

## Course Specification

University: Al-Azhar

Faculty: Medicine

Department: Forensic and clinical toxicology

### 1- Data of the course:

Code of the course: 401-For	Title of the course: forensic/clin.toxicology 4 <sup>th</sup> year course for MBBCh program	Year: 4 <sup>th</sup> year of the MBBCh program Duration: 30 weeks
Specialty: Forensic and clinical toxicology	Number of teaching units: 3 Forensic-toxicology-medical ethics	Lectures: 60 hrs <b>Total 140 hrs</b> Practical: 60 hrs Tutorial: 20hrs <b>Medical ethics: 60 hrs</b>

### 2- Objectives o the course:

1. To provide 4<sup>th</sup> grade students the basic principles and general knowledge of forensic medicine and clinical toxicology with the essential skills to graduate them as competent physicians.
2. We are committed to provide high quality applied educational programs.
3. To graduate quality physicians capable of following medical ethics ready for continuing professional development.
4. To Encourage infusion of scientific thinking in learning and endeavors in clinical practice.

### 3- ILOs

A- Knowledge and understanding:	<p><b>I-Forensic:</b> 1- Describe diagnosis of death, apparent death, somatic death (clinical death) molecular death (cellular death), brain death. 2- Describe Cause, manner and mechanism of death. 3- Describe postmortem changes 4-Identify legal and medicolegal classification of wounds. 5-Describe types of wound and causative weapons and antemortem and postmortem wounds. 6-Classify head injuries, Scalp injuries, Skull fractures, and Brain injuries 7- Describe types of injuries of the neck. differences between homicidal and suicidal cut throat. 8-Identify causes of death in cut throat. Injuries of the chest (heart and lungs), and abdomen. 9-Describe types of firearms, products of firing. 10-Describe thermal Injuries (fire, contact, wet burns) , electric burns , deaths due to electricity, and chemical and radioactive injuries. 11-Definition, and describe types,signs and symptoms of asphyxia and stages of asphyxia 12-Definition, medicolegal problems, types of abortion, criminal abortion -methods of induction of abortion 13-Describe causes of death in newly-born infants and features of maturity of the fetus. 14-Discuss Malpraxis (malpractice) due to either incompetence or negligence.</p> <p><b>II-Toxicology</b> 1-Definition of poisons-Classification of poisons</p>
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2-Describe factors influencing the action of any poison (factors related to the poison and factors related to the patient).

3-Identify corrosives; H<sub>2</sub>SO<sub>4</sub>, HCL, HNO<sub>3</sub>, NaOH, KOH, Carboic, oxalic and hydrocyanic acids): Definition, classification, conditions of poisoning, fatal dose, fatal period, mechanism of toxicity, clinical picture.

4-Identify metal poisoning ( arsenic, antimony, mercury, lead and phosphorus).

5-Describe Mechanism of metal toxicity, acute and chronic toxicity, fatal doses, fatal periods, clinical pictures and treatment .

6-Describe clinical picture of acute and chronic form of plant toxicity (morphine, strychnine, atropine, aconitine, nicotine, digitalis, ergot, cocaine, cannabis and LSD).

7-Describe volatile and hydrocarbon poisons (ethyl and methyl alcohols, kerosene, benzene and halogenated hydrocarbons).

8-Describe clinical picture of Gaseous poisons: (CO,CO<sub>2</sub> and H<sub>2</sub>S): Definition and their character uses and forms of toxicity,

9-Describe besticide poisoning; Insecticides, rodenticides and herbicides. ( organophophorus and organochlorine insecticides, warfarin, paraquat, diquat, pyrethrums and pyrethroids).

10-Describe Animal poisons: (snake bite and scorpion stings). Describe mechanism of toxicity, toxic dose, clinical presentation and treatment.

11-Describe food poisoning; Botulism (mechanism of toxicity, toxic dose, clinical presentation , diagnosis and treatment). Bacterial food poisoning (mechanism of toxicity, toxic dose, clinical presentation, diagnosis and treatment). Fish and selfish (mechanism of toxicity, toxic dose, clinical presentation and treatment). Methemoglobinemia (mechanism of toxicity, clinical presentation and treatment).

12-Define and classify general antidepressants (non-cyclic) and tricyclic antidepressants as regards mechanism of toxicity, toxic dose, clinical presentation, complications resulting from their uses and their uses and treatment.

13-Describe sedative and hypnotic poisoning (benzodiazepines and barbiturates). Identify the drugs used for induction of sedation and sleep as regards their modes of action, clinical presentation, complications and the line of their treatment.

14-Describe the different types of analgesic and antipyretics as regards their mode of action, mechanism of toxicity, clinical presentation and treatment of cases of toxicity (Acetaminophen, salicylates and non-steroidal anti-inflammatory drugs).

15-Describe the sympathomimetic drug poisoning as regard their mechanism of toxicity, toxic dose, clinical manifestations as well as their lines of treatment (e.g Amphetamines, theophylline).

16-Describe poisoning by Antibacterial agents, e.g. chlormphenicol and vancomycin): Mechanism of toxicity, toxic dose, diagnosis (specific serum levels and laboratory studies) and treatment.

17-Describe uses, mechanism of toxicity, toxic dose, clinical picture of anticonvulsant drugs (e.g. Carbamazepine and phenytoin), describe presentation and treatment.

<p>B- Intellectual Skills:</p>	<p>1-Differentiate sudden death from other causes of unnatural and natural death  2-Realize the value of identification and importance of using DNA and other methods for identification and medicolegal importance of age stimulation  3-Differentiate driver from passenger from pedestrians and medicolegal problems  4 -Identify blood stains, differentiate between human and non-human blood stains, identify the blood group of a certain person and know the techniques of blood grouping.  5-Recognize types of sexual offences- natural and unnatural types.  <b>Toxicology:</b>  6-Identify methods of active eliminations of poisons (urinary manipulations, hemodialysis, hemoperfusion, peritoneal dialysis, hemofiltration and repeated dose activated charcoal).  7-Formulate diagnosis and treatment of poisoning; techniques of doing gastric lavage as well as the other methods of active elimination of poisons.  8-Formulate diagnose for corrosives and metal poisoning and lines of their plan of treatment.  9-Diagnose different types of plant poisoning and their forms of toxicity, their clinical pictures and line of their treatment.  10-Diagnose volatile poisoning cases from clinical pictures, forms of toxicity, knows line of treatment .  11-Diagnose venomous bites and stings and how to treat each of them.  12-Diagnose food poisoning and how to treat each of them  13-Define and describe the classic triad of addiction (psychological, physical dependence and tolerance). Opioids as regards clinical aspects and treatment. Barbiturates and other sedative hypnotics as regards clinical aspects and treatment. Stimulants (e.g. caffeine, nicotine, cocaine, amphetamine and khat) as regards clinical aspects and treatment.  14-Recognize types of Antidotes (e.g. N-acetyl cysteine): Pharmacology, indications, adverse effects, dosage and method of administration of different types of antidotes..</p>
<p>C- Professional Skills:</p>	<p>1- Identification of the living and the dead  2- using the fingerprinting method and DNA fingerprinting  For forensic DNA Applications.  3- Determine different types of wounds, the causal instruments used for their infliction, estimation of their ages, antemortem and postmortem wounds.  4- understand responsibility of physician in cases of brain concussion and notify authorities about fatal head injury cases.  5- Identify injuries of the special parts of the body.  6- Types of injuries of driver-pedestrian and passengers- mechanism of injuries  7- Understand medicolegal problems associated with transportation injuries  8- Diagnose firearm injuries and their causes of death  9- Diagnose different types of diseases and injuries caused by heat (dry and moist), electric current and chemicals.  10- Diagnose suspected cases with violence on neck..  11- Identify medicolegal problems with sexual offences, identify the importance of evidence and how to preserve and document  12- Identify signs of live-birth of newly-born infants, estimate the period of survival of newly-born infants and the causes of their deaths.  13- Identify victim of child abuse  14-Write medical and medicolegal reports- Death certificate and report about</p>

	forensic evidence- forensic samples preservations <b>Toxicology:</b> 15- Perform Physical examination and toxidromes, diagnosis, and treatment of poisoning. 16- Perform gastric decontamination-aspiration lavage (techniques, indications, and contraindications). 17-Identify the drugs used for abuse, the criteria of addiction, clinical aspects of their effects and the plan of treatment.																																																																																																
D- General Skills:	1-Comprehend importance of medical reports of wounds and understand importance of notification of authorities of dangerous and fatal wounds 2-Recognize and aware of problems of head injuries and understand responsibility of physician in cases of brain concussion and notify authorities about fatal head injury cases 3-Recognize differences between wounds and physical injuries whether by heat or electricity or caustics or by radiation. 4-Comprehend the importance of blood grouping and medicolegal problems of blood transfusion 5-Comprehend the importance of diagnosis of injuries caused by fatal pressure on neck and signs of drowning for authority notification 6-Notification of authority about sexual offences cases. 7-Realize importance of diagnosis of infanticide with notification to authority. 8-Notify authority about child abuse cases. 9-Recognize laws ruling medical practice and comprehend his duties towards patients and colleagues and community. 10-Realize value of medical documentation and importance of writing reports of all types. <b>Toxicology:</b> 11-Comprehend the importance of diagnosis and urgent management and treatment for poisoned cases, with transfer of poisoned case to specialized poison centre and notify the authority.																																																																																																
4- Course Content:	<table border="1"> <thead> <tr> <th colspan="8"><b>Forensic pathology</b></th> </tr> <tr> <th></th> <th>Topic</th> <th>Lecture hrs</th> <th>Tutorial-small gr.</th> <th>Practice hrs</th> <th>Total hrs</th> <th>Wt.%</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Wounds</td> <td>4</td> <td>4</td> <td>2</td> <td>10</td> <td>10%</td> <td></td> </tr> <tr> <td>2</td> <td>Head injuries</td> <td>4</td> <td>4</td> <td>2</td> <td>10</td> <td>7%</td> <td></td> </tr> <tr> <td>3</td> <td>Injuries of the neck-chest-abdomen</td> <td>4</td> <td>4</td> <td>2</td> <td>10</td> <td>3%</td> <td></td> </tr> <tr> <td>4</td> <td>Physical Injuries(thermal-electric-chemical</td> <td>2</td> <td>4</td> <td>2</td> <td>8</td> <td>7%</td> <td></td> </tr> <tr> <td>5</td> <td>Firearm weapons and injuries</td> <td>4</td> <td>4</td> <td>2</td> <td>10</td> <td>8%</td> <td></td> </tr> <tr> <td>6</td> <td>Transportation injuries</td> <td>2</td> <td>2</td> <td>1</td> <td>5</td> <td>3%</td> <td></td> </tr> <tr> <td>7</td> <td>Sexual offences</td> <td>2</td> <td>2</td> <td>1</td> <td>5</td> <td>5%</td> <td></td> </tr> <tr> <td>8</td> <td>Pregnancy. Delivery and Abortion</td> <td>2</td> <td>2</td> <td>2</td> <td>6</td> <td>2%</td> <td></td> </tr> <tr> <td>9</td> <td>Death</td> <td>2</td> <td>4</td> <td>2</td> <td>8</td> <td>7%</td> <td></td> </tr> <tr> <td>10</td> <td>postmortem changes</td> <td>2</td> <td>4</td> <td>2</td> <td>8</td> <td>8%</td> <td></td> </tr> </tbody> </table>	<b>Forensic pathology</b>									Topic	Lecture hrs	Tutorial-small gr.	Practice hrs	Total hrs	Wt.%		1	Wounds	4	4	2	10	10%		2	Head injuries	4	4	2	10	7%		3	Injuries of the neck-chest-abdomen	4	4	2	10	3%		4	Physical Injuries(thermal-electric-chemical	2	4	2	8	7%		5	Firearm weapons and injuries	4	4	2	10	8%		6	Transportation injuries	2	2	1	5	3%		7	Sexual offences	2	2	1	5	5%		8	Pregnancy. Delivery and Abortion	2	2	2	6	2%		9	Death	2	4	2	8	7%		10	postmortem changes	2	4	2	8	8%	
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11	sudden death	1	2	1	4	3%	
12	Violent asphyxia	2	2	2	6	5%	
13	Infanticide and cot death	2	2	1	5	2%	
14	Child abuse	2	2	1	5	2%	
15	Blood	2	2	2	6	3%	
16	Identification and DNA	4	2	1	7	5%	
17	Medical ethics	4	4	2	10	10%	
18	medical documentations	2	4	4	10	10%	
<b><u>II Clinical Toxicology</u></b>							
1	Basic principles of toxicology	4	4	2	10	12%	
2	Management of an intoxicated patient	4	4	2	10	12%	
3	Corrosives	2	2	2	6	3%	
4	Metal Poisons	4	4	2	10	7%	
5	Plant poisons (alkaloids)	4	4	2	10	10%	
6	Volatile and hydrocarbon poisons	4	4	2	10	8	
7	Gaseous poisons	4	4	2	10	8	
8	Pesticides	4	4	2	10	8	
9	Animal poisons	1	2	1	4	3	
10	Food poisoning	1	2	1	4	3	
11	Drugs of abuse	4	4	2	10	7	
12	Antidepressants	1	1	1	3	2	
13	Sedative-hypnotic agents	2	2	2	6	3	
14	Analgesics and antipyretics	2	2	2	6	4	
15	Sympathomimetic and antihistaminic drugs	1	1	1	3	2	
16	Antimicrobials	1	1	1	3	2	

5- Methods of teaching:	<p>Lectures  Practical  Tutorial  Small group discussion in the museum  -Casualty and log book: once /month  Emergency department of Al-Azhar University Hospitals.</p>
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6- Methods of teaching of handicaps	Not present
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7- Students evaluation and assessment:

A- Method of assessment:	One Written examination 2 Oral examination 2 Practical examination Assignment (reports)
B- Time of assessment	Mid-year Exam End-year exam

C. Allocated marks/Distribution

Examination	tool	marks	% of total
Year activity	Written assignments	40	20%
	written	80	40%
Final	practical	20	10%
	oral	60	30%
<b>Total</b>		<b>200</b>	<b>100%</b>

8- Teaching books, notebooks, and references:

- Books/Notebooks:	1.Forensic Medicine( Keith Simpson& Bernard Knight1986) 2. Handbook of Forensic Pathology: Vincent Di Maio & Suzzanna E. Dana. 3.Goldfrank's Manual of Toxicological emergencies ( Michael J Darelano 2002)
- References:	<u>Web sites</u> ( <a href="http://www.forensicmed.co.uk/">www.forensicmed.co.uk/</a> , <a href="http://www.medlib.med.utah.edu/webpath/">www.medlib.med.utah.edu/webpath/</a> <a href="http://www.dundee.ac.uk/facmedden/bmsc">www.dundee.ac.uk/facmedden/bmsc</a> )

Head of the department

Course Coordinator: