 students per year.

It is anticipated that there will be some domestic interest but the fee-paying pathway is also expected to be very appealing to international students and in particular Asian students. This is because there are existing exchange programs in Australian Universities. The opportunity to work in industry, possibly in another Australian city (Sydney, Canberra or Melbourne) for their practicum would be attractive to students.

Garry Lee  
Professor of Food Science  
Centre for Forensic Science
Master of Food Science

Garry Lee
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Interdepartmental Collaborative

Physical and Life Science

School of Chemistry
School of Medical Science
School of BioSciences
School of Biological Classics

Natural and Agricultural Sciences

Faculty of Law

School of Dental Health Science

School of Veterinary Medical Science

School of Education

School of Health Science
Syllabus

✓ Compulsory introductory units
  - Food Chemistry
  - Food Micobiology.
✓ Aims:
  - To help the students acquire the fundamental knowledge of chemistry and microbiology with respect to the food industry.
  - To be able to succeed in the following units.
✓ Focus on several areas of Food Safety and Quality with core units
  - Chemical and Physical Contaminants (including allergens),
  - Microbiological Hazards and foodborne pathogens,
  - Food laws and regulations,
  - Quality issues
  - Emerging Issues.
✓ Aims:
  - To give students basic and up to date information on a broad range of topics in food safety and quality
  - To give students skills required to add value to the industry immediately.

Syllabus

✓ Electives or areas of interest, for example:
  - ANIM8306 – Animal Production
  - ANIM8323 – Aquaculture
  - COMM8303 – Science Communication for change in Industry and Community
  - ECON8300 – Agriculture economics and marketing
  - PLNT8353 – Horticultural Production Systems
  - SCIE8303 – Organic Agriculture and Horticulture.
  - Sensory Unit– Curtin University

✓ Research Project or Placement
✓ Give students invaluable hands on experience working with industry personnel with a six month industry placement where they can work on an industry project that brings together all the streams in order to solve a problem.
## Example of Program

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Unit</th>
<th>Core/Elective</th>
<th>Credit</th>
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<td>ECIB1000</td>
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<tr>
<td></td>
<td>Food &amp; Nutrition in Population Health</td>
<td>Elective</td>
<td>6</td>
<td>PUBHR8504</td>
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<td></td>
<td>Microbiology</td>
<td>Core</td>
<td>6</td>
<td>MICR8854</td>
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<td></td>
<td>Chemistry</td>
<td>Core</td>
<td>6</td>
<td>CHEM8800</td>
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<td>Core</td>
<td>6</td>
<td>MICR8800</td>
</tr>
<tr>
<td></td>
<td>Chemical Food Hazards (Core Unit)</td>
<td>Core</td>
<td>6</td>
<td>CHEM8800</td>
</tr>
<tr>
<td></td>
<td>QA/QC (Core Unit)</td>
<td>Core</td>
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</tr>
<tr>
<td></td>
<td>Science &amp; Communication</td>
<td>Elective</td>
<td>6</td>
<td>COMM8803</td>
</tr>
</tbody>
</table>

| Year 2 | Semester 1 | Aquaculture | Elective | 6 | ANIM8800 |
|        |            | Food Laws and Regulations (Core Unit) | Core | 6 | New |
|        |            | Emerging Issues (Core Unit) | Core | 6 | ECIB1000 |
|        |            | Organic Agriculture & Horticulture | Elective | 6 | ECIB8801 |
| Semester 2 | Research Project or Placement (Core Unit) | Compulsory | 24 | New |

**Total**

66

## Rationale

![Rationale Image]
Foodborne illness in Australia

- 17.2 million cases gastroenteritis
- 5.4 million estimated from contaminated food
- Estimated Cost $1.2 Billion

<table>
<thead>
<tr>
<th>Country</th>
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<th>No. cases (millions)</th>
<th>No. hospitalised</th>
<th>No. deaths</th>
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<td>1.7</td>
<td>21,997</td>
<td>687</td>
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<td>Australia</td>
<td>20</td>
<td>5.4</td>
<td>18,000</td>
<td>120</td>
</tr>
</tbody>
</table>

Demand from Food Sector

"the recent trends in global food production, processing, distribution and preparation are creating an increasing demand for food safety expertise in order to ensure a safer global food supply".

- Australian graduates in Food Science have not been up to scratch
- Required large investments on their part
- Food Analysis in Switzerland
- "We were shocked to find how little he knew"

- Large projects in UK, USA & Netherlands
- Pet Food in Australia (until recently)

- Graduate lacks the laboratory skills to carry out even the most simple task, lacks the knowledge to understand most safety issues and lacks the ability to find information about the latest safety concerns.
Benzene in Soft Drinks

Coca-Cola settles in benzene lawsuit
By Chris Kenny, 15 May 2007
Second Lawsuit - Public Concerns
Coca-Cola has reformulated two of its soft drinks in the UK to halt a trend linking them to cancer-causing substances.

Foods - Yesterday and Today

- Foods trends: health, marketing, technology (preservative, processing & transport)
- Universities - Focus on graduates able to develop "new, improved" versions of foods
- Result is a skill shortage in Food Safety
- Compounded by the rate of increasing technology - Safety and regulation cannot keep up.
Nanotechnology and Food

- In 2008, the nanotech project listed 80 food and beverage products on sale which had a nanotech component.
- There is much discussion on the safety issues involved with nanofoods and nanotechnology but as of yet, there are very little people who even know how to start to measure a nanoparticle accurately enough.
- In fact, ask any of these people working on nanofoods what a safety issue would be and the chances are that none of them would have even considered it.
- Universities are essentially still teaching the same food safety material from 10 years ago.
- Food has changed completely and some of the safety aspects no longer apply. i.e. Universities are still teaching food safety applied to white and brown bread, not the new additive bread.

Current Food Issues

- Nanotechnology
- Food derived from biotechnology
  - These include crops modified to resist pests or foods with allergens removed.
- Functional foods.
  - Antibiotics
- New farming and agricultural practices
  - Addition of low levels of antibiotics to animal feed in order to increase growth rate.
- Climate change
  - Eco systems changes lead to more pests and more vectors for microbes.
  - Uneventful weather points to humidity and fungal growth and water and soil contamination.
- Deliberate contamination of foods and the food supply
  - Sanlu - The Chinese milk powder scandal (294,000 infants suffering some form of disease to their urinary systems, 13,000 babies hospitalised and 11 infant deaths).
- Traceability and Country of Origin
  - Beef Substitution
- Health and food scares
  - Mad cows disease and foot and mouth disease
  - Swine flu, bird flu.
China & other potential markets

- Big market for students.
  - China (120,000), India (97,000)
- China is also the world’s largest producer of food.
- China sees food safety, especially Western Food Safety, as a priority as it grapples with International food regulations. Its food export industry demands it.
  - For example, in 2008, the US FDA refused entry to 99% food shipments alone from China due to food safety reasons.
- The recent milk powder scandal has just reinforced the need for food safety.
- Other potential student markets such as the SE Asia, Middle East and Europe are also interested in Food Safety as they are also the hotspots for food problems.

"Australia’s foreign student intake soars", Straits Times, 28th Feb 2009

Benefits for University & Faculty

- Faculty members across the University will have the opportunity to extend into new research areas into which they currently have little contact.
- The program will foster new collaborations between staff within the University.
- The program will build collaborations with Government, Industry and Industry Organisations and Faculty staff leading to novel and innovative research.
- The program will raise the profile of the University as a valuable and productive member of the Australian community.
- There will be a strengthening of the relationship between the Faculty and International organizations and institutions.
- The course will result in a tying in with other courses such as Forensic Science and Analytical Chemistry.
- Create interest in Food Science amongst high calibre university students and assisting in making University education more relevant to the food industry.
- The course will help the University of Western Australia create an "Educator of Choice" brand with Employers and Students.
Benefits for Students

✓ Better prepares students for entry into the workforce.
✓ Specifically the program will:
  o Provide students with knowledge and skills to solve food safety research issues that are relevant in their field.
  o Develop the students' analytical capabilities and expose them to current analytical techniques for food analysis.
  o Introduce students to sources of information and literature on food safety.
  o Improve students' written and oral communications skills, especially communication of scientific results to a non-scientific community.
✓ Provides an opportunity for students to advance to a research degree.
✓ Increases the industry-relevant component of the students' graduate resume. Students with research/industry experience will be more attractive to employers.
✓ The research placement component provides an opportunity for the student to
  o link theory to practice in the workplace doing real project work.
  o participate in well-scoped and devised projects and to work toward defined learning objectives.
  o develop a work ethic (especially related to quality and safety) and use this experience to enhance the value of their remaining study.

Employment Opportunities

✓ Food technologists, food chemists, food microbiologists, quality officers, laboratory personnel and in managerial positions.
✓ Graduates will also be qualified for positions in regulatory affairs, consultancy and administration in both government and industry.
✓ Other career opportunities include:
  o Private and public foodservice organizations;
  o Food marketing, merchandising and distribution;
  o Government and independent agencies involved in food research, planning, development, and control;
  o International organizations responsible for developing international food standards and providing various forms of aid for developing countries;
  o Laboratories involved in analyzing the chemical, physical, microbiological, sensory and nutritional properties of food products
  o Communications, advertising and journalism;
  o Schools and educational/training organization in the fields of food science and technology;
External Co-operation

- Discussions are underway with a number of organisations within Australia to contribute to the program by:
  - Input into the academic material of the course
  - Lecturing capacity and
  - Accommodation of students in a placement or research projects.
  - Use of Facilities
PROPOSALS FOR NEW COURSES OR PROGRAMMES

New courses are new degree, diploma or certificate courses, including new honours degree courses. New programmes are new programmes within existing degrees, which are to be formally recognised through the use of a differentiated version of the existing course title e.g. BSc(Marine Science). For a new combined course leading to two degrees, use the form "Proposals for a new combined course leading to two degrees" at: http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals.

For transnational programmes, it is essential that the Checklist for Approval of Transnational Programmes is also completed - see http://www.secretariat.uwa.edu.au/home/policies/internaitl.

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties should use the questions below in their checklists for proposals for new courses and new programmes in existing courses. Faculties may add other questions as they see fit.

1. **Course Details**

   (1) Please provide the following information:

   (a) the proposed name of the course or programme:
      Master of Food Science

   (b) the proposed abbreviated form of the course or programme name (see http://www.secretariat.uwa.edu.au/home/policies/degree_abbrv for policy on Degree Abbreviations);
      MFoodSc

   (c) the proposed annual intake to the course or programme (in student numbers);
      An estimated annual enrolment is 10-15. 75% of that will be international students and 25% domestic.

   (d) the proposed colour(s) of the silk linings and facings of the academic dress (for publishing in University General Rule 1.5.2.1);
      Emerald Green

   (e) for Master’s degrees and Doctorates only, state whether the course will be undertaken by way of:
      (v) Coursework and Dissertation where the research component represents less than 66.6% of the degree requirements
         YES

   (f) entry requirements;
      Bachelor of Science and has demonstrated to the Faculty adequate knowledge of each of the following at a tertiary level: Chemistry, Biology and Mathematics.

   (g) total number of points required for completion;
      96

   (h) expected completion time for full-time student taking standard load;
      2 years

   (i) (I) delivery mode (ie. Internal, external, multi-mode, online-only).
      Internal and External

   (ii) are any units taught by any kind of non face-to-face instruction?
      No

   (Note: Where a course is delivered less than 75% face-to-face (ie more than 25% by distance learning or similar), there may be implications for international student visas. Please contact the International Centre for more information.)

   (j) is any part of the course taught away from the Crawley campus?
      Some placements are done offsite or in other laboratories, but is project dependent

   (k) is any part of the course delivered by or taught in collaboration with another organisation?
      If yes, please state the name and address of the other organisation.
      • National Measurement Institute, Australian Resources Research Centre, 26 Dick Perry Avenue, Kensington, WA 6151
      • Food Standards Australia and New Zealand, Boeing House, 55 Blackall Street, BARTON ACT 2600
(f) is honours available in this course? If yes, please explain how students undertake honours study. is study towards honours open to international students? No

(2) Please give a succinct summary of the academic objectives of the proposed new course/programme. The MSc course will assure that food scientist, chemists and others with appropriate scientific backgrounds have a strong competence basis of work in the food safety service, the food industry and in government. This is achieved through a course concentrating on the relationship between food and health, on research and development, assessment and expertise, regulatory questions, risk analysis and risk management in a public health perspective. The degree will provide the student with:
   - A sound foundation in food chemistry, microbiology, quality, food laws and regulations and research methods.
   - Knowledge of the current topics in food science and technologies and how these affect the food industry.
   - Competence in the design, conduct and analysis of experimental work and to participate confidently in team projects.
   - Knowledge from a variety of disciplines in order to become effective problem solvers, innovators and decision makers.
   - Knowledge of regulatory requirements for the production, processing, distribution of food.
   - Understanding of quality control measures, systems and tools such as HACCP.

(3) Please summarise what teaching and learning practices will be used to realise the academic objectives. Interactive lectures, Laboratory, Exercises (Mock audits), Guest speakers, Student Presentations (case study report), Group discussions, site visits and a Research project/placement program.

(4) Please advise what technologies (if any) will be required to support the teaching and learning practices. Internet, WebCT, Videos, Computer, Video Conference, Skype

(5) Please outline what steps have been taken to ensure that any technologies to be used are readily available to staff and students.
Students are issued a student account on enrolment which gives access to Internet and WebCT facilities. Computers are available across campus. Skype is a free tool available on the internet and will be utilised for students participating in the placement program. Queries have been made as to the availability of video conferencing facilities. The Faculty of Natural and Agricultural Sciences have mentioned that their video conferencing facilities will be available for the program.

(6) Please indicate whether the proposal is the outcome of a school, course or other review. No

(7) Does this course complement any major research activities and/or centres? X □ Yes □ No
(If yes, please elaborate)
Components of this course compliments some activities in the following Schools:
   - Biomedical, Biomolecular and Chemical Sciences
   - Population Health
   - Animal Biology
   - Plant Biology
   - Institute of Agriculture
   - Centre for Forensic Science

(8) (a) Please list the intended student learning outcomes. Students will acquire the skills necessary to work in the food sector. They will be able to assess existing food safety and quality management systems, introduce improvements and communicate effectively with policy makers and with colleagues in multi-disciplinary teams. The specific learning outcomes are:
1. To understand the broad scope of food safety issues
2. Develop an understanding of food systems and food safety
3. All round knowledge of chemical and microbiological hazards
4. Analyse and control the chemical, physical, microbiological, nutritional safety and quality of food.
5. Carry out methodologically sophisticated modes of analysis relevant to food safety and quality issues.
6. Ability to evaluate the safety and quality of a food process.
7. Understand the broad regulatory and policy issues in food safety
8. Discuss and debate the Government and Industry's perspectives on food safety.
10. Develop an understanding of Hazard Analysis Critical Control Point (HACCP)
11. Independently locate and utilize resources needed to resolve food safety problems
12. Understand the current food biotechnology issues and predict future issues.
13. Attain the ability to chemically characterize a food product.
14. Attain advanced knowledge in a specific food industry, e.g. aquaculture, horticulture, meat, dairy, organic etc.
15. Ability to convey scientific data to a non scientific audience and the media.

(b) Is assessment explicitly tailored to such outcomes?  
   x Yes  □ No 
   (Please elaborate)

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<th>Unit</th>
<th>Examinations</th>
<th>Labs</th>
<th>Assignments</th>
<th>Exercise/training</th>
<th>Presentations</th>
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<td>2, 8, 11, 12</td>
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(Note: by resolution R23/08 the Academic Council endorsed the requirement that all new unit and course checklists should include the listing of intended student outcomes and affirmation that assessment is explicitly tailored to such outcomes).

2. **Demand**

**Notes:**
(i) The Chair of the Admissions Committee and the Manager, Admissions Centre are available to offer advice on estimating student numbers. (Please note that decisions on any quotas applicable to this course will be made by the Working Party on the Admission and Quota Policy.)

(ii) For new undergraduate courses to be listed in the TISC Guide, they need to be approved by Academic Council by May at the latest. Please advise the Executive Officer, Admissions Committee, as early as possible, of proposed new undergraduate courses.

1. Estimate the annual number of sufficiently qualified applications expected for this course. Please state the number of Australian and international student admissions separately. An estimated annual enrolment is 10-15. The expected breakdown between international and domestic students will be 75% international, 25% domestic. This is likely increase with exposure.

2. What is the expected impact on applications for admission to other courses? Please provide separate figures for Australian and international students.

3. **Employment Outcomes**

This course will prepare graduates for significant roles in the food industry as food technologists, food chemists, food microbiologists, quality officers, laboratory personnel and in managerial positions. Graduates will also be qualified for positions in regulatory affairs, consultancy and administration in both government and industry.
Other career opportunities include:
- Private and public foodservice organizations;
- Food marketing, merchandising and distribution;
- Government and independent agencies involved in food research, planning, development, and control;
- International organizations responsible for developing international food standards and providing various forms of aid for developing countries;
- Laboratories involved in analyzing the chemical, physical, microbiological, sensory and nutritional properties of food products
- Communications, advertising and journalism;
- Schools and educational/training organization in the fields of food science and technology;

The course was intentionally designed as an applied course with the input of personnel from 85% of these industries of the food sector. Personnel from many of these sectors are in negotiations to provide guest lectures or whole components of the course. Thus the course was designed with the idea of producing a graduate who can easily fill any of the above positions with minimal job training.

What do you believe will be the principal employment destinations for graduates and on what basis have you estimated this?

4. Consultation

(1) Please provide details of consultations you have had with various groups and individuals during the development of this proposal indicating whether or not any issues have been raised.
Consultation includes the following:

(a) other schools of the University which may have an interest in the course, including relevant academic staff;
   Discussions on course content, facilities and course units have taken place with Professor Geoffrey Stewart (Head of School of Biomedical, biomolecular and Chemical Sciences). Professor Smith has made enquiries with members of the School interested in developing and teaching components of the microbiological and chemistry units. Further discussions are still required.

A meeting was held with staff from the Faculty of Natural and Agriculture Sciences – Institute of Agriculture (Professor Kadambot Siddique, Chair in Agriculture/Director) and School of Plant Biology (Dr Michael Considine, Lecturer) on possible course material and participation.

Senior members of staff from the Centre for Forensic Science have been kept informed of the subject matter of interest and have contributed to the course outline.

A meeting is currently planned to discuss the program with Staff from the Faculty of Medicine, Dentistry and Health Sciences.

Currently all have shown strong support for the course.

(b) students and graduates;
   Discussions with a small number of graduate students from the School of Biomedical, biomolecular and Chemical Sciences and from the Centre for Forensic Sciences have indicated an interest in the Course.

(c) employers and/or employer groups, and professional bodies;
   Organisations, companies and professional bodies who have had input in the design of sections of the course include:
   - Organisations – Food Standards Australia and New Zealand, National Measurement Institute, Food Science Australia, Department of Agriculture and Food, Australian Pork Limited, Australian Quarantine Inspection Survey, ANSTO, CSIRO, Food Industries Association of Western Australia.
   - Companies: Robins Foods, Zespri, Saxby, Coles

All organisations have shown strong interest and support for the degree.

(d) other universities in WA which offer courses in similar fields;
   There are NO courses specific for food safety offered by any University in Western Australia. However Curtin University does offer a Masters of Food Science.
(e) leading universities in Australia and overseas which offer courses in similar fields; 
There are NO courses specific for food safety available in any Australian University. 
Courses in Food offered by Australian universities include:
• Royal Melbourne Institute of Technology offers the following Master degrees 
  (Master of Applied Science (Food Science and Technology), Master of Applied 
  Science (Food Technology) by Research, Master of Biotechnology (Food 
  Science and Technology))
• University of Melbourne offers a Master of Food Science
• University of New South Wales offers the following degrees (Master of 
  Engineering Science in Food Science and Technology and Master of Science 
  (Research) in Food Science and Technology)
• University of Queensland offer a number of Master of Food Studies degrees.
• Victoria University offers a Master in Food Science.

There are very few Master degrees offered by International universities specific for 
food safety. The only ones available are:
• Guelph University (Canada) – Master of Science (Food Safety and Quality 
  Assurance)
• University of Birmingham (UK) – Master of Science (Food Safety, Hygiene and 
  Management)
• Michigan State University (USA) – Master of Science in Food Safety.
• University of Barcelona (Spain) – Master Food Safety.
• Universidad de Burgos (Portugal) – Master of Food Safety and Biotechnology.
• Illinois Institute of Technology (US) – Master of Science (Food Safety and 
  Technology)

(2) If you are proposing a completely new course, have you given consideration to the alternative of 
introducing a new programme/major within an existing course? Please elaborate. 
There is no existing course within the University that could house this program. 
Expertise is available at the university to competently teach and mentor components of 
the course and these come from interdepartmental sources.

(3) If the proposal is similar to offerings in other institutions in WA, have you considered whether 
there is scope for a co-operative/collaborative approach? Please elaborate. 
The proposal has no similar offerings at other WA universities. Preliminary negotiations 
with Curtin University revealed that there is indeed a gap in teaching food safety.

5. Fees

Note: Courses must not be offered or advertised in any way to international students until the courses 
have been registered through the International Centre with CRICOS. (This does not occur until the 
introduction of the course has been approved by Senate.) Please ensure that you consult with the 
Director, International Centre about the suitability of a course for international students, proposed 
fees and any conditions that may be required.

(1) (a) Is the course to be registered on CRICOS as available to international fee-paying students on 
Student Visas?
YES

Is the course to be offered to international fee-paying students on other visas?
YES

(b) What fee per annum is proposed for international fee-paying students?
$27500 to be confirmed by international centre

(2) For Postgraduate coursework degrees/diplomas/certificates only

(a) Is the course to be registered with DEEWR as available on a fee-paying basis to local 
students?
YES

(b) If so, what fee is proposed? Please state: fee per annum, the total number of points and the 
fee per point. 
2009 Fee per annum = $14012; 48 pts; fee per point = $291.91

(c) Please comment on consultations you have had with other institutions, both national and 
local, in determining that fee.
N/A
6. **Explanation of how the proposed course fits with the University’s and the Faculty’s Strategic and Operational Priorities Plans**

An explanation as to how the proposed course fits with the University’s and the Faculty’s Strategic and Operational Priorities Plans must be attached to this checklist. The maximum length of the explanation is one A4 page.

**The Faculty’s Strategic Plan:**
- Connectivity and Integration – Collaborating with other groups externally is a component of this course and assists with the ability to provide services in the community. This course will also be offered to international students, complimenting the goal of International collaboration;
- The initiation of this Master degree fits with the theme of ‘demonstrating flexibility by developing new and innovative courses’;
- Promote our uniqueness – we are the only Australian university offering a Master degree specialising in food safety. Indeed, we will be one of only a few international institutions offering postgraduate study in food safety. Provision of this degree will not diminish the attraction of local, national and international students.
- Considering the importance of this subject, especially in relation to increasing use of technology (nanotechnology) and the effect of global events (terrorism, climate change) on our food, this program will also put UWA at the forefront of research in the food industry.

**The Faculty’s Operational Priorities Plan reflects the missions of the University:**
- Internationalisation – The degree is designed with the intention that International students from Europe, north America and especially those living in South East Asia and the Middle East, will apply;
- Teaching and Learning – The thesis course offered incorporate the teaching/research nexus. The proposed Master degree also fully supports the University’s vision to advance, transmit and sustain knowledge and understanding through the conduct of teaching, research and scholarship at the highest international standards for the benefit of the Western Australia, Australian and international communities.
- Research and Training – The new degree has the potential to (and already does) increase the number of higher degree students as well as promoting research in an area of community need with high social impact;
- Resource and Management – Increasing student numbers. Building further effective, strategic partnerships and alliances.

7. **Information Flow**

(1) Please confirm by ticking the boxes and entering the date of action, that you have forwarded a copy of this proposal, either in hard copy, or electronically, to:

**External to the Faculty**
- The Deans of all faculties which resource schools responsible for teaching units in the course/programme.

  - Faculty of Life and Physical Sciences □ Date 3.6.09
  - Faculty of Natural and Agricultural Sciences □ Date 3.6.09
  - Faculty of Medicine, Dentistry & Health Sciences □ Date 3.6.09

- The Head and relevant academic staff of any school which will be teaching in the course/programme.

  - School of Animal Biology □ Date 5.6.09
  - School of Plant Biology □ Date 5.6.09
  - School of Earth and Environment □ Date 5.6.09

- The Head and relevant academic staff of any school which is not involved in the course/programme, but which teaches in a cognate area.

  - School of Agricultural & Resource Economics □ Date 5.6.09
  - School of Population Health □ Date 5.6.09
• The Librarian □ Date

• Where the course proposed involves indigenous issues, the Dean of the School of Indigenous Studies □ Date

• Where the course proposed is postgraduate and includes 66.6% or more research, the Pro Vice-Chancellor (Research and Research Training) □ Date

• Executive Officer, Admissions Committee (for new undergraduate courses only) □ Date

• Where the course proposed is to be available to international students, the Director, International Centre □ Date

*Internal to the Faculty*

• The Head and relevant academic staff of any school which will be teaching in the course/programme:
  - School of □ Date
  - School of □ Date
  - School of □ Date

• The Head and relevant academic staff of any school which is not involved in the course/programme, but which teaches in a cognate area.
  - School of □ Date
  - School of □ Date
  - School of □ Date

(2) Please confirm, by ticking the box, that you have completed a Faculty Checklist for each new unit introduced as a result of this proposal. □

(3) Please confirm, by ticking the box, that the proposed course rules are attached. □

(4) Please confirm, by ticking the box, that you have sent a course overview to Publications. □

(5) Please confirm, by ticking the box, that you have consulted with the Academic Secretary about the degree abbreviation. □

Signature of Dean
Faculty of

Life and Physical Sciences

8. All courses – confirmation by Dean

I confirm that the process leading to the proposal for the introduction of the following course/programme

Name of course/programme Master of Food Science

has included appropriate consultation with all other faculties with a potential interest in the proposed course and that the course will not overlap significantly with any existing course.

Have any objections to this proposal been raised during the consultation process? □ Yes □ No
(If yes, please attach details of objection and response)

Signature of Dean
Faculty of

Life and Physical Sciences
9. **Confirmation by Dean of the School of Indigenous Studies**

Where the course proposed involves indigenous issues, the Dean of the School of Indigenous Studies must confirm the school's support.

I confirm that the indigenous issues involved in the proposal for the following course/programme:

Name of course/programme ________________________________

have been discussed with me and I confirm the support of the School of Indigenous Studies for the introduction of this course/programme.

Signature of Dean of the School of Indigenous Studies ________________________________

10. **Certification that the proposal is acceptable to the International Centre**

Where it is proposed to offer the course to international students, the Director, International Centre (or delegate) must confirm the proposal is acceptable to the International Centre.

I confirm that the International Centre has been consulted on the introduction of this course/programme, and is satisfied that the fee proposed to be charged to international students is appropriate.

Name of course/programme Master of Food Science

Signature of Director, International Centre (or delegate) ________________________________

University Secretariat
Checklist New Course
Last updated: October 2008
Additional information for item 9 of Faculty Board Agenda for meeting on 16 June 2009

9. PROPOSED INTRODUCTION OF MASTER OF FOOD SCIENCE (5XXXX)

Professor Garry Lee has advised that in the new unit checklists for the proposed Master of Food Science, the information flow should be recorded as follows:

Information Flow:

**Faculty of Life and Physical Sciences**
- School of Biomedical, Biomolecular and Chemical Sciences (2/06/2009)
- Centre for Forensic Science (9/06/2009)

**Faculty of Natural and Agriculture Sciences**
- School of Plant Biology (4/06/2009)
- Institute of Agriculture (4/06/2009)

**Faculty of Medicine, Dentistry and Health Sciences**
- School of Population Health (10/06/2009)
PROPOSALS FOR NEW UNITS

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties must include the questions below in their checklists for new units. Faculties may add other questions as they see fit.

1. Unit Details

(1) Please provide the following information:

(a) the proposed name of the unit; *(The character allowance for unit titles in Callista is 100 for long, 40 for short and 20 for abbreviated.)*
Chemistry for Food Science (CHEM8XXX)

(b) the proposed point value of the unit *(NB. By Council Resolution 110/02, all units must have a points value of 6 unless granted exemption)*;
6 Points

(c) a very brief description, not exceeding one line in length, of the content/area of the unit;
This course provides a broad exposure to the principles and laboratory techniques of Food Chemistry.

(d) the names of the degree, diploma and/or certificate courses in which you intend to offer the unit;
Master of Food Science

(e) the proposed quota on intake to the unit, if any, and the nature of the constraint on intake.
N/A

(2) Please give a succinct summary of the academic objectives of the unit.
The course provides an introduction to chemistry and chemical techniques used in food analysis. It prepares students for advanced studies in food safety and quality. Specifically the objectives are:

1. To provide an optimum environment for students to gain an understanding of the chemical and physical techniques used in food analysis.
2. To produce graduates with the appropriate skill base in chemistry to design and develop chemical protocols for food safety issues.
3. To provide an opportunity for students to develop technical and hands-on knowledge of chemical instrumentation used in food analysis.
4. To produce graduate with the ability to interpret data produced from scientific instrumentation.
5. To produce graduates that are capable of conducting research in a food chemical laboratory.

(3) Please summarise what teaching and learning practices will be used to realise the academic objectives.
Lectures, Laboratory, Guest speakers, Assignments

(4) Please advise what technologies (if any) will be required to support the teaching and learning practices.
Internet, Computer, WebCT

(5) Please outline what steps have been taken to ensure that any technologies to be used are readily available to staff and students.
Students are issued a student account on enrolment which gives access to Internet and WebCT facilities. Computers are available across campus.

(6) Please indicate whether the unit is the outcome of a school, course or other review.
Unit is not an outcome of a school, course or other review.

(7) Please advise whether the unit utilises any material from existing units. If so, please provide details.
The unit does not utilise material from existing units.

(8) Please advise whether the unit is to be offered within standard semester dates. (If it is not, please attach a proposal form for a non-standard semester unit.)
YES
Please advise whether lecture outline has been provided.
1) Basic chemistry of food.
2) Fundamentals of quantitative analytical chemistry
3) Errors, statistics and sampling QA/QC and GLP
4) Experimental design
5) Solvent extraction
6) Ion exchange
7) Column and thin layer chromatography
8) Liquid chromatography
9) Gas chromatography
10) Capillary electrophoresis
11) Infra red spectrometry
12) UV-Vis spectrometry
13) Spectrofluorimetry and Molecular Luminescence spectroscopy
14) Nuclear magnetic resonance spectrometry
15) Molecular mass spectrometry and hyphenated techniques
16) IR-MS light stable isotopes
17) Raman Spectroscopy
18) Lab on a stick – sensors and ion specific electrodes

(a) Please list the intended student learning outcomes.
1. Understand basic food chemistry and the interactions of components such as water, protein, carbohydrates and lipids.
2. Understand and be able to apply the theory and operational principles of a broad suite of analytical techniques for studying components in food.
3. Ability to select the most appropriate technique for the problem at hand (including being able to distinguish between qualitative and quantitative measurements)
4. Demonstrate knowledge of sampling methods for all states of matter.
5. Assess sources of error in chemical and instrumental analysis and account for errors in data analysis.
6. Recognize interferences in chemical and instrumental analysis.
7. Comprehend the concept of and perform instrument and method calibration.
8. Apply and assess concepts of availability and evaluation of analytical standards and formulate standardization methodology.

(b) Is assessment explicitly tailored to such outcomes?  X Yes  □ No
(Please elaborate)
Assessment consists of:
• A competency based exam which will evaluate if the student has met learning objectives 1-8
• Laboratories will evaluate the students' knowledge to address learning outcomes 2-8.
• Assignments will evaluate the students' knowledge to address learning outcomes 2-3

(Note: by resolution R23/08 the Academic Council endorsed the requirement that all new unit and course checklists should include the listing of intended student outcomes and affirmation that assessment is explicitly tailored to such outcomes).

2. Demand

(1) What are the estimated annual enrolments? An estimated annual enrolment is 10-15. 75% of that will be international students and 25% domestic.

(2) How has the estimate in (1) been arrived at? This estimate is based on discussions with colleagues at Universities overseas and the food industry in Western Australia. Already a University in China (Guizhou University) has expressed interest in forming a cooperative program. They have indicated that they will have 4 students who are interested in the next calendar year.

(3) From which other units are students likely to move? Not Applicable

3. Assessment

(1) Please advise how many examinations there will be for the unit and how long each will last. (Note: By Academic Council R16/94 the Examinations Office administers only standard examinations of 2 or 3 hours duration). Assessment will be:


- Examination (1 x 2 hr exam) 50%
- Laboratory Exercise 30%
- Assignments 20%

(2) If you do not propose to use more than one means of assessment for this unit (as recommended in the University's Guidelines on Assessment [http://www.secretariat.uwa.edu.au/home/policies/assessment], please explain the reason for this.

4. Grading Schema for Unit

(1) Schools are required to ensure that final results\(^1\) for units in courses at all levels be produced as both percentage marks and letter grades wherever possible. However, a number of categories of unit\(^2\) are exempt from this requirement. The following exemptions categories are pertinent for this checklist.

(i) units where the involvement of external assessors makes it difficult to compare students' performance in an equitable manner and provide appropriately graded results for the units (for example, in-country units, cross-institutional enrolments and practicum units);

(ii) units involving group activity where the contribution of individual students cannot be distinguished (for example, participation in the University Chorale/Orchestra compulsory field tours);

(iii) specific skill-acquisition only units, which may be taken to be completed merely by attendance and participation (for example, use of medical equipment, legal skills such as negotiation and mediation).

(2) Please indicate if it is intended that the result for the unit be recorded as an ungraded pass or ungraded fail only.
   No

(3) If the answer is YES please indicate into which of the categories of exempt units listed above the unit belongs.

\(^1\)Results for supplementary assessment are recorded as Ungraded Pass or Ungraded Fail and the original mark remains. See University General Rule 1.2.1.26(3).

\(^2\)Please see policy applying to ungraded passes and fails available at [http://www.secretariat.uwa.edu.au/home/policies/courseunit](http://www.secretariat.uwa.edu.au/home/policies/courseunit)

5. Resource-related matters

(1) Please advise whether all the costs of the unit (e.g. including, if appropriate, those associated with teaching at the Albany Centre such as Library/computer software resources) will be met from school resources or whether the proposal is the subject of application for other funding (e.g. University Initiatives Fund).
   Centre for Forensic Science

(2) Please indicate whether the school intends to suppress another unit to release resources for this one.
   No

(3) Please name the staff members who are able to teach the unit.
   Professor Garry Lee, Professor John Watling, Dr Mick Considine and external specialist lecturers from industry.

(4) Please confirm that you have attached a completed Library Consultation Form. Prelim enquiries made with the Science Library. Library consultation form to be submitted

(5) Will the introduction of this unit give rise to any accommodation needs other than standard lecture theatres, tutorial rooms or laboratory space (e.g. office space, new kinds of laboratory space) which cannot be met from the School's/Faculty's existing space allocation? Please ensure that your understanding is consistent with that of the Dean.
   No

   If YES, please confirm that you have attached a completed Accommodation Planning Form [http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals](http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals)

(6) Will there be any ancillary student fees/charges associated with this unit? If so, please confirm that you have submitted details of these to the Dean.
   No
6. Consultation

Please provide details of the consultations you have had with various groups and individuals during the development of this proposal indicating whether or not any issues have been raised. Consultation includes the following:

(a) heads of schools in cognate areas, which may have an interest in the unit content; Discussions on course content, facilities and course units have taken place with Professor Geoffrey Stewart (Head of School of Biomedical, biomolecular and Chemical Sciences). Professor Smith has made enquiries with members of the School interested in developing and teaching components of this unit. Further discussions are still required.

A meeting was held with staff from the Faculty of Natural and Agriculture Sciences – Institute of Agriculture (Professor Kadambot Siddique, Chair in Agriculture/Director) and School of Plant Biology (Dr Michael Considine, Lecturer) on possible course material and participation of this unit.

Senior members of staff from the Centre for Forensic Science (Professor John Watling) have been kept informed of the subject matter of interest and have contributed to the course outline.

A meeting is currently planned to discuss the program with Staff from the Faculty of Medicine, Dentistry and Health Sciences.

Currently all have shown strong support for the course.

(b) students and graduates;
   None

(c) employers and/or employer groups and professional bodies;
   None

(d) other universities in WA which teach similar units;
   None

(e) other leading universities in Australia or overseas which teach similar units. Academics from the University of Western Sydney were consulted on the nature of the unit.

7. Information Flow

Please confirm, by ticking the boxes and entering the date of action, that you have forwarded a copy of this proposal, either in hard copy or electronically, to:

- The Deans of all faculties involved, either through offering the unit in their degrees, or through resourcing your school.

  Faculty of Natural and Agricultural Sciences □ Date 02/06/09
  Faculty of □ Date □ Date
  Faculty of □ Date □ Date

- The Head of any school which teaches in a cognate area (specify below).

  School of Biomedical, Biomolecular and Chemical Sciences □ Date 02/06/09
  School of □ Date □ Date
  School of □ Date □ Date

- The Librarian □ Date □ Date

8. Confirmation by Head of School
I confirm that the process leading to the proposal for the introduction of

Chemistry for Food Science (Name of new unit)

has included appropriate consultation with all other schools, both internal and external to the faculty, with a potential interest in the proposed unit and that the proposed unit will not overlap significantly with any existing unit.

Have any objections to this proposal been raised during the consultation process?
☐ Yes  ☐ No
(If yes, please attach details of objection and response)

Signature of Head

Academic Secretariat
October 2008
(New_Unit_Checklist)

Centre for Forensic Science.
Library Consultation Form

This form is for use by those preparing proposals for new units or new honours courses (if not made up of units). As soon as it is possible to identify the content of a proposed new unit or honours course in sufficient detail for assessment of the adequacy of Library holdings, the form should be forwarded to the Subject Librarian with an outline of the proposed content of the new unit/course. The University Librarian will complete and return the form to the sender, who should then attach it to the final proposal submitted to the Faculty Board.

Faculty: LIFE PHYSICAL SCIENCES
School: CENTRE FOR FORENSIC SCIENCE
Contact name: PROFESSOR GARRY LEE
Ext: 2561
Email address: garry.lee@uwa.edu.au
Name of new unit/honours course: CHEMISTRY FOR FOOD SCIENCE

To be completed by the Library

1. Assessment of current collection

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2. Cost of additional material ($)

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3. University Librarian’s Comments

University Librarian’s Signature: __________________________ Date: ______________

To be completed by the appropriate Executive Dean:

I have noted the above assessment and comments. Signature: __________________________

Name: __________________________ Faculty: __________________________ Date: ______________
PROPOSALS FOR NEW UNITS

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties must include the questions below in their checklists for new units. Faculties may add other questions as they see fit.

1. **Unit Details**

   (1) Please provide the following information:

   (a) the proposed name of the unit; *(The character allowance for unit titles in Callista is 100 for long, 40 for short and 20 for abbreviated.)*
   Chemical & Physical Food Hazards (CHEM8xxx)

   (b) the proposed point value of the unit *(NB. By Council Resolution 110/02, all units must have a points value of 6 unless granted exemption)*;
   6 Points

   (c) a very brief description, not exceeding one line in length, of the content/area of the unit;
   *This course delivers the underlying scientific principles of Chemical Food Hazards.*

   (d) the names of the degree, diploma and/or certificate courses in which you intend to offer the unit;
   Master of Food Science

   (e) the proposed quota on intake to the unit, if any, and the nature of the constraint on intake.
   N/A

   (2) Please give a succinct summary of the academic objectives of the unit.
   This course focuses on the chemical aspects of food contamination including toxic substances occurring in food either naturally, formed during processing, introduced as food additives or as a consequence of migration from third party sources. Safety of genetically engineered foods, risk assessment, food safety policy, management procedures and laboratory techniques will be discussed. The aims of the course will be to:
   1. Provide an advanced understanding of the chemical aspects of food safety and toxicology.
   2. Further student understanding of the chemicals in food formed from microbial spoilage.
   3. Further student understanding of the chemicals in food from third party sources such as surrounding industry, work practices and packaging materials.
   4. Introduce the concept of food taints versus food contamination.
   5. Provide students with a solid training in chemical analytical skills with respect to food contamination issues.
   6. Provide a basic knowledge of food allergens, sensitivities and future food challenges.

   (3) Please summarise what teaching and learning practices will be used to realise the academic objectives.
   Interactive lectures, Laboratory, Guest speakers, Student Presentations (case study report)

   (4) Please advise what technologies (if any) will be required to support the teaching and learning practices.
   Internet, Videos, Computer, WebCT, Video Conference

   (5) Please outline what steps have been taken to ensure that any technologies to be used are readily available to staff and students.
   Students are issued a student account on enrolment which gives access to Internet and WebCT facilities. Computers are available across campus. Queries have been made as to the availability of video conferencing facilities. The Faculty of Natural and Agricultural Sciences have indicated that their video conferencing facilities will be available for the program.

   (6) Please indicate whether the unit is the outcome of a school, course or other review.
   Unit is not an outcome of a school, course or other review.

   (7) Please advise whether the unit utilises any material from existing units. If so, please provide details.
   The unit does not utilise material from existing units.
Please advise whether the unit is to be offered within standard semester dates. (If it is not, please attach a proposal form for a non-standard semester unit.)

YES

Please advise whether lecture outline has been provided.

Part 1: Analysis
Introduction
- Background
- Sources of contaminants
- Control measures
- Trends

Analytical chemistry.
Analytical Methods for detection & Characterisation
- Methodology & Techniques
- Standardised methods of analysis,
- Instrumentation,
- future directions.

Chemical Assays
Bioassays & Biosensors

Part 2: Contaminants
Veterinary Drug Residues
- Chemicals,
- Surveillance
- Analytical methods,
- Potential health effects,
- Current issues.

Inorganic Contaminants
- Intro,
- metals,
- nitrate and nitrites.

Environmental
- Intro
- Aromatics
- Dioxins
- PCBs
- Chemical migration,
- health issues,
- Regulatory

Pesticides –
- Types,
- Monitoring in food,
- high risk groups,
- Surveillance,
- Effects on humans,
- Future issues.

Taints
- food issues,
- halopanisoles and halophenols,
- storage,
- sources,
- sensory analysis

Packaging & Processing contaminants
- food polymers
- inks,
- Mallaird reaction,
- migration pathways.

Physical contaminants
- sources,
- detection methods

Food additives
- Preservatives and food colouring.
- Saccharin, cyclamate, aspartame, BHA/BHT, sulfites, and MSG.
- Phenolics and other nutriceuticals
- Recent issues (benzene).
Allergens
- Food allergy and sensitivity,
- Food Intolerance
- Metabolic Disorders

Biotech derived novel foods and Food toxicology challenges

Case studies

(10) (a) Please list the intended student learning outcomes.
1. Define different types of food contaminants and understand their origins.
2. Attain good working knowledge of chemical techniques used to detect, analyse and characterize contaminants.
3. Able to recognize contaminant issues and recommend method of analysis.
4. Understand the types of adverse food reactions.
5. Understand the major classes of drugs used in food animals and pesticides used in agriculture.
6. Discuss the general principles behind food processing and preparation.
7. Understand the major natural processes modifying food
8. Describe the physical chemistry background of toxicant formation in food processing.
9. Describe the formation of N-Nitrosamine, polycyclic aromatic hydrocarbons, amino acid pyrolysates and Maillard reaction products in cooking.
10. Understand the use, safety and toxicology of common food additives.
11. Explore the background and risk assessment of acrylamide formation in foods prepared at high temperatures.
12. Understand the history and affect of heavy metals (Hg, Pb, As) in food and health.
13. Differentiate food allergy and food sensitivity
14. Summarize the approach to food allergy diagnosis.
15. Explore future issues in food contamination.

(b) Is assessment explicitly tailored to such outcomes?  X Yes  □ No
(Please elaborate)

Assessment consists of:
- A competency based exam which will evaluate if the student has met learning objectives 1, 3-15.
- Laboratories will evaluate the students' knowledge to address learning outcomes 2.
- Case Study Discussion – address learning objectives 3, 11-12, 15.
- Presentation – addresses the following objectives 1, 4, 6-11.

(Note: by resolution R23/08 the Academic Council endorse the requirement that all new unit and course checklists should include the listing of intended student outcomes and affirmation that assessment is explicitly tailored to such outcomes).

2. Demand

(1) What are the estimated annual enrolments?
An estimated annual enrolment is 10-15. 75% of that will be international students and 25% domestic.

(2) How has the estimate in (1) been arrived at?
This estimate is based on discussions with colleagues at Universities overseas and the food industry in Western Australia. Already a University in China (Guizhou University) has expressed interest in forming a cooperative program. They have indicated that they will have 4 students who are interested in the next calendar year.

(3) From which other units are students likely to move?
N/A

3. Assessment

(1) Please advise how many examinations there will be for the unit and how long each will last. (Note: By Academic Council R16/94 the Examinations Office administers only standard examinations of 2 or 3 hours duration).

Assessment will be:
- Examination (1 x 2 hr exam)  40%
- Laboratory Exercise  30%
- Presentation  20%
- Case study discussion  10%
(2) If you do not propose to use more than one means of assessment for this unit (as recommended in the University’s Guidelines on Assessment (http://www.secretariat.uwa.edu.au/home/policies/assessment), please explain the reason for this.

4. Grading Schema for Unit

(1) Schools are required to ensure that final results¹ for units in courses at all levels be produced as both percentage marks and letter grades wherever possible. However, a number of categories of unit² are exempt from this requirement. The following exemptions categories are pertinent for this checklist.

(i) units where the involvement of external assessors makes it difficult to compare students’ performance in an equitable manner and provide appropriately graded results for the units (for example, in-country units, cross-institutional enrolments and practicum units);

(ii) units involving group activity where the contribution of individual students cannot be distinguished (for example, participation in the University Chorale/Orchestra compulsory field tours);

(iii) specific skill-acquisition only units, which may be taken to be completed merely by attendance and participation (for example, use of medical equipment, legal skills such as negotiation and mediation).

(2) Please indicate if it is intended that the result for the unit be recorded as an ungraded pass or ungraded fail only.

   No

(3) If the answer is YES please indicate into which of the categories of exempt units listed above the unit belongs.

¹Results for supplementary assessment are recorded as Ungraded Pass or Ungraded Fail and the original mark remains. See University General Rule 1.2.1.28(3).

²Please see policy applying to ungraded passes and fails available at http://www.secretariat.uwa.edu.au/home/policies/courseunit

5. Resource-related matters

(1) Please advise whether all the costs of the unit (e.g. including, if appropriate, those associated with teaching at the Albany Centre such as Library/computer software resources) will be met from school resources or whether the proposal is the subject of application for other funding (e.g. University Initiatives Fund).

   Centre for Forensic Science

(2) Please indicate whether the school intends to suppress another unit to release resources for this one.

   No

(3) Please name the staff members who are able to teach the unit.

   Professor Garry Lee, Dr Mick Considine and external specialist lecturers from industry and government.

(4) Please confirm that you have attached a completed Library Consultation Form.

   Prelim enquiries made with the Science Library. Consultation form to be completed

(5) Will the introduction of this unit give rise to any accommodation needs other than standard lecture theatres, tutorial rooms or laboratory space (e.g. office space, new kinds of laboratory space) which cannot be met from the School’s/Faculty’s existing space allocation? Please ensure that your understanding is consistent with that of the Dean.

   No

   If YES, please confirm that you have attached a completed Accommodation Planning Form (http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals).

(6) Will there be any ancillary student fees/charges associated with this unit? If so, please confirm that you have submitted details of these to the Dean.

   (See http://www.teachingandlearning.uwa.edu.au/tl4/for_uwa_students2/policies/asfc3)

   No

6. Consultation
Please provide details of the consultations you have had with various groups and individuals during the development of this proposal indicating whether or not any issues have been raised. Consultation includes the following:

(a) heads of schools in cognate areas, which may have an interest in the unit content; Discussions on course content, facilities and course units have taken place with Professor Geoffrey Stewart (Head of School of Biomedical, biomolecular and Chemical Sciences). Professor Smith has made enquiries with members of the School interested in developing and teaching components of this unit. Further discussions are still required.

A meeting was held with staff from the Faculty of Natural and Agriculture Sciences – Institute of Agriculture (Professor Kadambot Siddique, Chair in Agriculture/Director) and School of Plant Biology (Dr Michael Considine, Lecturer) on possible course material and participation of this unit.

Senior members of staff from the Centre for Forensic Science (Professor John Watling) have been kept informed of the subject matter of interest and have contributed to the course outline.

A meeting is currently planned to discuss the program with Staff from the Faculty of Medicine, Dentistry and Health Sciences.

Currently all have shown strong support for the course.

(b) students and graduates; Discussions with a small number of graduate students from the School of Biomedical, biomolecular and Chemical Sciences and from the Centre for Forensic Sciences have indicated an interest in the Course.

(c) employers and/or employer groups and professional bodies; The course material was prepared after consultation with staff in the:
   a. Food Safety and Quality Research Stream at Food Science Australia
   b. National Measurement Institute Food Advisory Committee
   c. Australian Pork Limited

The proposed material has also been endorsed by Food Standards Australia and New Zealand, Food Industry Association of WA, Australian Pork Limited and Coles.

The Department of Agriculture and Food (WA) has indicated support for the course concept. Further consultation with the Department is on-going.

The Food Industry Association of WA has passed the proposed unit outline to its’ members for comments. At this point, no comments have been received. The Australian Food and Grocery Council has also received advanced copies of the propose unit’s material.

(d) other universities in WA which teach similar units; This unit has been discussed briefly with Curtin University to ascertain if any overlap exists.

(e) other leading universities in Australia or overseas which teach similar units. This unit has not been discussed with other Universities.

7. Information Flow

Please confirm, by ticking the boxes and entering the date of action, that you have forwarded a copy of this proposal, either in hard copy or electronically, to:

- The Deans of all faculties involved, either through offering the unit in their degrees, or through resourcing your school.

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Chemical Safety_CHEM10xx
The Head of any school which teaches in a cognate area (specify below).

School of ___________________________ □ Date ____________
School of ___________________________ □ Date ____________
School of ___________________________ □ Date ____________

The Librarian ___________________________ □ Date ____________

8. Confirmation by Head of School

I confirm that the process leading to the proposal for the introduction of
Chemical & Physical Food Hazards ___________________________ (Name of new unit)

has included appropriate consultation with all other schools, both internal and external to the faculty, with a potential interest in the proposed unit and that the proposed unit will not overlap significantly with any existing unit.

Have any objections to this proposal been raised during the consultation process?
□ Yes  □ No
(If yes, please attach details of objection and response)

Signature of Head ___________________________
School of ___________________________

Centre for Forensic Science

Academic Secretariat
October 2008
(New_Unit_Checklist)
Library Consultation Form

This form is for use by those preparing proposals for new units or new honours courses (if not made up of units). As soon as it is possible to identify the content of a proposed new unit or honours course in sufficient detail for assessment of the adequacy of Library holdings, the form should be forwarded to the Subject Librarian with an outline of the proposed content of the new unit/course. The University Librarian will complete and return the form to the sender, who should then attach it to the final proposal submitted to the Faculty Board.

Faculty: **LIFE & PHYSICAL SCIENCES**  
School: **CENTRE FOR FORENSIC SCIENCE**

Contact name: **Professor Garry Lee**  
Ext: **2561**

Email address: **garry.lee@uwa.edu.au**

Name of new unit/honours course: **CHEMICAL & PHYSICAL FOOD HAZARDS.**

To be completed by the Library

1. **Assessment of current collection**

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2. **Cost of additional material ($)**

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3. **University Librarian’s Comments**

University Librarian’s Signature: ___________________________  
Date: __________________

To be completed by the appropriate Executive Dean:

I have noted the above assessment and comments.  
Signature: ___________________________

Name: ___________________________  
Faculty: _________________________  
Date: ___________________________
PROPOSALS FOR NEW UNITS

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties must include the questions below in their checklists for new units. Faculties may add other questions as they see fit.

1. **Unit Details**

   (1) Please provide the following information:

   (a) the proposed name of the unit; *(The character allowance for unit titles in Callista is 100 for long, 40 for short and 20 for abbreviated.)*  
   Microbiological Food Hazards (MICR8xxx)

   (b) the proposed point value of the unit *(NB. By Council Resolution 110/02, all units must have a points value of 6 unless granted exemption)*;  
   6 Points

   (c) a very brief description, not exceeding one line in length, of the content/area of the unit;  
   This course deals with food spoilage and the identification, enumeration and characterization of associated microorganisms

   (d) the names of the degree, diploma and/or certificate courses in which you intend to offer the unit;  
   Master of Food Science

   (e) the proposed quota on intake to the unit, if any, and the nature of the constraint on intake.  
   N/A

   (2) Please give a succinct summary of the academic objectives of the unit.  
   This course focuses primarily on food spoilage, and covers processing methods, spoilage organisms, foodborne diseases, laboratory testing and management strategies. It aims to  
   - Provide students with a solid grounding in the role of microorganisms as agents of food spoilage.  
   - Introduce students to microbiological analytical techniques and their application to food, environmental and clinical samples.  
   - Introduce and allows students to formulate management and risk assessment strategies with respect to microbial contamination.

   (3) Please summarise what teaching and learning practices will be used to realise the academic objectives.  
   Interactive lectures, Laboratory, Guest speakers, Student Presentations

   (4) Please advise what technologies (if any) will be required to support the teaching and learning practices.  
   Internet, Videos, Computer, Video conference, WebCT

   (5) Please outline what steps have been taken to ensure that any technologies to be used are readily available to staff and students.  
   Students are issued a student account on enrolment which gives access to Internet and WebCT facilities. Computers are available across campus. Queries have been made as to the availability of video conferencing facilities. The Faculty of Natural and Agricultural Sciences have indicated that their video conferencing facilities will be available for the program.

   (6) Please indicate whether the unit is the outcome of a school, course or other review.  
   Unit is not an outcome of a school, course or other review.

   (7) Please advise whether the unit utilises any material from existing units. If so, please provide details.  
   The unit does not utilise material from existing units.

   (8) Please advise whether the unit is to be offered within standard semester dates. (If it is not, please attach a proposal form for a non-standard semester unit.)  
   YES
(9) Please advise whether lecture outline has been provided.
Part 1: Food Spoilage
Introduction on food spoilage
- Major Sources of contamination.
- How microorganisms affect food
- Food as a substrate
- Types of spoilage (underprocessing, thermophilic, leaks)
Food Preservation Technologies, aspects food preservation
- heat,
- chilling,
- water activity,
- fermentation,
- preservatives,
- non-thermal processes and
- packaging and canning.
Food classes
- Fermented foods, Fermented vegetables,
- Dairy products - Cheese, Yogurt, Buttermilk
- Others
Procedures for investigating and interpreting both microbial and non-microbial spoilage.
Major pathogens and organisms
- physiology,
- ecology and
- taxonomy of spoilage organisms
Management strategies
- Prevention
- Emergency: natural, accidental, or intentional introduction
Laboratory media and techniques for detection and characterisation

Part 2: Foodborne Microorganisms
Overview
- Biotoxins and Infectious agents,
- Influences,
- types, risks,
- control,
- supply chain,
- prevention,
Food borne intoxications
- Vibrio cholera
- Staphylococcus aureus
- Clostridium perfringens
- Clostridium botulinum,
- Bacillus cereus
Food borne infections
- Salmonellae
- Escherichia coli
- Campylobacter
- Yersinia enterocolitica,
- Listeria monocytogenes
Water and milk borne diseases
- Shigella,
- Hepatitis A,
- Giardia intestinalis,
- Cryptosporidium parvum
Antibiotic resistant microorganisms in food. Organic Food toxins
Mould and mycotoxins (alfatoxins, ochratoxins),
Case studies

(10) (a) Please list the intended student learning outcomes.
1. Identify the important pathogens and spoilage microorganisms in foods and the conditions under which they will grow.
2. Identify natural toxins in fish, plants, mushrooms, animals
3. Understand the relationship between ecology and the human food chain.
4. Understand the relationship between mould growth, their potential mycotoxins, and human health.
5. Identify the conditions under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.
6. Utilize laboratory techniques to identify microorganisms in foods.
7. Understand the principles involving food preservation
8. Understand the role and significance of environmental factors (water activity, temperature, pH) on microorganisms in various environments.
9. Identify the conditions, including sanitation practices, under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.

(b) Is assessment explicitly tailored to such outcomes?  
(Please elaborate)

Assessment consists of:
- A competency based exam which will evaluate if the student has met learning objectives 1-5.
- Laboratories will evaluate the students’ knowledge to address learning outcomes 6.
- Case Study Discussion – address learning objectives 1-5, 7-9.
- Presentation – addresses the following objectives 7-9.

(Note: by resolution R23/08 the Academic Council endorsed the requirement that all new unit and course checklists should include the listing of intended student outcomes and affirmation that assessment is explicitly tailored to such outcomes).

2. Demand
(1) What are the estimated annual enrolments?
An estimated annual enrolment is 10-15. 75% of that will be international students and 25% domestic.

(2) How has the estimate in (1) been arrived at?
This estimate is based on discussions with colleagues at Universities overseas and the food industry in Western Australia. Already a University in China (Guizhou University) has expressed interest in forming a cooperative program. They have indicated that they will have 4 students who are interested in the next calendar year.

(3) From which other units are students likely to move?
N/A

3. Assessment
(1) Please advise how many examinations there will be for the unit and how long each will last. (Note: By Academic Council R16/94 the Examinations Office administers only standard examinations of 2 or 3 hours duration).

Assessment will be:
- Examination (1 x 2 hr exam) 40%
- Laboratory Exercise 30%
- Presentation 20%
- Case study discussion 10%

(2) If you do not propose to use more than one means of assessment for this unit (as recommended in the University’s Guidelines on Assessment (http://www.secretariat.uwa.edu.au/home/policies/assessment), please explain the reason for this.

4. Grading Schema for Unit
(1) Schools are required to ensure that final results¹ for units in courses at all levels be produced as both percentage marks and letter grades wherever possible. However, a number of categories of unit² are exempt from this requirement. The following exemptions categories are pertinent for this checklist:

(i) units where the involvement of external assessors makes it difficult to compare students’ performance in an equitable manner and provide appropriately graded results for the units (for example, in-country units, cross-institutional enrolments and practicum units);

(ii) units involving group activity where the contribution of individual students cannot be distinguished (for example, participation in the University Chorale/Orchestra compulsory field tours);
(iii) specific skill-acquisition only units, which may be taken to be completed merely by attendance and participation (for example, use of medical equipment, legal skills such as negotiation and mediation).  

(2) Please indicate if it is intended that the result for the unit be recorded as an ungraded pass or ungraded fail only.  
No  

(3) If the answer is YES please indicate into which of the categories of exempt units listed above the unit belongs.  

1 Results for supplementary assessment are recorded as Ungraded Pass or Ungraded Fail and the original mark remains. See University General Rule 1.2.1.26(3).  

2 Please see policy applying to ungraded passes and fails available at http://www.secretariat.uwa.edu.au/home/policies/courseunit  

5. Resource-related matters  

(1) Please advise whether all the costs of the unit (e.g. including, if appropriate, those associated with teaching at the Albany Centre such as Library/computer software resources) will be met from school resources or whether the proposal is the subject of application for other funding (e.g. University Initiatives Fund).  
Centre for Forensic Science  

(2) Please indicate whether the school intends to suppress another unit to release resources for this one.  
No  

(3) Please name the staff members who are able to teach the unit.  
Professor Kadambot Siddique, Staff from the School of Biomedical, Biomolecular, Chemistry Sciences and external specialist lecturers from industry and government.  

(4) Please confirm that you have attached a completed Library Consultation Form.  
Prelim enquiries made with the Science Library. Consultation form to be completed  

(5) Will the introduction of this unit give rise to any accommodation needs other than standard lecture theatres, tutorial rooms or laboratory space (e.g. office space, new kinds of laboratory space) which cannot be met from the School’s/Faculty’s existing space allocation? Please ensure that your understanding is consistent with that of the Dean.  
If YES, please confirm that you have attached a completed Accommodation Planning Form (http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals).  

(6) Will there be any ancillary student fees/charges associated with this unit? If so, please confirm that you have submitted details of these to the Dean.  
(See http://www.teachingandlearning.uwe.edu.au/tl4/for_uwa_students2/policies/asfc3)  

6. Consultation  

Please provide details of the consultations you have had with various groups and individuals during the development of this proposal indicating whether or not any issues have been raised. Consultation includes the following:  

(a) heads of schools in cognate areas, which may have an interest in the unit content;  
Discussions on course content, facilities and course units have taken place with Professor Geoffrey Stewart (Head of School of Biomedical, biomolecular and Chemical Sciences). Professor Smith has made enquiries with members of the School interested in developing and teaching components of this unit. Further discussions are still required.  

A meeting was held with staff from the Faculty of Natural and Agriculture Sciences – Institute of Agriculture (Professor Kadambot Siddique, Chair in Agriculture/Director) and School of Plant Biology (Dr Michael Considine, Lecturer) on possible course material and participation of this unit.  

A meeting is currently planned to discuss the program with Staff from the Faculty of Medicine, Dentistry and Health Sciences.  

Currently all have shown strong support for the Unit.
(b) students and graduates;
   None

(c) employers and/or employer groups and professional bodies;
The course material was prepared after consultation with staff in the Microbiology
Research Stream at Food Science Australia

The proposed material has also been endorsed by Food Standards Australia and New
Zealand, Food Industry Association of WA and Australian Pork Limited.

Feedback from the National Measurement Institute and Australian Pork Limited on the
contents of this unit was positive.

The Department of Agriculture and Food (WA) has indicated support for the course
concept. Further consultation with the Department is on-going.

The Food Industry Association of WA has passed the proposed unit outline to its’
members for comments. At this point, no comments have been received. The
Australian Food and Grocery Council, Dairy Australia and Robins Foods have also
received advanced copies of the propose unit’s material.

(d) other universities in WA which teach similar units;
   This unit has been discussed briefly with Curtin University to ascertain if any overlap
   exists.

(e) other leading universities in Australia or overseas which teach similar units.
   This unit has not been discussed with other Universities.

7. Information Flow

Please confirm, by ticking the boxes and entering the date of action, that you have forwarded a copy
of this proposal, either in hard copy or electronically, to:

- The Deans of all faculties involved, either through offering the unit in their degrees, or through
  resourcing your school.

  Faculty of _______________________________ □ Date ______________

  Faculty of _______________________________ □ Date ______________

  Faculty of _______________________________ □ Date ______________

- The Head of any school which teaches in a cognate area (specify below).

  School of _______________________________ □ Date ______________

  School of _______________________________ □ Date ______________

  School of _______________________________ □ Date ______________

- The Librarian ________________________________ □ Date ______________

8. Confirmation by Head of School
I confirm that the process leading to the proposal for the introduction of Microbiological Food Hazards (Name of new unit) has included appropriate consultation with all other schools, both internal and external to the faculty, with a potential interest in the proposed unit and that the proposed unit will not overlap significantly with any existing unit.

Have any objections to this proposal been raised during the consultation process?

☐ Yes ☐ No

(If yes, please attach details of objection and response)

Signature of Head of School of Centre for Forensic Science

Academic Secretariat
October 2008
(New_Unit_Checklist)
Library Consultation Form

This form is for use by those preparing proposals for new units or new honours courses (if not made up of units). As soon as it is possible to identify the content of a proposed new unit or honours course in sufficient detail for assessment of the adequacy of Library holdings, the form should be forwarded to the Subject Librarian with an outline of the proposed content of the new unit/course. The University Librarian will complete and return the form to the sender, who should then attach it to the final proposal submitted to the Faculty Board.

Faculty: **Life & Physical Sciences**  
School: **Centre for Forensic Science**

Contact name: **Professor Garry Lee**  
Ext: 2561

Email address: **garry.lee@uwa.edu.au**

Name of new unit/honours course: **Microbiological Food Hazards**

To be completed by the Library

1. **Assessment of current collection**

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2. **Cost of additional material ($)**

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3. **University Librarian’s Comments**

University Librarian’s Signature: ____________________________ Date: ____________________________

To be completed by the appropriate Executive Dean:

I have noted the above assessment and comments.  

Signature: ____________________________

Name: ____________________________  Faculty: ____________________________ Date: ____________________________
PROPOSALS FOR NEW UNITS

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties must include the questions below in their checklists for new units. Faculties may add other questions as they see fit.

1. **Unit Details**

   (1) Please provide the following information:

   (a) the proposed name of the unit; *(The character allowance for unit titles in Callista is 100 for long, 40 for short and 20 for abbreviated.)*
   Quality Control and Quality Assurance (SCIE8xxx)

   (b) the proposed point value of the unit *(NB. By Council Resolution 110/02, all units must have a points value of 6 unless granted exemption)*
   6 Points

   (c) a very brief description, not exceeding one line in length, of the content/area of the unit;
   Principles of Quality Control and Quality Assurance in Food.

   (d) the names of the degree, diploma and/or certificate courses in which you intend to offer the unit;
   Master of Food Science

   (e) the proposed quota on intake to the unit, if any, and the nature of the constraint on intake.
   N/A

   (2) Please give a succinct summary of the academic objectives of the unit.
   This course provides an integrated approach to the production of safe and quality foods. The objectives of the course are to familiarise and provide students with practical experience with modern quality systems and tools used for quality assurance including: control charts, acceptance and auditing inspections, critical control points (HACCP), reliability, safety, ISO standards and recall and liability.

   (3) Please summarise what teaching and learning practices will be used to realise the academic objectives.
   Interactive lectures, Laboratory, Guest speakers, Student Presentations, Group discussions, Site visits

   (4) Please advise what technologies (if any) will be required to support the teaching and learning practices.
   Internet, Videos, Computer, WebCT

   (5) Please outline what steps have been taken to ensure that any technologies to be used are readily available to staff and students.
   Students are issued a student account on enrolment which gives access to Internet and WebCT facilities. Computers are available across campus.

   (6) Please indicate whether the unit is the outcome of a school, course or other review.
   Unit is not an outcome of a school, course or other review.

   (7) Please advise whether the unit utilises any material from existing units. If so, please provide details.
   The unit does not utilise material from existing units.

   (8) Please advise whether the unit is to be offered within standard semester dates. *(If it is not, please attach a proposal form for a non-standard semester unit.)*
   YES

   (9) Please advise whether lecture outline has been provided.
   **What is quality**
   • Introduction
   • QC
   • QA
   • What are involved
   • Types of quality specifications
• Quality control cycle
• Predicting quality
• Classification of quality attributes

Introduction to National and International Standards
• Introduction
• Introduction to Risk Management Principles
• Steps in Risk Management
• Risk Management and Food Safety (Global Market/Challenges to Industry)
• So Where Is Food Law heading?
• Risk Management and Imported Foods
• Food Surveillance Strategies
• How to apply the Indonesian National Standards
• Sistem Akreditasi Program HACCP
• Control of the Indonesian Standard
• Quality of Management
• The Concept of Continuous Improvement
• Customer Focus
• Risk Management Based Quality Systems (HACCP / TQM)
• Principles of the AS/NZS ISO 9001:1994 Standard
• AS/NZS ISO 9001 (Int):2000

Organisationwide quality management

Quality costs

Tools in Quality Management.
• Benchmarking.
• Simple Food Safety Programs
• Prerequisites: Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP)
• Development of Standard Operating Procedures (SOPs)
• Calibration of Equipment
• Food Product Recall
• Training
• Customer Complaint

Production level QA & QC

Risk Analysis & Management. HACCP
• What is HACCP
• Objective of HACCP concept
• HACCP Plan and system
• Who uses it
• What is involved
• HACCP exercise

Prerequisite programmes of HACCP

Auditing criteria and certification of HACCP
• Internal and External Audits
• Roles of the Head Auditor
• Monitoring the status of the auditors

Validation and verification of HACCVP

Human aspect of HACCP audit
• The People / Management Function
• Responsibilities of the Auditors
• Communication Techniques

Statistical Quality/process Control

Sampling & sampling plans

Cleaning & sanitation Laboratories
• QA in laboratory
• metrology,
• proficiency testing

Regulatory aspects of QA/QC

Auditing quality

Staff training

Intro to Sensory

(a) Please list the intended student learning outcomes.
1) Understand the principles of and differences between Quality, Quality control and Quality Assurance.
2) Understand ISO9000 based quality systems
3) Be familiar with quality assurance tools.
4) Be familiar with and able to develop Risk management tools.
5) Be able to develop a quality program for a simple food supply chain.
6) Understand HACCP and its prerequisites program (cGMPs and SSOPs) and apply them to food processing systems through the development of HACCP plans
7) Identify potential hazard categories - biological, chemical and physical - that pose a threat to foods and characterize the control points or critical control points that can be monitored to effectively reduce or eliminate the hazards.
8) Prepare a basic HACCP plan to understand the steps and team dynamics necessary to design and implement a HACCP program at the plant level.
9) Define the term control points, and identify the ten control points in the food service system.
10) Describe the steps that managers should take when handling a foodborne illness complaint.
11) Describe the important personal health and hygiene practices necessary in a food establishment, including handwashing.
12) Explain how the food service operation can ensure the success of the cleaning and maintenance control point.
13) Outline the three objectives of the cooking control point, and identify measures for reducing risks at this control point.
14) List special food safety concerns, the riskiest food products, and measures for reducing risks at the preparing control point.
15) Able to conduct a quality audit
16) Understand and deal with product recalls.

(b) Is assessment explicitly tailored to such outcomes?  

(Please elaborate)

Assessment consists of:

- A competency based exam which will evaluate if the student has met learning objectives 1-3, 7, 9-16.
- Mock audit which will evaluate the students' knowledge to address learning outcomes 5-9, 13-15.
- Case Study Discussion – address learning objectives 2, 7, 12, 16.
- 2 Safety exercises – addresses the following objectives 4-5, 15

(Note: by resolution R23/08 the Academic Council endorsed the requirement that all new unit and course checklists should include the listing of intended student outcomes and affirmation that assessment is explicitly tailored to such outcomes).

2. Demand

(1) What are the estimated annual enrolments?

An estimated annual enrolment is 10-15. 75% of that will be international students and 25% domestic.

(2) How has the estimate in (1) been arrived at?

This estimate is based on discussions with colleagues at Universities overseas and the food industry in Western Australia. Already a University in China (Guizhou University) has expressed interest in forming a cooperative program. They have indicated that they will have 4 students who are interested in the next calendar year.

It is also likely that this unit may attract interest from local industry who require HACCP training for its employees.

(3) From which other units are students likely to move?

N/A

3. Assessment

(1) Please advise how many examinations there will be for the unit and how long each will last. (Note: By Academic Council R16/94 the Examinations Office administers only standard examinations of 2 or 3 hours duration).

Assessment will be:

- Examination (1 x 2 hr exam) 30%
- Safety Exercises (2 x) 40%
- Presentation (Mock Audit) 20%
- Case study discussion 10%
(2) If you do not propose to use more than one means of assessment for this unit (as recommended in the University’s Guidelines on Assessment (http://www.secretariat.uwa.edu.au/home/policies/assessment), please explain the reason for this.

4. **Grading Schema for Unit**

(1) Schools are required to ensure that final results\(^1\) for units in courses at all levels be produced as both percentage marks and letter grades wherever possible. However, a number of categories of unit\(^2\) are exempt from this requirement. The following exemptions categories are pertinent for this checklist.

(i) units where the involvement of external assessors makes it difficult to compare students’ performance in an equitable manner and provide appropriately graded results for the units (for example, in-country units, cross-institutional enrolments and practicum units);

(ii) units involving group activity where the contribution of individual students cannot be distinguished (for example, participation in the University Chorale/Orchestra compulsory field tours);

(iii) specific skill-acquisition only units, which may be taken to be completed merely by attendance and participation (for example, use of medical equipment, legal skills such as negotiation and mediation).

(2) Please indicate if it is intended that the result for the unit be recorded as an ungraded pass or ungraded fail only.

No

(3) If the answer is YES please indicate into which of the categories of exempt units listed above the unit belongs.

\(^1\)Results for supplementary assessment are recorded as Ungraded Pass or Ungraded Fail and the original mark remains. See University General Rule 1.2.1.26(3).

\(^2\)Please see policy applying to ungraded passes and fails available at http://www.secretariat.uwa.edu.au/home/policies/courseunit

5. **Resource-related matters**

(1) Please advise whether all the costs of the unit (e.g. including, if appropriate, those associated with teaching at the Albany Centre such as Library/computer software resources) will be met from school resources or whether the proposal is the subject of application for other funding (e.g. University Initiatives Fund).

**Forensic Science**

(2) Please indicate whether the school intends to suppress another unit to release resources for this one.

No

(3) Please name the staff members who are able to teach the unit.

**Professor Garry Lee**, external industry specialist.

(4) Please confirm that you have attached a completed Library Consultation Form.

**Preliminary enquiries made with the Science Library. Consultation form to be completed.**

(5) Will the introduction of this unit give rise to any accommodation needs other than standard lecture theatres, tutorial rooms or laboratory space (e.g. office space, new kinds of laboratory space) which cannot be met from the School’s/Faculty’s existing space allocation? Please ensure that your understanding is consistent with that of the Dean.

**No. Arrangements have been made to utilise the National Measurement Institutes laboratories at Bently for Mock Audits and Risk Assessments. Preliminary discussions have been conducted with Curtin University to utilise their sensory booths if the sensory component is included.**

If YES, please confirm that you have attached a completed Accommodation Planning Form (http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals).

(6) Will there be any ancillary student fees/charges associated with this unit? If so, please confirm that you have submitted details of these to the Dean.

(See http://www.teachingandlearning.uwa.edu.au/tl4/for_uwa_students2/policies/asfc3)

No
6. Consultation

Please provide details of the consultations you have had with various groups and individuals during the development of this proposal indicating whether or not any issues have been raised. Consultation includes the following:

(a) heads of schools in cognate areas, which may have an interest in the unit content; Discussions on course content, facilities and course units have taken place with Professor Geoffrey Stewart (Head of School of Biomedical, biomolecular and Chemical Sciences).

A meeting was held with staff from the Faculty of Natural and Agriculture Sciences – Institute of Agriculture (Professor Kadambot Siddique, Chair in Agriculture/Director) and School of Plant Biology (Dr Michael Considine, Lecturer) on possible course material and participation in this unit.

Senior members of staff from the Centre for Forensic Science have been kept informed of the subject matter of interest and have contributed to the course outline.

A meeting is currently planned to discuss the program with Staff from the Faculty of Medicine, Dentistry and Health Sciences.

Currently all have shown strong support for the course.

(b) students and graduates;
There have been no consultations with students on the material for this particular unit.

(c) employers and/or employer groups and professional bodies;
The units' lecture topics were designed with the aid of the National Measurement Institute, National Association of Testing Authorities and Proficiency Testing Australia. Dr Stewart Jones from the National Measurement Institute has pledge time and facilities to run Mock Audit exercises and also to deliver lectures.

The proposed material has also been endorsed by Food Standards Australia and New Zealand, Food Industry Association of WA, Australian Pork Limited and Coles.

The Department of Agriculture and Food (WA) has indicated support for the course concept. Further consultation with the Department is on-going.

The Food Industry Association of WA has passed the proposed unit outline to its' members for comments. At this point, no comments have been received.

(d) other universities in WA which teach similar units;
This unit has not been discussed with other Universities.

(e) other leading universities in Australia or overseas which teach similar units.
This unit has not been discussed with other Universities.

7. Information Flow

Please confirm, by ticking the boxes and entering the date of action, that you have forwarded a copy of this proposal, either in hard copy or electronically, to:

- The Deans of all faculties involved, either through offering the unit in their degrees, or through resourcing your school.

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• The Head of any school which teaches in a cognate area (specify below).

School of ___________________________________________ □ Date ____________
School of ___________________________________________ □ Date ____________
School of ___________________________________________ □ Date ____________

• The Librarian ___________________________ □ Date ____________

8. Confirmation by Head of School

I confirm that the process leading to the proposal for the introduction of

Quality Control and Quality Assurance ________________________________ (Name of new unit)

has included appropriate consultation with all other schools, both internal and external to the faculty, with a potential interest in the proposed unit and that the proposed unit will not overlap significantly with any existing unit.

Have any objections to this proposal been raised during the consultation process?
□ Yes □ No
(If yes, please attach details of objection and response)

Signature of Head

__________________________
School of ____________________________

Centre for Forensic Science

Academic Secretariat
October 2009
(New_Unit_Checklist)
Library Consultation Form

This form is for use by those preparing proposals for new units or new honours courses (if not made up of units). As soon as it is possible to identify the content of a proposed new unit or honours course in sufficient detail for assessment of the adequacy of Library holdings, the form should be forwarded to the Subject Librarian with an outline of the proposed content of the new unit/course. The University Librarian will complete and return the form to the sender, who should then attach it to the final proposal submitted to the Faculty Board.

Faculty: LIFE = PHYSICAL SCIENCES  
School: CENTRE FOR FORENSIC SCIENCE  
Contact name: PROFESSOR GARR-1 LEE  
Ext: 2561  
Email address: garry.lee@uwa.edu.au  
Name of new unit/honours course: QUALITY CONTROL / ASSURANCE

To be completed by the Library

1. Assessment of current collection

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3. University Librarian’s Comments

University Librarian’s Signature: ___________________________ Date: ______________

To be completed by the appropriate Executive Dean:

I have noted the above assessment and comments. Signature: ___________________________

Name: ___________________________ Faculty: ___________________________ Date: ______________
PROPOSALS FOR NEW UNITS

CORE QUESTIONS FOR CHECKLISTS USED BY FACULTIES

All faculties must include the questions below in their checklists for new units. Faculties may add other questions as they see fit.

1. **Unit Details**

   (1) Please provide the following information:

   (a) the proposed name of the unit; *(The character allowance for unit titles in Callista is 100 for long, 40 for short and 20 for abbreviated.)*
   Introduction to Food Safety (SCIE8xxx)

   (b) the proposed point value of the unit *(NB. By Council Resolution 110/02, all units must have a points value of 6 unless granted exemption)*
   6 Points

   (c) a very brief description, not exceeding one line in length, of the content/area of the unit; *An overview of the fundamental concepts in food safety and quality including aspects of chemistry, microbiology, toxicology, nutrition and quality control,*

   (d) the names of the degree, diploma and/or certificate courses in which you intend to offer the unit; *Master of Food Science*

   (e) the proposed quota on intake to the unit, if any, and the nature of the constraint on intake. N/A

   (2) Please give a succinct summary of the academic objectives of the unit.
   This course aims to provide the student with basic and up to date information on a broad range of topics in the food safety and quality by:
   
   a) planned learning activities designed to facilitate student academic outcomes (Academic course material, Assignments).

   b) exposure to the continually updated food resource material via web resources of partner organisations (such as FSANZ, Food Industry Association of WA, NMI, CSIRO).

   This course also aims to improve the general chemistry and assessment skills through:

   a) a practical assessment of the materials, qualities and characterisation of a food substance that require evaluation and interpretation of data.

   b) an emphasis on and practice of critical thinking skills in the assessment of nutritional information and health claims.

   (3) Please summarise what teaching and learning practices will be used to realise the academic objectives.
   Learning, Interactive Lectures, Demonstration, Problem Solving, Laboratories

   (4) Please advise what technologies (if any) will be required to support the teaching and learning practices.
   Collaborative, Film/Video, Internet resources, Video conference, WebCT

   (5) Please outline what steps have been taken to ensure that any technologies to be used are readily available to staff and students.
   Students are issued a student account on enrolment which gives access to Internet and WebCT facilities. Computers are available across campus. Queries have been made as to the availability of video conferencing facilities. The Faculty of Natural and Agricultural Sciences have indicated that their video conferencing facilities will be available for the program.

   (6) Please indicate whether the unit is the outcome of a school, course or other review.
   Unit is not an outcome of a school, course or other review.

   (7) Please advise whether the unit utilises any material from existing units. If so, please provide details.
   The unit does not utilise material from existing units.
(8) Please advise whether the unit is to be offered within standard semester dates. (If it is not, please attach a proposal form for a non-standard semester unit.)

YES

(9) Please advise whether lecture outline has been provided.
Food Safety Hazards
International and Industrial food safety concerns
Intro Food Chemistry - Basic Food Chemistry and Analytical techniques,
Food Laboratory skills
Risk Communication
Public Health concerns
Regulatory and Legal concerns
Risk Assessment & Risk Management
Food Safety
GMO’s
HAACP - Principles and Practices
Industry & Government Perspective on Food Safety
Use of Online Technology
Bioethics in Food Safety
Intro to nutrition
Toxicology in foods - Principles of, Concepts, Dose - Response Relationships

(10) (a) Please list the intended student learning outcomes.
1. Understand the broad scope of food safety issues
2. Develop an understanding of food systems and food safety
3. Basic knowledge of chemical and microbiological hazards
4. Understand the broad regulatory and policy issues in food safety
5. Discuss and debate the Government and Industry’s perspectives on food safety.
6. Understand and apply risk management principles and practices to food safety.
7. Develop an understanding of Hazard Analysis Critical Control Point (HACCP)
8. Ability to independently locate and utilize resources needed to resolve food safety problems
9. Understand the current food biotechnology issues and predict future issues.
10. Attain the ability to chemically characterize a food product.

(b) Is assessment explicitly tailored to such outcomes?  
   X Yes  □ No
(Please elaborate)
   Assessment consists of:
   • A competency based exam which will evaluate if the student has met learning objectives 1-9.
   • Laboratories will evaluate the students’ knowledge to address learning outcomes 10.
   • Assignment which will evaluate students knowledge of learning objectives 2-3, 8-9.

(Note: by resolution R23/08 the Academic Council endorsed the requirement that all new unit and course checklists should include the listing of intended student outcomes and affirmation that assessment is explicitly tailored to such outcomes).

2. Demand

(1) What are the estimated annual enrolments?
An estimated annual enrolment is 10-15. 75% of that will be international students and 25% domestic.

(2) How has the estimate in (1) been arrived at?
This estimate is based on discussions with colleagues at Universities overseas and the food industry in Western Australia. Already a University in China (Guizhou University) has expressed interest in forming a cooperative program. They have indicated that they will have 4 students who are interested in the next calendar year.

(3) From which other units are students likely to move?
None

3. Assessment

(1) Please advise how many examinations there will be for the unit and how long each will last. (Note: By Academic Council R16/94 the Examinations Office administers only standard examinations of 2 or 3 hours duration).
Assessment will be:
- Examination (1 x 2 hr exam) 50%
- Laboratory Exercise 30%
- Assignment 20%

(2) If you do not propose to use more than one means of assessment for this unit (as recommended in the University's Guidelines on Assessment (http://www.secretariat.uwa.edu.au/home/policies/assessment), please explain the reason for this.

4. Grading Schema for Unit

(1) Schools are required to ensure that final results\(^1\) for units in courses at all levels be produced as both percentage marks and letter grades wherever possible. However, a number of categories of unit\(^2\) are exempt from this requirement. The following exemptions categories are pertinent for this checklist.

(i) units where the involvement of external assessors makes it difficult to compare students' performance in an equitable manner and provide appropriately graded results for the units (for example, in-country units, cross-institutional enrolments and practicum units);

(ii) units involving group activity where the contribution of individual students cannot be distinguished (for example, participation in the University Chorale/Orchestra compulsory field tours);

(iii) specific skill-acquisition only units, which may be taken to be completed merely by attendance and participation (for example, use of medical equipment, legal skills such as negotiation and mediation).

(2) Please indicate if it is intended that the result for the unit be recorded as an ungraded pass or ungraded fail only.
No

(3) If the answer is YES please indicate into which of the categories of exempt units listed above the unit belongs.

\(^1\)Results for supplementary assessment are recorded as Ungraded Pass or UngradedFail and the original mark remains. See University General Rule 1.2.1.26(3).

\(^2\)Please see policy applying to ungraded passes and fails available at http://www.secretariat.uwa.edu.au/home/policies/courseunit

5. Resource-related matters

(1) Please advise whether all the costs of the unit (e.g. including, if appropriate, those associated with teaching at the Albany Centre such as Library/computer software resources) will be met from school resources or whether the proposal is the subject of application for other funding (e.g. University Initiatives Fund).

Centre for Forensic Science

(2) Please indicate whether the school intends to suppress another unit to release resources for this one.
No

(3) Please name the staff members who are able to teach the unit.
Professor Garry Lee, Dr Mick Considine, Professor Kadambot Siddique, Staff from BBC (To be determined), external specialist industry speakers.

(4) Please confirm that you have attached a completed Library Consultation Form.

Prelim enquiries made with the Science Library. Consultation form to be completed

(5) Will the introduction of this unit give rise to any accommodation needs other than standard lecture theatres, tutorial rooms or laboratory space (e.g. office space, new kinds of laboratory space) which cannot be met from the School's/Faculty's existing space allocation? Please ensure that your understanding is consistent with that of the Dean.
No

If YES, please confirm that you have attached a completed Accommodation Planning Form (http://www.secretariat.uwa.edu.au/home/policies/courseunit/proposals).

(6) Will there be any ancillary student fees/charges associated with this unit? If so, please confirm that you have submitted details of these to the Dean.
(See http://www.teachingandlearning.uwa.edu.au/td4/for_uwa_students2/policies/asfc3)
6. Consultation

Please provide details of the consultations you have had with various groups and individuals during the development of this proposal indicating whether or not any issues have been raised. Consultation includes the following:

(a) heads of schools in cognate areas, which may have an interest in the unit content; Discussions on course content, facilities and course units have taken place with Professor Geoffrey Stewart (Head of School of Biomedical, biomolecular and Chemical Sciences). Professor Smith has made enquiries with members of the School interested in developing and teaching components of this unit. Further discussions are still required.

A meeting was held with staff from the Faculty of Natural and Agriculture Sciences – Institute of Agriculture (Professor Kadambot Siddique, Chair in Agriculture/Director) and School of Plant Biology (Dr Michael Considine, Lecturer) on possible course material and participation of this unit.

Senior members of staff from the Centre for Forensic Science (Professor John Watling) have been kept informed of the subject matter of interest and have contributed to the course outline.

A meeting is currently planned to discuss the program with Staff from the Faculty of Medicine, Dentistry and Health Sciences.

Currently all have shown strong support for the course.

(b) students and graduates;

None

(c) employers and/or employer groups and professional bodies;

The course material was prepared after consultation with staff in the:

a. Food Standards Australia and New Zealand

b. A private Consultant (Mr John Coward) to the Malaysian and Indonesian Meat industry.

The proposed material has been endorsed by Food Standards Australia and New Zealand, Food Industry Association of WA, Australian Pork Limited and Coles.

The Department of Agriculture and Food (WA) has indicated support for the course concept. Further consultation with the Department is on-going.

The Food Industry Association of WA has passed the proposed unit outline to its members for comments. At this point, no comments have been received. The Australian Food and Grocery Council has also received advanced copies of the propose unit’s material.

(d) other universities in WA which teach similar units;

None

(e) other leading universities in Australia or overseas which teach similar units.

The course material was prepared with consultation with retired academics with experience in food course in Asia from the University of Western Sydney.

7. Information Flow

Please confirm, by ticking the boxes and entering the date of action, that you have forwarded a copy of this proposal, either in hard copy or electronically, to:

- The Deans of all faculties involved, either through offering the unit in their degrees, or through resourcing your school.

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8. **Confirmation by Head of School**

I confirm that the process leading to the proposal for the introduction of  

**Introduction to Food Safety**  
*(Name of new unit)*

has included appropriate consultation with all other schools, both internal and external to the faculty, with a potential interest in the proposed unit and that the proposed unit will not overlap significantly with any existing unit.

Have any objections to this proposal been raised during the consultation process?  
☐ Yes  ☐ No  
*(If yes, please attach details of objection and response)*

Signature of Head  
School of  

---

Academic Secretariat  
October 2009  
(New_Unit_Checklist)
Library Consultation Form

This form is for use by those preparing proposals for new units or new honours courses (if not made up of units). As soon as it is possible to identify the content of a proposed new unit or honours course in sufficient detail for assessment of the adequacy of Library holdings, the form should be forwarded to the Subject Librarian with an outline of the proposed content of the new unit/course. The University Librarian will complete and return the form to the sender, who should then attach it to the final proposal submitted to the Faculty Board.

Faculty: LIFE & PHYSICAL SCIENCES  School: CENTRE FOR FORENSIC SCIENCE
Contact name: **PROFESSOR GARRY LEE** Ext: 2561
Email address: gel@uwq.edu.au
Name of new unit/honours course: INTRODUCTION TO FOOD SAFETY

To be completed by the Library

1. **Assessment of current collection**

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2. **Cost of additional material ($)**

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3. **University Librarian’s Comments**

University Librarian’s Signature: ___________________________ Date: __________________

To be completed by the appropriate Executive Dean:

I have noted the above assessment and comments. Signature: ___________________________

Name: ___________________________ Faculty: ___________________________ Date: __________________
9.6.36A MASTER OF FOOD SCIENCE (5XXX)

Applicability of the University General Rules for Academic Courses
9.6.36A.1 The rules in 1.1 and 1.3 of the University General Rules for Academic Courses in this handbook apply to the Master of Food Science except as set out in the rules which follow.

Admission
9.6.36A.2 The Board may accept into the course for the Master of Food Science an applicant who has the degree of Bachelor of Science and has demonstrated to the Faculty adequate knowledge of each of the following at a tertiary level: Chemistry, Biology and Mathematics.

Course Structure
9.6.36A.3 The course consists of units to a total value of 96 points comprising –
(a) all units in Table 9.6.36Aa [Master of Food Science by Coursework and Dissertation Core Units] – 48 points

and

(b) units to the value of 48 points [Recognised Units for the Master of Food Science (5XXX)] approved by the Faculty.

Table 9.6.36Aa Master of Food Science Core Units
All units have a value of six points unless otherwise stated.

S2  CHEM8XXX Chemistry for Food Science
S1  CHEM8XXX Chemical & Physical Food Hazards
S1  COMM8303 Science Communication for Change in Industry
S2  PUBH8804 Food Nutrition in Population Health
S2  SCIE8XXX Introduction to Food Safety
S1  MICR8XXX Microbiological Food Hazards
S2  MICR8814 Microbiology for Nurses
S1  SCIE8XXX Quality Control and Quality Assurance
9 April 2009.

Ms Jenny Gamble  
School Manager  
Faculty of Life and Physical Sciences  
M011

Dear Jenny

Re: Change to unit prerequisites

As a consequence of the recent AAESS accreditation process, the School of Sport Science, Exercise and Health would like to add one more unit (HMES3385) to the prerequisite lists for the Bachelor of Exercise Rehabilitation Science and the Graduate Diploma of Science (Exercise Rehabilitation).

This rule should come into place for the 2010 Semester 1 entry cohort, but with the exception of UWA BSc students who graduated prior to 2009. The current group of students have all been informed of this rule change and have the opportunity to change their enrollment for Semester 2. (The reason for this rule exception is that those students in the Bachelor of Exercise Rehabilitation Science program do not have the option of enrolling in HMES7806 Special Topics with which to complete HMES3385).

Though we have not yet received the final report, the AAESS NUCAP site visit committee recognized as a deficiency, the possibility of a student completing either of the 4-year programs without the knowledge and skills gained through the elective HMES3385. At the moment, prerequisites for this course are:

- HMES3301 Exercise Prescription for Health and Fitness
- HMES3389 Exercise Rehabilitation
- HMES3390 Professional Practice Part 1
- HMES3391 Professional Practice Part 2

The School of Sport Science, Exercise and Health’s Teaching and Learning Committee accepted the suggestion from Professor Tim Ackland that HMES3385 be included as a prerequisite for the above courses.

Thank you for your consideration of this request.

Yours sincerely,

Bruce Elliott, Professor  
Head of School