

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> CJP/AJD1/07		<b>Course name:</b> English Language for PhD Students 1			
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present					
<b>Number of credits:</b> 2					
<b>Recommended semester/trimester of the course:</b> 1.					
<b>Course level:</b> III.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b>					
<b>Learning outcomes:</b>					
<b>Brief outline of the course:</b>					
<b>Recommended literature:</b>					
<b>Course language:</b>					
<b>Course assessment</b> Total number of assessed students: 558					
N	Ne	P	Pr	abs	neabs
0.0	0.0	56.99	0.0	43.01	0.0
<b>Provides:</b> PhDr. Helena Petruňová, CSc., Mgr. Zuzana Kolaříková, PhD., Mgr. Zuzana Nadřová					
<b>Date of last modification:</b> 06.02.2018					
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice					
<b>Faculty:</b> Faculty of Science					
<b>Course ID:</b> CJP/AJD2/07		<b>Course name:</b> English Language for PhD Students 2			
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present					
<b>Number of credits:</b> 3					
<b>Recommended semester/trimester of the course:</b> 2.					
<b>Course level:</b> III.					
<b>Prerequisites:</b>					
<b>Conditions for course completion:</b>					
<b>Learning outcomes:</b>					
<b>Brief outline of the course:</b>					
<b>Recommended literature:</b>					
<b>Course language:</b>					
<b>Course assessment</b> Total number of assessed students: 558					
N	Ne	P	Pr	abs	neabs
0.0	0.0	92.29	1.43	6.27	0.0
<b>Provides:</b> PhDr. Helena Petruňová, CSc., Mgr. Zuzana Kolaříková, PhD.					
<b>Date of last modification:</b> 06.02.2018					
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.					

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ ASTF/15	<b>Course name:</b> Astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 4 <b>Per study period:</b> 56 <b>Course method:</b> present	
<b>Number of credits:</b> 10	
<b>Recommended semester/trimester of the course:</b> 1.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar essay. Oral exam with preparation; 3 questions within the curriculum presented during the course.	
<b>Learning outcomes:</b> Become acquainted with other aspects of the formation of spectra in stellar atmospheres.	
<b>Brief outline of the course:</b> Chemical analysis; measurement of stellar radii and temperatures; measurements of photospheric pressure; stellar rotation; velocity fields in stellar photospheres; microturbulence and macroturbulence; stellar granulation.	
<b>Recommended literature:</b> 1. Gray, D.F., The observation and analysis of stellar photospheres, Cambridge University Press, Cambridge, 1992; 2. Böhm-Vitense, E., Introduction to stellar astrophysics, Stellar atmospheres, Cambridge University Press, Cambridge, 1997; 3. Kippenhahn, R., Weigert, A., Stellar Structure and evolution, Springer-Verlag, Berlin, 1990;	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 4	
N	P
0.0	100.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ ASVE/15	<b>Course name:</b> High energy astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar essay. Oral exam with preparation; 3 questions within the curriculum presented during the course.	
<b>Learning outcomes:</b> Become acquainted with the basics of high energy astrophysics.	
<b>Brief outline of the course:</b> Astrophysical mechanisms of the origin and properties of high energy photons in different types of cosmic objects: solar system bodies, active stellar coronae, supernova explosions and remnants, neutron stars, cataclysmic variable stars and X-ray binaries, active galactic nuclei, clusters of galaxies and gamma-ray bursts. Detection and analysis of X-rays and gamma rays.	
<b>Recommended literature:</b> 1. Melia, F., High-Energy Astrophysics, Princeton University Press, Princeton, 2009; 2. Lewin, W.H.G., van der Klis, M., Compact Stellar X-ray Sources, Cambridge University Press, Cambridge, 2006; 3. Longair, M. S., High Energy Astrophysics, Cambridge University Press, Cambridge, 2011; 4. Seward, F. D., Charles, P. A., Exploring the X-ray Universe, Cambridge University Press, Cambridge, 2010;	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 0	
N	P
0.0	0.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ CDC/04	<b>Course name:</b> Citation in scientific journal published in the country of residence
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 0	
abs	n
0.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ CM/04	<b>Course name:</b> Citation in monograph
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 20	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 1	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ CZC/04	<b>Course name:</b> Citation in scientific journal published abroad
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 10	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 40	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/DK/04	<b>Course name:</b> National Conference
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 125	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	



## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/DKC/04	<b>Course name:</b> Journals registered in the Current Contents Connect database and published in the country of residence
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 15	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 7	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/DKZU/04	<b>Course name:</b> Home Conference with Foreign Participation
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 4	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 255	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ DNC/04	<b>Course name:</b> Journals not registered in the Current Contents Connect database and published in the country of residence
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 13	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/DZS/14	<b>Course name:</b> Doctoral Thesis Examination
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Obtaining required number of credits as given by the study plan.	
<b>Learning outcomes:</b> Evaluation of competences of the student according to his/her scientific profile.	
<b>Brief outline of the course:</b> Presentation of the results in the thesis for disertation exam, responding to referee's comments, answering questions of exam committee. Two questions are selected subsequently from one compulsory and one optional subject, respectively. The subjects are selected by guarantee of the program according to the study plan and scientific profile of the student. The third question addresses the current state of work on dissertation thesis.	
<b>Recommended literature:</b>	
<b>Course language:</b> english	
<b>Course assessment</b> Total number of assessed students: 94	
N	P
0.0	100.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ FOTA/15	<b>Course name:</b> Photometry
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 1.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> oral exam and test	
<b>Learning outcomes:</b> inform students about advanced methods of astronomical photometry	
<b>Brief outline of the course:</b> Detection of objects, background determination. Aperture photometry, apertures optimization, profile fitting. PSF photometry. Image subtraction method. Measurements calibration, removing systematic trends and errors. Transformation to international system.	
<b>Recommended literature:</b> 1. Budding & Demircan: 2007, Introduction to Astronomical Photometry, Cambridge University Press 2. Howell : 2000, Handbook of CCD Astronomy, Cambridge University Press 3. Lena et al.: 1996, Observational Astrophysics, Springer-Verlag 4. Martinez a Klotz: 1998, A practical giude to CCD Astronomy, Cambridge University Press. manuals to software packages, published papers and internet sources	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 5	
N	P
0.0	100.0
<b>Provides:</b> doc. Mgr. Štefan Parimucha, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ FTDV/15	<b>Course name:</b> Physics of the close binaries
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 2.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> oral exam	
<b>Learning outcomes:</b> Obtaining knowledges about methods about close binaries research and their structure and evolution.	
<b>Brief outline of the course:</b> Kopal's classification of close binaries. Creation and evolution of close binaries. Physical processes in close binaries: mass transfer, outflow, tidal pulsations, accretion disks, mass flows. Methods of observations: photometry, spectroscopy, interferometry, polarimetry, Doppler tomography. Determination of orbital parameters and absolute parameters of bodies.	
<b>Recommended literature:</b> 1. Hilditch, R.W.: 2001, An introduction to Close binary Stars, Cambridge University Press 2. Kallrath, J., Milone, E.F.: 1999, Eclipsing Binary Stars, Springer Verlag 3. Richards, M.T., Hubeny, I. (eds.):2012, "From Interacting Binaries to Exoplanets: Essential Modeling Tools", proceedings of IAU Symposium 282, Cambridge University Press	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 0	
N	P
0.0	0.0
<b>Provides:</b> Mgr. Theodor Pribulla, CSc.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/IG/04	<b>Course name:</b> Acquirement of Internal Grant
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 10	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 105	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> Dek. PF UPJŠ/JSD/14	<b>Course name:</b> Spring School for PhD Students
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> 4d <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 121	
abs	n
100.0	0.0
<b>Provides:</b> prof. RNDr. Katarína Cechlárová, DrSc.	
<b>Date of last modification:</b> 19.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	



## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ KTPA/15	<b>Course name:</b> Quantum field theory
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 4 <b>Per study period:</b> 56 <b>Course method:</b> present	
<b>Number of credits:</b> 8	
<b>Recommended semester/trimester of the course:</b> 2.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Exam	
<b>Learning outcomes:</b> To acquaint with quantum field theory methods and their application in theory of elementary particles and astrophysics.	
<b>Brief outline of the course:</b> 1. Quantum field, Lagrange formalism, interacting quantum fields, Wick theorems and Feynman diagrammatic technique, higher orders of perturbation theory. 2. Application of quantum field theory in the theory of elementary particles: standard model, unified theories of elementary particles. 3. Application of quantum field theory in statistical physics. Feynman diagrams. 4. Critical dynamics and description of scaling at phase transitions by means of quantum-field technique and renormalization group. Selection of aforementioned topics will be made by supervisor according to the content and aims of PhD thesis	
<b>Recommended literature:</b> 1. L.H. Ryder, Quantum Field Theory, Cambridge University Press, Cambridge, 1996. 2. A. Zee, Quantum Field Theory in Nutshell, Princeton University Press, Princeton, 2010. 3. P. Ramond, Field Theory: A Modern Primer, Westview Press, 1990. 4. Zinn-Justin J., Quantum Field Theory and Critical Phenomena, Claredon Press, Oxford, 2004. 5. W. Greiner, J. Reinhardt, Field Quantization, Springer, Berlin, 1996. 6. W. Greiner, J. Reinhardt, Quantum Electrodynamics, Springer, Berlin, 2009. 7. W. Greiner, S. Schramm, E. Stein, Quantum Chromodynamics, Springer, Berlin, 2007. 8. A.N. Vasiliev, The Field Theoretic Renormalization Group in Critical Behavior Theory and Stochastic Dynamics, Chapman & Hall/CRC Press Company Boca Raton, London, 2004.	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 0	

N	P
0.0	0.0
<b>Provides:</b> prof. RNDr. Michal Hnatič, DrSc.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ MK/04	<b>Course name:</b> International Conference
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 354	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ NMAS/15	<b>Course name:</b> Numerical methods of astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 4 <b>Per study period:</b> 56 <b>Course method:</b> present	
<b>Number of credits:</b> 8	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b> Acquaint students about advanced numerical methods for solving of problems in astrophysics.	
<b>Brief outline of the course:</b> Monte-Carlo simulations in astrophysics, error determination of parameters. Simulation of mass transfer and accretion disks. N-body system dynamics.	
<b>Recommended literature:</b> 1. Press et. al.: 2002, Numerical Recipes in C.: Cambridge University Press 2. Robert & Cassela: 2005, Monte Carlo Statistical Methods, Springer manuals for packages NumPy, SciPy, PyKE, published papers	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 4	
N	P
0.0	100.0
<b>Provides:</b> doc. Mgr. Štefan Parimucha, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ NZ/04	<b>Course name:</b> Non-reviewed collections of papers and monographs published abroad or in the country of residence
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 92	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ODZP/14	<b>Course name:</b> Defence of Doctoral Thesis
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 30	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 47	
N	P
0.0	100.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ PDS/18	<b>Course name:</b> Writing Dissertation Work
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 15	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 22	
N	P
0.0	100.0
<b>Provides:</b>	
<b>Date of last modification:</b> 17.04.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ PLSD/15	<b>Course name:</b> Planetary systems
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 2.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> exam	
<b>Learning outcomes:</b> Obtaining knowledges about methods of exoplanet searching and their physical properties.	
<b>Brief outline of the course:</b> Methods of exoplanets detection: transits, radial velocities, microlensing, direct imaging. Dynamic of exoplanets. Creation and evolution of exoplanets, evolution of protoplanetary discs. Atmosphere of exoplanets.	
<b>Recommended literature:</b> 1. Haswell: 2010, Transiting exoplanets, Cambridge University Press 2. Perryman: 2011, The exoplanet handbook, Cambridge University Press 3. Seager (eds.): 2010, Exoplanets, The University of Arizona Press, Tuscon	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 2	
N	P
0.0	100.0
<b>Provides:</b> Mgr. Martin Vaňko, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	



## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ POVK/04	<b>Course name:</b> Work in Organizing Committee of Conference
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 78	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ PPC/04	<b>Course name:</b> Teaching activities
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 1	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 214	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ PPC/04	<b>Course name:</b> Teaching activities
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 1	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 214	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ PTMH/15	<b>Course name:</b> Populations of the interplanetary bodies
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 1.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Exam	
<b>Learning outcomes:</b> Obtaining detailed knowledges about populations of interplanetary matter.	
<b>Brief outline of the course:</b> Meteoroids flows, near-earth asteroids, new comets under Oort, Troians. Ice objects of Edgeworth-Kuiper belt: orbits physical properties, dynamical and physical evolution	
<b>Recommended literature:</b> 1. Bottke, Cellino, Paolicchi, Binzel,: 2002, Asteroids III, University of Arizona Press 2. Hawkes, Mann, Brown: 2005, Modern Meteor Science, Springer 3. Fernández, Lazzaro, Prialnik, Schulz: 2010, Icy Bodies of the Solar System, Cambridge University Press 4. Swamy: 2010, Physics of comets, World Scientific	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 0	
N	P
0.0	0.0
<b>Provides:</b> doc. RNDr. Ján Svoreň, DrSc.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ PVS/04	<b>Course name:</b> Author's patents, discoveries, software
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 34	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice		
<b>Faculty:</b> Faculty of Science		
<b>Course ID:</b> KPE/ PgVU/17	<b>Course name:</b> Pedagogy for university teachers	
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> 28s <b>Course method:</b> present		
<b>Number of credits:</b> 5		
<b>Recommended semester/trimester of the course:</b>		
<b>Course level:</b> III.		
<b>Prerequisites:</b>		
<b>Conditions for course completion:</b>		
<b>Learning outcomes:</b>		
<b>Brief outline of the course:</b>		
<b>Recommended literature:</b>		
<b>Course language:</b>		
<b>Course assessment</b> Total number of assessed students: 12		
abs	n	neabs
100.0	0.0	0.0
<b>Provides:</b> PaedDr. Renáta Orosová, PhD.		
<b>Date of last modification:</b> 05.02.2018		
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.		

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice		
<b>Faculty:</b> Faculty of Science		
<b>Course ID:</b> KPPaPZ/PsVU/17	<b>Course name:</b> Psychology for University Lecturers	
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> 28s <b>Course method:</b> present		
<b>Number of credits:</b> 5		
<b>Recommended semester/trimester of the course:</b>		
<b>Course level:</b> III.		
<b>Prerequisites:</b>		
<b>Conditions for course completion:</b>		
<b>Learning outcomes:</b>		
<b>Brief outline of the course:</b>		
<b>Recommended literature:</b>		
<b>Course language:</b>		
<b>Course assessment</b> Total number of assessed students: 12		
abs	n	neabs
100.0	0.0	0.0
<b>Provides:</b> Mgr. Marta Dobrowolska Kulanová, PhD., doc. PhDr. Beata Gajdošová, PhD.		
<b>Date of last modification:</b> 20.02.2018		
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.		

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ RZ/04	<b>Course name:</b> Reviewed Proceedings
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 169	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	



## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SASTa/15	<b>Course name:</b> Seminar in astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 <b>Per study period:</b> 42 <b>Course method:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of the course:</b> 1.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b> Acquaint students with actual problems of astronomy and astrophysics and presentation of own results.	
<b>Brief outline of the course:</b> Scientific seminar about problems of astronomy and astrophysics, problems of dissertation thesis.	
<b>Recommended literature:</b> Current papers in astronomical and astrophysical journals.	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 5	
N	P
0.0	100.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD., doc. Mgr. Štefan Parimucha, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SASTb/15	<b>Course name:</b> Seminar in Astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 <b>Per study period:</b> 42 <b>Course method:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of the course:</b> 2.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b> Acquaint students with actual problems of astronomy and astrophysics and presentation of own results.	
<b>Brief outline of the course:</b> Scientific seminar about problems of astronomy and astrophysics, problems of dissertation thesis.	
<b>Recommended literature:</b> Current papers in astronomical and astrophysical journals.	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 5	
N	P
0.0	100.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD., doc. Mgr. Štefan Parimucha, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SASTc/15	<b>Course name:</b> Seminar in astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 <b>Per study period:</b> 42 <b>Course method:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b> Acquaint students with actual problems of astronomy and astrophysics and presentation of own results.	
<b>Brief outline of the course:</b> Scientific seminar about problems of astronomy and astrophysics, problems of dissertation thesis.	
<b>Recommended literature:</b> Current papers in astronomical and astrophysical journals.	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 4	
N	P
0.0	100.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD., doc. Mgr. Štefan Parimucha, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SASTd/15	<b>Course name:</b> Seminar in astrophysics
<b>Course type, scope and the method:</b> <b>Course type:</b> Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 3 <b>Per study period:</b> 42 <b>Course method:</b> present	
<b>Number of credits:</b> 3	
<b>Recommended semester/trimester of the course:</b> 4.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b> Acquaint students with actual problems of astronomy and astrophysics and presentation of own results.	
<b>Brief outline of the course:</b> Scientific seminar about problems of astronomy and astrophysics, problems of dissertation thesis.	
<b>Recommended literature:</b> Current papers in astronomical and astrophysical journals.	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 4	
N	P
0.0	100.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD., doc. Mgr. Štefan Parimucha, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SCI/04	<b>Course name:</b> Citation registered in Science Citation Index
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 20	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 116	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SDPR/04	<b>Course name:</b> Co-worker of project supported by national grant schemes
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 388	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SLAA/15	<b>Course name:</b> Solar activity
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 2.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> exam	
<b>Learning outcomes:</b> Knowledges about physical properties of plasma in solar interior and atmosphere, about physics of active regions on the Sun and understanding of solar activity cycle.	
<b>Brief outline of the course:</b> Solar interior - solar activity cycles, Tachocline, solar atmosphere - energy transfer and radiation, magnetic field of the Sun and active regions, solar spots, eruptions, coronal mass ejections, Solar dynamics, Helioseismology	
<b>Recommended literature:</b> 1. Aschwanden Markus, Physics of the Solar Corona: An Introduction with Problems and Solutions, Springer, 2006 2. Priest, E.R.: Solar Magnetohydrodynamics, Reidel, 1982. 3. Stix M.: The Sun, An Introduction, Springer, 2nd edition, 2002. 4. Sturrock, Holzer, Mihalas, Ulrich, Physics of the Sun I. II. III. Geophysics and Astrophysics Monographs, Riedel Publ. Dodrecht 1968 5. Zirin, H., Astrophysics of the Sun, Cambridge Univ. Press, Cambridge, 1988	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 0	
N	P
0.0	0.0
<b>Provides:</b> RNDr. Aleš Kučera, CSc.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SMPR/04	<b>Course name:</b> Co-worker of project supported by international grant schemes
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 15	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 86	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	



## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SPKD/15	<b>Course name:</b> Spectroscopy
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 1.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Seminar essay. Oral exam with preparation; 3 questions within the curriculum presented during the course.	
<b>Learning outcomes:</b> Become acquainted with the basics of acquisition, processing and analysis of stellar spectra.	
<b>Brief outline of the course:</b> Spectroscopic tools a detectors. The measurement and behaviour of stellar continua and spectral lines.	
<b>Recommended literature:</b> 1. Gray, D.F., The observation and analysis of stellar photospheres, Cambridge University Press, Cambridge, 1992; 2. Böhm-Vitense, E., Introduction to stellar astrophysics, Stellar atmospheres, Cambridge University Press, Cambridge, 1997; 3. Kippenhahn, R., Weigert, A., Stellar Structure and evolution, Springer-Verlag, Berlin, 1990;	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 4	
N	P
0.0	100.0
<b>Provides:</b> doc. RNDr. Rudolf Gális, PhD.	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ SSOL/04	<b>Course name:</b> Self-motivated Study on Scientific Literature
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 163	
N	P
0.0	100.0
<b>Provides:</b>	
<b>Date of last modification:</b> 23.02.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ USMA/15	<b>Course name:</b> Introduction to standard model
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture <b>Recommended course-load (hours):</b> <b>Per week:</b> 2 <b>Per study period:</b> 28 <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b> 3.	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> exam	
<b>Learning outcomes:</b> The aim of the course is to give to the students, oriented to the astrophysics, basic knowldges about unified theory of electro-weak interactions	
<b>Brief outline of the course:</b> 1.From the metodological point of view the lectures are based on explanation of known processes of weak interaction where beta-decay belongs. 2.Genesis of modern electro-weak theory and standard model is given by inductive method starting from definition of V-A currents, choise of appropriate calibration symmetry, corresponding intermediate bosons and Yang_Mils quantum fields and Higgs mechanism. 3.As a result the modern formulation of Glashow- Weinberg-Salam standard model is proposed.	
<b>Recommended literature:</b> 1. J. Hořejší: Introduction to electroweak unification (World Scientific, Singapore 1994); czech version: Elektroslabé sjednocení a stromová unitarita (Karolinum, Praha 1993). 2. P. Renton: Electroweak interactions (Cambridge Univ. Press, Cambridge 1990). 3. Francis Halzen, Alan D. Martin: Quarks and Leptons, John Wiley&Sons; in russian: F.Helzen, A.D.Martin: Kvarki i leptoni, Mir, Moskva, 1987. 4. Cheng T.P., Li L.F.: Gauge theory of elementary particle Physics, Claredon Press, Oxford, 1984.	
<b>Course language:</b> Slovak, English	
<b>Course assessment</b> Total number of assessed students: 0	
N	P
0.0	0.0
<b>Provides:</b> prof. RNDr. Michal Hnatič, DrSc.	
<b>Date of last modification:</b> 23.02.2018	

**Approved:** Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális,  
PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ VBP/04	<b>Course name:</b> Supervisor/consultant of bachelor thesis
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 35	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ VPBP/04	<b>Course name:</b> Elaboration of reviewer report
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 18	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ VPSV/04	<b>Course name:</b> Supervision of Student's Scientific Activity
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 6	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 14	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ VYS/04	<b>Course name:</b> Presentation in Seminar
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 306	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	



## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ ZKC/04	<b>Course name:</b> Journals Registered by Current Contets Database
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 20	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 366	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ ZNC/04	<b>Course name:</b> Journals not registered in the Current Contents Connect database and published abroad
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 5	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 42	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚFV/ ZSP/04	<b>Course name:</b> Study Stay Abroad
<b>Course type, scope and the method:</b> <b>Course type:</b> <b>Recommended course-load (hours):</b> <b>Per week: Per study period:</b> <b>Course method:</b> present	
<b>Number of credits:</b> 2	
<b>Recommended semester/trimester of the course:</b>	
<b>Course level:</b> III.	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b>	
<b>Learning outcomes:</b>	
<b>Brief outline of the course:</b>	
<b>Recommended literature:</b>	
<b>Course language:</b>	
<b>Course assessment</b> Total number of assessed students: 233	
abs	n
100.0	0.0
<b>Provides:</b>	
<b>Date of last modification:</b> 01.03.2018	
<b>Approved:</b> Co-guaranteedoc. Mgr. Štefan Parimucha, PhD.Co-guaranteedoc. RNDr. Rudolf Gális, PhD.Guaranteeprof. RNDr. Michal Hnatič, DrSc.	