Competencies for Food Graduate Careers

Food and drink is the largest manufacturing sector in the UK (accounting for 19% of the total manufacturing sector) turning over £95.5bn per annum and employing around 400,000 people. 140,000 new recruits are needed by 2024 to meet growing demand. (FDF, 2017) and a significant proportion are needed within the technical field coming from food science or technology based courses). To meet this demand, 33 degree programmes (BSc and MSc), accredited by Institute of Food Science and Technology (2017) are available from 16 providers across the UK and there are many more related degree courses on offer in the country.

To ensure job-readiness Food Sciences degree providers need to ensure that course content reaches beyond the science and technology of the subject matter and also encourages development of the associated personal competencies that make a great graduate for the industry across the range of initial roles they could choose as a graduate.

This project seeks to develop, test and disseminate a competency framework tailored to typical technical careers pathways for graduates entering the food industry. This framework aims to:

- Inform students intending to join the food industry as a technical graduate as a key objective.
- Support recruiters and employers in providing consistent, accurate advertisement and selection criteria.
- Optimize food science degree courses to reflect the needs of the industry

Institute of Food Science and Technology is fully aligned and supportive of the aims to develop greater clarity and support to talent entering the UK Food Industry.

A core group of stakeholders has been engaged during the project activity, representing employers, recruiters and recent graduates in the food industry. The breadth of the group aimed to cover representation from different sectors in manufacturing, retail, research and development, academic and technical services.

Developing Consistent Terms; 'A Common Language'

The importance of consistency of word use in the project was identified. Stakeholders supported a qualitative process of developing a 'common language'. The process included semi-structured interviews, thematic analysis and on on-line focus group.

The *Competencies for Food Graduate Careers* comprises of a list of 48 elements. They provide a tailored, consistent and relevant set of behaviours, knowledge and skills or 'elements' that may be desirable in a food sciences graduate. The tool informs all future stages of the project and aims to support students in gaining clarity in what elements they may need to develop in themselves or articulate in interviews for a particular role.

References [both accessed Sept 2017]:
FDF, 2017   https://www.fdf.org.uk/statsataglance.aspx
IFST, 2017   https://www.ifst.org/accreditation-accreditation-degree-courses/ifst-accredited-programmescourses
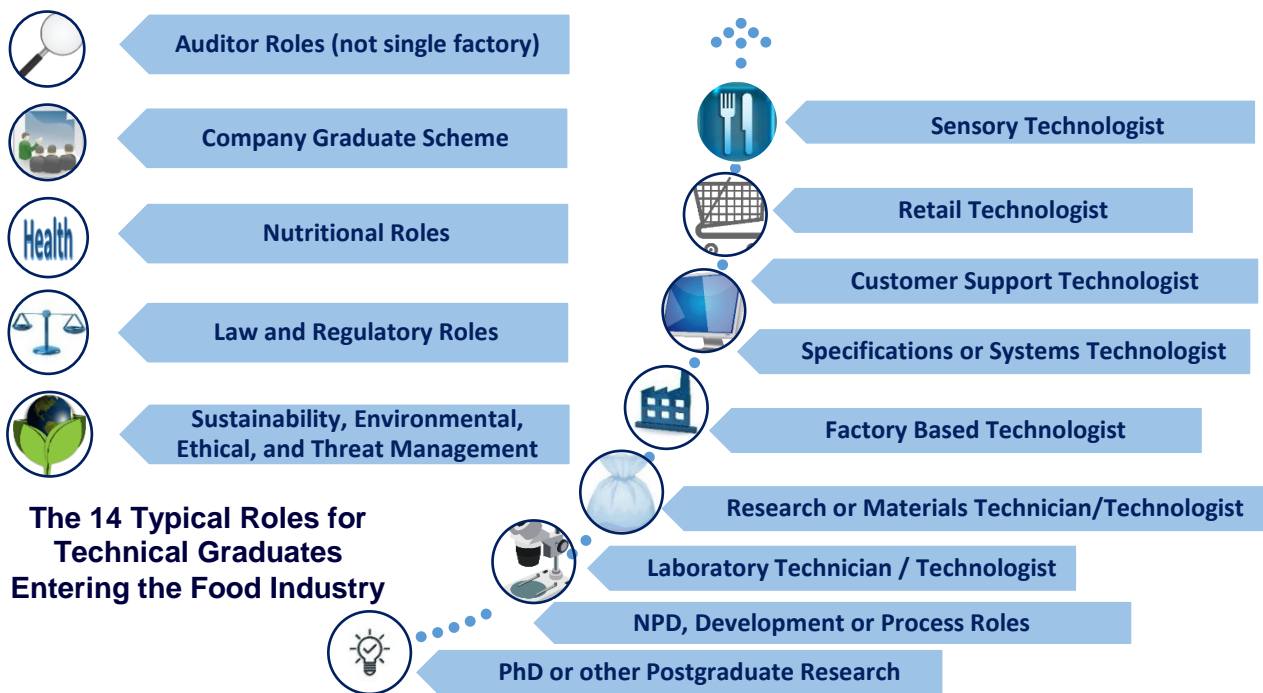
Establishing the Graduate Roles

The list of typical initial destinations for Food Sciences graduates was established.
A review was undertaken encompassing:

- Current job market and advertisements
- Websites providing food industry careers advice
- Employment data of recent University of Nottingham Food Sciences alumni

A list of **14 role types** and associated definitions were then reviewed and ratified by the industry stakeholder group. They are illustrated below:

Auditor Roles (not single factory)

Company Graduate Scheme

Nutritional Roles

Law and Regulatory Roles

Sustainability, Environmental, Ethical, and Threat Management

Sensory Technologist

Retail Technologist

Customer Support Technologist

Specifications or Systems Technologist

Factory Based Technologist

Research or Materials Technician/Technologist

Laboratory Technician / Technologist

NPD, Development or Process Roles

PhD or other Postgraduate Research

The 14 Typical Roles for Technical Graduates Entering the Food Industry

Surveying the Wider Industry

An online survey was issued in early 2017. Recruiters, employers and recent graduates were asked to rate each of the 48 elements in the *Competencies for Food Graduate Careers* for desirability in a specific graduate role of their choice using an adaptation of a 5 point Likert scale.

226 responses were gathered across the 14 roles from participants in the food and drink industry across the UK and Republic of Ireland. The amount of data gathered varied between the roles (data sets of 3 to 55) and in general appears to mirror the prevalence of the number roles usually on offer in the UK. The roles with lower sample sets are highlighted where required, mindful that the data has limitations for robust statistical analysis, but have been included. It was important to ensure full representation of the job market.

Data was analysed with two approaches:

- Multivariate analysis of the survey data to explore themes
- Analysing the descriptive data for more detailed conclusions

Looking at the detailed descriptive data for each individual role, a number of key elements can be extracted, as either rated essential or highly desirable or being more desired than average data from the survey.

In addition it could be found that eight 'themes' were generated, indicative of general proficiency groups valued in a technical graduate for the food industry. The diagram adjacent outlines these themes and their agreed characterisation.

The each theme contains up to 12 of the 48 elements established. Some elements can be found within 2 themes but in each case with a logical argument (for example, verbal communication can be found in D3 and D5).

	Theme	What the Theme Encompasses
D1	Positivity	Having the behaviours that drive success and wellbeing in the workplace
D2	Appreciation of the Wider World	Engaging and embracing values, processes and ways of working in the industry with a diverse perspective.
D3	Data, Numbers & Communications	The ability to embrace information of all types, then use it and disseminate to best advantage.
D4	Getting the Job Done & Tackling Problems	Identifying and overcoming challenges to find solutions and reach your goals.
D5	Working Well with Others	Using a variety of styles for effectiveness and synergy in your relationships and activities with others.
D6	Innovation & Inquiry	Creativity in mind, approach and method to find new opportunities and enable results.
D7	Dependability	Harnessing your experiences and skills to establish trust in your ability to deliver.
D8	The Business World	Appreciation of systems and drivers that produce successful operational performance and profit.

8 Themes of Desirable Competencies Generated from Survey Material

We can compare the *relative* importance of each theme between the 14 roles included in the study. Below illustrates for each role the relative importance or desirability indicated for each theme (the darker the blue shading, the higher the relative importance). It can be suggested some roles require high levels of specific themes and some much less so; other roles require a more balanced skills set.

Auditor (not based in a single factory)	Company Graduate Scheme	Customer Support Technologist	Factory Based Technologist	Laboratory Technician/Technologist	Law and Regulatory New Graduate Role	NPD, Development or Process Role	Nutritional Graduate Role	PhD or other Postgraduate Research Role	Research or Materials Technician/Technologist	Retail Technologist	Sensory Technologist Graduate Role	Specifications or Quality Systems Technologist	Sustain, Env, Ethical or Threat Management Roles
D4	D2	D8	D4	D7	D7	D6	D5	D3	D3	D2	D5	D3	D2
D5	D1	D5	D7	D1	D1	D8	D3	D6	D6	D4	D8	D7	D3
D1	D6	D3	D5	D2	D3	D5	D7	D4	D5	D8	D3	D2	D5
D7	D5	D1	D8	D5	D2	D7	D2	D1	D8	D1	D4	D1	D1
D3	D8	D4	D1	D8	D5	D2	D6	D2	D7	D6	D2	D5	D6
D8	D4	D7	D2	D3	D4	D1	D8	D7	D4	D7	D7	D8	D4
D2	D7	D2	D3	D6	D6	D3	D1	D8	D1	D5	D1	D4	D8
D6	D3	D6	D6	D4	D8	D4	D4	D5	D2	D3	D6	D6	D7

Relative Importance of Each Theme for Each Graduate Role
(grey shaded roles have sample sizes of <10)

Producing Useful Material

Next the level of importance of each of the 48 individual elements for a particular role was also established. Lists of the most desirable elements were then compiled for each of the 14 roles.

Using all the results gathered in the study to date a profile for each role can be drawn aiming to demonstrate the key differences between each typical point of graduate entry in to the Food Industry. An example of such as profile can be seen here using the NPD (New Product Development), Development role.

NPD*, DEVELOPMENT OR PROCESS ROLE

Focussed on development of new products (NPD), existing ones or improvement of processes themselves. Most are a combination of 2 or more of these. Can be employed in small to large businesses and some are retailer facing, others branded. A large variety of role titles and salaries but a classic graduate entry point.

NPD = New Product Development

KEY FEATURES

Typical Role Names

- NPD Technologist
- Development Technologist
- Process Development Technologist
- Process Technologist
- NPD Process Technologist
- Product Developer

So What is Desirable for a NPD, Development of Process Role?

There are standards for the technical content of Food Sciences degrees; but there are more aspects you can develop to support success in the workplace. **14 typical graduate roles types** have been identified & this is one of them. Industry have outlined what they think may be the most valuable skills, knowledge and behaviours for this role. They are outlined in **8 themes** then more detail is provided on specific **elements**. Below is the profile for this role.

Desirable Themes for this Role

D6	Innovation & Inquiry	Creativity in mind, approach and method to find new opportunities and enable results. *(this role has the highest association with D8)*
D8	The Business World	Appreciation of systems and drivers that produce successful operational performance and profit.

Desirable Elements for this Role

Adaptability
Collaboration
Commercial Awareness
Entrepreneurship
Initiative
Innovation

Open-Minded
Passion for Subject
Questioning Approach
Teamworking
The Mechanics of Business
Work Experience
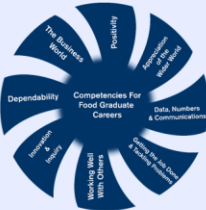
Competencies for Food Graduate Careers

Find out about more technical graduate roles in the food industry and what may be best suited to you in developing your career on (web link to be added in near future)

University of Nottingham
UK | CHINA | MALAYSIA

This material has been developed with full food industry involvement to support new graduates, employers and degree educators.

For more information please contact emma.weston@nottingham.ac.uk

Possibilities for Students and Industry

The Student:

The *Competencies for Food Graduate Careers* will be openly accessible as an online tool. A student shall be able to review the profile for a particular role, compare roles or choose which elements they feel they possess or exhibit successfully and find out which roles may be ideal for them.


In finding out more about a particular graduate job, the tool is hoped to be of real use to undergraduates when building personalised career plans and choices reflecting on their own strengths and interests. It should also help them prepare for success in graduate selection processes.

The Employer or Recruiter:

There could be significant value in *Competencies for Food Graduate Careers* for employers in refining their selection and recruitment processes, namely:

- writing clear job specifications
- building role profiles
- developing targeted criteria for all stages of interviews and selection.
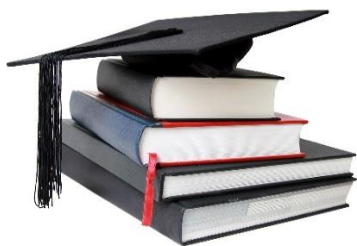
The Educator:

Finally the *Competencies for Food Graduate Careers* can also inform and direct educationalists and degree providers into providing a targeted content within their food science based degree courses to match the needs of the UK food industry.

Future:

All detailed material will be made available in the near future (2018) on the University of Nottingham website alongside the interactive online tool.

To obtain a copy of the *Competencies for Food Graduate Careers,* for more information about graduate roles or any other queries please contact Emma Weston - Project Leader, emma.weston@nottingham.ac.uk