

**University of the Incarnate Word**  
**„The Physics of Star Trek“**  
**Course Syllabus**

**Instructor:**

Dr. Hubert Zitt, visiting professor from the University of Applied Sciences Kaiserslautern, location Zweibrücken, Germany

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Websites: [www.fh-kl.de/~zitt](http://www.fh-kl.de/~zitt) and [www.startrekvorlesung.de](http://www.startrekvorlesung.de)

Lecture times: Monday and Wednesday 1:30 pm – 2:45 pm, BSH 119

Office hours: Monday and Wednesday 1:00 pm – 1:30 pm, BSH 119 or by appointment

**Course Description:**

In the course ideas and technologies are addressed, which are shown in the science fiction TV-show Star Trek. Some visions, which were shown in Star Trek, became already reality like the communicator of Captain Kirk which looks pretty similar to today's cell phones. Other technologies could be reality in the future, for example fusion reactors or holographic communication. Star Trek also showed us different and interesting ways to interact with computers. All these topics will be shown in the course.

Apart from that, the students will learn to figure out some calculations from the classical physics and the theory of relativity. The most of the calculation are taken from Star Trek, e.g. to figure out the velocity, the acceleration or the power consumption of the starship Enterprise.

**Course Outcomes:**

The students will be able to:

- ✍ get an idea of the communication possibilities of the future
- ✍ get an idea of possible solutions of today's energy problems
- ✍ work with physical units and the metric system
- ✍ accomplish calculations from the classical physics (velocity, acceleration, energy etc.)
- ✍ understand easy calculations from the theory of relativity
- ✍ understand the idea of the quantum mechanics
- ✍ prepare and give a presentation about a topic from Star Trek

**Grade Distribution:**

Presentation	50 %
Attendance	30 %
Quizzes and homework	20 %

Final letter grades will be determined at the end of the semester.

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**Presentations:**

Each student has to give a presentation on a topic of his choice. Of course the topic should have something to do with Star Trek. Each presentation should take about 30 minutes.

Depending upon topic several students can prepare a presentation together. In this case everyone of the group must give a part of the presentation; it is thus not possible that one student speaks for the entire group. Dependently of the topic the formulas, equations and explanations, discussed so far, can and should be used in the presentations.

Providing an additional handout for the class will be specially honored.

Feel free to show scenes or screenshots in your presentations. To get screenshots you can use e.g. the freeware program “VLC media player”.

For your preparations you can visit the following websites:

- ✂ <http://memory-alpha.org>
- ✂ [http://en.wikipedia.org/wiki/Star\\_trek](http://en.wikipedia.org/wiki/Star_trek)
- ✂ [http://en.wikipedia.org/wiki/Physics\\_and\\_Star\\_Trek](http://en.wikipedia.org/wiki/Physics_and_Star_Trek)
- ✂ <http://krauss.faculty.asu.edu/starlinks.html>
- ✂ <http://www.startrek.com>

You can also ask for the loan of the following textbooks:

- ✂ Lawrence Krauss, The Physics of Star Trek
- ✂ Rick Sternbach and Michael Okuda, Star Trek: The Next Generation Technical Manual
- ✂ Franz Josef, Star Trek Starfleet Technical Manual

Each student will send her/his presentation (and – if available – the handout) to me as a PDF-document by e-mail and I will post them on BLACKBOARD.

**Course calendar “The Physics of Star Trek”:**

No.	Date	Name	Topic
1	M, Aug. 25	Zitt	Introduction and course overview
2	W, Aug. 27	Zitt	Overview of Star Trek
3	M, Sep. 01	-	<i>Labor Day</i>
4	W, Sep. 03	Zitt	Communication possibilities of the future
5	M, Sep. 08	Zitt	Unexplainable things in Star Trek
6	W, Sep. 10	Zitt	Distances in space, parsec, light year etc.
7	M, Sep. 15	Zitt	Velocity and acceleration
8	W, Sep. 17	Zitt	Kinetic force
9	M, Sep. 22	Zitt	Work and kinetic energy
10	W, Sep. 24	Zitt	Antimatter and $E=mc^2$
11	M, Sep. 29	Zitt	Conservation of momentum and fusion reactors
12	W, Oct. 01	Zitt	Impulse drive and beaming
13	M, Oct. 06	Zitt	Beaming
14	W, Oct. 08	Zitt	Quantum mechanics and gravitons
15	M, Oct. 13	-	<i>Fall break</i>
16	W, Oct. 15	-	<i>Fall break</i>
17	M, Oct. 20	Student Student	The Borg Cloaking devices
18	W, Oct. 22	Student Student	Weapons Replicator
19	M, Oct. 27	Student Student	Synthetic gravity
20	W, Oct. 29	Student Student	Artificial intelligence The Star Trek Galaxy
21	M, Nov. 03	Student Student	Warp drive
22	W, Nov. 05	Student Student	Tricorders Computer technology
23	M, Nov. 10	Student Student	Transporters
24	W, Nov. 12	Student Student	Transporters
25	M, Nov. 17	Student Student	Medicine aspect Star Trek and catholicism
26	W, Nov. 19	Student Student	A cultural approach Beyond Star Trek
27	M, Nov. 24	Student Student	Holograms
28	W, Nov. 26	-	<i>Thanksgiving Holiday</i>
29	M, Dec. 01	Student all	Time traveling Conclusion and summary
30	T, Dec. 02	Zitt	Christmas-Lecture (To beam or not to beam)