**III.2.13 PATHOGENIC MICROBIOLOGY**

1. **Course description:**
2. **Credit points**: 3 ECTS
3. **Time commitment:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Items | Lecture | Tutorial/  Exercise | Practice/  Assignment | Lab-work | **Total** |
| No. of hours | 30 |  |  |  | **30** |

1. **Prerequisites**:
2. **Recommended background knowledge**: Biochemistry; Biology; Cell Biology; Microbiology
3. **Subject description:**

There are the following lectures delivered in Pathogenic Microbiology course:

i) Recommendation of studying materials and textbooks for Pathogenic Microbiology;

ii) Introduction of Pathogenic Microbiology; Types of microbials;

iii) Pathogenic microorganisms; Types of symbiotic associations (Mutualism; Commensalism; Parasitism); Bacterial pathogenesis;

iv) Infections and Infectious Diseases; Opportunistic pathogens; Reservoirs for infections; Stages of infections;

v) Microbial interactions with hosts and microbial pathogenesis (colonization; invasion; inflammation; bacterial defense against phagocytosis and specific immune response);

vi) Introduction to virology and viruses;

vii) Representative pathogens and their pathogenesis: *Salmonella; Shigella; Bacillus anthracis*;

viii) Lab-work: Bacterial spreading and inspection in the lecturer’s laboratory.

1. **Objectives & Outcome :**

In the Pathogenic Microbiology, students will gain knowledges about:

(1) The conceptualization of microbial pathogenicity and pathogenesis, including three types of symbiotic associations such as Mutualism; Commensalism; Parasitism.

(2) The microbial infections and Infectious Diseases; types of opportunistic and pathogenic pathogens; the animal/ reservoirs for infections; Stages of infections;

(3) The interactions between microbials and hosts such as microbial pathogenesis (colonization; invasion; inflammation; toxins) and defense of the microbials against phagocytosis and immnune response.

(4) The general concepts of virology and viruses which comprise of majority of pathogenic microorganisms.

(5) The overall introduction of Representative pathogens and their pathogenesis, ie., *Salmonella; Shigella; Bacillus anthracis*; and some Lab-works in growing bacteria and inspection of their colonies on agar plate*.*

1. **Assessment/ Evaluation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Component | Attendance | Exercises | Report | Practical | Midterm | Final |
| Percentage % | 10 |  |  |  | 20 | 70 |

1. **Prescribed Textbook(s)**

[1] Todar’s edition (textbook online): Kenneth Todar, Ph.D. [www.textbookofbacteriology.net](http://www.textbookofbacteriology.net)

[2] <http://textbookofbacteriology.net/themicrobialworld/homepage.html>

[3] Derek Wong’s Virology: <http://virology-online.com/>

[4] Medical Microbiology. 5th Edition,  P.R. Murray, K.S. Rosenthal, and M.A. Pfaller. Mosby, 2005..

**II. Course content & schedule:**

[1] Topic 1: i) Recommendation of studying materials and textbooks for Pathogenic Microbiology;

[2] Topic 2: ii) Introduction of Pathogenic Microbiology; Types of microbials;

[3] Topic 3: iii) Pathogenic microorganisms; Types of symbiotic associations (Mutualism; Commensalism; Parasitism); Bacterial pathogenesis;

[4] Topic 4: iv) Infections and Infectious Diseases; Opportunistic pathogens; Reservoirs for infections; Stages of infections;

[5] Topic 5: v) Microbial interactions with hosts and microbial pathogenesis (colonization; invasion; bacterial defense against phagocytosis and specific immune response); Bacterial exotoxins and endotoxins

[6] Topic 6: vi) Introduction to virology and viruses;

[7] Topic 7: vii) Representative pathogens and their pathogenesis: Salmonella; Shigella; Bacillus anthracis; Clostridium spp

[8] Topic 8: viii) Lab-work: Bacterial culture and inspection in the lecturer’s laboratory.

**III. Reference Literature:**

N/A