Beni-Suef University

Faculty of Veterinary Medicine

Department of Food Hygiene

Program Specification for PhDDegree

2017-2018

A-Basic information:

1- Program title: *PhD VSC***Specialty:** ***Hygiene and Control of Meat, Fish, their Products and Animal by-products.***
2- **Program type:** *Single*
3- **Department offering program:** *Food Hygiene and Control*
4- **Academic year:***2017-2018*
5- **Approval date of Department Council:**
6- **Approval date of Faculty Council:**
7- External evaluator(s):

B-Professional information:

1- Overall aims of the program:

By the end of this program, the graduate should

1. Acquire knowledge and skills related to advanced procedures and modern techniques of the hygiene, technology, microbiology, quality and safety of meat, fish flesh, and poultry meat and their products.
2. Mastering the skills of scientific research in the area of meat hygiene.
3. Expertizing the various methods of data collection and application of analytical

procedures in meat hygiene and control.

4. Integrating the specialized in the field of meat hygiene and related disciplines to conclude and develop the interdisciplinary relations.
5. Providing graduates the opportunity to develop communication skills.
6. Having the awareness about current public health problems related to food safety.
7. Identifying the problems and getting solutions based on sound scientific concepts.
8. Using appropriately the modern techniques and applications for meat analysis.
9. Acquiring communication and IT skills effectively and leading the team.
10. Exploiting the available resources and offering new ones.
11. Deciding effectively based on available information.
12. Having a positive attitude towards his/her role in community development, and environmental protection.
13. Considering continuous, self-learning and experience transfer.
14. Designing a research plan and steer the progress of research projects.
15. Expertizing writing of scientific articles and dissertation.

2-Intended learning outcomes of course (ILOs):

a- Knowledge and understanding:
By the end of this PhD program the graduate should be able to:

a1- Describe the state-of-the-art research techniques used in the field of Meat Hygiene & Control

a2- Acquire up-to-date knowledge in meat science to the critically analyze and discuss the scientific literature.

a3- Understanding principals to produce safe and highly quality meats, fish and poultry and their products.

a4- Acquire Knowledge related to chemical residues, animal by-products, food chemistry, advanced microbiology and parasitology.

a5- Outline the importance of advanced technology in food processing and preservation.

a6- Enumerate the different types of food animals, fishes and poultry.

a7-Sustain quality control in food industry

a8- Remark advanced research principles, regulations and ethics in the field of Meat Hygiene & Control

a9- Connect to recent professional practice regulations and ethics in the field of Meat Hygiene.

a10- Be aware of the effect of food technology, animal by-products utilization and chemical residues on the community and the environment.

b- Intellectual capacity:
By the end of this PhD program the graduate should be able to:

b1- Identify, conceptualize and define research problems and questions related to meat, fish and poultry hygiene.

b2- Critically evaluate the research data and develop new approach to deal with the research questions of hygiene

b3- Develop creative approaches to solve field problems, community issues or any issues associated with the research project.

b4- Identify, summarize and evaluate prior researches finding in the area of meat science

b5- Integrate between the applied hygienic measures and standards with produced meat quality.

b6- Determine the symptoms of food poisoning and foodborne illnesses and assess their risks.

b7- Evaluate the keeping quality of different foods by conventional and advanced techniques.

b8- Invent and innovate in the field of meat science, and discuss evidently.

b9- Perform research studies have impacts on the current status of meat safety

b10- Decide efficiently in the field of meat inspection.

b11- Plan for the improvement of meat hygiene, safety, quality and inspection.

c- Professional and practical skills:
By the end of this PhD program the graduate should be able to:

c1- Apply the principles of good experimental design and analysis to their own research project in the field of meat hygiene.

c2- Perform relevant statistical analysis of research data and interpret the results.

c3- Design and write a research proposal in the field of meat hygiene to be considered for funding by international or national agencies.

c4- Consider the technical, ethical and safety issues and available budgets during writing proposals and researching.

c5- Write a research article to be considered for publication in an international reputable journal.

c6- Obtain experience in handling of animals and poultry prior to slaughter.

c7- Apply GHPs, GMPs and HACCP systems inside a food organization.

c8- Acquire experience in the advanced technology of sensory, chemical, and microbiological examinations of meat, fish, poultry and their products.

c9- Exploit efficiently the available resources and creating new ones.

c10- Employ food standards and specifications in his/her research.

d- General and transferable skills:
On successful completion of the PhD program the graduate should be able to:

dl- Demonstrate an ability to learn independently in preparation for a career of lifelong learning.

d2- Establish interpersonal skills and teamwork abilities by the successful

completion of collaborative learn assignments and awarded researches projects.

d3- Present his/her research findings in oral and poster presentation forms using an arrange of appropriate software.

d4- Manage scientific events and time.

d5- Consider peer-learning and self-learning.

d6- Work in research groups and lead a team of researchers

3-Academic standards:

* The faculty mission, vision and strategic objective are confirmed to the academic standard. The learning outcomes are inline with the department and the faculty mission.

* Postgraduates NARS (March 2009) Master degree chapter issued by national authority for quality assurance and accreditation of education (NAQAAE) and Veterinary medicine post graduate academic standards (ARS) for the faculty of veterinary medicine, Beni-Suef University, Beni-Suef, Egypt are selected to confirm the appropriateness of the academic standards .

ARS (National Academic Reference Standards) prepared by NAQAAE.

4- Curriculum Structure and Contents

a-Program duration: 48 weeks.

b-Program structure: 3-5 preliminary courses

☒ **Hours/ week:**

Theoretical	5-8	Practical	6-8	Total	11-16

Preliminary courses

Code	Course title	Hours /week	Academic	Teaching

		theoretical	practical	year	duration
According to selected courses	Selected (3-5) PhD subsidiary courses from the various Faculty Departments depending on his/her dissertation topics.	5-8	6-8	Preliminary year	36 weeks

D- Courses contents

See subsidiary courses specification

5- Program Admission Requirements

* According to the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate Programs, applicants should have a master degree in the specialization subject he will register in one of the Egyptian Universities or an equivalent degree from any approved university or another recognized scientific institute.

* According to Beni-Suef University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects:

1-English language (Toefl or equivalent degree)

* Admission to the program is open annually during March and September.

*The faculty council has the right to suspend the student enrolment for a certain period if he/she has an acceptable excuse preventing him/her from continuing his study or research.

6. Regulations for Progression and Program Completion

After finishing the preliminary courses, the graduate student will be eligible to sit for the examination according to the following roles:

No. of course teaching hours/ week	Allowed written examined time	Degree	
		Theoretical	Practical and oral exam
≥ 3 hours	3 hours	50	50
≤ 3 hours	2 hours	25	25

-The faculty council has the right to deprive the applicant from entering the exams if his attendance courses is less than 75% .

-Failure or depriving from entering one or more courses does not require reexamination of other passed courses.

-The applicant should present a seminar within 2 years after registration about his/her dissertation topics which should be assessed and accepted by a specialized committee of professors and assistant professors (3 in number).

-The applicant should submit the thesis that accepted by the judging committee in an open discussion and the following polices should be met:

-Pass all preliminary curriculums successfully.

-Acceptance of the seminar presented by the applicant.

-The applicant should publish at least two scientific papers from the outcomes of his/her research in local or international journal(s).

Qualification grades of the preliminary courses:

Excellent	≥ 90
Very good	80-89
Good	70-79
Pass	60-69
Failed	45 to less than 60 weak

	Less than 45 Very weak

After passing, the graduate starts the practical research of his/her Ph.D. thesis at the beginning of the second year.

The candidate will receive his/her degree after evaluating and approving the thesis by a committee according to University regulations.

7-Graduate student assessment

A: Assessment Tools

According the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate, students should be assessed at the end of preliminary year and the thesis should be evaluated and approved by a committee after at least three years from registration date according to University regulations.

Preliminary year:

Assessments methods for each course	**practical exam**	**Oral exam**	**Written exam**
Time of Assessments	By the end of the year	By the end of the year	By the end of the year
Marks	25	25	50

Ph.D. dissertation:

The Ph.D. students should prepare a thesis in the field of hygiene and control of meat, fish and their products and animal byproducts. The department and the ethical committees must approve the protocol of the research. The thesis includes a review part with a practical part. The thesis is supervised by 2-4 staff members and may include related specialties according to the topics of the research. The thesis should be evaluated and approved by a committee according to University regulations.

B- Matrix alignment of the measured ILOs:

Assessments methods	Matrix alignment of the measured ILOs			
	K&U (a)	I.S (b)	P&P. S (c)	G&T. S (d)
Written exam	5,7,8	1,3,6		-----
Practical exam		3,4,5,6,	1.2.3.4.6.	2.3.6
Oral exam	1,2,3,4,5	1, 4,5,6,	7	

8- Evaluation of Program Intended Learning Outcomes:

Evaluator	Tool	Sample
1. Postgraduate Students	Questionnaire at the end of the program	All the PG students
4. External Evaluators	Review program and courses Attending the final exam	Once before implementation annual report
5. College Quality Assurance committee	Annual program reviewer	

PhD Program Courses Matrix with ILOs

Academic standards / Program ILOs		Courses
Knowledge and understanding	**a1**	**Ph-122, Ph-87, Ph-124, Ph-125**
	a2	**Ph-127, Ph-128, Ph-124, Ph-125**
	a3	**Ph-123, Ph-124, Ph-125**
	a4	**Ph-124, Ph-125, Ph-126, Ph-128, Ph-152**
	a5	**Ph-115, Ph-124**
	a6	**Ph-120, Ph-121, Ph-123**
	a7	**Ph-124, Ph-129, Ph-126, Ph-115**
	a8	**Ph-120, Ph-121, Ph-122**
	a9	**Ph-121, Ph-122, Ph-124, Ph-125**
	a10	**Ph-124, Ph-126, Ph-129, Ph-115**
Intellectual skills	**b1**	**Ph-121, Ph-122, Ph-123**
	b2	**Ph-87, Ph-121, Ph-122**
	b3	**Ph-126, Ph-127, Ph-128**
	b4	**Ph-120, Ph-124, Ph-125**
	b5	**Ph-121, Ph-122, Ph-126**
	b6	**Ph-117, Ph-125**
	b7	**Ph-121, Ph-122, Ph-124**
	b8	**Ph-87, Ph-125, Ph-126**
	b9	**Ph-114, Ph-125, Ph-126, Ph-127**
	b10	**Ph-121, Ph-122**
	b11	**Ph-121, Ph-122, Ph-125**
Professional and practical skills	**c1**	**Ph-211, Ph-212**
	c2	**Ph-121, Ph-122, Ph-125**

	c3	**Ph-125, Ph-126, Ph-127**
	c4	**Ph-124, Ph-125, Ph-126**
	c5	**Ph-87, Ph-125, Ph-211**
	c6	**Ph-120, Ph-121, Ph-123**
	c7	**Ph-124, Ph-125, Ph-129**
	c8	**Ph-123, Ph-124, Ph-125, Ph-126**
	c9	**Ph-122, Ph-124, Ph-125**
	c10	**Ph-124, Ph-125, Ph-127**
General and transferable skills	**d1**	**Ph-121, Ph-122**
	d2	**Ph-124, Ph-125, Ph-126**
	d3	**Ph-116, Ph-125, Ph-129**
	d4	**Ph-87, Ph-121, Ph-124**
	d5	**Ph-125, Ph-126, Ph-214**
	d6	**Ph-121, Ph-122, Ph-125**

Program aims /Program ILOS Matrix

Program ILOs / **Program ILOS**		**Program aims**														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Knowledge and understanding	a.1-	√	√	√												
	a2-	√														
	a3-	√														
	a4-	√	√	√	√		√									
	a5-	√														
	a6-	√														
	a7-	√														
	a8-	√	√	√	√											
	a9-	√	√	√	√											
	a10-	√					√									
Intellectual skills	b1							√								
	b2		√	√												
	b3							√								
	b4		√	√												
	b5	√														
	b6	√					√									

Program ILOs / Program ILOS		Program aims														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	b7	√		√					√							
	b8		√	√												
	b9		√	√	√			√								
	b10											√				
	b11												√			
Practical and professional skills	c1-														√	
	c2			√												
	c3														√	
	c4										√					
	c5															√
	c6	√														
	c7	√					√									
	c8	√							√							
	c9										√					
	c10	√														
General and transferable skills	d1	√												√		
	d2									√						
	d3					√										
	d4					√				√						
	d5													√		
	d6									√						

Program coordinator **Head of Department**

Dr. Nasser Sayed **Prof. Fathy Khalafalla**

Matrix NARS with Program ILOs

Academic standards / Program ILOs		Knowledge and understanding					Intellectual skills									Professional and practical skills					General and transferable skills						
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	1	2	3	4	5	1	2	3	4	5	6	7
Knowledge and understanding	**1**	■																									
	2	■																									
	3	■	■																								
	4	■																									
	5	■																									
	6	■				■																					
	7				■																						
	8		■																								
	9			■																							
	10					■																					
Intellectual skills	**1**						■																				
	2						■																				
	3							■																			
	4						■	■																			
	5						■						■														

	6																											
	7																											
	8																											
	9																											
	10																											
	11																											
Professional and practical skills	**1**																											
	2																											
	3																											
	4																											
	5																											
	6																											
	7																											
	8																											
	9																											
	10																											
General and transferable skills	**1**																											
	2																											
	3																											

	4																												
	5																												
	6																												

Postgraduate Course Specification

1- Basic information

Course Code: Ph-120

Course title :**Food animal hygiene**

Program title: Ph.D. degree of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 3 hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should understand the academic and practical knowledge related to characteristics of live animal which influence meat quality, methods of transportation and handling of food animals prior to slaughter.

- Enumerating the different types of food animals
- Outlining the importance of pre-slaughter care on meat quality
- Interpreting the keeping quality of meat

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-

al-Understanding principals to produce safe meat through proper handling and transportation of food animals prior to slaughter.

a2-Recognize the affections which associated with improper handling of animals prior to slaughter.

a3- Explain the importance of pre-slaughter care on meat quality.

a4- Enumerate the different types of food animals.

a5- Explain the factors affecting meat quality.

a6. list the different methods of abattoir sanitation.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-

b1- Integrate between the improper pre-slaughter care with produced meat quality.

b2- Demonstrate the post mortem affections associated with bad handling of animals during transportation to slaughter house.

b3- Determine the effect of improper abattoir sanitation on meat quality.

b4- Evaluate the keeping quality of meat.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1- Obtain experience in handling of animals prior to slaughter.

c2- Acquire experiences in the main legal requirements associated with animal transportation to abattoir and the vehicles used for transportation.

c3- Apply ante-mortem and post-mortem examinations of food animals.

c4- Determination of the different affections associated with bad handling of animals.

c5- apply abattoir sanitation
c6- identify different types of stamps.

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2-Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Food animals	4	2	2
Characteristics of live animal which influence meat quality • Animal health • Age • Genetics and breeding • Sex • Husbandry and housing • Feeding • Veterinary practices (vaccination, injections and surgical operations)	9	4	5
Transportation and handling of live stock prior to slaughter- 1. Transportation • Control of animals • Managements • Ways of transports 1. Quarantine • Regulation • Laraige • Animal management • Native and imported animals • Duration • Diseases detection and control	15	9	6
Slaughterhouses • Pre-slaughter care • Antemortem inspection • Postmortem inspection	38	9	29
Handling of meat • Stamps and carcass grading	28	8	10

• Chilling • Freezing • Offals • By-products			
Abattoirs, meat plants and food surfaces sanitation and its effects on meat quality	24	4	20
Student activities: - Abattoir visits - Writing assays - Internet search			
Total hours	108	36	72

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**: to abattoirs of animals and poultry.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Written Exam	a1to a5	b1to b3	c2,c4	
Practical Exam		b1- b2- b3-	c1- c2- c3- c4	
Oral Exam	a1to a5	b1,b2,b3		d3

6.2. Assessment schedules

Method	Week(s)
Written Exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written Exam	**50%**

Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.
- Text book of Meat Technology and Preservation, professor/ Fathy Ahmed Khalafalla, 2004.
- Practical Meat Hygiene, professor/ FathyAhmedKhalafalla and professor/Fatma Hassan Mohammed, 2004.
- Practical meat technology and preservation, professor/FathyAhmedKhalafalla and professor/ Fatma Hassan Mohammed, 2004.

These previous books are available at food hygiene department, faculty of veterinary medicine, Benisuef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- The microbiology of safe food (StephenJ.Forsythe), rst published 2000

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)
- FDA
- FAO
- International journal of food science and technology

- Websites

- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge and Understanding (a)						Intellectual Skills (b)			Practical and Professional Skills ©						General & Transferable Skills (d)		
			1	2	3	4	5	6	1	2	3	1	2	3	4	5	6	1	2	3
1	**Food animals**	4				**x**						**X**	**x**	**x**						
2	**Characteristics of live animal which influence meat quality** • Animal health • Age • Genetics and breeding • Sex • Husbandry and housing • Feeding • Veterinary practices (vaccination, injections and surgical operations)	9	**X**	**x**	**X**				**x**	**x**		**X**								
3	**Transportation and handling of live stock prior to slaughter-** 1. Transportation • Control of animals • Managements • Ways of transports 1. Quarantine • Regulation • Laraige • Animal management • Native and imported animals	13	**x**	**x**	**X**					**x**			**x**							

	Topics	Hours	Knowledge and Understanding (a)						Intellectual Skills (b)			Practical and Professional Skills ©						General & Transferable Skills (d)		
			1	2	3	4	5	6	1	2	3	1	2	3	4	5	6	1	2	3
	• Duration • Diseases detection and control																			
4	**Slaughter houses** • Pre-slaughter care • Ante-mortem inspection • Postmortem inspection	36	**X**	**x**	**X**		**x**		**x**	**x**				**x**	**x**					
5	**Handling of meat** • Stamps and carcass grading • Chilling • Freezing • Offal • By-products	28															**X**			
6	**Abattoirs, meat plants and food surfaces sanitation and its effects on meat quality**	24						**x**			**x**					**x**				
7	Student activities: - Abattoir visits - Writing assays - Internet search																	**x**	**x**	**x**

Postgraduate Course Specification

1. Basic information

Course Code: Ph-121

Course title :Sanitation and management of slaughterhouses

Program title: Ph.D. degree in Hygiene and Control of Meat, Fish, their Products and Animal by-products.

Contact hours/ week: 4hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

The student should understand the academic and practical knowledge related to facilities and requirements for slaughterhouse construction, methods of their sanitation and disposal of by-products.

- Listing the main facilities and requirements for abattoir construction.
- Operating abattoir sanitation properly.
- Correlating between the proper finishing of buildings inside abattoir and sanitation process.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-

a1-Recognize principals to produce safe meat through abattoir construction and operations.

a2-list the main facilities and requirements for abattoir constructions

a3-Set the different types of abattoirs.

a4- Enumerate the different compartments of a modern abattoir.

a5- Mention the different methods of abattoir sanitation and by-products disposal.

a6- classify different sanitizers used in abattoir

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-

b1- Integrate between the proper construction of abattoir and the easiness of operations inside it.

b2- Explain the importance of proper choice of abattoir site and overall layout on meat quality.

b3- correlate between the proper finishing of buildings inside abattoir and sanitation process.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1- Identify different supplies(water, electricity, sewage, etc.) for abattoir construction

c2- Design a modern abattoir.

c3-Apply GHP andGMP in abattoir.

c4-dispose appropriately animal by-products.

c5- operate abattoir sanitation properly.

c6- Examine abattoir compartments for effect sanitation

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her management skills.
d2- Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Facilities • Site • Supplying • Ventilation and air conditioning • Doors and windows • Floors and walls • Equipment design • Building and structural compartments of establishments	44	22	22
Sanitation • Cloths changing facilities and toilets • Water distribution system • Effluent disposal • Hand washing facilities • Cleaning and disinfection • Facilities for storage of waste and inedible materials • Hygiene and control of environment • Employees	80	40	40
Treatment and disposal of animal by-products	20	10	10
Student activities: - Abattoir visits - Writing assays - Internet search			
Total hours	144	72	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge and Understanding						Intellectual Skills			Practical and Professional Skills						General & Transferable Skills		
			1	2	3	4	5	6	1	2	3	1	2	3	4	5	6	1	2	3
1	**Facilities** • Site • Supplying (water, electricity, drainage) • Ventilation and air conditioning • Doors and windows • Floors and walls • Equipment design • Building and structural compartments of establishments	44	**x**	**x**	**x**	X			**x**	**x**	**x**	**x**	**x**							
2	**Sanitation** • Cloths changing facilities and toilets • Water distribution system • Effluent disposal • Hand washing facilities • Cleaning and disinfection • Facilities for storage of waste and inedible materials • Hygiene and control of environment • Employee	80		**x**	**x**	X	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**			
3	**Treatment and disposal of animal by-products**	20					**x**		**x**	**x**	**x**				**x**	**x**				
4	**Student activities:** - Abattoir visits - Writing assays - Internet search																	**x**	**x**	**x**

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**: to abattoirs of animals and poultry.
- **Practical sections:** microbiological examination of water, air and contact surfaces inside abattoir.
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Written Exam	a1to a6	b1to b3		
Practical Exam		b1- b2- b3	C1 to c6	
Oral Exam	a1- a2- a5	b1to b3		d3

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Writing exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.

These previous books areavailable at food hygiene department, faculty of veterinary medicine, Beni suef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- The microbiology of safe food (Stephen J. Forsythe), rst published 2000

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)
- FDA
- FAO
- International journal of food science and technology

- **Websites**
- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-122

Course title :Meat Hygiene

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 4hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should understand the academic knowledge and practical kills relatedto meat hygiene, abattoir related operations, meat microbiology and food poisoningthrough:

- Differentiating the general physiological and pathological conditions of slaughtered carcasses.
- Recognizing ante-mortem and post-mortem carcass inspection.
- Examining food animals (ante-mortal and post-mortal) and judge the results.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-

a 1- List food borne diseases and food poisoning microorganisms

a2 outlinethe judgment on the affected meat and carcasses.

a 3-Recognizetypes and classification of different affections of meat.

a 4-List chemical residues in meat and their public health significance.

a 5- Enumerate the different methods of slaughter, types of stamps and methods of identification of animal species and meat.

a6- outline the factors affecting meat quality and rigor mortis.

a 7- Recognize ante- mortem and post- mortem carcass inspection

a8 Recognize abattoir construction and abattoir related operations.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-

b1- Integrate the results of both ante mortem and postmortem examinations of food animals and give a final judgment.

b 2- Expect the causative agent of food poisoning outbreaks.

b3-Demonstrate the post mortem lesions of slaughtered food animals.

b4- Take decisions regarding ante mortem examination of animals in emergency state.

b 5- Evaluate the keeping quality of meat and meat products

b6- Differentiate the general physiological and pathological conditions of slaughtered carcasses.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1- locate and examine different carcass lymph nodes

c2- perform bacteriological examination of the carcasses and meat

c3-Interpret the results of laboratory examinations of suspected meat and its products.
c4- examine carcasses for parasitic diseases
c5- Examine food animals (ante mortal and post mortal) and judge the results.
c6- examine meat for freshness , bleeding efficacy ,and keeping quality parameters **.**

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2-Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Abattoir	8	4	4
Ante-mortem inspection of food animals	4	2	2
Methods of slaughter	4	2	2
Emergency slaughter	4	2	2
Bleeding	6	3	3
Dressing and carcass yield	4	2	2
Postmortem inspection of food animals	4	2	2
Stamping of carcasses	4	2	2
Lymphatic system in relation to butcher joints	10	5	5
Chemistry of meat	4	2	2
Rigor mortis	8	4	4
Identification of animal species	10	5	5
Abnormal condition and diseases of food animals	10	5	5
Affections of specific parts of carcass	6	3	3
Bacterial and viral diseases	20	13	7
Parasitic diseases	14	7	7
Microbiology of meat	10	5	5
Food poisoning	4	4	-
Bacteriological examination of carcasses	4	-	4
Detection of residues in animal tissues	6	-	6

Student activities:

- Abattoir visits
- Writing assays
- Internet search

Beni-Suef University
Faculty of Veterinary Medicine
Department of Food Hygiene

Year: 2017-2018

Ph.D. Specialization: Hygiene and control of meat, fish and their products and animal by-products

	Topics	Hours	Knowledge and Understanding								Intellectual Skills						Practical and Professional Skills						General & Transferable Skills		
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3
1	Abattoir	8								X															
2	Ante-mortem inspection of food animals	4							X		X			X							X				
3	Methods of slaughter	4					X																		
4	Emergency slaughter	4					X							X				x			X				
5	Bleeding	6		X			X	x							X				x			x			
6	Dressing and carcass yield	4		X											X						X				
7	Postmortem inspection of food animals	4							X		X						x			x	X				
8	Stamping of carcasses	4					X																		
9	Lymphatic system in relation to butcher joints	10			x				X				x	X			x			x	X				
10	Chemistry of meat	4				X					X				X				x			x			
11	Rigor mortis	8						x	X	X															
12	Identification of animal species	10					X														X				
13	Abnormal condition and diseases of food animals	10		X	X						X	x		X		x				x	X				
14	Affections of specific parts of carcass	6		X	X						X		x	x				x		x		x			
15	Bacterial and viral diseases	20	x		X						X	x	x					x	x						
16	Parasitic diseases	14		x	X								x	x			x		x	x					
17	Microbiology of meat	10	x								x							x	x						
18	Food poisoning	4	x			x						x													
19	Bacteriological examination of carcasses	4	x										x					x	x						
20	Detection of residues in animal tissues	6				x													x		x				

	Topics	**Hours**	**Knowledge and Understanding**								**Intellectual Skills**						**Practical and Professional Skills**						**General & Transferable Skills**		
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3
21	Student activities: - Abattoir visits - Writing assays - Internet search																						**x**	**x**	**x**

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**: to abattoirs and meat processing plants.
- **Practical sections:** Laboratory diagnosis of suspected meat and meat products by chemical and microbiological methods, identification of meat species by laboratory methods.
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1- to a8	b1tob6-		
Practical Exam			c1-to c6	
Oral Exam	a1- to a8	b1 to b6		d3

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.

The book isavailable at food hygiene department, faculty of veterinary medicine, Beni suef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- The microbiology of safe food (StephenJ. Forsythe), rst published 2000

- Meat science , an – introductory text, (P. D. Warris, 2000) faculty Library

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)
- FDA
- FAO
- International journal of food science and technology

- Websites

- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-123

Course title :Inspection of poultry and rabbit meat

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 3 hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should acquire the academic knowledge and practical skills relatedto poultry and rabbit slaughtering, processing and examinationthrough:

- Describing principals to produce poultry meat, rabbit meat and poultry products.
- Distinguishing the technology of poultry processing.
- Comparing between the different processing faults associated with poultry carcasses.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-
al- Describe principals to produce safe poultry meat, rabbit meat and poultry products
a2- Mention food borne diseases and food poisoning microorganisms associated with poultry and rabbit
a3- Recognize types and classification of different poultry meat products.
a4-Describe proper construction of poultry and rabbit slaughterhouses.
a5-Distinguish the technology of poultry processing.
a6-List the factors affecting poultry and rabbit meat quality.

b- Intellectual skills (Is

By the end of studying this course, the graduate should be able to:-
b1- Interpret the results of microbiological and chemical examinations of poultry and rabbit carcasses.
b2-Recognize the post mortem lesions of slaughtered poultry and rabbit.
b3-Summarize ante mortem examination of poultry flock.
b4-compare between the different processing faults associated with poultry carcasses.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-
c1-Inspect poultry and rabbit carcasses(ante-mortem and post-mortem examination.
c2- Design a poultry slaughterhouse.
c3- Acquire experiences in microbiological and chemical analysis of poultry carcasses.
c4- examine and judge the different bacterial, viral and parasitic affections

associated with poultry and rabbit carcasses
c5- Apply GMP and GHP in poultry processing plants.
c6-Identify different processing faults of poultry carcasses and products.

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Appreciate the importance of group working and cooperation.
d2- Enhancement of his/her communication skills.
d3- Manage scientific meetings and time.
d4- Enhancement of his/her effective presentation skills

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
I- Poultry	60	20	40
Introduction to poultry industry	3	1	2
Quality identification of poultry	3	1	2
Quality maintenance	6	2	4
Chemical and nutritive characteristics	6	2	4
Plant layout	3	1	2
Water supply and sanitation	3	1	2
Processing of fresh poultry	6	2	4
Inspection, diseases and processing faults	6	2	4
Packaging	3	1	2
Refrigerated storage	6	2	4
Microbiology of poultry meat	6	2	4
Processed products	3	1	2
Inedible products	3	1	2
The rendering plant	3	1	2
II- Rabbit	48	16	32
The rabbit production	6	2	4
Chemical and nutritive value	12	4	8
Slaughtering, inspection and diseases	12	4	8
Marketing processed rabbits	12	4	8
Inedible products	6	2	4
Student activities: - Poultry slaughterhouses and food plants visits - Writing assays - Internet search	-	-	-

Total hours	108	36	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge and Understanding						Intellectual Skills				Practical and Professional Skills						General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4
	I- Poultry																					
1	Introduction to poultry industry	3	x																			
2	Quality identification of poultry	3	x					x	x				x									
3	Quality maintenance	6						x									x					
4	Chemical and nutritive characteristics	6							x						x							
5	Plant layout	3				x								x			x					
6	Water supply and sanitation	3	x			x	X										x					
7	Processing of fresh poultry	6	x	x			X	x					x									
8	Inspection, diseases and processing faults	6		x	x		x		x	x	X	x	x			x		x				
9	Packaging	3	x		x		X											x				
10	Refrigerated storage	6	x				x											x				
11	Microbiology of poultry meat	6	x	x				x	x						x							
12	Processed products	3	x		x		X										x					
13	Inedible products	3	x		x									x			x					
14	The rendering plant	3												x			x					
	II- Rabbit																					
15	The rabbit production	6			x																	
16	Chemical and nutritive value	12	x						x						x							
17	Slaughtering, inspection and diseases	12				x				x						x		x				
19	Marketing processed rabbits	12	x					x														

	Topics	Hours	Knowledge and Understanding						Intellectual Skills				Practical and Professional Skills						General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4
20	Inedible products	6	**x**		x									**x**			**x**					
21	Student activities: - Poultry slaughterhouses and food plants visits - Writing assays - Internet search																		**x**	**x**	**x**	**x**

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**: to poultry and rabbit slaughter houses.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1toa6	b1to b4		
Practical Exam		b1to b4	c1 to c6	
Oral Exam	a1- a2- a3			D2& d4

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Poultry meat science (R.I.Richardson, 1999) (faculty library)

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Journal of Food Microbiology
- FSIS (Food science and inspection services)
- International journal of food science and technology

- **Websites**
- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-124

Course title: **Meat technology**

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 3 hrs

Approval Date: 12-9-2017

2- Professional information "Overall aims"

The student should acquire the academic knowledge and practical skills related to technological properties of meat, processing technology of meat as well as poultry, fish and meat preservation through.

1- Recognize types and classification of different processing faults of meat, poultry and fish products.
2- Describe chemical composition of meat, fish and poultry.
3- list the different methods of preservation.
4- Examine meat, fish and poultry products microbiologically and chemically

2- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:

al- Outline principals to produce safe meat, poultry and fish products through proper construction of food processing plants.

a2-Recognize types and classification of different processing faults of meat, poultry and fish products.

a3-Recognize chemical composition of meat, fish and poultry.

a4- Describe the technology of meat processing and different

a5- Enumerate the different methods of food packaging.

a6- List the different methods of preservation and its effect on meat quality.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:

b1- Integrate between the proper construction and overall layout of food plant and the product quality.

b2-interpret the main processing faults encountered in meat, poultry and fish products their causes, and how to avoid them.

b3- Evaluate the keeping quality of meat, fish and poultry products.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1- Examine and reporting meat, poultry and fish products organoleptically.

c2- Apply HACCP system in food processing plants.

c3- Examine meat, fish and poultry products microbiologically and chemically.

c4- Interpret the results of laboratory examinations of suspected meat products.

c5- Identify the different processing faults of meat products.
c6- Examine canned, refrigerated, and cured meat , poultry and fish products.

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2- Enhancement of his/her communication skills.
d3- Manage scientific meetings and time.
d4- Enhancement of his/her effective presentation skills

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Design and construction of meat processing plant	6	2	4
Chemistry of meat and nutritional value	8	4	4
Composition of meat extenders, its nutritional value and uses in meat processing	10	2	8
Plant additives used in meat processing	6	2	4
Curing chemicals, chemistry and function	6	2	4
Palatability characteristics of meat	6	2	4
Meat fats • Characteristics and uses • Processing • Antioxidants	6	2	4
Packaging technology	6	2	4
Curing	6	2	4
Smoking	6	2	4
Canning	6	2	4
Cold preservation	6	2	4
Sausage technology	6	2	4
Formulation meat technology	6	2	4
Processed poultry	6	2	4
Deterioration of processed meat	6	2	4
Application of HACCP in meat processing	6	2	4
Student activities: - Food plants visits - Writing assays - Internet search	-	-	-

Total hours	108	36	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	a-Knowledge and Understanding						b- Intellectual Skills			c- Practical and Professional Skills						d- General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	1	2	3	4	5	6	1	2	3	4
1.	Design and construction of meat processing plant		x						x												
2.	Chemistry of meat and nutritional value	8	x		x	x			x	x		x	x		x		x				
3.	Composition of meat extenders, its nutritional value and uses in meat processing	10					x	x													
4.	Plant additives used in meat processing	6		x	x						x					x					
5.	Curing chemicals, chemistry and function	6	x			x			x					x							
6.	Palatability characteristics of meat	6		x			x	x		x		x	x		x		x				
7.	Meat fats • Characteristics and uses • Processing • Antioxidants	6	x		x		x	x			x		x	x		x					
8.	Packaging technology	12	x			x			x			x			x		X				
9.	Curing	6	x							x				x		x					
10.	Smoking	6		x			x				x		x		x		X				
11.	Canning	6			x	x		x									X				
12.	Cold preservation	6	x												x						
13.	Sausage technology	6																			
14.	Formulation meat technology	6	x			x			x			x	x	x	x	x	x				
15.	Processed poultry	12			x						x					x					
16.	Deterioration of processed meat	6	x				x			x							x				
17.	Application of HACCP in meat processing												x								

	Topics	**Hours**	**a-Knowledge and Understanding**						**b- Intellectual Skills**			**c- Practical and Professional Skills**						**d- General & Transferable Skills**			
			1	2	3	4	5	6	1	2	3	1	2	3	4	5	6	1	2	3	4
18.	Student activities: - Food plants visits - Writing assays and internet search																	**x**	**x**	**x**	**x**

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**: to meat and poultry processing plants.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1to a6	b1to b3		
Practical Exam			c1-to c6	
Oral Exam	a1to a6	b1to b3		D2& d6

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.
- Text book of Meat Technology and Preservation, professor/ FathyAhmedKhalafalla, 2004.
- Practical Meat Hygiene, professor/ Fathy Ahmed Khalafalla and

professor/Fatma Hassan Mohammed, 2004.

- Meat technology and preservation, professor/ Fathy Ahmed Khalafalla These the book is available at food hygiene department, faculty of veterinary medicine, Beni suef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- Handbook of meat product technology (M. D. Ranken, 2000) (faculty library)
- HACCP in meat industry(Maytn Brown, 2000)
- Safety and quality issues in sh processing (Allen Brmner, 2002)

7.2. Recommended books

- - Fundamental food microbiology (B. Ray, 1996) (Faculty library.

7.4. Journals and Periodicals

Journals

- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- FSIS (Food science and inspection services)
- International journal of food science and technology

- **Websites**

- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-125

Course title : Microbiology of meat and meat products

Program title: Ph.D. degree in Hygiene and Control of Meat, Fish, their Products and Animal by-products.

Contact hours/ week: 4hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should understand the academic and practical knowledge relatedto meat and poultry microbiology, factors affecting growth of microorganisms in foods, food poisoning and spoilagethrough :

- Recognizing sources of meat contamination.
- Evaluating the keeping quality of meat and meat products.
- Expecting the causative agent of food poisoning outbreaks.

2- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-
al- Listfactors affecting growth of microorganisms in food.
a2- Classifyfood borne diseases and food poisoning microorganisms
a3-Recognizesources of meat contamination.
a4-Describeforms of meat and fat deterioration.
a5- Set the factors affecting meat quality.
a6- Describe the methods used for reduction of meat and poultry contamination.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-
b1- Expect the causative agent of food poisoning outbreaks.
b2- Interpret the results of microbiological examination of meat and meat products.
b3- Evaluate the keeping quality of meat and meat products.
b4-Recognize the main causes of meat spoilage.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-
c1- identify spoiled meat samples grossly.
c2- Operate microbiological and deterioration criteria analysis of meatand poultry.
c3-Interpret the results of laboratory examinations of suspected meat and its products.
c4- dispose different culture media and reagents for enumeration and isolation of microorganisms in meat.
c5- Diagnose a case of food poisoning and expect the causative agent.
c6- Design protocol for reduction of contamination of meat and poultry

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2-Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.
d4- Manage scientific meetings and time.
d5- Enhancement of his/her effective presentation skills

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Sources of contamination	16	8	8
Factors influencing the bacterial development	16	8	8
Spoilage of meat and fat A) Liability of meat and fat for spoilage a) Perishable foods b) Semi-perishable foods c) Stable foods B) Factors influencing spoilage a) Rate of contamination b) Growth rate of m.os. - Associated growth - Environmental conditions C) Spoilage of meat and fat	32	16	16
Microorganisms of importance in foods: A) Bacteria and its requirement for growth B) Yeast and its requirement for growth C) Mould and its requirement for growth	32	16	16
Bacterial food poisoning	16	8	8
Classification of meat into types according to bacterial growth A) Raw meat ❖ Chilled carcass meat ❖ Chilled vacuum packed joints ❖ Chilled retail cuts ❖ Chilled comminuted meat ❖ Frozen raw meat ❖ Low temperature rendered meat B) Dried meat C) Raw cured meat D) Cooked uncured meat	32	16	16

E) Cooked cured meat			
Student activities: - Abattoir and food plants visits - Writing assays - Internet search			
Total hours	144	72	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	Knowledge and Understanding						Intellectual Skills				Practical and Professional Skills						General & Transferable Skills				
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4	5
1	Sources of contamination	16			x			x	x			x											
2	Factors influencing the bacterial development	16	x					x			x					x							
3	Spoilage of meat and fat A) Liability of meat and fat for spoilage a) Perishable foods b) Semi-perishable foods c) Stable foods B) Factors influencing spoilage a) Rate of contamination b) Growth rate of m.os. - Associated growth - Environmental conditions C) Spoilage of meat and fat	32	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
4	Microorganisms of importance in foods: A) Bacteria and its requirement for growth B) Yeast and its requirement for growth C) Mould and its requirement for growth	32											x	x	x	x	x	x					
5	Bacterial food poisoning	16	x	x					x		x		x		x		x						
6	Classification of meat into types according to bacterial growth A) Raw meat ❖ Chilled carcass meat ❖ Chilled vacuum packed joints	32		x			x	x		x		x				x		x					

	Topics	**Hours**	**Knowledge and Understanding**						**Intellectual Skills**				**Practical and Professional Skills**						**General & Transferable Skills**				
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4	5
	❖ Chilled retail cuts ❖ Chilled comminuted meat ❖ Frozen raw meat ❖ Low temperature rendered meat B) Dried meat C) Raw cured meat D) Cooked uncured meat E) Cooked cured meat																						
7	Student activities: - Food plants visits - Writing assays - Internet search																		x	x	x	x	x

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1to a6	b1to b4		
Practical Exam			c1to c6	
Oral Exam	a1to a6	b1to b4		D3-d4- d5

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.

The book isavailable at food hygiene department, faculty of veterinary medicine, Beni suef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- Practical food micrbilogy (D. Roberts and M Greenwood) third edtion, 2003

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)

- Websites

- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-126

Course title :Microbiology of ready-to-eat cold meals

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 2hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should understand the academic and practical knowledge related to microbiology of ready-to-eat cold meals and edible offalthrough:

- Identifying food borne diseases and food poisoning microorganisms associated with ready to eat meals and offal.
- Listing thedifferent types of ready to eat meals and edible offal.
- Grossly examining ready to eat cold meals.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-
al- Outline the principals to produce safe ready to eat meals and proper storage.
a2- Identify food borne diseases and food poisoning microorganisms associated with ready to eat meals and offal.
a3- List the different types of ready to eat meals and edible offal.
a4- Set preparation methods of ready to eat meals and edible offal
a5- Enumerate the factors affecting quality and safety of ready to eat meals.
a6- Recognize the microbiological standards of cold and ready to eat meals.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-
b1-Evaluate the quality control of cold meals.
b2- Interpret the results of microbiological examination of ready to eat cold meals.
b3-identify the public health significance of ready to eat cold meals and offal.
b4-Recognize the keeping quality of cold meals.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-
c1- Grossly examine ready to eat cold meals.
c2-Perform proper preparation and storage methods of cold meals.
c3-apply microbiological and analysis of cold meals and offal.
c4- Interpret the results of laboratory examinations of suspected cold meals and offal.
c5- design consumer safe cooking procedures of ready to eat meals and their effect on quality.
C6-dispose different culture media and reagents for enumeration and isolation of

microorganisms in ready to eat cold meal.

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2- Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.
d4- Manage scientific meetings and time.
d5- Enhancement of his/her effective presentation skills

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
I- Cold meals			
Introduction	2	2	-
Types of cold meals and its legal requirements of ingredients	8	4	4
Preparation of cold meals			
a) Food composition	4	2	2
b) The use of heat	4	2	2
c) Chemistry of cooking	4	2	2
d) Storage of meals	4	2	2
Quality control of cold meals	4	2	2
Examination of cold meals	8	4	4
Microbiological standards of cold and ready to eat meals	8	4	4
II- Edible offal			
Types	4	2	2
Uses and preparation of edible offal	6	2	4
Affections of offal	8	4	4
Sanitary status and microbiological quality of offal	8	4	4
Student activities: - Cold meals samples collection and preparation - Writing assays - Internet search	-	-	-
Total hours	72	36	36

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	a- Knowledge and Understanding						b-Intellectual Skills				c- Practical and Professional Skills						d- General & Transferable Skills				
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4	5
	I- Cold meals																						
1	Introduction	2	x	x			x	x															
2	Types of cold meals and its legal requirements of ingredients	8	x		x					x	x		x		x	x		x					
3	Preparation of cold meals a) Food composition b) The use of heat c) Chemistry of cooking d) Storage of meals	 4 4 4 4	x	x		x		x					x	x	x		x						
4	Quality control of cold meals	4	x				x	x	x			x	x	x		x	x						
5	Examination of cold meals	8			x	x							x	x	x	x	x	x					
6	Microbiological standards of cold and ready to eat meals	8		x					x				x	x	x	x	x	x					
II- Edible offal																							
18	Types	4			x	x																	
19	Uses and preparation of edible offal	6			x	x						x	x			x		x					
20	Affections of offal	8					x	x		x	x				ع								
21	Sanitary status and microbiological quality of offal	8		x			x	x			x	x			X								
22	Student activities: - Cold meals samples collection and preparation - Writing assays	-																	x	x	x	x	x

	Topics	Hours	a- Knowledge and Understanding						b-Intellectual Skills				c- Practical and Professional Skills						d- General & Transferable Skills				
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4	5
	- Internet search																						

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**:to establishment that prepare cold meals.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1to a6	b1to b4		
Practical Exam			c1 to c6	
Oral Exam	a1to a6	b1to b4		d3, d5

6.2. Assessment schedules

Method	Week(s)
Written exam	December
Practical exam	December
Oral exam	December

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.
- Text book of Meat Technology and Preservation, professor/ Fathy Ahmed Khalafalla, 2004.

These previous books areavailable at food hygiene department, faculty of veterinary medicine, Beni suef.

7.2. Essential Books

- Practical food microbiology (D. Roberts and M Greenwood) third edition, 2003
- The microbiology of safe food (StephenJ.Forsythe), rst published 2000

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)
- FDA
- FAO
- **Websites**
- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-127

Course title :**Microbiology of fish, shell fish and its products**

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 3 hrs.

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should understand the academic knowledge and acquire the practical skills related to microbiology of fish, shellfish and fish productsthrough:

- Describing the principals to produce safe fish and shellfish.
- Listing the different forms of fish deterioration.
- Mentioningthe factors affecting fish and shellfish quality.
- Demonstrating the symptoms of scombroid and ciguatera poisoning.
- Conduct sensory evaluation of fish and shellfish.
- Determining the different processing faults of fish products.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-

al-Describe the principals to produce safe fish and shellfish.

a2- Enumerate seafood borne illnesses and seafood poisoning bacteria.

a3-Recognizedifferent species of fish and shellfish and their nutritive value.

a4- List the different forms of fish deterioration.

a5- Enumerate the different methods of post catching handling of fish.

a6-Mention the factors affecting fish and shellfish quality.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-

b1- Expect the causative agent of seafood poisoning outbreaks.

b2- Interpret the results of microbiological and chemical examination of fish and shellfish products.

b3-Demonstrate the symptoms of scombroid and ciguatera poisoning.

b4- Evaluate the keeping quality of fish and shellfish.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1- Conduct sensory evaluation of fish and shellfish.

c2-Perform the microbiological and chemical methods of fish and shellfish analysis.

c3- Identify different forms of fish deterioration.

c4-Interpret the results of laboratory examinations of fish and shellfish.

c5- Determine the different processing faults of fish products.

c6-dispose different culture media and reagents for enumeration and isolation of

microorganisms in fish and shellfish.

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2-Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.
d4- Enhancement of his/her effective presentation skills.

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
Microbiology of fish (fresh, chilled and frozen)			
○ Spoilage of fish	6	2	4
○ Microflora of fish	6	2	4
○ Microbiological standards	6	2	4
○ Fish borne infections and intoxication	6	2	4
Microbiology of shell fish			
○ Production of nutritive value	6	2	4
○ Microbiological standards	6	2	4
○ Spoilage and public health hazards caused by shell fish consumption	6	2	4
Microbiology of fish products			
1.Fish products:			
○ Dried fish	3	1	2
○ Smoked fish	6	2	4
○ Canned fish	6	2	4
○ Salted fish	6	2	4
○ Fermented fish	3	1	2
○ Anchovey	6	2	4
○ Processed shellfish	6	2	4
○ Caviar	6	2	4
2. Preparation of sh products	12	4	8
3. Microbiological standards	6	2	4
4. Defects and abnormalities of sh products	6	2	4
Student activities: - Fish processing plants visits - Writing assays - Internet search	-	-	-
Total hours	108	36	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	a-Knowledge and Understanding						b-Intellectual Skills				c-Practical and Professional Skills						d-General & Transferable Skills		
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3
1	**Microbiology of fish (fresh, chilled and frozen)** ○ Spoilage of fish ○ Micro flora of fish ○ Microbiological standards ○ Fish borne infections and intoxication	 6 6 6 6		**x**		**x**		**x**		**x**	**x**		**x**	**x**	**x**	**x**		**x**			
2	**Microbiology of shell fish** ○ Production of nutritive value ○ Microbiological standards ○ Spoilage and public health hazards caused by shell fish consumption	 6 6 6		**x**	**x**	x		**x**	**x**			**x**	**x**	**x**	**x**	**x**		**x**			
3	**Microbiology of fish products** 1.Fish products: ○ Dried fish ○ Smoked fish ○ Canned fish ○ Salted fish ○ Fermented fish ○ Anchovey ○ Processed shellfish ○ Caviar 2. Preparation of sh products 3. Microbiological standards 4. Defects and abnormalities of sh products	 3 6 6 6 3 6 6 6 12 6 6	**x**	**x**		x	**x**			**x**	**x**	**x**				**x**	**x**	**x**				
4	Student activities:	-																	**x**	**x**	**x**

	Topics	**Hours**	**a-Knowledge and Understanding**						**b-Intellectual Skills**				**c-Practical and Professional Skills**						**d-General & Transferable Skills**		
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3
	- Fish processing plants visits - Writing assays and internet search																				

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1to a6	b1 to b4		
Practical Exam			c1to c6	
Oral Exam	a1to a6	b1to b4		d3

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

Marine and fresh water products handbook(Roy E Martin et al), 2003

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- The microbiology of safe food (StephenJ.Forsythe), rst published 2000

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Food protection
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)

- **Websites**

- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-128

Course title :**Analysis of meat, fish and their products**

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 3 hrs.

Approval Date: 12-9-2017

2- Professional information "Overall aims"

Thestudent should acquire the academic knowledge and practical skills related to chemical composition and analysis of meat, poultry, fish and their products through:

- Describe techniques of chemical analysis of meat and meat products
- Interpret the results of chemical and microbiological analysis of meat and meat products
- Demonstrate the anatomical and morphological structure of animal carcasses

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-

al- Describe techniques ofchemical and microbiological examination of meat and meat products.

a2-Recognize the chemical composition and structure of meat, poultry and fish.

a3-Mention the chemical means of detection of both spoilage and adulteration of meat.

a4- Recognize meat cuts and meat grading.

a5-List methods of residues detection in meat, poultry and fish.

a6-outline the different chemicalmethods of identification of animal species.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-

b1- Integrate the results of sensory, chemical and microbiological analysis of meat and meat products.

b2-Identify chemical methods for detection of spoilage of meat, poultry and fish.

b3- Interpret the results of chemical and microbiological analysis of meat and meat products

b4- Explain different chemical methods of animal species identification.

b5- Demonstrate the anatomical and morphological structure of animal carcasses

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1-Operate chemical examination of meat, meat products, poultry and fish.

c2-Examine meat chemically for additives, and spoilage.

c3-Identify between carcasses and muscle samples of various animal species by physical, chemical and biological means.

c4-Examine meat products for adulteration.

c5 Rate different butcher joints and meat grading
c6. Dispose different chemical reagents that used for chemical and microbiological examination of meat

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2- Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.
d4- Enhancement of his/her effective presentation skills

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
I- Chemical analysis			
Introduction	3	1	2
Meat grading and cuts	3	1	2
Anatomical and morphological structures of carcasses of meat animals	9	3	6
Chemical and biochemical constitution of muscle and fat	6	2	4
Chemical composition of fish	3	1	2
Examination for additives	6	2	4
Detection of residues	6	2	4
Detection of adulteration and falsification of meat and fat	3	1	2
Identification of animal species	6	2	4
Assessment of meat spoilage	3	1	2
Sensory evaluation of meat	3	1	2
Analysis of fats of food animal	3	1	2
Assessment of fat spoilage	3	1	2
legalizations and limits	6	2	4
Analysis of meat of poultry and rabbit	6	2	4
II- Microbiological analysis			
Sampling (methods, preservation and preparation for analysis)	6	2	4
Determination of total number of microorganisms	6	2	4
Examination of foods for selected groups	3	2	4
Detection of foodborne pathogens	6	2	4
Culturing of metabolically injured	3	1	2

organisms			
Detection of metabolic products Microbial toxins Microbial enzymes	6	2	4
Detection of gram negative enterotoxins	3	1	2
Uses of fluorescent antibody technique in food microbiology	3	1	2
Student activities: - Abattoir and food plants visits - Writing assays - Internet search	-	-	-
Total hours	108	36	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	a-Knowledge and Understanding						b-Intellectual Skills					c-Practical and Professional Skills						d-General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4
I- Chemical analysis																							
1	Introduction	3	x	x	x	X																	
2	Meat grading and cuts	3		x		X			x				x			x		x					
3	Anatomical and morphological structures of carcasses of meat animals	6											x			x							
4	Chemical and biochemical constitution of muscle and fat	6		x					x			x				x			x				
5	Chemical composition of fish	3		X					X					X				x					
6	Examination for additives	3			x		X				x				x		X						
7	Detection of residues	6					X				x												
8	Detection of adulteration and falsification of meat and fat	3			x				x														
9	Identification of animal species	6						X				X				x							
10	Assessment of meat spoilage	3			x					x					x								
11	Sensory evaluation of meat	3	x						x					x									
12	Analysis of fats of food animal	3	x						x		X					x			x				
13	Assessment of fat spoilage	3			x					X					X								
14	legalizations and limits	6		x			x				x												
15	Analysis of meat of poultry and rabbit	6	x	x										x		x		x	x				
II- Microbiological analysis																							
16	Sampling (methods, preservation and preparation	6	x							x					x								

	Topics	Hours	a-Knowledge and Understanding						b-Intellectual Skills					c-Practical and Professional Skills						d-General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4
	for analysis)																						
17	Determination of total number of microorganisms	6	**x**						**x**		x								**X**				
18	Examination of foods for selected groups	3	x	x							**x**												
19	Detection of foodborne pathogens	6	**x**						**x**		**x**												
20	Culturing of metabolically injured organisms	3																	**X**				
21	Detection of metabolic products Microbial toxins Microbial enzymes	6			**x**		**x**			**x**					**x**	**x**			**X**				
22	Detection of gram negative enterotoxins	3							**x**								**x**	**x**	**X**				
26	Uses of fluorescent antibody technique in food microbiology	3		**x**		x			**x**			**x**		**x**	**x**	**x**	**x**	**x**	**x**	**x**			
27	Student activities: - Abattoir and food plants visits - Writing assays - Internet search	-																		**x**	**x**	**x**	**x**

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**: to abattoirs of animals and poultry.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1to a6	b1to b5		
Practical Exam			c1to c6	
Oral Exam	a1to a6	b1to b5		D3, d4

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.
- Text book of Meat Technology and Preservation, professor/ FathyAhmedKhalafalla, 2004.

These books areavailable at food hygiene department, faculty of veterinary medicine, Benisuef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- Food chemistry (H. D. Beltiz et al.) 4th edition

7.2. Recommended books

- Food analysis (Susanne Nielsen) 4th edition, 2010

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Food chemistry
- Meat Science
- International journal of food science and technology

- **Websites**
- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**

Postgraduate Course Specification

1- Basic information

Course Code: Ph-129

Course title:**Hygienic measures of meat and fish plants**

Program title: Ph.D. of "Hygiene and control of Meat, Fish and their Products and Animal Byproducts"

Contact hours/ week: 4hrs

Approval Date: 12-9-2017

2- Professional information "Overall aims"

Thestudent should acquire the knowledge and practices relatedto the application of GMP, GHP and HACCP in food establishments through:

- Mention the principals to produce safe meat through hygienic design of food operating areas.
- List different types of disinfectants used in food operating locations and their efficiency.
- Outline the personal hygiene and forbidden personal habits in food serving establishments.
- Recognize the skills required by personnel working in food serving establishments.
- Apply HACCP system in food plants.
- Operate microbiological examination of food contact surfaces.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-

al-Mention the principals to produce safe meat through hygienic design of food operating areas.

a2-Listdifferent types of disinfectants used in food operating locations and their efficiency.

a3-Recognizedifferent types of food operating systems.

a4-List themicrobiological standards related to meat and fish plants

a5 Outline the personal hygiene and forbidden personal habits in food servingestablishments.

a6- Enumerate GMP,GHP, HACCP principles

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:-

b1-Recognize the skills required by personnel working in food serving establishments.

b2-Control of hygienic measures adopted in meat and fish factories and food serving establishment.

b3- Interpret the results of microbiological and chemical examination of meat and meat contact surfaces.

b4-Demonstrate the efficiency of sanitation program in a food processing plant.

c- Professional and Practical skills (PPs)

By the end of studying this course, the graduate should be able to:-

c1-Apply HACCP system in food plants.
c2-Operate microbiological examination of food contact surfaces.
c3-Interpret the results of bacteriologicalexaminations of food contact surfaces.
c4- ApplyGMP and GHP in meat processing plants.
c5-Design educational programs required for food handlers and workers.
C6-Evalute the hygienicmeasures adopted in the design and use of food contact equipment.

d- General and Transferable skills (GTs)

By the end of this course, the student should be able to:-
d1- Enhancement of his/her computer and internet skills.
d2-Appreciate the importance of group working and cooperation.
d3- Enhancement of his/her communication skills.
d4- Enhancement of his/her effective presentation skills

4. Course Topics and Contents

Topics	Total (hr)	Lectures (hr)	Practical (hr)
The application of HACCP system • GHPs • GMPs • HACCP principles • Application of HACCP	36	18	18
Hygienic design of food operating areas ❖ Location and surrounding areas ❖ Hygiene and design of facilities ❖ Hygiene and physical control of environment	20	10	10
Hygienic consideration in the design and use of equipment ❖ Equipment standards and specifications ❖ Cleanability ❖ Protecting the food ❖ Operation and maintenance	28	14	14
Cleaning and disinfection ❖ Basic concepts ❖ Principles of cleaning and disinfection ❖ Management of hygiene	24	12	12
Health and hygiene of personnel ❖ Transmission of pathogens from, by and to man ❖ Maintenance of health of	24	12	12

food handlers ❖ Hygienic handling of foods ❖ Personnel hygiene			
Educational programs forpersonnel ❖ Processors and food service personnel ❖ Transport and food storage personnel ❖ The publicRegulatory personnel ❖ Persons who develop HACCP programs	12	6	6
Student activities: - Abattoir and food plants visits - Writing assays - Internet search	-	-	-
Total hours	144	72	72

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	a- Knowledge and Understanding						b- Intellectual Skills				c- Practical and Professional Skills						d- General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4
1	**The application of HACCP system** • GHPs • GMPs • HACCP principles • Application of HACCP	36	**x**					X					**x**			**x**						
2	**Hygienic design of food operating areas** ❖ Location and surrounding areas ❖ Hygiene and design of facilities ❖ Hygiene and physical control of environment	20		**x**	**x**				**x**	**x**					**x**	**x**						
3	**Hygienic consideration in the design and use of equipment** ❖ Equipment standards and specifications ❖ Cleanability ❖ Protecting the food ❖ Operation and maintenance	28					**x**	**x**				**x**		**x**			**x**	**x**				
4	**Cleaning and disinfection** ❖ Basic concepts ❖ Principles of cleaning and disinfection ❖ Management of hygiene	24	**x**		**x**	X			**x**	**x**		**x**			**x**	**x**		**x**				
5	**Health and hygiene of personnel** ❖ Transmission of pathogens from, by and to man ❖ Maintenance of health of food handlers	24		**x**			**x**	**x**			**x**		**x**	**x**			**x**					

	Topics	Hours	a- Knowledge and Understanding						b- Intellectual Skills				c- Practical and Professional Skills						d- General & Transferable Skills			
			1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	1	2	3	4
	❖ Hygienic handling of foods ❖ Personnel hygiene																					
6	**Educational programs forpersonnel** ❖ Processors and food service personnel ❖ Transport and food storage personnel ❖ The public ❖ Regulatory personnel ❖ Persons who develop HACCP programs	12	**x**		۶	x		**x**		**x**			**x**		**x**	**x**		**x**				
7	Student activities: - Abattoir and food plants visits - Writing assays - Internet search	-																	x	**x**	**X**	**x**

5- Teaching and learning methods

- **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids.
- **Training visits**:food establishments and processing plants.
- **Practical sections**
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library.

6- Student Assessments

6.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	I.S	P&P.S	G.S
Written Exam	a1to 6	b1to b4		
Practical Exam			c1to c6	
Oral Exam	a1to 6	b1to b4		D3to d 4

6.2. Assessment schedules

Method	Week(s)
Written exam	**December**
Practical exam	**December**
Oral exam	**December**

6.3. Weight of assessments

Assessment	Weight of assessment
Written exam	**50%**
Practical exam	**25%**
Oral exam	**25%**
Total	100%

7- List of Books and References

7.1. Books

- Text book of Meat Hygiene, Professor/FathyAhmedKhalafalla, 2004.
- Text book of Meat Technology and Preservation, professor/ FathyAhmedKhalafalla, 2004.

These books areavailable at food hygiene department, faculty of veterinary medicine, Benisuef.

7.2. Essential Books

- Meat Hygiene (J.F. Gracey and D.S.Collins) , ninth edition, 1992
- The microbiology of safe food (StephenJ.Forsythe), rst published 2000
- HACCP in meat industry(Maytn Brown, 2000

7.2. Recommended books

- Modern food microbiology, (James, M. J. et al.) 7th ed. Springer, 2005.

7.4. Journals and Periodicals

Journals

- Journal of Association of official analytical chemistry (AOAC)
- Journal of Food protection
- Meat Science
- Journal of Food Microbiology
- Journal of Applied Bacteriology
- FSIS (Food science and inspection services)
- FDA
- FAO
- International journal of food science and technology

- Websites

- cms.nelc.edu.eg
- www.meatscience.org

Course Coordinator **Head of Department**