Ariel University – Course Outline Form

1. Course General Information

Course Name	PreMed Physics 2		
Faculty		Department	

Course Number	Semester	Local credit[1]	ECTS[2]
	Spring	4	5.4

Prerequisites	
Language[3]	☐Hebrew ☒English ☐Russian ☐Arabic ☐Other
Course Level	☒Undergraduate ☐Graduate
Course Type	☒Required ☐Elective ☐Required for a specific track
Course Category	☐Core course ☐Track specific core course ☐Supportive Course ☐General Course

2. Method of instruction

Activity	Hours/week	Comments
Frontal Lecture	3	
Tutor sessions	1	
Laboratory	1	
Workshop		
Individual meetings		
Other		

3. Staff and Schedule

	Name	E-mail
Course Coordinator	Dr. Refael Minnes	refaelm@ariel.ac.il
Course Lecturer(s)	Dr. Refael Minnes	refaelm@ariel.ac.il
Assistant(s)	Dr. Yael Hilman	yaelhi@ariel.ac.il

Location	Day	Hours

4. Course Plan

[1] Local credit is generally determined by amount of instruction hours in class
[2] ECTS is determined by expected total time invested by the student 1ECTC=25-30 hours
[3] Tick all that apply

Course Objectives	This course provides a thorough introduction to the principles and methods of physics for students that have no solid physics background. The course (together with Physics 1) is designed to cover the full required syllabus of the Physics M-CAT test.
Learning Outcomes	Upon completion of the course students should be able to: • Apply knowledge of electromagnetism, optics and nuclear physics to explain natural physical processes. • Use an understanding of elementary mathematics along with physical principles to effectively solve problems encountered in everyday life, further study in science, and in the professional world. • Design experiments and acquire data in order to explore physical principles, effectively communicate results, and critically evaluate related scientific studies. • Identify possible sources of error and implementing techniques that enhance precision. • Assess the contributions of physics to our evolving understanding of global change and sustainability while placing the development of physics in its historical and cultural context.
Course Description	In this course, we study electromagnetism, optics and nuclear physics. The subjects are electric force, field and energy, Current and resistance and DC circuits, magnetism, geometrical optics and physical optics and nuclear physics.

5. Weekly subjects and required materials
   Syllabus is based on 13-week period excluding the final exams

Week	Subjects	Required Materials
1	Coloumb laws & electric fields	Ch. 15 in the textbook
2	Electric energy	Ch. 16 in the textbook
3	Capacitance	Ch. 16 in the textbook
4	Current and resistance, Ohm law	Ch. 17 in the textbook
5	Direct current circuits	Ch. 18 in the textbook
6	Magnetism	Ch. 19 in the textbook
7	Reflection and refraction	Ch. 22 in the textbook
8	Mirrors, lenses	Ch. 23 in the textbook
9	EM waves	Ch. 21 in the textbook
10	Wave optics	Ch. 24 in the textbook
11	Optical instruments	Ch. 25 in the textbook
12	Nuclear physics	Ch. 29 in the textbook
13	Nuclear energy and elementary particles	Ch. 30 in the textbook

6. Main textbook and additional text books

Course Notes/Textbooks	"College Physics". Publication Date: 2018 | Edition: 11 | Publisher: Cengage Learning | Raymond A. Serway, Chris Vuille
Suggested Readings/Materials	PhET interactive simulations

	https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype

7. Assessment:

Activity	Number/course	Weight (%)/activity	Weight (%)
Participation	10	mandatory	0
Laboratory/Application	5	4	20
Field Work			
Quiz/Studio Critique			
Homework/Assignment	10	1.5	15
Presentation			
Project			
Seminar/Workshop			
Midterm	1	25	25
Final Exam	1	40	40
Total (%)			100

8. ECTS / Workload Table

Activity	Number/course	Duration/activity (Hours)	Total Duration
Participation	13	3	39
Laboratory/Application	13	1	13
Field Work			
Quiz/Studio Critique			
Homework/Assignment	13	1	13
Reading Material - Articles[4]			
Reading Material – Book Chapter[5]	260		52
Presentation			
Project			
Seminar/Workshop			
Midterm	1	2	2
Preparation for exam[6]	1	39+13+13+52	23
Final Exam	1	2	2
Total			144

3.3 pages per hour [4]
5 pages per hour [5]
20% of total course time [6]

9. Course /Program Outcome Matrix
   The course does not have to contribute to all program outcomes.
   If the course does not contribute to a specific program outcome, leave the contribution level empty.
   1=Lowest, 5=Highest

	Program Competencies/Outcomes	Contribution Level				
		1	2	3	4	5