

Culinology & Culinary Science: Dr. J. S. Pai

A chef may know how to prepare a delicious chutney using choicest of ingredients blended in most imaginative way, however, he may not know what would be the pH required or concentration of sorbate required for making it last for a month at chilled conditions. Similarly, a food scientist may know what thermal conditions would be needed to destroy the Staphylococcus but may not know how to bring out the flavours by marinating or the difference between roasting and smoking. Industry has to employ two specialists for these two requirements. More recently, in the US a new course has been started which combines the courses in food science and culinary arts to mould a 'culinologist'.

This need was felt for quite some time and some years ago when Research Chefs Association was established. Research Chefs, also called Product Development Chefs or Food Innovation Chefs, create new foods for food manufacturing or service industry. They blend their culinary training with an understanding of Food Science. They can make food taste and look good. Also they understand food preservation, mass production etc. which they use in their recipes. Basically, they earn a degree in culinary arts and then they go on to take additional classes in food science and chemistry.

The Research Chefs Association offers certification to research chefs having culinary education with some experience in research and culinary arts and a passing score on the certification exam. They also offer a culinary scientist certification to food scientists who score a written cooking exam.

Whenever new products are developed, research chefs become important members of the R&D team and drive innovation with new ingredients early in the development process. A research chef's knowledge of the product might be the key in the final evaluation process.

The need for a formal course was thus felt for some time and so the culinology courses were developed and started within the food science syllabus, but now a full-fledged degree course in culinology is offered in some universities in the US and is recognised by the Research Chefs Association. University of Nebraska, Lincoln (UNL) was the first to offer Culinology emphasis among their B.S. degree options. UNL partnered with nearby Metropolitan Community College with existing two-year culinary programme to offer a blend of courses leading to new UNL Culinology degree programme.

Clemson University, So. Carolina prefers to use term Culinary Science to describe the new emphasis. They retained the food technology curriculum and added culinary classes, defining Culinology as the blending of the disciplines of food science and culinary arts. By combining the knowledge of food science with the creativity of culinary arts, students are expected to develop unique skills that will enable them to develop new food products through creative process.

University of Cincinnati in association with Cincinnati State Technical and Community College have also started B.S. in Culinary Arts and Science. The students first complete the associate's degree in Culinary Arts in Cincinnati State, before fulfilling remaining portion of the curriculum for a Bachelor's degree in University of Cincinnati.

However, all these were dual courses with some blend of the two disciplines to somehow satisfy the needs of the new programme. The truly blended course was developed by Southwest Minnesota State University, Marshall, where Michael Cheng, after gaining experience from the first culinology effort in Nebraska, started a fully integrated four-year Culinology programme, in which principles of food science were interwoven with culinary arts.

To properly equip the programme, \$3.5 million resources were made available to renovate and construct four kitchens for basic skills, baking, demonstrations and product development as well as dining room, all comprising a total of 7,200 sq. ft. area. They also got on their staff, former chefs with considerable experience in hospitality industry. The curriculum included following courses

- Introduction to Baking & Pastry;
- Principles of Garde Manger & Buffet;
- International Cuisine—includes a technical approach to flavour profiles;
- Food Science—major food components and food preservation;
- Principles of Meat Identification, Fabrication and Evaluation;
- Aromatics and Flavours;
- Food Sensory Analysis;
- Food Products Research and Development Methodology—new-product development, from concept to store shelves;
- Food Chemistry and Analysis;
- Fundamentals of Food Processing;
- Food Trends, Legislation and Regulation;
- Advanced Culinary Science— an examination of taste, cooking techniques, ingredients and flavouring techniques;
- Quality Assurance of Food Products;
- Product Development—students develop products for commercial or retail food manufacturers and foodservice operations; a hands-on, real-world course.

This course is expected to prepare students to take up careers of chefs with an understanding of basic chemistry so they would have a solid grasp of how ingredients interact. Alternatively, as food scientists, they would be capable to better understanding in tacking recipes with new ingredients using their culinary arts' tools. Thus they would be invaluable both in hospitality and in food industry.

Presently food science and technology graduates learn about the quantity food manufacture and factors affecting its stability. Most new food manufacturing companies are looking for food scientists for optimisation and quality control of the products that are developed elsewhere mostly by chefs. This does not give the food scientists much challenge to develop anything new. Moreover, entrepreneurs do not feel that food scientists have enough culinary artistry to develop new products. They prefer to use the chefs of hospitality industry to give them new products, which are manufactured on a larger scale in the company with the help of food scientists. This reduces the role of food scientists to a lesser useful position.

Food scientists are capable of quantity manufacture, scaling up of a recipe developed in kitchens. Here some knowledge of engineering as well as microbiology, nutrition etc. becomes quite useful in developing a process for large-scale manufacture of food products, using optimal ingredients, environmental conditions, packaging material and additives that will give a packaged food product lasting for a period long enough to allow commercial activity till consumers use it at home. However, once the product and process has been optimised, the management should try to utilise the services of food scientists to develop better and newer products. This unfortunately does not happen as they have greater confidence in chefs.

However, if there were to be culinology graduates around who could take up the responsibility of developing new products that would have high consumer acceptability and optimise the processing conditions for producing safer, high quality, nutritious products, then these professionals would have tasks year-round.

Presently, there is a lot of interest in traditional Indian food products as well as new products that have taste, flavour, appearance etc. as the more desirable qualities. Consumers would like convenience but not at the sacrifice of quality and taste. This requires thorough understanding of how these foods are made from the culinary point of view and design a process that will ensure the sensory quality to remain intact while processing and preserving them for marketing.

Markets are also receptive for new products. Earlier price constraints are also somewhat relaxed as consumers are willing to pay more for convenience and taste. This is where some imaginative recipes, traditional or western foods that have been modified to suit the taste preferences, better nutrition for the new lifestyle, and convenient to prepare and to consume, will be the emphasis of these new products. Some new concepts have not lived up to the taste criteria and some have not served the suggested utility. However, some hamburger and pizza makers have realised the needs and modified their wares to suit the consumers and even at somewhat high prices doing brisk business.

Possibly it is time we had a fresh look at our traditional food science curriculum and design a course that will truly meet the needs of the industry and train the students accordingly.

For further information on Culinology:

<http://www.clemson.edu/foodscience/PDF%20Downloads/CulinologyTM%20Comes%20to%20Clemson.pdf>

http://www.usatoday.com/tech/news/techinnovations/2005-08-14-culinology_x.htm

<http://www.culinology.com/>

<http://www.southwestmsu.edu/Academics/Programs/Culinology/News/SMSU%20Culinology%20Article%20Dec%2006.pdf>