Bridging education, training and research for industry and the wider community: the ISEKI_Food Network approach

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Ankara, 8 November 2013
Food sector, chain and stakeholders
Food sector, chain and stakeholders
Education: goals and responsibility

To improve and to allow the development of the society by
• transfer of knowledge
• development of skills and expertise of students and trainees, meeting the expectations of
  - consumers
  - job market
Main training and educational goals of HE institutions

- Quality standards (certification, label)
- Internationalisation
- New skills for new jobs

while facing issues like.....

- New generation of students
  - Internet-social network
  - Web 2.0 generation
- Lower financial support to HE
- Resistance to changes
- ...lower importance of Food Science and Technology studies/curricula
- Competition from other scientific fields
Main training and educational needs of professionals and scientists in the Food sector

- Hard-technical skills (basic-medium-advanced knowledge)
  - Change of the importance of the main areas: from Quality and Safety...to health and wellness ...to nutragenomics and metabolomics.
- Technology transfer
- ...personal (or soft) skills!

Based on 2011 and 2013 ISEKI_Food 4 and Track_Fast project surveys
Key characteristics of graduates in Food Studies

- Food science, technology/engineering, ...
- Technical speciality
- Education and Training
- Ethical & society Impact/role of profession
- Multidisciplinary Transdisciplinary
Food professional career path

Choice of area of studies

Family Life and Basic Studies

Industry
Governmental Research Consultancy

Higher Education

BSc → MSc → PhD

Career Development

Work experience
Planning
Training

Food Professional
Food Scientists
Food Technologist, ...

Food 4
ISEKI
Food professional career path

- Industry
- Governmental Research
- Consultancy
- Family Life and Basic Studies

Choice of area of studies

Higher Education

- Bachelor's (BSc)
- Master's (MsC)
- Doctorate (PhD)

Career Development

- Work experience
- Planning
- Training

Food Professional
- Food Scientists
- Food Technologist, ...

ISEKI - Food 4
Food professional career path

Industry, Governmental, Research Consultancy, ....

work experience

Planning

Training

Choice of area of studies

Family Life and Basic Studies

Career Development

Higher Education

BSc → MsC → PhD

Food Professional Food Scientists Food Technologist, ...

Skills and Competences

Workforce with high potential individuals
Bridges between stakeholders

EDUCATION/RESEARCH/INDUSTRY INTERFACES
TOWARDS THE INNOVATION OF THE FOOD SECTOR

INDUSTRY

EDUCATION & TEACHING

RESEARCH

WIDER COMMUNITY

What kind of STRATEGIES?
The case study of the ISEKI and ISEKI_Food projects: the framework - the Bologna process

The Bologna process (1998) is the product of a series of meetings aimed to the creation of the **European Higher Education Area** by making academic degree standards and quality assurance standards more comparable and compatible throughout Europe, in particular under the Lisbon Recognition Convention, in order to:

- Harmonise architecture of study programmes and favour students mobility
- Enhance the employability and mobility of citizens in EU
- Increase the international competitiveness of European higher education.

**2010**

- Education, Research & innovation
- International Openeness
- Mobility
Objectives for the development of a network of Universities and stakeholders in the Food area in EU

Academic studies in Food Science and Engineering are strongly multidisciplinary: chemistry, biochemistry, physics, microbiology, process engineering and technology, management, logistics, market studies, informatics...

That gives a full justification to organize a network of universities dealing with Food Studies, with different specialities, but all working for the same aims: education and research for the benefit of consumers through food industry.

.....

Our role and duty as researchers and teachers is to develop mutual knowledge, exchange of ideas, at a European and International level to be able to participate in the development of all countries, locally and everywhere, to give right answers to an international changing market.

The history of the ISEKI_Food projects....


Integrating Safety and Environment Knowledge In Food towards European Sustainable Development

Integrating Food Science and Engineering Knowledge Into the Food Chain

Internationalisation
Sustainability and Exploitation
Innovation

112 partners/30 countries
97 partners/30 countries
89 partners/27 countries

37 partners/24 countries
53 partners/30 countries
Main objectives and activities of the past ISEKI_Food projects

- **Education and Training**
  - Implementation of the Bologna process
  - Tuning curricula in Food Studies and Minimum Requirements
  - Innovative teaching and training materials
  - Quality assurance of European Food Studies

- **Development of interfaces and promote synergies** between research in Food Science and Engineering with Education/Teaching and Industry
  - **Establish communication** with the general public and the consumers
  - **Virtual community** of experts in the field of food
Main outcomes of the past ISEKI-
ISEKI_Food 3

Education and Training

• Tuning curricula in Food Studies and Minimum Requirements (reference document for new curricula in FST in EU)
• Innovative teaching and training materials
• Quality assurance label of European Food Studies

Education-Research-Industry interactions

- e-journal
- ISEKI_Food Conference
- Innovative teaching and training materials

See: www.iseki-food.eu
**INNOVATIVE TEACHING MATERIALS DATABASE**

Innovative teaching materials relevant to Food Science and Technology have been collected through web searches and contact with experts in various countries. The collection includes videos, animations, databases, Excel spreadsheets, calculators, converters, books and simulators available in various languages such as English, Portuguese, Turkish, French and Spanish.

The material is free to access and is presented as a searchable database accessible via [www.iseki-food.net/view_teaching_materials](http://www.iseki-food.net/view_teaching_materials) where material can be located through the use of keywords in the languages indicated on the site.

Topics are varied and include:
- Applied Biochemistry
- Biochemical Engineering and Fermentation
- Cereal Technology
- Dairy Science and Technology
- Environmental Engineering
- Fish Technology
- Food Analysis
- Food Chemistry
- Food Microbiology
- Food Safety
- Meat Science and Technology
- Nutrition
- Oil Technology
- Packaging
- Thermodynamics
- Transport Phenomena and Unit Operations
- Vegetable and Fruit Technology

To date, more than 500 documents have been uploaded to the database which is maintained and updated regularly, and includes reviewer and user opinions.

**E-LEARNING MODULES**

E-learning modules on a variety of subjects have been developed by Food Scientists and Food Engineers for general use.

Topics include:
- Canning
- Packaging
- Hygienic design
- Freezing and thawing

For more information on the E-learning modules available and to download a registration form, visit [www.iseki-food.net/node/119](http://www.iseki-food.net/node/119)

**Food4us WEBSITE AND INTERACTIVE GAME**

*Food4us* is a website containing reference and teaching materials in food-related subjects aimed at high school students, teachers and consumers. Resources include an entertainment game about food product development, entitled Food4us, which has been designed to capture a day in the life of a food scientist working in industry. To keep the player engaged in the game, a budget is assigned to each task and the level of complexity in product development increases as the student acquires knowledge via the use of information pop ups.

This game was developed based on the fact that the interest of teenagers to audio-visual media is growing exponentially and that electronic games are their main source of entertainment. Visit [www.food4us.eu](http://www.food4us.eu) to check out our teaching resources and to register to play Food4us!!

To learn more about these and other Innovative Teaching Materials available, visit: [www.iseki-food.net/teaching_materials](http://www.iseki-food.net/teaching_materials)
THE ISEKI-FOOD BOOK SERIES

ISEKI_FOOD AND ISEKI_FOOD 2
MUNDUS PUBLICATIONS

Volume 1 FOOD SAFETY: A PRACTICAL AND CASE STUDY APPROACH
Edited by Anna McElhatton and Richard Marshall

Volume 2 ODORS IN THE FOOD INDUSTRY
Edited by Xavier Nicolay

Volume 3 UTILIZATION OF BY-PRODUCTS AND TREATMENT OF WASTE IN THE FOOD INDUSTRY
Edited by Vasso Oreopoulou and Winfried Russ

Volume 4 PREDICTIVE MODELING AND RISK ASSESSMENT
Edited by Rui Costa and Kristberg Kristbergsson

Volume 5 EXPERIMENTS IN UNIT OPERATIONS AND PROCESSING OF FOODS
Edited by Maria Margarida Cortez Vieira and Peter Ho

Volume 6 CASE STUDIES IN FOOD SAFETY AND ENVIRONMENTAL HEALTH
Edited by Maria Margarida Cortez Vieira and Peter Ho

Volume 7 NOVEL TECHNOLOGIES IN FOOD SCIENCE: THEIR IMPACT ON PRODUCTS, CONSUMER TRENDS AND THE ENVIRONMENT
Edited by Anna McElhatton, Paolo Sobral

Volume 8 FOOD PROCESSING
Edited by Kristberg Kristbergsson and Semih Ötes

Volume 9 APPLIED STATISTICS FOR FOOD AND BIOTECHNOLOGY
Edited by Gerhard Schleuning, Peter Ho and Saverio Mannino

ISEKI_FOOD 3 / MUNDUS 2 PUBLICATIONS

The ISEKI-Food books will be continued with a Trilogy on Traditional Foods to be written and published as volumes 10, 11 and 12 in the series. The working titles for the books are:

- Traditional Foods; General and Consumer Aspects
- Modernization of Traditional Food Processes and Products
- Functional Properties of Traditional Foods

The scope of the three books will be such that Traditional Foods; General and Consumer Aspects will focus on general descriptions of traditional foods and topics related to consumers and sensory aspects.

Modernization of Traditional Food Processes and Products will be devoted to recent changes and modernizations that may have been made in the processing of traditional foods focusing on the processing and engineering aspects of the processes.

Functional Properties of Traditional Foods will be devoted to functional and biochemical aspects of traditional foods and the beneficial effects of bioactive components that may be found in some traditional foods.

Editorial board:
Anna McElhatton, Farruh Erdogdu, Jorge Oliveira, Kristberg Kristbergsson, Mustapha Misebah El airassi, Paolo Sobral and Semih Ötes

To learn more about the ISEKI-Food Book Series visit the homepage of Springer Publishers:
www.springer.com
INFORMATION FOR STUDENTS

The Food Studies Curricula Database contains information about Bachelors and Masters programmes being taught internationally. You can also find information about the institutions and the curricula of each programme.

Look for programmes in other countries to help you choose your future studies!

To learn more about the Food Studies Curricula Database and to access this leaflet in other languages, please visit the ISEKI-Food Association homepage at: www.iseki-food.net

INFORMATION FOR PROFESSIONALS IN HIGHER EDUCATION

Become familiar or stay up-to-date with international Food Studies programmes.

Check the analysis of the curricula and compare with the ones from your institution.

Search by curriculum to see which curricula exist in a particular country or in which countries a certain curriculum exists. This search can also be done by degree.

<table>
<thead>
<tr>
<th>Basic Sciences</th>
<th>Engineering Sciences</th>
<th>Applied Sciences</th>
<th>General Sciences</th>
<th>Personal Skills</th>
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<tbody>
<tr>
<td>Analytical Chemistry</td>
<td>Automatic Control</td>
<td>Biochemistry</td>
<td>Accounting</td>
<td>Personal Development</td>
</tr>
<tr>
<td>Biology</td>
<td>Engineering Services</td>
<td>Biotechnology</td>
<td>Economics</td>
<td>Practical Placement</td>
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<tr>
<td>Computer Studies</td>
<td>Environmental Engineering</td>
<td>Environmental Sciences</td>
<td>Industrial Economics</td>
<td>Research Training</td>
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<tr>
<td>General Chemistry</td>
<td>Food Packaging</td>
<td>Food Analysis</td>
<td>Legislation</td>
<td>Thesis</td>
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<td>Inorganic Chemistry</td>
<td>Food Plant Design</td>
<td>Food Chemistry</td>
<td>Logistics</td>
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<td>Language</td>
<td>Food Processing</td>
<td>Food Microbiology</td>
<td>Management</td>
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<td>Mathematics</td>
<td>Industrial Design</td>
<td>Nutrition/Toxicology</td>
<td>Marketing</td>
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<td>Microbiology</td>
<td>Information-Modelling</td>
<td>Physical Analysis</td>
<td>Product Development</td>
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<td>Organic Chemistry</td>
<td>Reaction Kinetics</td>
<td>Safety</td>
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<td>Thermodynamics</td>
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<td>Physics</td>
<td>Transport Phenomena</td>
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<tr>
<td>Statistics</td>
<td>Unit Operations</td>
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AIMS OF EQAS-FOOD

- To provide a knowledge base to inform educational qualifications in Food Studies in the European Higher Education Area.
- To drive the certification of the field of Food Science and Technology (first and second degree) and of each individual programme, by defining the goals and challenges related to the capacity to deliver Science and Technology education and advance the standing of this field.
- To contribute to the increasing efficiency of programmes in the achievement of national and regional demands in high level education in Food Science and Technology by assuring the judicious opinion of an approval panel on the strengths, weaknesses and overall performance of such programmes.
- To facilitate recognition of degrees awarded in Food Science and Technology in higher education in accordance with EU Directives and other international agreements.
- To facilitate the mobility of students and professionals in the field of Food Science and Technology.

To learn more about the EQAS-FOOD Award visit the homepage of the ISEKI-Food Association at: www.iseki-food.net

CERTIFICATION PROCESS

SELF-ASSESSMENT REPORT
- Can include a group of programmes or a single Food Technology programme
- Guidelines, Framework supporting documentation provided by EQAS

AUDIT VISIT
- 2 days duration
- Expert panel composed of lecturers, industry specialists and students

DECISION ON THE AWARD
- Based on self-assessment and audit reports
- Subject to appeal and review
- Decision by FA Accreditation Commission

SELF-ASSESSMENT REPORT

1. The rationale of the programme
   Needs of stakeholders, Educational objectives, Programme outcomes

2. Educational Process
   Overview of the curriculum, Delivery of the curriculum, Learning and assessment, Alignment matrix for EQAS Learning Outcomes

3. Resources and Partnerships
   Academic and support staff, Facilities, Partnership

4. Management System
   Re-examining needs, objectives and outcomes, educational process, resources and partnerships and quality assurance; analysis of student results, analysis of graduate results

For queries and to apply for certification please email: eqas@iseki-food.net
Are you a student thinking about undertaking a mobility experience? If so, take a look at our database of reviews completed by students returning from mobility experiences. These reviews rate overall experience and include important information on living costs such as food, accommodation and transportation to help you plan your future.

PICAM Food is a web-based platform developed for students, academics and food industry professionals to promote international cooperation and mobility in the field of Food Studies.

Designed to satisfy the needs of food industry professionals, academics and students alike, the food exports database has been created to enable you to find, or to promote yourself as, an expert with substantial knowledge and expertise in a variety of food-related subject areas. Search the database by country, institution (if known) and/or an extensive list of activity areas in a drop down box format to find an expert who could be a future consultant, collaborator or mobility experience supervisor.

Whether you are a student or an academic staff member planning mobility, or an institution looking for international cooperation, you can find key information in the mobility institutions database. Search by country, discipline and/or language for more specific information.

Visit our website to learn more about the PICAM Food platform and to access this leaflet in other languages.

http://food4mobility.net
IFOOD 4 - Main objectives and expected outcomes

- Modernising and upgrading the education and training of Food studies
- Implementing the labour market role of the third level of education (PhD programmes, in particular) in promoting the employability and entrepreneurship of the graduated FS&T and Food professional
- Lecturing qualification of university teaching staff

Toolbox for modernisation and internationalisation of curricula in Food studies

Innovative teaching tools

Virtual platform for PhD students networking and training

Teaching staff framework and pilot summer school
The ISEKI_Food Conference Series

www.isekiconferences.com

To promote constructive dialogue and collaboration on relevant topics on: Food Science and Technology Industry and Education

An International “open” forum for all the stakeholders of the whole food chain (students, researchers, education scientists, Technologists, Representative of government agencies, Industry representatives and trainers, Food consumers and Wider community)

3° Int. ISEKI_Food, 21-23 May 2014 (Greece)
Actions and projects

TRACK\_FAST ([www.trackfast.eu](http://www.trackfast.eu))
Training Requirements And Careers for Knowledge-based Food Science and Technology in Europe
FP7 KBBE 227220
September 2009 – February 2013
T_F - Main objectives and expected outcomes

“Identification of the training and career requirements of future European food scientists and technologists (FST), and implementation of a European strategy to recruit the next generation FST leaders”.

- Update education/training based on actual and future food job market needs
- Establishment of a framework for continual professional training and career development for the FST professionals
- Promotion of FST to attract students
- Regulation of FST professions in Europe
Sustainability of the ISEKI_Food project:
ISEKI_Food Association

www.iseki-food.net

Secretariat:
c/o Department of Food Science and Technology
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President: Richard Marshall
Vice-President: Paola Pittia
Past-President: Cristina L. Silva
IFA is an independent European non-profit organisation, founded in 2005 as an outcome of 10 years of Thematic Network activities for all stakeholders in the food supply chain with regard to education, research, legislation and communication.

226 individual and 36 company members from 61 countries around the world

1 sub-section: Indonesia
EDUCATION/RESEARCH/INDUSTRY INTERFACES TOWARDS THE INNOVATION OF THE FOOD CHAIN

INDUSTRY

EDUCATION & TEACHING

FS&T associations

Policymakers

FS&T students and graduates

RESEARCH

WIDER COMMUNITY
Contact: Paola Pittia
ppittia@unite.it
www.iseki-food4.eu/

Contact: Gerhard Schleining
Gerhard.schleining@boku.ac.at
www.iseki-food.net/

Contact: Cristina L Silva
clsilva@porto.ucp.pt
www.iseki-food.eu/
Derslerini tamamlayan öğrencilerin, 8.dönemde İNTÖRN MÜHENDİS STATÜSÜ ile mezuniyet öncesi 1 dönem sanayide çalışmalari/eğitilmeleri

- Öğrenci tarafı
- Öğretim üyesi/elemanı tarafı
- Sanayici tarafı
- Üniversite tarafı
Öğrenci tarafı

- 4 kredi karşılığı ders almıştır
- Öğrenci konumunda ancak Mühendis olarak sanayiyi tanır
- Teoriyi ve pratiği birleştirir
- Diğerlerine kıyasla 4.5 ay iş tecrübesi olur
- Sanayinin şartlarına göre vardıya, haftasonu vs. çalışır.
- Sürekli üniversite ve sanayici kontrolündedir.
- Notunu sanayici verir
- Gerçek hayatı tanır
- İş disiplinini öğrenir
- Özgüveni gelişir
- Çevre edinir
- Para kazanır
- İş bağlantısı sağlar
- Naylon bir uygulama değildir.
- **Sanayici tarafı**
  - Mühendislik eğitiminin bir parçasıdır
  - Kendi mühendisini kendi yetiştirir
  - 4.5 aylık deneme süreci avantajı ile mühendis seçebilir
  - İnsan kaynağı açığını kapatır
  - Üniversite öğretim sistemine katkı sağlar
  - Farklı mühendislik dallarını ve işlevlerini daha yakından tanıma fırsatı bulur
  - Öğretim üyelerinin zorunlu ziyaretleri ile işbirliği olanakları elde eder
  - Üniversitenin araştırma alt yapısını tanır
  - Hem Öğretim elemanı hem öğrenci yoluya bilgiye ulaşımı kolaylaştırır
  - İsteğe bağlı öğrenciyi maaş verir
• Öğretim Üyesi/Elemanı tarafı
  • 15/30 günde bir sanayiyi ziyaret eder
  • Mezun edeceği öğrenciden sanayinin beklentilerini ilk kayı
  • Mezunların çalışma şartlarını öğrenir ve iyileştirmeye için katkıda bulunabilir
  • Karşılıklı sorunları belirleme şansı bulur
  • Sanayiyi görme ve tanıma fırsatı bulur
  • Verdiği dersin uygulamadaki rolünü irdeler
  • Ortak projeler üretmek için imkan bulur
  • Birlikte ziyarete katılan Araştırma Görevlisine öncülük etmek yoluyla tecrübe sağlar
• Üniversite tarafı
  • Öğretim elemanının ulaşımını sağlar
  • Mezunlarına iş sağlar
  • Üniversite Sanayi işbirliğini sağlar

• Birikimlerini toplumla paylaşarak saygınlığı artır
• Sanayicinin Üniversiteyi daha yakından tanışmasını sağlar
• Kurulacak işbirlikleri ile mensuplarına ek gelir sağlar
• Sanayi projelerini bünyesine çeker
SÜREÇLER

- İTAK firmalarla protokol yapar, firmaları akredite eder (yurtiçi ve dışı)
- Kurum/Kuruluş/Firma intörn talepleri toplanır, İTAK öğrencilere duyurur
- Öğrenciler 5+5=10 tane firma belirleyerek İTAK Bölüm temsilcilerine teslim eder
- İsteğe bağlı firma ve yetkililerinin öğrenci belirleme mülakatları yapılır
- Yerleştirme ve eşleştirmeler İTAK ve İTAK Bölüm Temsilcileri tarafından yapılır
- İntörn ve Firmalara eşleştirme listeleri bildirilir
- İntörn Mühendislerin Eğitimleri ve Sertifikaları verilir
  - İş Güvenliği
  - İş Disiplini ve Düzeni
  - Kalite
- İntörn Mühendislerin Kurum/Kuruluş/Firmada çalışmalarına başlaması
- İlgili Akademik Danışman tarafından İntörn Mühendisin takibi
- Firmaların notlarını Üniversiteye iletmesi
- İntörn Mühendislerin raporlarını ilgili danışmana ve İTAK’a teslim etmesi
- Danışmanların intörn mühendisler için notlarını vermesi
- İTAK’ın raporlardaki firmaların tale ettiği çalışmalar için raporların 1 nüshasını TTO’ya iletmesi --- Proje bağlantısı sağlanması