

## Syllabus template

<b>Semester: 2</b>	
<b>Course : MOLECULAR MEDICAL MICROBIOLOGY (PGD MMM)</b>	
<b>Paper Title: Oncogenic Microbes and QMS</b>	
<b>Paper code: DMMB5203</b>	<b>Credits: 4</b>
<b>Hours/week : 4</b>	
<b>Category: Core/MDC/SEC/VAC : Core</b>	
<b>Theory / Practical / Composite : Theory</b>	
<b>No of Modules : 2</b>	
<b>Course Overview:</b> This theory paper covers the fundamentals of oncogenesis and its relationship to oncogenic microbes. It also covers quality management systems.	
<b>Course Outcome:</b> By the end of this course, students will be able to:	
<ol style="list-style-type: none"> <li>1) Remember and understand the principles of “oncogenesis and oncogenic microbes”, and quality management systems.</li> <li>2) Learn about various types of oncogenic microbes like viruses, bacteria, parasites. Also learn various quality management tests like Proficiency Testing (PT), External Quality Assurance (EQA), Inter Laboratory Comparisons (ILC), NABL accreditation</li> <li>3) Explain the role of these microbes in oncogenesis. Explain the importance of quality control</li> <li>4) Describe the underlying mechanism of oncogenesis behind each microbe</li> <li>5) Apply the knowledge of molecular pathogenesis of these microbes in designing strategies against the same. Apply different Quality Management Systems in laboratories</li> </ol>	
<b>CO1: Remember:</b>	
<ol style="list-style-type: none"> <li>1. To know about different microbes associated with development of cancer.</li> <li>2. To know about Quality Management Systems</li> </ol>	
<b>CO2: Understand:</b>	
<ol style="list-style-type: none"> <li>1. The principles behind oncogenesis.</li> <li>2. The relation between oncogenesis and oncogenic microbes</li> <li>3. The principles behind quality management systems</li> </ol>	
<b>CO3: Apply:</b>	
<ol style="list-style-type: none"> <li>1. Apply knowledge of quality management system in everyday work</li> <li>2. Application of the knowledge of oncogenic microbes in drug administration.</li> </ol>	
<b>CO4: Analyze:</b>	
<ol style="list-style-type: none"> <li>1. Analysis of the observations and application of drugs when and how to use in bacterial, parasitic, viral oncogenesis.</li> <li>2. Integration of the concepts of quality management systems in day to day work and in</li> </ol>	

treatment.

**CO5: Evaluate:**

1. Evaluate quality management system, control of oncogenic microbes, and control in laboratory and healthcare settings.

**Prerequisites:** *Basic knowledge about any prior course*

**SYLLABUS**

<b>UNIT/Module</b>	<b>CONTENT</b>	<b>HOURS or NUMBER OF CLASSES</b>	<b>CO Mapping</b>	<b>COGNITIVE LEVEL</b>
<b>I.</b>	<b>Oncogenic Microbes</b> 1.Study of cancer related Microbes Oncogenic viruses and other microbes causing human cancers <ul style="list-style-type: none"><li>○ Helicobacter pylori</li><li>○ Human Papilloma Virus</li><li>○ Hepatitis B Virus</li><li>○ Hepatitis C Virus</li><li>○ Epstein Barr Virus</li><li>○ Human Herpes Virus 8</li><li>○ HTLV- 1, HTLV- 2</li><li>○ Clonorchis sinensis</li><li>○ Schistosoma haematobium</li></ul>	<b>20</b>	<b>CO1,CO2,CO3,CO4,CO5</b>	<b>K1,K2,K3,K4, K5</b>
<b>2.</b>	<b>Quality Management Systems(TMCK) [20L]</b>	<b>20</b>	<b>CO1,CO2,CO3,CO4,CO5,</b>	<b>K1,K2,K3,K4, K5</b>

	<p>DQ, IQ, OQ, PQ (Design qualification, installation qualification, operational qualification, performance qualification)</p> <ul style="list-style-type: none"><li>○ Validation and verification of a diagnostic test</li><li>○ Internal Control</li><li>○ Proficiency Testing (PT)</li><li>○ External Quality Assurance (EQA)</li><li>○ Inter Laboratory Comparisons (ILC)</li><li>○ NABL accreditation</li><li>○ Equipment calibration and maintenance</li><li>○ Inventory management</li><li>○ Staff competency assessment</li></ul>			
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	Standard Operating Procedure			

### Text Books

INTERNATIONAL STANDARD ISO 15189 Fourth edition 2022-12  
 Medical laboratories — Requirements for quality and competence.  
<https://www.iaclld.com/UpFiles/Documents/2e096ce5-485b-4f22-b7be-e557fb7d06f8.pdf>

- The Microbiome and Cancer: Understanding the Role of Microorganisms in Tumor Development and Treatment, Editors: [Nosheen Masood](#), [Azra Yasmin](#), Springer

### Web Resources Suggested readings

oncogenic pathways and epigenetic mechanisms in gastric carcinogenesis. *Future Oncol.* 2010 May;6(5):851-62. doi: 10.2217/fon.10.37. PMID: 20465395; PMCID: PMC2882595.

Tornesello ML, Buonaguro FM. Human Papillomavirus and Cancers. *Cancers (Basel)*. 2020 Dec 15;12(12):3772. doi: 10.3390/cancers12123772. PMID: 33333750; PMCID: PMC7765250.

Chang MS, Kim WH. Epstein-Barr virus in human malignancy: a special reference to Epstein-Barr virus associated gastric carcinoma. *Cancer Res Treat.* 2005 Oct;37(5):257-67. doi: 10.4143/crt.2005.37.5.257. Epub 2005 Oct 31. PMID: 19956524; PMCID: PMC2785932.

El-Serag HB. Epidemiology of viral hepatitis and hepatocellular carcinoma. *Gastroenterology*. 2012 May;142(6):1264-1273.e1. doi: 10.1053/j.gastro.2011.12.061. PMID: 22537432; PMCID: PMC3338949.

Efared B, Bako ABA, Idrissa B, Alhousseini D, Boureima HS, Sodé HC, Nouhou H. Urinary bladder *Schistosoma haematobium*-related squamous cell carcinoma: a report of two fatal cases and literature review. *Trop Dis Travel Med Vaccines*. 2022 Feb 15;8(1):3. doi: 10.1186/s40794-022-00161-x. PMID: 35164874; PMCID: PMC8845255.

Machicado C, Marcos LA. Carcinogenesis associated with parasites other than *Schistosoma*, *Opisthorchis* and *Clonorchis*: A systematic review. *Int J Cancer*. 2016 Jun 15;138(12):2915-21. doi: 10.1002/ijc.30028. Epub 2016 Feb 19. PMID: 26840624.

Fedak KM, Bernal A, Capshaw ZA, Gross S. Applying the Bradford Hill criteria in the 21st century: how data integration has changed causal inference in molecular epidemiology. *Emerg Themes Epidemiol*. 2015 Sep 30;12:14. doi: 10.1186/s12982-015-0037-4. PMID: 26425136; PMCID: PMC4589117.

Rubinstein PG, Aboulafia DM, Zloza A. Malignancies in HIV/AIDS: from epidemiology to therapeutic challenges. *AIDS*. 2014 Feb 20;28(4):453-65. doi: 10.1097/QAD.0000000000000071. PMID: 24401642; PMCID: PMC4501859.

**Evaluation** Total Marks: 100 CIA: 20 Marks: (Each module: 10 marks) End semester Exam: 80 Marks (Each module: 40 marks)

Paper Structure: End semester Exam: 80 Marks

Two Modules: 40 marks each

Question Pattern: Each Module: MCQ-20 marks (2 marksX10 questions to be attempted out of 12 questions given)

Broad questions; 20 marks (5 marks X 4 Questions to be attempted out of 6 questions given)

### Course outcomes (COs) and Cognitive Level Mapping

COs	CO Description	Cognitive levels
CO1	<p><b>Remember:</b></p> <ol style="list-style-type: none"> <li>To Know about different microbes associated with development of Cancer.</li> <li>To know about Quality Management Systems</li> </ol>	K1
CO2	<p><b>Understand:</b></p> <ol style="list-style-type: none"> <li>The principles behind oncogenesis.</li> <li>The relation between oncogenesis and oncogenic microbes</li> <li>The principles behind quality management systems</li> </ol>	K2
CO3	<p><b>Apply:</b></p> <ol style="list-style-type: none"> <li>Apply knowledge of quality management system in everyday work</li> <li>Application of the knowledge of oncogenic microbes in drug administration.</li> </ol>	K3
CO4	<p><b>Analyze:</b></p> <ol style="list-style-type: none"> <li>Analysis of the observations and application of drugs when and how to use in bacterial, parasitic, viral oncogenesis.</li> <li>Integration of the concepts of quality management systems in day to day work and in treatment.</li> </ol>	K4
CO5	<p><b>Evaluate:</b></p> <ol style="list-style-type: none"> <li>Evaluate quality management system, control of oncogenic microbes, and control in laboratory and healthcare settings.</li> </ol>	K5

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