Course specification

University/Academy: Damanhour
Faculty/Institute: Science
Department: Botany

1. course Data:

<table>
<thead>
<tr>
<th>Course code: Mic 423</th>
<th>Course title: Applied microbiology and special mycology</th>
<th>Academic year/level: 2010/2011 4th year student (first term) -</th>
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<tbody>
<tr>
<td>Specialization: Chemistry / Microbiology</td>
<td>No. of instructional units: lecture 3 practical 3</td>
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2. course Aim

The course of applied microbiology is designed to provide students with theoretical knowledge and practical skills in different strategies for large scale production using fungi with particular emphasis on growth kinetics in batch, fed – batch and continuous culture. The course provides students with an appropriate balance of applied and fundamental concepts in fermentation technologies and therefore, it allows students to enter into the areas of industrial microbiology where biotechnological skills are required.

The course of special mycology allows the study of different mycotic diseases caused by yeast and fungi pathogenicity and infection circumstances.

3. Intended learning outcome

a) Knowledge and understanding

By the end of the course, students will be able to:
A1-Write the requisites of industrial microorganisms
A2- List the used substrates for biotechnological processes
A3-Describe methods for large scale fermentation
A4-Illustrate the different biotechnological products are produced
A5- Mention different types of mycotic diseases
A6- Give details about the isolation, purification and identification of pathogens

b) Intellectual skills

By the end of the course, the students are expected to develop higher order skills that are reflected in their ability to:
B1-Design knowledge and understanding of essential of facts, concepts, principles and theories relating to the subject areas identified above.
B2- Plan training for students in modern laboratory
c) **Professional skills**

By the end of the course, students will be able to:

- **C1** Improve their practical skills and understands the scientific approach in microbiology
- **C2** manages skills that enable a harmonic working group.

**d) General skills**

By the end of the course, students will be able to:

- **D1** communicate on oral written levels
- **D2** solve problems, relate qualitative and information, extend to situations where evaluations have to be made on the basis of limited information.
- **D3** interact with other people and to engage in team – working.

4. **course content**

The requisites of industrial microorganisms

Substrates used for biotechnological processes

- Methods for large scale fermentation
- Different type of bioreactor (batch – fed batch – continuous)
- Batch culture

Continuous culture

Fed batch culture

- Products produced by fermentation
- Organic acids
- Amino acids
- Antibiotic
- Pharmaceutical products
- Microbial transformation
- Medical mycology
- Superficial mycoses
- Differentiation of dermatophytes
- Coetaneous mycoses
- Subcutaneous mycoses
- Systemic mycoses
- Mycological methods
- Mycological methods (continued)

5. **Teaching and learning methods**

- 5.1. Lectures and seminars.
- 5.2. Lab work.

**teaching and learning methods for students with special needs**

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### 6. Student Assessment

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<tr>
<td>7.1. Quizzes.</td>
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<td>5.2. Mid term exam.</td>
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<td>5.3. Practical exam.</td>
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<td>5.4. Final term exam.</td>
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#### a) Procedures used:
- Recent Text Books
- Standard microbiological laboratory equipments and chemicals
- Teaching aids (data show)
- Presence of a bank for fungal strains.
- Lamina flow.
- Video and scientific films
- Manual of practical work,

#### b) Schedule:
Assessment 1: Quizzes Week 4-7  
Assessment 2: Mid term exam  
Assessment 3: Practical exam  
Assessment 4: Final term exam Week: 16

#### c) Weighing of Assessment:
<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Final-Term Examination</td>
<td>150</td>
</tr>
<tr>
<td>Practical Examination</td>
<td>30</td>
</tr>
<tr>
<td>Mid term exam</td>
<td>10</td>
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<tr>
<td>Semester work</td>
<td>10</td>
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<td><strong>Total</strong></td>
<td>200</td>
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### 7. List of Textbooks and References:

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<tbody>
<tr>
<td>1 Course Notes</td>
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<tr>
<td>4 Journal of Biotechnology</td>
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<tr>
<td>5 Applied Microbiology and Biotechnology</td>
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<td>6 Applied and Environmental Microbiology</td>
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#### a) Course Notes

#### b) Required Books (Textbooks)

#### c) Recommended Books

#### d) Periodicals, web sites, etc
Course Instructor: ---------  Head of Department: ---------

Date: -----/-----/-----