

**COURSE RECORD**

Code	<b>BENG 624</b>
Name	<b>Metastasis and Tumor Environment</b>
Hour per week	3 (3 + 0)
Credit	3
ECTS	10
Level/Year	Graduate
Semester	-
Type	Elective
Location	AGU
Prerequisites	None
Special Conditions	-
Coordinator(s)	Assistant Prof. Mona El Khatib
Webpage	
Content	Tumor is more than a mass of cancerous proliferating cells. It is a complex architecture that is composed of cancerous and normal cells that constitute the tumor microenvironment. This tumor can grow and spread throughout the body by a process called metastasis. This course will provide a detailed overview about the molecular events that regulate and drive tumor metastasis and its effect on the tumor microenvironment.
Objectives	<ul style="list-style-type: none"> <li>- Provide an overview about the different components of the tumor microenvironment (TME)</li> <li>- Discuss the different mechanisms of interactions between the different components of TME and tumor cells</li> <li>- Provide a detailed description of the metastasis process.</li> <li>- Highlight the idea that tumor architecture is highly dynamic and regulated by complex interactions by the different components of the TME</li> </ul>
Learning Outcomes	LO1: Be able to describe the multistep process of metastasis LO2: Be able identify the different component of the tumor microenvironment and the different interaction among its different components. LO3: Understand that the tumor is constantly changing and adapting to survive LO4: Learn the theoretical aspect behind the different research techniques that are used to study metastasis and TME.
Requirements	None.
Reading List	Research articles.
Ethical Rules and Course Policy	

**LEARNING ACTIVITIES** *Please, use this one as a reference for your course*

Activities	Number	Weight (%)
Lecture	7	30%
Group Works	2	35%
Presentations	7	35%
Site Visits	0	0%
	Total	100

**ASSESSMENT**

Evaluation Criteria	Weight (%)
Quizzes	20%
Weekly Assignments	15%
Group Project Assignments & Presentations	30%
Attendance/Participation	05%

Final Exam/Submission	40%
<b>Total</b>	<b>100%</b>

For a detailed description of grading policy and scale, please refer to the website <https://goo.gl/HbPM2y> section 28.

**COURSE LOAD** *Please, use this one as a reference for your course*

Activity	Duration (hour)	Quantity	Work Load (hour)
In class activities	2	14	28
Lab	0	0	0
Group work	2	12	24
Research (web, library)	6	14	84
Required Readings	3	14	42
Pre-work for Presentation	5	14	70
Lab reports	0	0	0
		<b>General Sum</b>	<b>248</b>

**ECTS: 10** (Work Load/25-30)

**CONTRIBUTION TO PROGRAMME OUTCOMES\***

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
LO1	3	5	3	4	5	5	5	4						
LO2	3	5	3	4	5	5	4	4						
LO3	3	5	5	5	5	4	4	5						
LO4	3	5	5	5	5	5	5	5						

\* Contribution Level: 0: None, 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

**WEEKLY SCHEDULE**

W	Topic	Outcomes
1	Overview for tumor metastasis and Tumor Microenvironment (TME) Activity: None	LO1, LO2
2	Tumor Heterogeneity and Cancer Stem Cells/Initiating Cells Activity: Research article discussion	LO2, LO3, LO4
3	TME: Immune cells Activity: Research article discussion	LO2, LO3, LO4
4	TME: Cancer Associated Fibroblasts Activity: Research article discussion	LO2, LO3, LO4
5	TME: Endothelial Cells, Pericytes, Lymphatic Endothelial Cells and Adipocytes Activity: Research article discussion	LO2, LO3, LO4
6	TME: Extracellular Matrix Activity: Research article discussion	LO2, LO3, LO4
7	TME: Extracellular Vesicles Activity: Research article discussion	LO2, LO3, LO4
8	Epithelial-to-Mesenchymal Transition (EMT) Activity: Research article discussion	LO1, LO2, LO3, LO4
9	Angiogenesis Activity: Research article discussion	LO1, LO2, LO3, LO4
10	Circulating Tumor Cells, micrometastasis and cancer dormancy Activity: Research article discussion	LO1, LO2, LO3, LO4
11	Metastatic Niche Activity: Research article discussion	LO1, LO2, LO3, LO4
12	Tumor Metabolism Activity: Research article discussion	LO1, LO2, LO3, LO4
13	Signalling Pathways in Metastasis	LO1, LO2, LO3,

---

	Activity: Research article discussion	L04
14	Epigenetic Regulation of Tumor Metastasis	L01, L02, L03,
	Activity: Research article discussion	L04

---

Prepared by Mona El Khatib  
Date 17/07/2018