WP2: Development of training courses

<u>Training course</u>

QUALITY MANAGEMENT TOOLS

Final report

FOODQA partner: Creative Thinking Development (CRE.THI.DEV.)

Local Scientific coordinators: Lina Tsakalou and Sofia Papakonstantinou (CRE.THI.DEV.)

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Project Nr 574010-EPP-1-2016-1-JO-EPPKA2-CBHE-JP

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1   Syllabus and Contents

TITLE: Quality Management Tools

Teaching/contact time: 16 hours

A: Target group

- Practitioners of the food chain sector
- Experienced professionals
- Undergraduates
- Master degree students, PhD

B: Learning outcomes

The aim was for trainees to be able to:

- Understand the basic principles of quality and quality management
- Understand the principles of Statistical Process Control
- Understand and use in processes the basic quality tools

C: Minimum knowledge pre-requisites

Minimum requirements (knowledge): Basic knowledge of statistics

D: Contents

	Sub-topic	Teaching material	Reference person
1.	**Basic Quality Concepts** • Basic Quality Definitions • History of Quality Control And Improvement	Powerpoint presentation , e-book	Ms Lina Tsakalou
2.	**Statistical Quality Control** • Statistics Used In Quality • Statistical Process Control • Acceptance Sampling • Design Of Experiments (DOE)	Powerpoint presentation, examples, e-book	Prof. Sotirios Bersimis
3.	**Quality Tools** • Check Sheets • Run Charts	Powerpoint presentation, examples, e-book	Prof. Sotirios Bersimis

Sub-topic	Teaching material	Reference person
• Histograms • Scatter Diagrams • Pareto Charts • Flowcharts • Cause And Effect (Fishbone) Diagrams • Control Charts • Process Capability (Capability Indices) • Quality Costs		

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E: Complementary activities

- A tour to the Agricultural University of Athens premises, including laboratories, workstations, simulation farms, etc.

- A visit at the YIOTIS food company in collaboration with the "Quality Management Systems (ISO 9001:2015)" Training Module that was presented on April 16 & April 17 by AUA. Presentation of the company's processes, laboratories etc.

F: Evaluation: self-evaluation

4 questions per subtopic were to be answered by the participants.

2 Planning and Organisation

Organisational information

Training courses: Quality management tools

Training Venue: Agricultural University of Athens (Iera Odos 75, 11855 Athens, Greece) - Central Administration Building – 1st floor

**Responsible partner:** CRE.THI.DEV.

Schedule at glance

15 April: Arrival in Athens for the first module "Quality Management Systems (ISO 9001:2015)" that took place on April 16 & April 17, for which AUA was the responsible partner.

18 April: Visits to AUA premises and to YIOTIS Food Company.

19 April – 21 April: Training of the course "Quality Management Tools" (classes, assessment, training evaluation, tour to AUA premises including laboratories, workstations, simulation farms, etc.).

Location of the training venue

The participants received analytical information regarding their stay in Athens, tickets and transportation, access to the training venue, etc.

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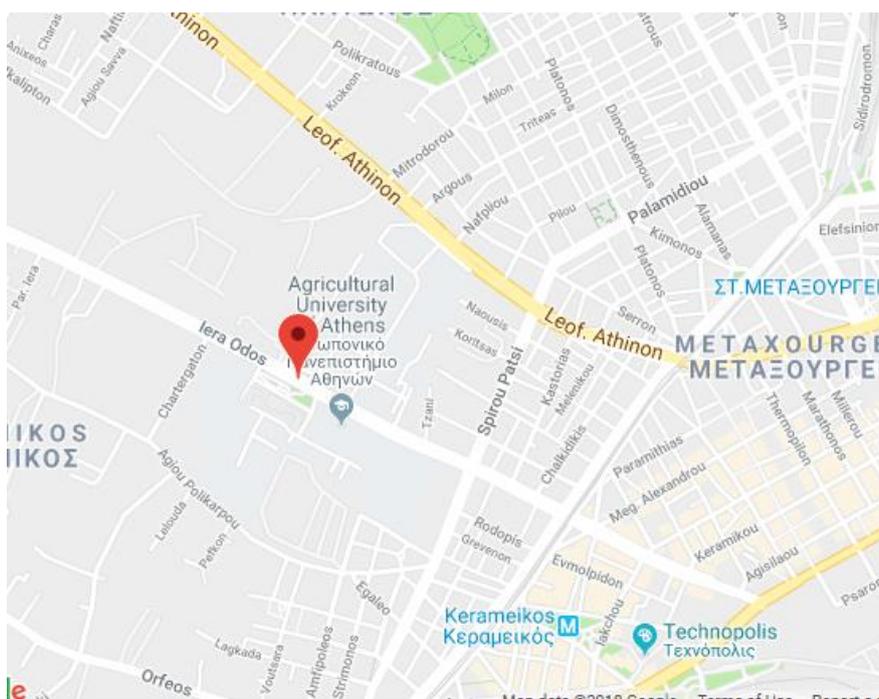
ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ
AGRICULTURAL UNIVERSITY OF ATHENS

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3 Training Course Timings

3.1 Schedule

Wednesday, 18th April 2018	
09:00 – 11:00	**Tour to AUA premises**
11:00 – 15:00	**Visit to YIOTIS Company** YIOTIS S.A. is a historic Greek food company located in Athens, with products that include baby foods, powder mixes for baking and cooking, chocolates, syrups and chilled desserts. The company was founded in 1930 and offered children food with ingredients from local crops such as corn and rice. From that day on, the company has never stopped innovating. The Company has one of the finest Research and Development Departments in the Greek Food Industry. The company meets the needs of the whole family, with a rich variety of innovative products that make them the homemaker's "right hand" when it comes to cooking and baking at home. In addition to this, it has been steadily playing its part in strengthening the Greek economy by consistently implementing its investment plans. In 2014, the company invested in acquiring a new warehouse in Mandra, Attica, with a total area of 9,000 sq. m. and capacity for 5,500 pallet stacks. In 2015, YIOTIS S.A. continued its steady investment plan in Greece and completed the construction of its new factory in Agrinio, with a total area of 10,000 sq. m. In 2017 the construction of new company facilities was completed. These 1350 sq. m. facilities house the "Hellenic Research and Innovation Center" (HRIC), which gives the company the ability and the momentum to increase the checks and controls, it carries out on its Food Production. At the same time, the company is dynamically strengthening its presence in foreign markets in all five continents. **YIOTIS S.A.** 130, Kifissou Av. GR-121 31, ATHENS GREECE http://www.jotis.gr

Thursday, 19th April 2018		
10:00 – 10:30	**Welcome**	
10:30-11:15	**Basic Quality Concepts** • Basic Quality Definitions • History Of Quality Control And Improvement	Lina Tsakalou (CRETHIDEV)
11:15 – 11:30	Break	
11:30 – 12:30	**Introduction to Statistical Quality Control** • Statistics Used In Quality • Statistical Definition of Quality • Design of Experiments • Statistical Process Control • Acceptance Sampling	Prof. Sotirios Bersimis
12:30 – 12:45	Break	
12:45 - 13:30	**The Main Quality Tools** • Check Sheets • Flowcharts • Cause And Effect (Fishbone)	Prof. Sotirios Bersimis

	• Histograms • Scatter Diagrams • Pareto Charts • Run Charts / Control Charts	
13:30 – 13:45	Break	
13:45 - 14:30	**The Main Quality Tools (continued)**	Prof. Sotirios Bersimis
14:30 – 14:45	Break	
14:45 – 15:30	**Introduction to Process Capability** • Process Distribution & Specifications • Quality Costs • Process Capability Indices (Cp) • Process Capability Indices (Cpk) **Summary of the day - Discussion**	Prof. Sotirios Bersimis
Friday, 20th April 2018		
10:00 – 12:00	Tour to AUA premises	
12:15-13:00	**Introduction to Statistical Process Control** • Basic Characteristics of Control Charts • Phases of Statistical Process Control • Control Charts for Variables • Average Run Length • Control Charts for Attributes	Prof. Sotirios Bersimis
13:00 – 13:15	Break	
13:15-14:00	**Introduction to Statistical Process Control (continued)**	Prof. Sotirios Bersimis
14:00 – 14:15	Break	
14:15-15:00	**Introduction to Statistical Process Control (continued)** **Summary of the day - Discussion**	Prof. Sotirios Bersimis
15:00-15:30	**Evaluation**	
Saturday, 21st April 2018		
10:00 – 12:00	**Case studies**	Lina Tsakalou (CRETHIDEV)
12:00 – 12:15	Break	
12:15-14:00	**Summary of the day - Discussion**	Lina Tsakalou (CRETHIDEV)

3.2 Teachers

- **Ms Lina Tsakalou**

Lina Tsakalou is a Chemical Engineer BSc is a Project Manager for CRE.THI.DEV where she has served as the Project Quality Manager for several Erasmus+ projects. She has worked at ELKEDE Technology & Design Centre SA at its Quality Department and the Quality Control Laboratory, in charge of the Product Certification Office. During the same time she also prepared the Certification Quality System for Accreditation assessment according to the EN45011 standard and has served for many years as an Assistant Quality Manager for the Quality Control Laboratory of ELKEDE. During her work at the Laboratory, she was in charge of the coordination of the internal laboratory quality control in the scope of the accreditation of the Laboratory according to EN ISO 17025. She has also been the main trainer on the subject "Introduction to the Requirements of ISO 9001", for entrepreneurs from Moldavia, Georgia, Ukraine, Serbia, Albania, and Egypt, in cooperation with the Training Centre of the National Bank of Greece & EOMMEX.

- **Prof. Sotirios Bersimis**

Bersimis Sotirios is an Assistant Professor at the Statistics and Insurance Science Department of the University of Piraeus, where he has been providing his academic services since 2010. He is a PhD holder in Statistics and Probability, from the Statistics and Insurance Science Department of the University of Piraeus. He also holds an MSc in Statistics from Athens University of Economics and Business and a BSc in Statistics and Insurance Science from the University of Piraeus. His doctoral research has been funded by a scholarship from the Hellenic General Secretary of Research and Technology. He has also been granted a post-doctoral fellow scholarship by the Hellenic State Scholarships Foundation. His teaching at the University of Piraeus involves "Statistics" in the Department of Economics, in the Department of Industrial Management and Technology, "Biostatistics" and "Statistical Quality Control" in the Department of Statistics and Insurance Science as well as "Biostatistics and Epidemiology" and "Clinical trials" both in a post-graduate level in the Statistics and Insurance Science Department and "Business Intelligence / Business Analytics" in a post-graduate level in the Department of Business Administration. Since December 15th 2015, he has been appointed as President of the Hellenic Organization for Health Care Services Provision (EOPYY), which is a governmental agency responsible for providing health care services to all Greek citizens.

http://www.unipi.gr/unipi/en/sbersim.html

https://www.linkedin.com/in/sotiris-bersimis-7564465/

4 List of Participants

The training seminar eventually was attended by 6 trainees (out of 19 registered). In the following table the persons that did not attend are noted.

UNIVERSITY	No.	TITLE	FULL NAME	
Jordan University of Science and Technology (JUST)	1	Mr.	JASER KHALAF QASEM MAHASNEH	Did not attend
	2	Mr.	BASHAR HAMMAD ALI AL-DWAIRI	Did not attend
	3	Mr.	RA'ED KHALED BDAIWI AL-ZOUBI	Did not attend
	4	Dr.	KHALID IZEDDIN BARAKAT ALKHATIB	Did not attend
Jerash University (JU)	5	Dr.	EBRAHEEM SULIMAN YOUSUF AL TAHA'T	Did not attend
	6	Dr.	AHMED MOHAMMD MAHMOUD AL-HAWAMDEH	Did not attend
The Jordan Food and Drug Administration (JFDA)	7	Eng.	SAFA'A REDWAN ASAD AL-SMADI	Attended
	8	Eng.	NAWAL AHMAD ABDELQADER ALSAKARNEH	Attended
	9	Eng.	OMAR M. A. ADWAN	Attended
	10	Eng.	RA'AFAT KHALAF ALI ALHALAKI	Attended
University of Jordan (UJ)	11	Prof.	MOHAMMAD ALI MOHAMMAD ALOMARI	Did not attend
	12	Prof.	(MOHAMMED ISAM) AHMAD MOHAMMED YAMANI	Did not attend
	13	Prof.	MAHER MAHMMUD BASHEER DABBAS	Did not attend
	14	Mr.	RA`ED ABDULELAH OTHMAN ALSAIED AHMAD	Did not attend
Al-Balqa` Applied University (BAU)	15	Eng.	BASIM ABDEL RAHMAN AHMAD ALDABABSEH	Did not attend
	16	Eng.	ASEEL KHALED MOHAMMAD ALRAHAHLEH	Did not attend
	17	Eng.	MOHAMMED NOURI ABDALLAH ABU HAZEEM	Attended
	18	Eng.	LAMA MOHAMMAD AHMAD ABU HAMOUR	Did not attend
	19	Dr.	MAHDI AHMAD MUSA NISIRAT	Attended

5 Signatures

There were some trainees who signed for more days of the training by accident. The signatures for the days that these trainees did not attend have been erased with a red X.

Attendance Sheet: LIST of participants & Signatures

Training course: Quality management tools

FOODQA TRAINING
16-21 April, 2018-04-14
Athens, Greece
Agricultural University of Athens (AUA) &
Creative Thinking Development (CRE.THI.DEV.)

UNIVERSITY	No.	TITLE	FULL NAME	19/04/2018	20/04/2018	21/04/2018
	1	Prof.	MAJDI ALI MEFLEH AL-MAHASNEH		Did not register for this module	
	2	Dr.	ANAS ABDEL-RA'UOF MAHMOUD ALNABULSI		Did not register for this module	
Jordan University of Science and Technology (JUST)	3	Dr.	HADIL SHAFEE MAH'D SOBIH		Did not register for this module	
	4	Dr.	HANA AWWAD MOHAMMAD ALKHALIDY		Did not register for this module	
	5	Mr.	JASER KHALAF QASEM MAHASNEH			
	6	Mr.	BASHAR HAMMAD ALI AL-DWAIRI			

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UNIVERSITY	No.	TITLE	FULL NAME	19/04/2018	20/04/2018	21/04/2018
Jordan University of Science and Technology (JUST)	7	Mr.	RA'ED KHALED BDAIWI AL-ZOUBI			
	8	Dr.	KHALID IZEDDIN BARAKAT ALKHATIB			
Jerash University (JU)	9	Dr.	EBRAHEEM SULIMAN YOUSUF AL TAHA'T			
	10	Dr.	AHMED MOHAMMD MAHMOUD AL-HAWAMDEH			
	11	Eng.	SAFA'A REDWAN ASAD AL-SMADI			
The Jordan Food and Drug Administration (JFDA)	12	Eng.	NAWAL AHMAD ABDELQADER ALSAKARNEH			
	13	Eng.	OMAR M. A. ADWAN			
	14	Eng.	RA'AFAT KHALAF ALI ALHALAKI			
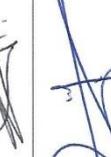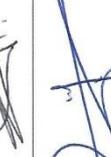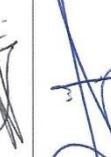
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FOODQA TRAINING
16-21 April, 2018-04-14
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UNIVERSITY	No.	TITLE	FULL NAME	19/04/2018	20/04/2018	21/04/2018
University of Jordan (UJ)	15	Prof.	MOHAMMAD ALI MOHAMMAD ALOMARI			
	16	Prof.	(MOHAMMED ISAM) AHMAD MOHAMMED YAMANI			
	17	Prof.	MAHER MAHMMUD BASHEER DABBAS			
	18	Mr.	RA'ED ABDULELAH OTHMAN ALSAIED AHMAD			
	19	Eng.	BASIM ABDEL RAHMAN AHMAD ALDABABSEH			
	20	Eng.	ASEEL KHALED MOHAMMAD ALRAHAHLEH			
Al-Balqa` Applied University (BAU)	21	Eng.	MOHAMMED NOURI ABDALLAH ABU HAZEEM			
	22	Eng.	LAMA MOHAMMAD AHMAD ABU HAMOUR			
	23	Dr.	MAHDI AHMAD MUSA NISIRAT			

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6 List of Additional Training Materials

DAY 1	INTRODUCTION TO QUALITY CONTROL (HISTORY & DEFINITIONS)	LINA TSAKALOU
	STATISTICAL QUALITY CONTROL PART 1: QUALITY QUALITY DIMENSIONS AND CHARACTERISTICS PRODUCTION PHASES & TECHNICS OF STATISTICAL QUALITY CONTROL BASIC STATISTICS THE MAGNIFICENT SEVEN UNDERSTANDING VARIABILITY PROCESS CAPABILITY	PROF. SOTIRIOS BERSIMIS
DAY 2	STATISTICAL QUALITY CONTROL PART 2: STATISTICAL BASIS OF THE CONTROL CHART CONTROL CHART FOR VARIABLES CONTROL CHARTS FOR INDIVIDUAL OBSERVATIONS CONTROL CHARTS FOR ATTRIBUTES	PROF. SOTIRIOS BERSIMIS
DAY 3	EXAMPLES	PROF. SOTIRIOS BERSIMIS

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7 Assessment

The final assessment of the acquired knowledge was carried out using a questionnaire made of 10 questions.

7.1 Training Assessment Questionnaire

Training assessment

Work Package: 2- Development of training courses

Seminar/Training Course Title: *Quality Management Tools*

Location of training: *Athens*

Date: *20 April 2018*

Your name (compulsory):

Your company/organisation (compulsory):

Email (compulsory):

1 Choose the best answer

1. Does the product/service meet the purpose of which it is destined?

(a) Performance

(b) Reliability

(c) Durability

(d) Serviceability

2. Flowchart

(a) is a form (document) used to collect data

(b) is a graphical representation of a process

(c) looks like a "Fish Skeleton"

(d) is used to improve Serviceability

3. Process capability index Cp should take values

(a) greater than 1

(b) greater than 1.66

(c) smaller than 1

(d) greater than 0

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4. Pareto chart is similar to

(a) bar chart

(b) box plot

(c) pie chart

(d) scatter plot

5. Using Scatter Plots you can

(a) identify out-of-control variables

(b) identify possible correlations

(c) depict the process flow

(d) plot one variable

6. In the following figure _____ is presented.
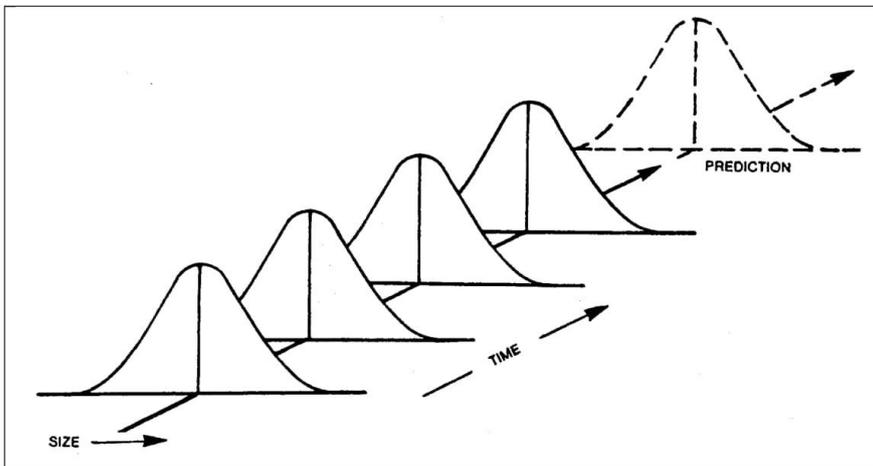
(a) an out-of-control process

(b) an in-control process

(c) a scatter plot

(d) a flow chart

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7. In the following figure _____ is presented.
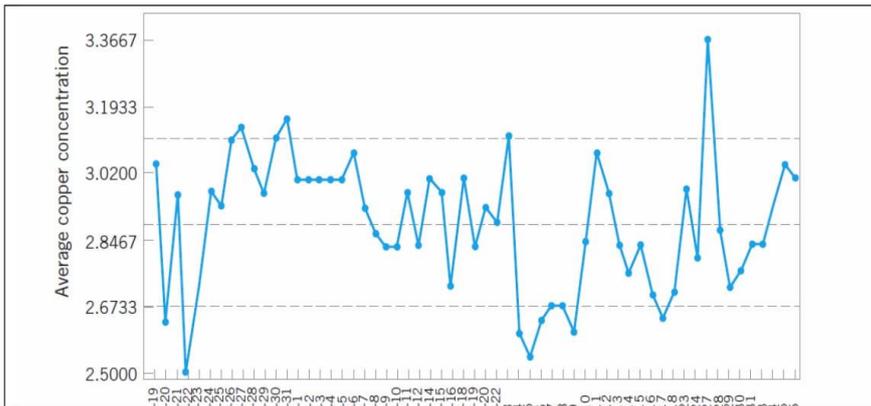

(a) a control chart

(b) a scatter plot

(c) a run chart

(d) a pre-control chart

8. In the following figure _____ is presented.
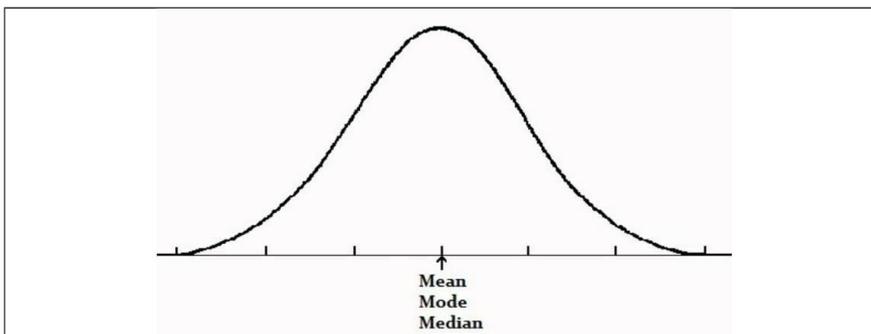

(a) a symmetrical distribution

(b) a skewed distribution

(c) a bivariate distribution

(d) a multivariate distribution

9. In the following figure _____ is presented.

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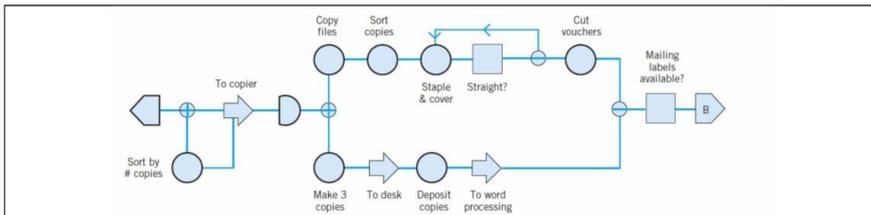
(a) a flowchart

(b) a fishbone chart

(c) a scatter plot

(d) a time series plot

10. In the following figure _____ is presented.
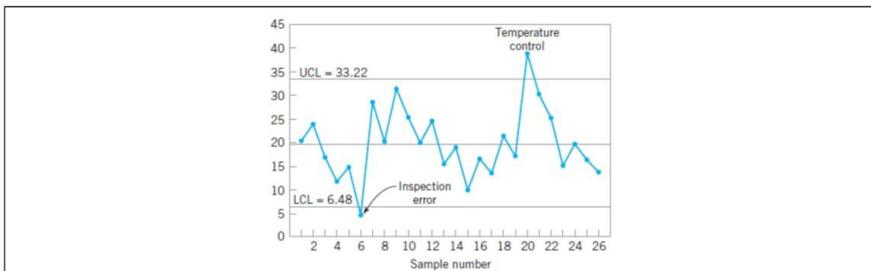

(a) a c-chart

(b) a p-chart

(c) a S-chart

(d) a time series plot

7.2 Assessment Results

All trainees have taken the exam, with average correct responses to questions 66,7%. All participants had correct responses above 60%.

8 Pictures

1. At the Fish, Microbiology and Dairy Laboratories, AUA

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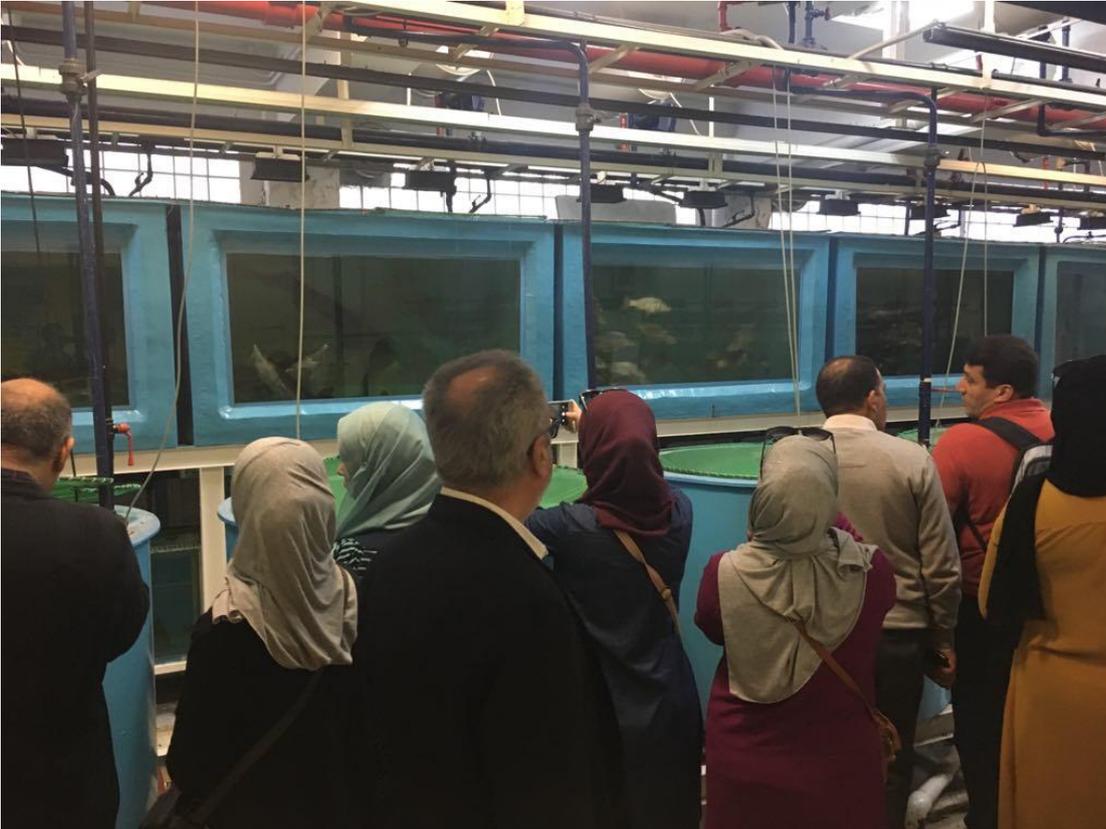
2. At the tour and presentations in YOTIS facilities:

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3.   Training Sessions with Ms Lina Tsakalou & Prof. Sotirios Bersimis

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9 Training Evaluation

Work Package: *2-Development of training courses*

Seminar/Training Course Title: *Quality Management Tools*

Location of training: *Athens, Greece*

Date: *18-22 April*

Please answer each question with a grade between 1-5, where 1 is Fully disagree and 5 is Fully agree.	**weighted average**
(1) Please rate the overall training experience.	
a) The training was well planned and organised.	87,0%
b) The training facilities were adequate and comfortable.	90,0%
c) The technical resources used were satisfactory.	83,0%
d) Materials provided were helpful.	90,0%
e) The objectives of the training were clearly defined and met.	83,0%
f) The training content was well organised.	77,0%
g) The topics of the training were clear and easy to follow.	87,0%
h) Length of training was sufficient.	70,0%
i) The training enhanced my understanding on the subject.	80,0%
j) Training was relevant to my needs.	83,0%
k) The training will be useful to my work and my professional growth.	90,0%
l) Training met my expectations.	80,0%
(2) What is your opinion of the Trainers, regarding:	
a) The trainer was knowledgeable about the training topic.	83,0%
b) The trainer had the ability to explain and illustrate concepts.	87,0%
c) The topics were presented in a clear and understandable manner.	87,0%

Please answer each question with a grade between 1-5, where 1 is Fully disagree and 5 is Fully agree.	**weighted average**
d) The trainer encouraged participation, interaction and answered questions clearly.	90,0%
e) The trainer's communication style kept me focused and interested.	83,0%

(3) **Was this training appropriate for your level of experience?**	**Yes** 100%	**No** 0%

(4) Which topics were not covered or insufficiently covered, in your opinion?

- ISO was not covered well.
- All topics of the course were covered.
- Still it's a standard and should be given before.
- All.

(5) Which topics were not relevant in your opinion?

- No topics were not relevant.
- The statistical part.
- Quality Tools, but it was good and the trainer is also good.
- None.

(6) What did you like best about the training?

- Dr. Bersimis Sotiris is an excellent trainer.
- I think you may add signature of trainee at each entry and exit, so you can monitor attendance perfectly.
- The Quality Management Tools.
- All things were good.
- Dr Bersimis of how he was relating the subject together.
- Dr Bersimis is an excellent trainer.
- Dr Bersimis' method of interconnecting the material.

(7) What suggestions or comments do you have for making the program more effective?

- Monitoring attendance and the materials could be given for the trainees before the training, so the trainees could be prepared for the course. Special thanks for all persons who were preparing and teaching this course.

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9.1 Overall Conclusions

- The overall results of the evaluation of the training are positive as the majority of the trainees agree that the objectives of the training were clearly defined and met, the training enhanced understanding on the subject and that the training was relevant to their needs.

- 50% of the respondents believe that the length of training was sufficient, while 33% had a neutral response to this question.

- All agree that the training was well planned and organized, the facilities were adequate and comfortable, and the materials provided were helpful and that the training will be useful to their work as well as to their professional growth.

- The majority agree that the technical resources used were satisfactory, the training content was well organized and that the topics of the training were clear and easy to follow.

- The majority agree that the training workshop met their expectations.

- The majority of the participants consider that the trainers were knowledgeable about the training topic and that they had the ability to explain and illustrate concepts.

- The majority believe that the topics were presented in a clear and understandable manner and that the trainers encouraged participation, interaction and answered questions clearly.

- The majority stressed that the trainers' communication style kept them focused and interested.

- All consider that the level of training was appropriate for their level of experience.

- All stressed that the trainers of the subject *Quality Management Tools*, were very qualified.

10 Annexes

Annex 1: Introduction to Quality Control (History & Definitions)

Annex 2: Statistical Quality Control Part 1

Annex 3: Statistical Quality Control Part 2

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