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

Program Specification for Master Degree
2017-2018

A-Basic information:

1- Program title: ***Master degree in 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 acquire knowledge and skills related to the recent techniques in hygiene, technology, microbiology, quality and safety of meat, fish flesh, and poultry meat and their products through:

1. Enabling graduates to achieve competencies in laboratory techniques related to meat science.
2. Qualifying graduates to write a research proposal in the field of meat hygiene and control.
3. Qualifying graduates to collect scientific data through web research.
4. Developing the ability of graduates to engage critically with writing scientific literature and to critically review and present their own research data.
5. Enabling graduates to collect, manage and analyze scientific data.
6. Detecting and solving the societal and environmental problems in the field of meat hygiene and control.
7. Improving the graduates` general skills such as presentation, communication, IT and team working skills.

8. Having the awareness about his/her role in the community development and environmental protection.
9. Writing the dissertation and scientific articles.
10. Having the commitment to research ethics and veterinary practices regulations.

2- Intended learning outcomes of course (ILOs):

a- Knowledge and understanding:

On successful completion of this program, the graduate should be able to:

al- Acquire the advanced concepts in the field of meat hygiene and control.
a2- Classify different types of research proposals.
a3- List different experimental designs.
a4- Identify efficiently the professional practice regulations, standards and ethics in the field of meat science.
a5- Identify the meat hygiene practices and its relation to environmental protection and society development.
a6- Recognize the state-of-the-art in the area of meat hygiene and control.
a7- Recall principles and ethics of scientific research in the field of meat hygiene and control

b- Intellectual skills:

On successful completion of master program, the graduates should be able to:

b1- Identify, conceptualize and define research problems and questions related to meat, fish and poultry hygiene.
b2- Critically evaluate their own research data and develop new approach to solve their research questions.
b3- Develop creative approaches to solve field problems or issues associated with his/her research project with inadequacy of some resources in the area of meat hygiene and control.
b4- Design a research plan on topics related to meat hygiene and to enhance the meat inspectors` performance.
b5- Analyze and manage the risks associated with research in this area and make a decision in variable professional and research practices.
b6- Identify, summarize and evaluate prior researches findings related to his/her mater topics.

c- Professional and practical skills:

On successful completion of this program the graduates should be able to:

c1- Apply the principles of good experimental design and analysis to their own research project.
c2- Select and perform relevant statistical analysis on data obtained for their own research.

c3- Perform effectively all types of relevant research work related to his/her master project.
c4- Operate all steps of academic writing of scientific reports.
c5- Write efficiently dissertations and scientific manuscripts in the field of meat hygiene.
c6- Evaluate the available and required material and instruments for his/her research project.

d- General and transferable skills:

On successful completion of this program the graduate should be able to:

d1- Disseminate his research experiences within his work environment using IT.
d2- Share his results with his colleagues and present in scientific events.
d3- Work in research groups and lead a work team efficiently.
d4- Manage time efficiently.
d5- Have the attitude of self-evaluation, self-learning and can assess his/her needs.
d6- exploit efficiently the available resources for obtaining knowledge and skills.
d7- Issue the regulations and indicators for performance evaluation.

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.

4- Program Structure and Contents

A- Program duration: At least two academic years from the approval of registration by the Faculty Council and maximum four years. The faculty council has the right to give the applicant another period not exceed two years according to the supervisor request

The first year for preliminary courses study, while the second year for researches and preparation of the Master Thesis.

B- Program structure: Hours/ week:

1. Preliminary stage (one academic year):

1.1. Basic courses:

4	7	11

Theoretical Practical Total

1.2. Subsidiary courses:

Theoretical | 4-8 | Practical | 6-8 | Total | 10-16 |

2. Master Thesis: completed during the second academic year.

C- Program courses:

1- basic courses

Code	Course title	Hours /week		Academic year	Teaching duration
		Theoretical	Practical		
	Master Principal course	3	4	Preliminary year	36 weeks
	Research methods	1	3	Preliminary year	36 weeks

2-Subsidiary courses:

Code	Course title	Hours /week		Academic year	Semester
		Theoretical	practical		
	Selected (3-5) courses depending on the thesis title from the various Faculty Master courses other than specialty of the Master.	5-6	6-9	Preliminary year	36 weeks

D- Program courses contents:

See master courses specification

5- Program Admission Requirements

a- According to the Faculty of Veterinary Medicine, Beni-Suef University Bylaws for Post Graduate Programs, applicants should have BVSc., from an Egyptian University or equivalent degree from any approved university, with at least general grade (Good) and (Very Good) in the specialized subject.

b- If the student has postgraduate diploma in one specialization of total (3 hours) at least with general grade (Good) and (Very good) in the specialized subject.
c- According to Beni-Suef University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects:
I- English language (Toefl or equivalent degree)
2- Computer skills (ICDL) or equivalent computer course.
d- Admission to the program is open during March and September annually after at least one year from the BVSc degree.

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 rules:

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

- It is mandatory to pass all the courses each chance except biostatic (212)
-The passing mark in each exam is ⩾ 60%.
-The faculty council has the right to deprive the applicant from entering the exams if his attendance courses is less than 75%.

Qualification grades:

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 research for Master Thesis at the beginning of the second year.
-The candidate will receive his degree after evaluating and approving the thesis by a committee according to University regulations.
-The applicant should publish at least two scientific papers from the thesis in local or international journals.

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 according to University regulations.

1-Preliminary stage:

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

2-Master Thesis:

All master-degree students should prepare a thesis in: Master degree in Hygiene and Control of Meat, Fish, their Products and Animal by-products. The department council must approve the protocol (plan) of the research. The thesis is supervised by one or more staff members and may include other specialties according to the nature of the research. The thesis should be evaluated and approved by a committee according to University regulations. The applicant should publish at least one scientific paper from the thesis in local or international journals

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	a1, a2,a3,,a4	b3,b4		
Practical exam		b1,b2,	c1,c2,c3	d1,d2
Oral exam	a1, a2	b1,b3	c2	

Master program courses matrix with ILOs

Academic standards / Program ILOs		Courses
Knowledge and understanding	**a1**	**Master principal course MBC-MEHG, M-122**
	a2	**Research methodology, M-125**
	a3	**Research methodology, M-87, M-68, M-114, M-213**
	a4	**Master principal course MBC-MEHG, M-122**
	a5	**Master principal course MBC-MEHG, M-120, M-122, M-7**
	a6	**M-56, M-121, M-122, M-124, M-125, M-128, M-129**
	a7	**M-124, M-125, M-128**
Intellectual skills	**b1**	**M-122, M-120, M-127, M-124**
	b2	**M-124, M-116, M-111**
	b3	**M-122, M-121, M-87**
	b4	**M-123, M-121, M-125, M-124**
	b5	**M-124, M-125, M-128**
	b6	**Master principal course MBC-MEHG, M-120, M-124, M-125**
Professional and practical skills	**c1**	**Master Principal course MBC-MEHG, M-87, M-120, M-121**
	c2	**M-212, M-213, M-214**
	c3	**M-87, M-178, M-124, M-125**
	c4	**Research methodology, M-212, M-213**
	c5	**M-120, M-122, Master Principal course MBC-MEHG, Research methodology**
	c6	**Research methodology**
General and transferable skills	**d1**	**M-129, M-125, M-123, M-214, M-212**
	d2	**M-128, M-127, M-126**
	d3	**M-125, M-124, M-120**
	d4	**M-121, M-122, Master Principal course MBC-MEHG**
	d5	**Research methodology, M-124, M-125**
	d6	**Research methodology, M-121, M-122**
	d7	**M-122, M-124, M-125**

Master programme aims / Programme ILOS Matrix

Programme ILOs		Programme aims									
		1	2	3	4	5	6	7	8	9	10
Knowledge and understanding	a1	√	√	√	√	√			√		√
	a2		√								
	a3	√									
	a4		√	√	√	√					√
	a5						√		√		
	a6		√								
	a7		√		√	√					√
Intellectual skills	b1				√	√			√		
	b2		√	√	√	√					
	b3		√				√		√		
	b4				√	√					
	b5				√	√					
	b6				√	√					
Professional and practical skills	c1	√									
	c2		√								
	c3		√		√	√					
	c4		√		√	√					
	c5		√							√	
	c6	√									
General and transferable skills	d1				√	√		√			
	d2							√			
	d3	√						√			
	d4							√			
	d5				√	√		√			
	d6			√		√		√			
	d7							√			

Program coordinator **Head of the Department**

Dr. Abdel-Rahim H.A. Hassan **Prof. Fathy Khalafalla**

Academic standards		Knowledge and understanding						Intellectual skills							Professional and practical skills				General and transferable skills					
ProgramILOs		1	2	3	4	5	6	1	2	3	4	5	6	7	1	2	3	4	1	2	3	4	5	6
Knowledge and understanding	a1	x																						
	a2	x																						
	a3						x																	
	a4				x	x																		
	a5		x																					
	a6			x																				
	a7					x	x																	
Intellectual skills	b1							x																
	b2							x		x														
	b3								x															
	b4										x		x											
	b5											x		x										
	b6									x														
Professional and practical skills	c1														x	x								
	c2														x			x						
	c3														x									
	c4															x								
	c5																	x						
	c6																x							
General and transferable skills	d1																		x					
	d2																		x					
	d3																						x	x
	d4																						x	
	d5																			x				
	d6																				x			
	d7																					x		

Postgraduate Course Specification

1- Basic information

Course Code ; MBC-MEHG

Course title : Meat Hygiene

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

Contact hours/ week: 3 hrs theoretical
and 4 hrs practical

Approval Date: 12/9/2017

2- Professional information "Overall aims"

The student should understand the academic knowledge and practical skills related to meat hygiene, abattoir related operations, meat microbiology and food poisoning.

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 outline the judgment on the affected meat and carcasses.
a 3- Recognize types 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.
b 3- Demonstrate the post mortem lesions of slaughtered food animals.
b 4- Take decisions regarding ante mortem examination of animals in emergency state.
b 5- Evaluate the keeping quality of meat and meat products
b 6- 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 bacterlogical 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	14	6	8
Ante-mortem inspection of food animals	7	3	4
Methods of slaughter	7	3	4
Emergency slaughter	7	3	4
Bleeding	11	5	6
Dressing and carcass yield	7	3	4
Postmortem inspection of food animals	7	3	4
Stamping of carcasses	7	3	4
Lymphatic system in relation to butcher joints	18	8	10
Chemistry of meat	7	3	4
Rigor mortis	14	6	8
Identification of animal species	17	7	10
Abnormal condition and diseases of food animals	17	7	10
Affections of specific parts of carcass	11	5	6
Bacterial and viral diseases	32	18	14
Parasitic diseases	24	10	14
Microbiology of meat	17	7	10
Food poisoning	6	6	-
Bacteriological examination of carcasses	8	-	8
Detection of residues in animal tissues	12	-	12

Student activities:

- Abattoir visits
- Writing assays
- Internet search

Total hours	252	108	144

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	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	x	x								x				
3	Methods of slaughter	4					x				x														
4	Emergency slaughter	4					x							x				x			x				
5	Bleeding	6						x		x	x				x		x		x	x	x	x			
6	Dressing and carcass yield	4								x											x				
7	Postmortem inspection of food animals	4							x		x			x			x			x	x				
8	Stamping of carcasses	4					x			x									x			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	x			
13	Abnormal condition and diseases of food animals	10		x	x						x	x		x		x				x	x	x			
14	Affections of specific parts of carcass	6	x	x	x						x		x	x				x		x		x			
15	Bacterial and viral diseases	20	x		x						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						

	Topics	Hours	a, Knowledge and Understanding								b, Intellectual Skills						c, Practical and Professional Skills						d, 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
18	Food poisoning	4	**x**								**x**	**x**						**x**	**x**						
19	Bacteriological examination of carcasses	4	**x**										**x**					**x**	**x**						
20	Detection of residues in animal tissues	6				**x**													**x**						
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/ Fathy Ahmed Khalafalla, 2004. Deposited No. 17664

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

- The microbiology of safe food (Stephen J. 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:M-120

Course title :**Food animal hygiene**

Program titleMaster degree in Hygiene and Control of Meat, Fish, their Products and Animal by-products.

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 through:

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

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

a1-Describe 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-Outline the importance of pre-slaughter care on meat quality.

a4- Enumerate the different types of food animals.

a5- Explain the factors affecting meat quality.

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 meat quality.

b2-Interpret 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-Identify appropriate methods of animal handling and transportation 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 examinations of food animals.

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

c5- 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	6	2	4
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)	15	6	9
Transportation and handling of live stock prior to slaughter- 1. Transportation • Control of animals • Managements • Ways of transports 1. Quarantine • Regulation • Lairage • Animal management • Native and imported animals • Duration • Diseases detection and control	19	9	10
Slaughterhouses • Pre-slaughter care • Ante mortem inspection	42	9	33
Handling of meat • Stamps • Chilling • Freezing • Offal • By-products	32	8	14
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, 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 b2		
Practical Exam			c1toc5	
Oral Exam	a1to a5	b1,b2		d3

6.2. Assessment schedules

Method	Week(s)
written exam	**Decmber**
Practical exam	**Decmber**
Oral exam	**Decmber**

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 are 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
- 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)

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

Course Coordinator **Head of Department**

Course Matrix for Achievement of Intended Learning Outcomes

	Topics	Hours	a-Knowledge and Understanding					b-Intellectual Skills (b)		c-Practical and Professional Skills				d-General& Transferable Skills		
			1	2	3	4	5	1	2	1	2	3	4	1	2	3
1	**Food animals**	6				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)	15	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	19	x	x	x			x	x	x	x					

	Topics	Hours	a-Knowledge and Understanding					b-Intellectual Skills (b)		c-Practical and Professional Skills				d-General& Transferable Skills		
			1	2	3	4	5	1	2	1	2	3	4	1	2	3
	• Duration • Diseases detection and control															
4	**Slaughter houses** • Pre-slaughter care • Ante-mortem inspection	42	**x**	**x**	**x**		**x**	**x**				**x**				
5	**Handling of meat** • Stamps • Chilling • Freezing • Offal • By-products	32	**x**		**x**			**x**				**x**				
6	Student activities: - Abattoir visits - Writing assays - Internet search													x	x	x

Postgraduate Course Specification

1. Basic information

Course Code:M-121

Course title :Sanitation and management of slaughterhouses

Program title: Master 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.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

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

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

a2-listthe main facilities and requirements for abattoir constructions.

a3- Mention the different methods of abattoir sanitation.

a4- 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.

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 constructions.

c2-Dispose appropriately animal by-products.

c3-Operate abattoir sanitation properly.

c4- 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	54	27	27
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	90	45	45
Student activities: - Abattoir 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	1	2	3	1	2	3	4	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	54	**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	90		**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**			
3	**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 a4	b1to b3		
Practical Exam			c1 to c4	
Oral Exam	a1- a2- a3-	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
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.

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
- Essentials of Food Sanitation (Norman G Marriot) 1997

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 : M-122

Course title : Meat Hygiene

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

Contact hours/ week: 4 hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

The student should understand the academic knowledge and practical skills related to meat hygiene, abattoir related operations, meat microbiology and food poisoning

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

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

a1 Outline the judgment on the affected meat and carcasses.

a 2- Recognize types and classification of different affections of meat.

a 3- Enumerate the different methods of slaughter, types of stamps and methods of identification of animal species and meat.

a4- Outline the factors affecting meat quality and rigor mortis.

a 5- Recognize ante- mortem and post- mortem carcass inspection

a6 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- Demonstrate the post mortem lesions of slaughtered food animals.

b 3- Evaluate the keeping quality of meat and meat products

b 4- 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- Examine carcasses for parasitic diseases

c3- Examine food animals (ante mortal and post mortal) and judge the results.

c4- 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	10	5	5
Ante-mortem inspection of food animals	6	3	3
Methods of slaughter	6	3	3
Emergency slaughter	6	3	3
Bleeding	8	4	4
Dressing and carcass yield	6	3	3
Postmortem inspection of food animals	6	3	3
Stamping of carcasses	6	3	3
Lymphatic system in relation to butcher joints	12	6	6
Rigor mortis	10	5	5
Identification of animal species	11	5	6
Abnormal condition and diseases of food animals	11	5	6
Affections of specific parts of carcass	8	4	4
Bacterial and viral diseases	22	13	9
Parasitic diseases	16	7	9
Student activities: - Abattoir 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	1	2	3
1	Abattoir	10						x											
2	Ante-mortem inspection of food animals	6	x				x	x	x						x				
3	Methods of slaughter	6			x														
4	Emergency slaughter	6			x										x				
5	Bleeding	8				x		x	x		x					x			
6	Dressing and carcass yield	6						x							x				
7	Postmortem inspection of food animals	6					x		x				x	x	x				
8	Stamping of carcasses	6			x			x											
9	Lymphatic system in relation to butcher joints	12					x	x		x			x	x	x				
11	Rigor mortis	10				x	x	x											
12	Identification of animal species	11			x										x	x			
13	Abnormal condition and diseases of food animals	11	x	x					x			x		x	x	x			
14	Affections of specific parts of carcass	8	x	x					x	x				x		x			
15	Bacterial and viral diseases	22		x					x	x			x						
16	Parasitic diseases	16		x						x			x	x					
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 examination of suspected meat and meat products for freshness ,bleeding and quality as well as identification of meat species.
- **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals as well as 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 a6	b1tob4		
Practical Exam			c1-to c4	
Oral Exam	a1- to a6	b1 to 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
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/ Fathy Ahmed Khalafalla, 2004. Deposited No. 17664

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
- The microbiology of safe food (Stephen J. 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: M-123

Course title : Inspection of poultry and rabbit meat

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

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 poultry and rabbit slaughtering, processing and examination.

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- Recognize types and classification of different poultry meat products.
a3- Distinguish the technology of poultry processing.
a4-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- Recognize the post mortem lesions of slaughtered poultry and rabbit.
b2- Summarize the ante mortem examination of poultry flock.
b3- 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- Acquire experiences in microbiological and chemical analysis of poultry carcasses.
c3- examine and judge the different bacterial, viral and parasitic affections associated with poultry and rabbit carcasses
c4- 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	5	2	3
Quality identification of poultry	5	2	3
Quality maintenance	7	2	5
Chemical and nutritive characteristics	7	2	5
Processing of fresh poultry	6	2	4
Inspection, diseases and processing faults	6	2	4
Packaging	5	2	3
Refrigerated storage	6	2	4
Microbiology of poultry meat	6	2	4
Processed products	4	1	3
Inedible products	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	a, Knowledge and Understanding				b,Intellectual Skills			c,Practical and Professional Skills				d,General & Transferable Skills			
			1	2	3	4	1	2	3	1	2	3	4	1	2	3	4
1	Introduction to poultry industry	5	x														
2	Quality identification of poultry	5	x			x				X							
3	Quality maintenance	7															
4	Chemical and nutritive characteristics	7			x			x		x							
5	Processing of fresh poultry	6	x		x	x				x							
6	Inspection, diseases and processing faults	6		X			X	x	x	x		x	x				
7	Packaging	5	x		x				x				x				
8	Refrigerated storage	6	x		x								x				
9	Microbiology of poultry meat	6	x			x					x						
10	Processed products	3	x	x	x												
11	Inedible products	3															
12	The rabbit production	6		x													
13	Chemical and nutritive value	12	x								x						
14	Slaughtering, inspection and diseases	12					x					x	x				
15	Marketing processed rabbits	12	x			x		x									
16	Inedible products	6															
17	Student activities:													x	x	x	٤

	Topics	**Hours**	**a, Knowledge and Understanding**				**b,Intellectual Skills**			**c,Practical and Professional Skills**				**d,General & Transferable Skills**			
			1	2	3	4	1	2	3	1	2	3	4	1	2	3	4
	- Poultry slaughterhouses and food plants visits - Writing assays - 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 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	a1toa4	b1to b3		
Practical Exam			c1 to c4	
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: M-124

Course title: **Meat technology**

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

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:-

a1- Recognize types and classification of different processing faults of meat, poultry and fish products.
a2- Recognize chemical composition of meat, fish and poultry.
a3- Describe the technology of meat processing and different
a4- Enumerate the different methods of food packaging.
a5- list the different methods of preservation.

b- Intellectual skills (Is)

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

b1-interpret the main processing faults encountered in meat, poultry and fish products their causes, and how to avoid them.
b2- 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- Examine meat, fish and poultry products microbiologically and chemically.
C3- Identify the different processing faults of meat products.
C4- 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)
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
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					Intellectual skills		Professional and Practical skills				d- General & Transferable Skills			
			1	2	3	4	5	2	3	1	2	3	4	1	2	3	4
1	Chemistry of meat and nutritional value	8		x	X			x		x			x				
2	Composition of meat extenders, its nutritional value and uses in meat processing	10				x	x										
3	Plant additives used in meat processing	6	x	x					x			x					
4	Curing chemicals, chemistry and function	6			X						x						
5	Palatability characteristics of meat	6	x			x	x	x		x			x				
6	Meat fats • Characteristics and uses • Processing • Antioxidants	6		x		x	x		x		x	x					
7	Packaging technology	12			X					x			X				
8	Curing	6						x			x	x					
9	Smoking	6	x			x			x				X				
10	Canning	6		X	x		x						X				
11	Cold preservation	6															
12	Sausage technology	6															
13	Formulation meat technology	6			x					x	x	x	x				
14	Processed poultry	12		x					x			x					
15	Deterioration of processed meat	6				x		x					x				
16	Student activities:													x	x	x	x

	Topics	**Hours**	**a- Knowledge and understanding**					**Intellectual skills**		**Professional and Practical skills**				**d- General & Transferable Skills**			
			1	2	3	4	5	2	3	1	2	3	4	1	2	3	4
	- Food 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.
- **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 a5	b1to b2		
Practical Exam			c1- to c4	
Oral Exam	a1to a5	b1to b2		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/ Fathy Ahmed Khalafalla, 2004.
- Text book of Meat Technology and Preservation, professor/ Fathy Ahmed Khalafalla, 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: M-125

Course title : Microbiology of meat and meat products

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

Contact hours/ week: 4 hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

The student should acquire the academic knowledge and practical skills related to meat microbiology, factors affecting growth of microorganisms in meat as well as food poisoning and spoilage.

2- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

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

al-List factors affecting growth of microorganisms in food.

a2- Classify food borne diseases and food poisoning microorganisms

a3- Recognize sources of meat contamination.

a4- Set the factors affecting meat quality.

a5- 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- Evaluate the keeping quality of meat and meat products.

b3-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 meat and 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.

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	24	12	12
Factors influencing the bacterial growth	20	10	10
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	40	20	20
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	40	20	20
Bacterial food poisoning	20	10	10
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	1	2	3	1	2	3	4	1	2	3	4	5
1	Sources of contamination	24		x			x	x		x									
2	Factors influencing the bacterial development	20			X	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.	40	x	x	X	x	x	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	1	2	3	1	2	3	4	1	2	3	4	5
	- Associated growth - Environmental conditions C) Spoilage of meat and fat																		
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	40									**x**	**x**	**x**	**x**					
5	Bacterial food poisoning	20	**x**		**X**	**x**		**x**	**x**		**x**		**x**						
6	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 a5	a1to a5		
Practical Exam			c1to c4	
Oral Exam	a1to a5	a1to a5		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/ Fathy Ahmed Khalafalla, 2004.

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
- 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:M-126

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

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

Contact hours/ week: 2hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should acquire the academic knowledge and practical skills relatedto microbiology of ready-to-eat cold meals and edible offal.

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.

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-Identify the public health significance of ready to eat cold meals and offal.
b3-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 analysis of cold meals and offal.
c4-Designconsumer safe cooking procedures of ready to eat meals and their effect on quality.
c5-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	3	3	-
Types of cold meals and its legal requirements of ingredients	8	4	4
Preparation of cold meals			
a) Food composition	6	3	3
b) The use of heat	6	3	3
c) Chemistry of cooking	6	3	3
d) Storage of meals	6	3	3
Examination of cold meals	9	4	5
II- Edible offal			
Types	6	3	3
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	1	2	3	1	2	3	4	5	1	2	3	4	5
1	Introduction	3	x	x			x													
2	Types of cold meals and its legal requirements of ingredients	8	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	6 6 6 6	x	x			x				x	x	x	x						
4	Examination of cold meals	9			x	x					x	x	x	x	x					
5	Types	6			x	x														
6	Uses and preparation of edible offal	6			x	x				x	x				x					
7	Affections of offal	8					x		x				۶							
8	Sanitary status and microbiological quality of offal	8		x				x				x								
9	Student activities: - Cold meals samples collection and preparation - 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.
- **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 a5	b1to b3		
Practical Exam			c1 to c5	
Oral Exam	a1to a5	b1to b3		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/ FathyAhmedKhalafalla, 2004.

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

7.2. Essential Books

- Practical food micrbilogy (D. Roberts and M Greenwood) third edtion, 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:M-127

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

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

Contact hours/ week: 3 hrs

Approval Date: 12/9/2017

2- Professional information "Overall aims"

Thestudent should understand the academic knowledgeand acquire the practicalskills relatedto microbiology of fish , shellfish and fish products.

3- Intended Learning Outcomes (ILOs)

a- Knowledge and understanding (KU)

By the end of this course the graduate should be able to:-
a1-Describe the principals to produce safe fish and shellfish.
a2-Enumerateseafood borne illnesses and seafood poisoning bacteria.
a3-Recognizedifferent species of fish and shellfish and their nutritive value.
a4-List thedifferent forms of fish deterioration.
a5- Enumerate the different methods of post catching handling of fish.

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-Demonstrate the symptoms of scombroid and ciguatera poisoning.
b3- 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 methods of fish and shellfishanalysis.
c3- Identify different forms of fish deterioration.
c4- Determine the different processing faults of 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-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	9	3	6
○ Microflora of fish	9	3	6
○ Fish borne infections and intoxication	6	2	4
Microbiology of shell fish			
○ Production of nutritive value	9	3	6
○ Spoilage and public health hazards caused by shell fish consumption	9	3	6
Microbiology of fish products			
1.Fish products:	6	2	4
○ Dried fish	9	3	6
○ Smoked fish	9	3	6
○ Canned fish	9	3	6
○ Salted fish	6	2	4
○ Fermented fish	9	3	6
○ Anchovey	6	2	4
○ Processed shellfish	6	2	4
○ Caviar	6	2	4
2. Defects and abnormalities of fish 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	1	2	3	1	2	3	4	1	2	3
1	**Microbiology of fish (fresh, chilled and frozen)** ○ Spoilage of fish ○ Micro flora of fish ○ Fish borne infections and intoxication	9 9 6	**X**		**x**		**x**		**x**		**x**	**x**	**x**	**x**			
2	**Microbiology of shell fish** ○ Production of nutritive value ○ Spoilage and public health hazards caused by shell fish consumption	9 9		**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. Defects and abnormalities of fish products	6 9 9 9 6 9 6 6 6 6 6	**X**	**x**		X	**x**		**x**	**x**								
4	Student activities: - Fish processing plants visits - Writing assays and 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.
- **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	b1 to b3		
Practical Exam			c1to c4	
Oral Exam	a1to a5	b1to b3		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

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:M-128

Course title Analysis of meat, fish and their products

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

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 chemicalcomposition and analysis of meat, poultry, fish and their products through:

- Describe techniques of chemical analysis of meat.
- Interpret the results of chemical and microbiological analysis of meat.
- 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 analysis 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 food spoilage.
a4- Recognize meat cuts and meat grading.
a5-List methods of residues detection in meat, poultry and fish.

b- Intellectual skills (Is)

By the end of studying this course, the graduate should be able to:
b1-Identify chemical methods for detection of spoilage of meat, poultry and fish.
b2- Interpret the results of chemical analysis of meat and meat products
b3- Explain different chemical methods of animal species identification.
b4- 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 and microbiological examination of meat, meat products, poultry and fish.
c2-Examine meat chemically for additives, and spoilage.
c4 Rate different butcher joints and meat grading
c5. 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	12	4	8
Chemical and biochemical constitution of muscle and fat	6	2	4
Chemical composition of fish	3	1	2
Examination for additives	9	3	6
Detection of residues	12	4	8
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)	9	3	6
Determination of total number of microorganisms	6	2	4
Examination of foods for selected groups	9	3	6
Detection of foodborne pathogens	6	2	4
Culturing of injured microorganisms	3	1	2
Detection of gram negative enterotoxins	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	1	2	3	4	1	2	3	4	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	x	x				
3	Anatomical and morphological structures of carcasses of meat animals	12					x					x	x	x	x				
4	Chemical and biochemical constitution of muscle and fat	6		x		x			x		x		x		x				
5	Chemical composition of fish	3			X	x							x	x					
6	Examination for additives	9						x	x				x						
7	Detection of residues	12								x					x				
10	Assessment of meat spoilage	3			x	x			x		x		x		x				
11	Sensory evaluation of meat	3	x					x		x				x					
12	Analysis of fats of food animal	3		x											x				
13	Assessment of fat spoilage	3										x		x					
14	legalizations and limits	6				x			x										
15	Analysis of meat of poultry and rabbit	6	x			x						x		x	x				
II- Microbiological analysis																			
16	Sampling (methods, preservation and preparation for analysis)	9			x			x		x	x		x		x				
17	Determination of total number of microorganisms	6		x								x	x	x	x				
18	Examination of foods for selected groups	9				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	1	2	3	4	1	2	3	4	1	2	3	4
19	Detection of foodborne pathogens	6	**x**					**x**			**x**								
20	Culturing of injured microorganisms	3										**x**	**x**	**x**	**x**				
22	Detection of gram negative enterotoxins	3										**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	b1to b5	b1to b4		
Practical Exam			c1to c4	
Oral Exam	b1to b5	b1to b4		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, Benis-uef.

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:M-129

Course title:Hygienic measures of meat and fish plants

Program title: Master 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 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.

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

a5- 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-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.

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	24	12	12
Hygienic consideration in the design and use of equipment ❖ Equipment standards and specifications ❖ Cleanability ❖ Protecting the food ❖ Operation and maintenance	32	16	16
Cleaning and disinfection ❖ Basic concepts ❖ Principles of cleaning and disinfection ❖ Management of hygiene	28	14	14
Health and hygiene of personnel ❖ Transmission of pathogens from, by and to man ❖ Maintenance of health of food handlers ❖ Hygienic handling of foods ❖ Personnel hygiene	24	12	12
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	1	2	3	1	2	3	4	1	2	3	4
1	**The application of HACCP system** • GHPs • GMPs • HACCP principles • Application of HACCP	36	**x**							**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	24		**x**	**x**			**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	32				**x**	**x**			**x**		**x**						
4	**Cleaning and disinfection** ❖ Basic concepts ❖ Principles of cleaning and disinfection ❖ Management of hygiene	28	**x**		**x**			**x**	**x**	**x**			**x**	**x**		**x**	**x**	**x**
5	**Health and hygiene of personnel** ❖ Transmission of pathogens from, by and to man	24		**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	1	2	3	1	2	3	4	1	2	3	4
	❖ Maintenance of health of food handlers ❖ Hygienic handling of foods ❖ Personnel hygiene																	
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 5	b1to b3		
Practical Exam			c1to c4	
Oral Exam	a1to 5	b1to b3		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, 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
- 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**