

# Postgraduate Diploma

Nutrigenomics and Precision Nutrition.  
Laboratory, Biostatistics and Current  
Market for Nursing





## Postgraduate Diploma Nutrigenomics and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/in/nursing/postgraduate-diploma/postgraduate-diploma-nutrigenomics-precision-nutrition-laboratory-biostatistics-current-market-nursing](http://www.techtute.com/in/nursing/postgraduate-diploma/postgraduate-diploma-nutrigenomics-precision-nutrition-laboratory-biostatistics-current-market-nursing)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 22*

06

Certificate

---

*p. 30*

# 01

# Introduction

Update your knowledge in Nutrigenomics and Precision Nutrition with this comprehensive Postgraduate Diploma that focuses on laboratory, biostatistics and current market issues. A specialization that will allow you to improve your daily practice with the help of the best teaching methodology.





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*Genomic and precision nutrition is a booming discipline that requires highly trained practitioners in the field"*



This Postgraduate Diploma details everything a healthcare practitioner needs to know about Nutrigenomics and Precision Nutrition, taking into account aspects related to the laboratory, biostatistics and the current market. Thus, the material is organized in such a way as to advance knowledge without leaving doubts or gaps in information. It is the best specialization on the market, because it offers the opportunity to learn online all the innovation in the field of genomic nutrition, including specific modules on laboratory techniques and statistics.

The program introduces the main and basic points of the human genome, genetic variation and the studies that have been carried out in the field, introducing their designs and their main importance so that the student can follow the following modules. In this regard, the main studies worldwide where genomic nutrition analyses have been performed and results published in the field are included.

Laboratory techniques used in the field of Nutrigenomics and Precision Nutrition are also shown, so the basics will be presented so that the student will be able to recognize and appreciate them once in a laboratory.

And the methodology used in human clinical studies is analyzed, delving into the designs used mainly in nutritional epidemiology. For this purpose, we show how to perform statistical analysis of studies in large nutrition populations.

Finally, the key aspects for the application of genomic nutrition in society, such as legal and ethical aspects, are presented and analyzed. Analyzing DTCs, the role of the healthcare practitioner in the new genomic and big data era, reflecting and analyzing cases from the past, present and anticipating future market developments in the field of genomic nutrition are fundamental aspects of this specialization.

This Postgraduate Diploma has the innovation of including practical sections on the current state of the market that offer a realistic, practical and up to date view for the practitioner who needs a 360° vision of the subject. The practical topics help to obtain the necessary critical capacity and deep knowledge of the subject matter for the student to use and apply it in their clinical practice.

This Postgraduate Diploma provides students with specific tools and skills to successfully develop their professional activity related to Nutrigenomics and Precision Nutrition.

This **Postgraduate Diploma in Nutrigenomics and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing** contains the most complete and up to date scientific program on the market. The most important features of the specialization are:

- ◆ The development of case studies presented by experts in Genomic and Precision Nutrition.
- ◆ The graphic, schematic, and eminently practical contents with which they are created contain information that is indispensable for professional practice.
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning.
- ◆ Special emphasis on innovative methodologies in genomic and precision nutrition, focusing on aspects such as laboratory, biostatistics and the current market.
- ◆ Theoretical lessons, questions to for the experts, debate forums on controversial topics, and individual reflection assignments.
- ◆ Content that is accessible from any fixed or portable device with an Internet connection.



*Get trained in the broad field of Nutritional Genomics and offer specialized treatments to your patients"*

“

*This Postgraduate Diploma is the best investment you can make in selecting a refresher program to get up to date with your knowledge in Nutrigenomics and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing”*

Its Teaching Staff includes Professionals belonging to the field of Nutrition, who contribute their work experience to this Specialization, as well as renowned Specialists from Reference Societies and Prestigious Universities.

Its Multimedia Content, elaborated with the latest Educational Technology, will allow the Professional a situated and contextual learning, that is to say, a Simulated Environment that will provide an immersive specialization programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. To this end, the professional will be assisted by a novel interactive video system conducted by renowned and highly experienced experts in genomic and precision nutrition: laboratory, biostatistics and current market.

*The Postgraduate Diploma allows training in simulated environments, which provide immersive learning programmed to train in real situations.*

*This 100% online Postgraduate Diploma will allow you to combine your studies with your professional work while increasing your knowledge in this field.*



# 02 Objectives

The main objective of the program is the development of theoretical and practical learning, so that the nursing practitioner can master the study of Nutritional Genomics and precision nutrition in a practical and rigorous way.





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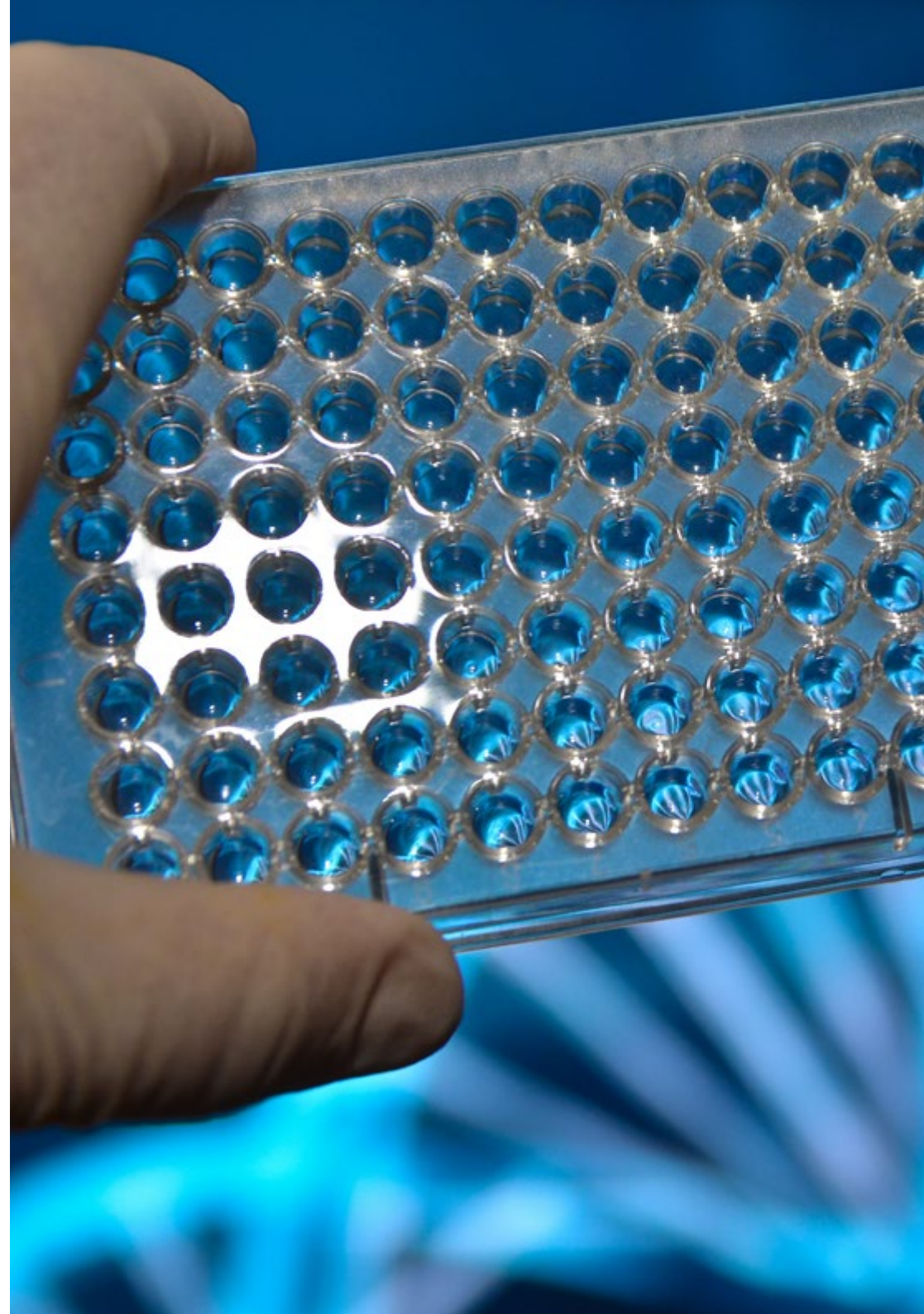
*This refresher program will generate a sense of security in the performance of your daily practice, which will help you grow personally and professionally.”*



## General Objectives

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- ◆ Acquire theoretical knowledge of human population genetics..
- ◆ Acquire knowledge of genomic and precision nutrition to be able to apply it in practice.
- ◆ Learn the development of this novel field and the key findings that contributed to its development.
- ◆ Know in which pathologies and conditions of human life Genomic and Precision Nutrition can be applied..
- ◆ To evaluate individual response to nutrition and dietary patterns in order to promote health and disease prevention.
- ◆ Learn how nutrition influences gene expression in humans.
- ◆ Learn about new concepts and future trends in the field of Genomic and Precision Nutrition..
- ◆ Adapt personalized dietary and lifestyle habits according to genetic polymorphisms.
- ◆ Provide health professionals with all the updated knowledge in the field of Genomic and Precision Nutrition in order to know how to apply it in their professional activity..
- ◆ Put all the up to date knowledge in perspective. Where we are now and where we are headed so that the student can appreciate the ethical, economic and scientific implications in the field.





## Specific Objectives

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### **Module 1. Introduction to Genomic and Precision Nutrition**

- ◆ Present definitions necessary to follow the thread of the following modules.
- ◆ Explain relevant points of human DNA, nutritional epidemiology, scientific method
- ◆ Analyze key studies in Genomic Nutrition.

### **Module 2. Laboratory Techniques for Nutritional Genomics**

- ◆ Understand the techniques used in Nutritional Genomics Studies.
- ◆ Acquiring the latest advances in Bioinformatics and Biomedical techniques.

### **Module 3. Biostatistics for Genomic Nutrition**

- ◆ Acquire the necessary knowledge to correctly design experimental studies in the areas of Nutrigenomics and Nutrigenetics.
- ◆ Deepen your knowledge about statistical models for clinical studies in humans.

### **Module 4. Current Market State**

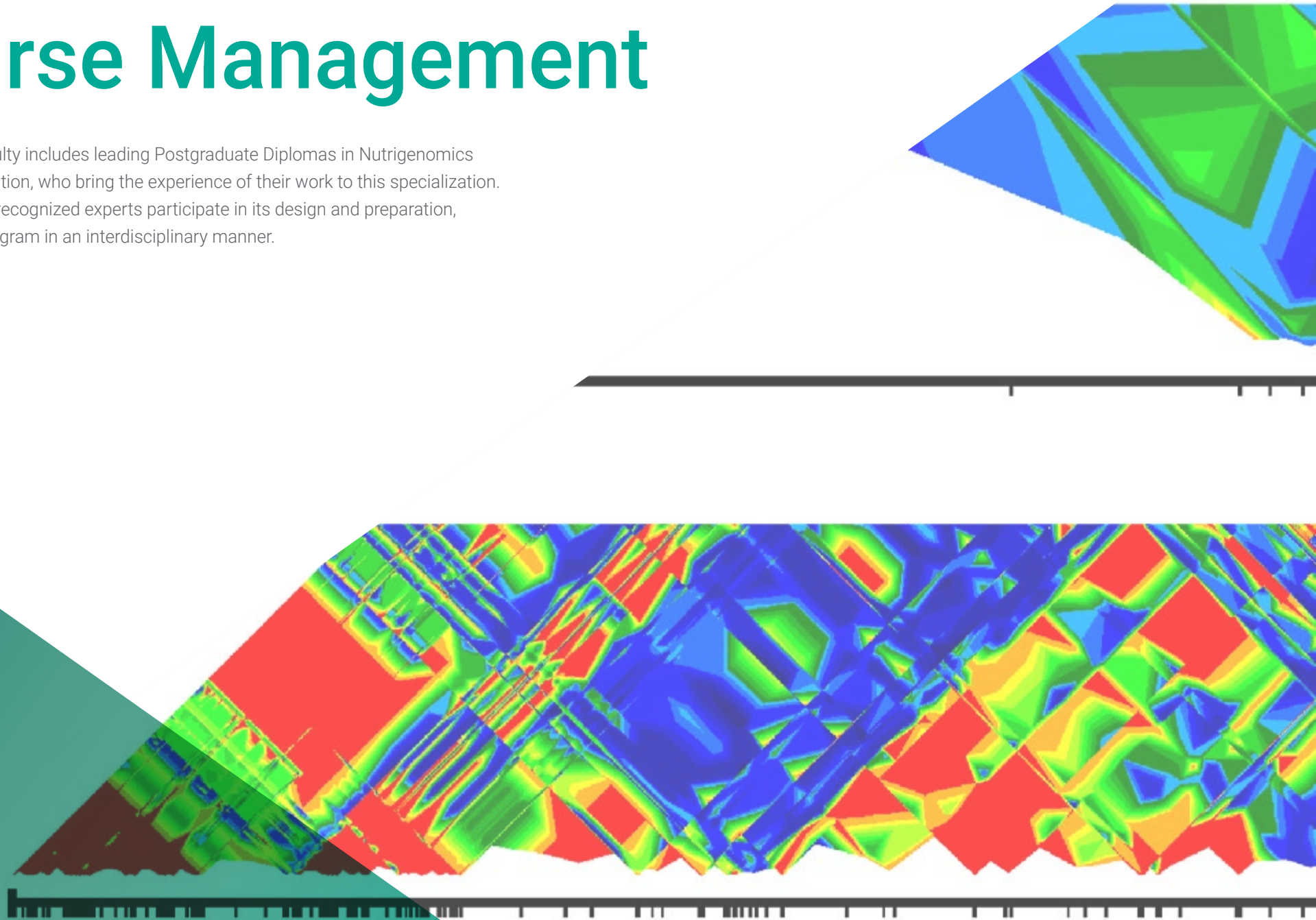
- ◆ Present and Analyze Key Aspects for the Application of Genomic Nutrition in Society.
- ◆ Reflect and Analyze Past and Present Cases and Anticipate Future Market Developments in the Field of Genomic Nutrition.

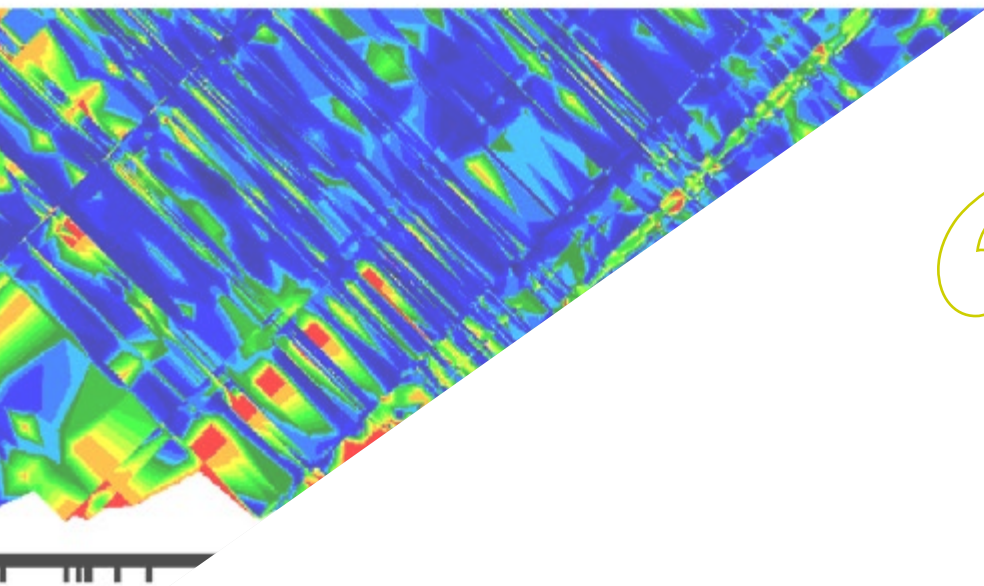
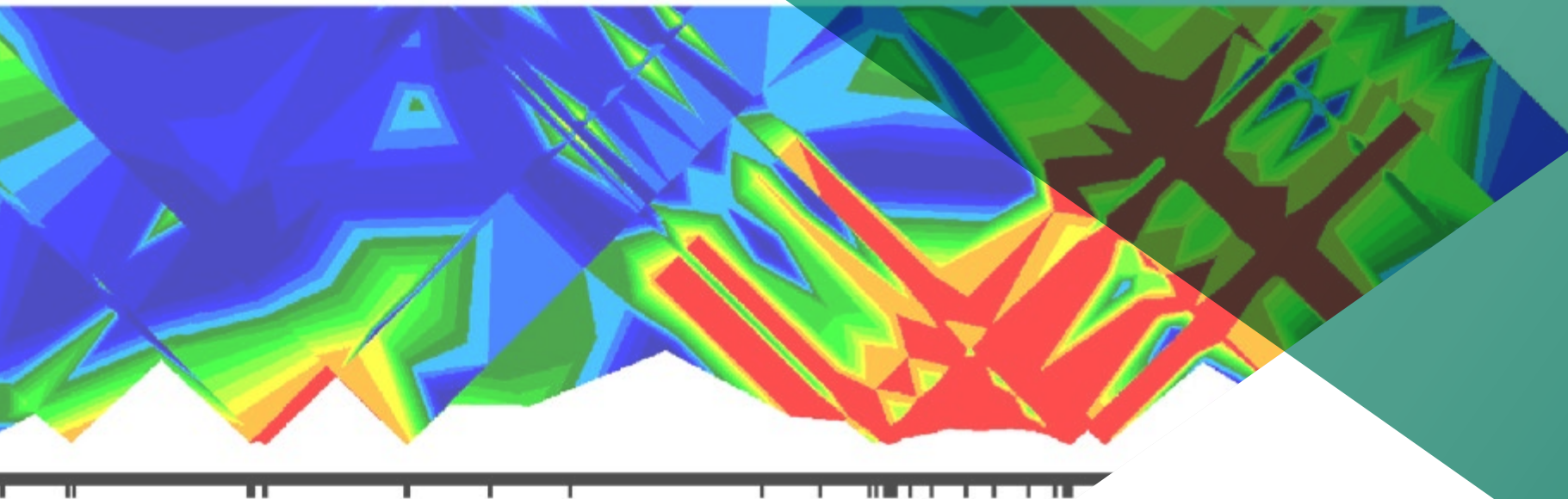


03

# Course Management

The program's faculty includes leading Postgraduate Diplomas in Nutrigenomics and Precision Nutrition, who bring the experience of their work to this specialization. Additionally, other recognized experts participate in its design and preparation, completing the program in an interdisciplinary manner.





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*Leading professionals in the field have come together to teach you the latest advances in Genomic and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing”*



## Management



### Dr. Konstantinidou, Valentini

- ♦ D. in Biomedicine.
- ♦ Lecturer in Nutrigenetics.
- ♦ Founder of DNANUTRICOACH®.
- ♦ Dietitian-Nutritionist.
- ♦ Food Technologist.

## Professors

### Mr. Anglada, Roger

- ♦ Graduate in Multimedia. Polytechnic University of Catalonia.
- ♦ Senior Technician in Analysis and Control. Narcís Monturiol HSI, Barcelona.
- ♦ Senior research support technician at the Genomics Service of the Pompeu Fabra University where he is responsible for the equipment and devices for sequencing and real-time PCR, providing support to users from different centers both in the design and interpretation of the results.
- ♦ Co-author of several scientific publications since 2002. He combines his work with lectures and teaching both at Pompeu Fabra University and in different programs and courses.



04

# Structure and Content

The structure of the contents has been designed by a team of professionals who are familiar with the implications of specialization in daily practice, and who are aware of the relevance of training in Nutritional Genomics and Precision Nutrition. They are committed to quality teaching through new educational technologies.





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*We have the most complete and updated scientific program on the market. We strive for the excellence that we want you to achieve too”*

## Module 1. Introduction to Genomic and Precision Nutrition

- 1.1. Human Genome
  - 1.1.1. DNA discovery
  - 1.1.2. Year 2001
  - 1.1.3. Human Genome Project
- 1.2. Variations of Interest in Nutrition
  - 1.2.1. Genomic Variations and the Search for Disease Genes
  - 1.2.2. Environmental vs. Genetic Factors and Heritability
  - 1.2.3. Differences between SNPs, Mutations and CNVs
- 1.3. The Genome of Rare and Complex Diseases
  - 1.3.1. Examples of Rare Diseases
  - 1.3.2. Examples of Complex Diseases
  - 1.3.3. Genotype and Phenotype
- 1.4. Precision Medicine
  - 1.4.1. Influence of Genetics and Environmental Factors in Complex Diseases
  - 1.4.2. Need for Precision The problem of Missing Heritability Definition of Interaction
- 1.5. Precision Nutrition vs. Community Nutrition
  - 1.5.1. The Principles of Nutritional Epidemiology
  - 1.5.2. Current Bases of Nutritional Research
  - 1.5.3. Experimental Designs in Precision Nutrition
- 1.6. Levels of Scientific Evidence
  - 1.6.1. Epidemiological Pyramid
  - 1.6.2. Regulation
  - 1.6.3. Official Guides
- 1.7. Consortia and Major Studies in Human Nutrition and Genomic Nutrition
  - 1.7.1. Precision4Health Project
  - 1.7.2. Framingham
  - 1.7.3. PREDIMED
  - 1.7.4. CORDIOPREV
- 1.8. Current European Studies
  - 1.8.1. PREDIMED Plus
  - 1.8.2. NU-AGE
  - 1.8.3. FOOD4me
  - 1.8.4. EPIC







## Module 2. Laboratory Techniques for Nutritional Genomics

- 2.1. Molecular Biology Laboratory
  - 2.1.1. Basic Instructions
  - 2.1.2. Basic Material
  - 2.1.3. Accreditations Required in the US
- 2.2. DNA Extraction
  - 2.2.1. From Saliva
  - 2.2.2. From Blood
  - 2.2.3. From Other Fabrics
- 2.3. Real-Time PCR
  - 2.3.1. Introduction - History of the Method
  - 2.3.2. Basic Protocols Used
  - 2.3.3. Most Used Equipment
- 2.4. Sequencing
  - 2.4.1. Introduction - History of the Method
  - 2.4.2. Basic Protocols Used
  - 2.4.3. Most Used Equipment
- 2.5. High-throughput
  - 2.5.1. Introduction - History of the Method
  - 2.5.2. Examples of Human Studies
- 2.6. Gene Expression - Genomics - Transcriptomics
  - 2.6.1. Introduction - History of the Method
  - 2.6.2. Microarrays
  - 2.6.3. Microfluidic Cards
  - 2.6.4. Examples of Human Studies
- 2.7. Omics Technologies and their Biomarkers
  - 2.7.1. Epigenomics
  - 2.7.2. Proteomics
  - 2.7.3. Metabolomics
  - 2.7.4. Metagenomics
- 2.8. Bioinformatics Analysis
  - 2.8.1. Pre- and post-Computing Bioinformatics Programs and Tools
  - 2.8.2. GO Terms, Clustering of DNA Microarray Data
  - 2.8.3. Functional Enrichment, GEPAS, Babelomics

### Module 3. Biostatistics for Genomic Nutrition

- 3.1. Biostatistics
  - 3.1.1. Human Studies Methodology
  - 3.1.2. Introduction to Experimental Design
  - 3.1.3. Estudios clínicos
- 3.2. Statistical Aspects of a Protocol
  - 3.2.1. Introduction, Objectives, Description of Variables
  - 3.2.2. Quantitative Variables
  - 3.2.3. Qualitative Variables
- 3.3. Design of Clinical Studies in Humans, Methodological Guidelines
  - 3.3.1. Designs with 2 treatments 2x2
  - 3.3.2. Designs with 3 treatments 3x3
  - 3.3.3. Parallel, Cross-Over and Adaptive Design
  - 3.3.4. Sample Size Determination and Power Analysis
- 3.4. Evaluation of Treatment Effect
  - 3.4.1. For Parallel Design, for Repeated Measurements, for Cross-Over Design
  - 3.4.2. Randomization of the Order of Treatment Allocation
  - 3.4.3. Carry-Over Effect (Wash Out)
- 3.5. Descriptive Statistics, Hypothesis Testing, Risk Calculation
  - 3.5.1. Consort, Populations
  - 3.5.2. Study Populations
  - 3.5.3. Grupo control
  - 3.5.4. Subgroup Analysis Types of Studies
- 3.6. Statistical Errors
  - 3.6.1. Measurement Errors
  - 3.6.2. Random Error
  - 3.6.3. Systematic Error
- 3.7. Statistical Bias
  - 3.7.1. Selection Bias
  - 3.7.2. Observation Bias
  - 3.7.3. Sesgo de asignación
- 3.8. Statistical Modeling
  - 3.8.1. Continuous Variable Models
  - 3.8.2. Categorical Variables Models
  - 3.8.3. Linear Mixed Models
  - 3.8.4. Missing data, Flow of Participants, Presentation of Results
  - 3.8.5. Adjustment for Baseline Values, Transformation of Response Variable: Differences, Ratios, Logarithms, Carry-Over Evaluation
- 3.9. Statistical Modeling with Co-Variables
  - 3.9.1. ANCOVA
  - 3.9.2. Logistic Regression for Binary and Count Variables
  - 3.9.3. Multi-Variant Analysis
- 3.10. Statistical Programs
  - 3.10.1. The R
  - 3.10.2. SPSS

## Module 4. Current Market State

- 4.1. Legal Aspects
- 4.2. Ethical Aspects
- 4.3. DTC (Direct-to-consumer) Tests
  - 4.3.1. Pros and Cons
  - 4.3.2. Myths of Early DTCs
- 4.4. Quality Criteria for a Nutrigenetic Test
  - 4.4.1. SNP Selection
  - 4.4.2. Interpretation of Results
  - 4.4.2. Laboratory Accreditations
- 4.5. Health Professionals
  - 4.5.1. Specialization Requirements
  - 4.5.2. Criteria of Professionals Applying Genomic Nutrition
- 4.6. Nutrigenomics in the Media
- 4.7. Integration of Evidence for Personalized Nutritional Counseling
- 4.8. Critical Analysis of the Current Situation
- 4.9. Discussion Work
- 4.10. Conclusions, use of Genomic and Precision Nutrition as Prevention



*A unique, key, and decisive master's degree experience to boost your professional development"*

05

# Methodology

This training provides you with a different way of learning. Our methodology uses a cyclical learning approach: ***Re-learning***.

This teaching system is used in the most prestigious medical schools in the world, and major publications such as the ***New England Journal of Medicine*** have considered it to be one of the most effective.





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*Discover Re-learning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*



## At TECH Nursing School we use the Case Method

In a given clinical situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical case studies based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Nurses learn better, faster, and more sustainably over time.

*With TECH, nurses can experience a learning methodology that is shaking the foundations of traditional universities around the world.*



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the real conditions in professional nursing practice.

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*Did you know that this method was developed in 1912 at Harvard for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method.*

**The effectiveness of the method is justified by four fundamental achievements:**

1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the university program.



## Re-learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

Our University is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.



*The nurse will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

With this methodology we have trained more than 175,000 nurses with unprecedented success, in all specialties regardless of from the workload. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Re-learning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (we learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



In this program you will have access to the best educational material, prepared with you in mind:



### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is really specific and precise.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



### Nursing Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current nursing procedures and techniques. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



### Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".



### Additional Reading

Recent articles, consensus documents, international guides. in our virtual library you will have access to everything you need to complete your training.







**Expert-Led Case Studies and Case Analysis**

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



**Testing & Retesting**

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you are achieving your goals.



**Classes**

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an expert strengthens knowledge and memory, and generates confidence in our future difficult decisions.



**Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.



# 06 Certificate

The **Postgraduate Diploma in Nutrigenomics and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing** guarantees you, in addition to the most rigorous and up to date specialization, access to a Postgraduate Diploma issued by **TECH Technological University**.





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*Successfully complete this specialisation and receive your university degree without travel or laborious paperwork”*

This **Postgraduate Diploma in Nutrigenomics and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing** contains the most complete and up to date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University via tracked delivery\***.

The Certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Nutrigenomics and Precision Nutrition. Laboratory, Biostatistics and Current Market for Nursing**

ECTS: **24**

Official Number of Hours: **600 h.**



\*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.



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Nutrigenomics and Precision  
Nutrition. Laboratory, Biostatistics  
and Current Market for Nursing

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online



# Postgraduate Diploma

Nutrigenomics and Precision Nutrition.  
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