COURSE SPECIFICATIONS

(Ph D)

Prepared By
Histology Department

University: Benha.
Faculty: Veterinary Medicine.
Course Title: Histology of fish (advanced).
Code: 16.
Department offering the course: Histology & Cytology Department.
Program(s) on which the course is given: Master degree in veterinary science (histology and cytology).
Academic Year / level: 2011-2012.
Date of specification approval: 10 / 1 / 2012.

A- Basic Information

Title: Histology of fish (advanced).

<table>
<thead>
<tr>
<th>Lecture: 2</th>
<th>Practical: 2</th>
<th>Total: 4h /w</th>
</tr>
</thead>
</table>

B- Professional Information

1- Overall Aims of the Course: The postgraduate student gain the experience in identifying the histochemistry and electron microscopy of the different fish species.

2- Intended Learning Outcomes of the Course: (ILOs)

A- knowledge and Understanding

After the completion of these courses the student should be able to:

A1- Identify the different methods in histochemistry of the fish tissues and organs.

A2- Realize the different scientific methods in electron microscopy of fish.
tissues and organs.

A3- Interpert the electron micrograph of fish tissues and organs.

A4-Mention knowledge of best recent practice in veterinary histology of fish

A5-Identify the plan work within the governmental frame work regulation in fish experiments

A6-Recognize the ability to collate different pieces of accurate information.

**B-Intellectual skills:**

After the completion of these courses the student should be able to:

- **B1**- Design a research proposal in the area of specialization
- **B2** - Estimate, Identify and evaluate the articles and collected research papers in histology in different fish species.
- **B3**- Criticize and Assess their own research data regarding the research area
- **B4**- Comment accurately upon the obtained results on his given results
- **B5**- Determine area where further research is necessary and be aware beyond current ethical codes List

**C-Professional and practical skills:**

After the completion of these courses the student should be able to:

- **C1**- Write correctly the report of the different tissues in fish.
- **C2**- Perform relevant statistical analysis on data obtained from own research which support his practical skills.
- **C3**- Conduct research project using appropriate range of experimental techniques

**D-General and transferable skills:**

After the completion of these courses the student should be able to:

- **D1**- Problem solving skills
D2-Communication skills  
D3-Information technology skill  
D4 - Continuous self learning (life long learning)  
D5- Focus in his role in community development  

**E- Attitude:**  
After the students fishing this courses they should be able to:  

E1- Scientific integrity  
E2- know the rules and ethics of scientific research  

### 3 – CONTENTS:  

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of hours</th>
<th>Lecture</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestive system</td>
<td>10</td>
<td>5</td>
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</tr>
<tr>
<td>Gills</td>
<td>5</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Cardiovascular system</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Endocrine system</td>
<td>10</td>
<td>5</td>
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<tr>
<td>Urinary system</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Genital system</td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nervous system</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Lymphatic system</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Skin &amp; special sense</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>74</strong></td>
<td><strong>39</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

### 4- Teaching and learning methods:  
4.1. Lectures.  
4.2. Practical microscopical examination.  
4.3. Reports  

### 5- Student assessment methods:  
5.1. Research work To assess student ability for discussion of his attendants.  
5.2. Oral Examination To assess student ability to demonstrate his knowledge  
5.3. Practical Exam To assess Practical skills.  
5.4. written Exam To assess different skills.  

**Weighing of assessments:**
<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Mid-year examination</td>
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<tr>
<td>Oral examination</td>
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<tr>
<td>Practical examination</td>
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<tr>
<td>research work</td>
<td>15 %</td>
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<tr>
<td>Final-term examination</td>
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<td><strong>Total</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

6- List of References:

6.1. **Course Notes:** A concise Guide of General histology and cytology.

6.2. **Essential books (Text books):**


6.3. **Periodicals, Web sites, etc:**


- [http://www. pubmed.com](http://www. pubmed.com)

- [http://www. Sciencedirect.com](http://www. Sciencedirect.com)

7- **Facilities Required for Teaching and Learning:**

7.1. Data show and TV.

7.2. Histology Laboratory.

7.3. Library.

**Course Coordinators (Teaching Committee):**

1. Prof. Dr. Ihab El-Zoghby

**Head of Biochemistry Department:**
## Matrix of the course no: 16 (Histology of fish)

<table>
<thead>
<tr>
<th>Course title</th>
<th>No of hours teaching</th>
<th>Program ILOs covered by No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lecture</td>
<td>Practical Lab</td>
</tr>
<tr>
<td>Cytology</td>
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<tr>
<td>Cytogenetic</td>
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<tr>
<td>Cytochemistry</td>
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<tr>
<td>Epithelial tissue</td>
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<td>6</td>
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<tr>
<td>Connective tissue</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Muscular tissue</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Nervous tissue</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Lymphatic tissue</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>