Report pokrytí Sylabu ČSpA

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1. Na listu [B-sezanam kurzů] zadejte jednotlivé kurzy s indentifikací používanou vaší školou:

Kurzy			
Ident	**Název**	**Odkaz na sylabus školy**	**ECTS**
101	Životní pojištění	www.vse.cz/zp	5
102	Neživotní pojištění	www.vse.cz/np	5
103	Základy aktuárských věd (životní a neživotní pojištění)	www.vse.cz/zav	10

2. Na jednotlivých listech s okruhy (například na listu C7 - Actuarial Models)

- U jednotlivých témat se zapíšou alternativní kombinace kurzů potřebných pro splnění jednotlivých polož
- Jednotlivé kurzy jsou v rámci kombinace odděleny čárkou, alternativní kombinace pak středníkem.
- Ve většině případů bude jen jeden kurz. Pokud budou kombinace, budou se pravděpodobně opakovat.
- Jedná se o množinu množin identů u každého tématu, kde jednotlivé prvky množin alternativ jsou množi

Learning Objective	**Tax.**	Alternativy kombinací kurzů, kterými je oblast pokryta
…		
Describe the principal forms of heterogeneity within a population and the ways in which selection can occur.	B2	101
Explain the characteristics of distributions suitable for modeling frequency of losses, for example: Poisson, mixed Poisson, binomial, negative binomial, and geometric distributions.	B2	102 ; 103
Carry out sensitivity and stress testing of assumptions and explain why this forms an important part of the modelling process.	C3	101, 102 ; 103

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Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)
;geometric distribution is not covered

Kurzy		
Ident (vlastní)	**Název**	**Odkaz na sylabus školy**
M3121	Pravděpodobnost a statistika I	https://is.muni.cz/predmet/
M4122	Pravděpodobnost a statistika II	https://is.muni.cz/predmet/
M5120	Lineární statistické modely I	https://is.muni.cz/predmet/
M7222	Zobecněné lineární modely	https://is.muni.cz/predmet/
MF004	Matematické modely ve financích	https://is.muni.cz/predmet/
M6110	Pojistná matematika	https://is.muni.cz/predmet/
M5KPM	Kapitoly z pojistné matematiky	https://is.muni.cz/predmet/
M2120	Finanční matematika I	https://is.muni.cz/predmet/
M5123	Finanční matematika II	https://is.muni.cz/predmet/
M9211	Bayesovské metody	https://is.muni.cz/predmet/
M7988	Modely ztrát v neživotním pojištění	https://is.muni.cz/predmet/
M9750	Robustní a neparametrické statistické metody	https://is.muni.cz/predmet/
MF002	Stochastická analýza	https://is.muni.cz/predmet/
M8DM1	Data mining I	https://is.muni.cz/predmet/
MPF_TEPO	Teorie portfolia	https://is.muni.cz/predmet/
BPE_MAE1	Makroekonomie 1	https://is.muni.cz/predmet/
BPE_MIE1	Mikroekonomie 1	https://is.muni.cz/predmet/
MPF_ACP1	Analýza cenných papírů	https://is.muni.cz/predmet/
BPF_FITR	Finanční trhy	https://is.muni.cz/predmet/
MPF_FIDE	Finanční deriváty	https://is.muni.cz/predmet/
MPF_RRFI	Řízení rizik finančních institucí	https://is.muni.cz/predmet/
BPF_BEFI	Behaviorální finance	https://is.muni.cz/predmet/
BPF_FIU1	Finanční účetnictví 1	https://is.muni.cz/predmet/
MPF_MUST	Mezinárodní účetní výkaznictví	https://is.muni.cz/predmet/
BPF_FIMG	Finanční management	https://is.muni.cz/predmet/
MPF_FIFI	Firemní finance	https://is.muni.cz/predmet/
BPF_ZAFI	Základy financí	https://is.muni.cz/predmet/
MPF_MEZF	Mezinárodní finance	https://is.muni.cz/predmet/
MPF_EARB	Ekonomika a řízení bank	https://is.muni.cz/predmet/
MPF_EARP	Ekonomika a řízení pojišťoven	https://is.muni.cz/predmet/
BPF_POJ1	Pojišťovnictví 1	https://is.muni.cz/predmet/
BPF_STAF	Statistika pro finance	https://is.muni.cz/predmet/
MPF_AIIF	AI in Finance	https://is.muni.cz/predmet/
MPF_RDFT	Regulace a dohled nad finančními trhy	https://is.muni.cz/predmet/
BPF_ARMI	Risk Management and Insurance	https://is.muni.cz/predmet/
MF001	Stochastické procesy ve finanční matematice	https://is.muni.cz/predmet/
MF003	Oceňování finančních derivátů	https://is.muni.cz/predmet/
M8F10	Matematicko-statistické metody v pojišťovnictví	https://is.muni.cz/predmet/
M9121	Časové řady	https://is.muni.cz/predmet/

** možno vložit potřebný počet řádků nad tento řádek*

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AAE Core Syllabus			Alternativy kombinací kurzů, kterými je oblast pokryta	**Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)**
Topic / Sub-Topic	Learning Objective	Tax.		
Statistics				
Random variables				
	Explain the concepts of random variable, probability distribution, distribution function, expected value, variance and higher moments.	B2	M3121	
	Calculate expected values and probabilities associated with the distributions of random variables.	B3	M3121	
	Define a probability generating function, a moment generating function, a cumulant generating function and cumulants, derive them in simple cases, and use them to evaluate moments.	B3	M4122	except cumulant generating function and cumulants
	Define basic discrete and continuous distributions and be able to apply them.	B3	M3121	
	Explain the concepts of independence, jointly distributed random variables and conditional distributions, and use generating functions to establish the distribution of linear combinations of independent random variables.	B3	M3121, M4122	
	Explain and apply the concepts of conditional expectation and compound distribution	B3	M4122	
Statistical inference				
	State and apply the central limit theorem.	B3	M4122	
	Explain the concepts of random sampling, statistical inference and sampling distribution, and state and use basic sampling distributions.	B3	M4122	
	Describe the main methods of estimation and the main properties of estimators, and apply them.	B3	M4122	
	Construct confidence intervals for unknown parameters.	C3	M4122	
	Test hypotheses.	C3	M4122	
	Estimate empirical survival and loss distributions, for example using: a) Kaplan-Meier estimator, including approximations for large data sets b) Nelson Aalen estimator c) Cox proportional hazards d) Kernel density estimators.	C3	M8F10	
	Estimate transition intensities depending on age, exactly or using large sample approximations.	C3		

Graduation and statistical tests	Use the main statistical tests of crude estimates in order to compare with a standard table (e.g. chi-square test, standardized deviation test, sign test, cumulative deviation test, grouping of signs test, serial correlation test) and describe for each of them: a) the formulation of the hypothesis b) the test statistic c) the distribution of the test statistic using approximation where appropriate d) the application of the test statistic.	C3		
	Describe the reasons for graduating crude estimates of transition intensities or probabilities and state the desirable properties of a set of graduated estimates.	B3	M8F10	
	Execute a test for smoothness of a set of graduated estimates.	C3		
	Describe the process of graduation by parametric formula, standard table and graphical method, and state the advantages and disadvantages of each method.	B3	M8F10	
	Describe how the statistical tests should be amended: a) to allow for the presence of duplicate policies b) to compare crude and graduated set of estimates.	B3		
	Carry out a comparison of a set of crude estimates and a standard table, as well as a set of crude estimates and a set of graduated estimates.	C3		
Regression	Explain linear relationships between variables using correlation analysis and regression analysis.	B2	M5120	
	Explain the fundamental concepts of a generalized linear model (GLM), and describe how a GLM may be applied.	B3	M7222, MF004	
	Estimate parameters for these models and perform diagnostic tests including checking assumptions and evaluating model fit.	B5	M7222	
Bayesian statistics and credibility theory	Explain the fundamental concepts of Bayesian statistics and apply them to parameter estimation, hypothesis testing, and model selection.	B3	M9211, M7988, MPE_BAAN	Bayesovská ekonometrie

	Explain and apply Bayesian and empirical Bayesian credibility models.	B3	M5KPM, M8F10	
Stochastic processes and time series				
	Describe and apply the main concepts underlying stochastic processes.	B3	MF002	
	Describe and apply the main concepts underlying time series models.	B3	M9121	
Simulation				
	Explain the concepts of Monte Carlo simulation.	B2	M9211, M4122, M7988	
	Simulate both discrete and continuous random variables using the inversion method.	C3	M9211, M7988	
	Estimate the number of simulations needed to obtain an estimate with a given error and a given degree of confidence.	B3	M4122	
	Use a permutation test to determine the distribution of a test statistic.	C3	M4122, M9750	
	Use the bootstrap method to estimate properties (e.g. the mean squared error) of an estimator.	C3	MF004	

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Topic / Sub-Topic	Learning Objective	Tax.		
Economics				
Macroeconomics				
	Explain basic macroeconomic measures (e.g. GDP) used to compare the economies of countries.	B2	BPE_MAE1	
	Describe the structure of public finances for an industrialized country.	A1	BPE_MAE1	
	Explain the effect of fiscal and monetary policy on the economy, including the effect on financial markets.	B2	BPE_MAE1, BPF_FITR	
	Explain the role of international trade, exchange rates and the balance of payments in the economy.	B2	BPE_MAE1	
	Explain the effect of savings and consumption rates on the economy.	B2	BPE_MAE1	
	Explain the major factors affecting the level of interest rates, the rate of inflation, the exchange rate, the level of employment, and the rate of growth for an industrialized country.	B2	BPE_MAE1	
	Describe the function of money in the economy.	B1	BPE_MAE1	
	Explain how interest rates are determined.	B2	BPE_MAE1	
	Explain the relationship between money and interest rates.	B2	BPE_MAE1	
	Explain how macroeconomic policies affect businesses.	B2	BPE_MAE1	
Microeconomics				
	Explain the concept of utility and how rational utility maximizing agencies make consumption choices.	B2	BPE_MIE1	
	Explain the elasticity of supply and demand and the effects on a market of the different levels of elasticity.	B2	BPE_MIE1	
	Explain the interaction between supply and demand and the way in which equilibrium market prices are achieved.	B2	BPE_MIE1	
	Explain various pricing strategies that can be used by firms.	B2	BPE_MIE1	
	Explain the core economic concepts involved in choices made by businesses with respect to short- run and long-run investment and production choices.	B2	BPE_MIE1	
	Explain competitive markets and how they operate.	B2	BPE_MIE1	
	Explain profitability in markets with imperfect competition.	B2	BPE_MIE1	
Financial economics				

Evaluate the features of bond price models.	B5	BPF_FITR, MPF_ACP1, M5123	
Explain asset pricing models (e.g. Capital Asset Pricing Model).	B2	BPF_FITR, MPF_ACP1, MPF_TEPO	
Explain how market data can be used to construct a yield curve.	B2	MPF_ACP1, M5123	
Explain the properties of single and multifactor models of asset returns.	B2	MPF_TEPO	
Explain the assumptions of mean-variance portfolio theory and its principal results.	B2	MPF_TEPO, M5123	
Explain the cash flow characteristics of various options.	A2	MPF_FIDE, M5123, MF003	
Explain the properties of the lognormal distribution and its applicability to option pricing.	B2	MPF_FIDE, MF003	
Explain the Black-Scholes formula.	B2	MPF_FIDE, MF003	
Calculate the value of European and American put and call options.	B3	MPF_FIDE, MF003	
Simulate stock prices, including using variance reduction techniques.	B3		
Explain the calculation and use of option price partial derivatives.	B2	MPF_FIDE, MF003	
Explain how to control risk using delta-hedging.	C3	MPF_RRFI, M5123, MF003	
Explain the advantages and disadvantages of different measures of investment risk (e.g. Value at Risk, variance of return).	B2	MPF_RRFI	
Explain the main findings of behavioral finance and how they can be applied.	B4	BPF_BEFI	

AAE Core Syllabus			Alternativy kombinací kurzů, kterými je oblast pokryta	**Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)**
Topic / Sub-Topic	Learning Objective	Tax.		
Finance				
Financial reporting and taxation				
	Describe the basic principles of personal and corporate taxation and the taxation of investments held by institutions.	A1	BPF_FIU1	
	Explain why companies are required to produce annual reports and accounts.	B2	BPF_FIU1	
	Explain fundamental accounting concepts and terms, and describe the main sources of accounting regulation.	B2	BPF_FIU1, MPF_MUST	
	Explain the value of reporting on environmental, social and economic sustainability and other alternatives to traditional financial reporting, and describe possible contents of such reports.	B2	MPF_MUST	
	Explain the basic structure of company and group accounts.	B2	BPF_FIMG	
	Explain the purpose of the main components of company accounts and interpret them.	B4	BPF_FIU1, BPF_FIMG	
	Construct simple statements of financial position and profit or loss.	B6	BPF_FIU1	
	Calculate and interpret financial and accounting ratios.	B4	BPF_FIMG	
Securities and other forms of corporate finance				
	Explain the characteristics of various forms of equity capital from the point of view of the issuer and the investor.	B2	BPF_FIMG	
	Explain the characteristics of various forms of long-term debt capital from the point of view of the issuer and the investor.	B2	BPF_FIMG	
	Explain the characteristics of various forms of short and medium term finance from the point of view of the issuer and the investor.	B2	BPF_FIMG	
	Describe the role of derivative securities and contracts in corporate finance.	B1	MPF_FIFI	
	Describe the methods a company may use to raise capital through the issue of securities.	A1	BPF_FIMG, MPF_FIFI	

Financial mathematics	Calculate present and accumulated values of cash flows using deterministic interest rates (including rates compounding over different intervals and continuously).	B3	M2120	
	Explain real and nominal interest rates and value inflation linked cash flows.	B3	M2120	
	Calculate the value of a forward contract.	B3	M5123	
	Explain the principal concepts and terms underlying the theory of a term structure of interest rates.	B2		
	Apply the term structure of interest rates to modelling various cash flows, including calculating the sensitivity of the value to changes in the term structure.	B3		
	Explain how duration and convexity are used in the immunization of a portfolio of liabilities.	B2	M5123	
	Calculate expected present values and variances of cash flows using simple stochastic theory of interest.	B3		
Corporate finance	Describe different possible structures for a business entity and their advantages and disadvantages.	B2	MPF_FIFI	
	Describe possible sources of finance for a business and explain the factors influencing choice of capital structure and dividend policy.	B2	MPF_FIFI	
	Explain capital budgeting and calculate cost of capital.	B3	MPF_FIFI	
	Calculate investment return on a project using different methods and evaluate each method.	C5	BPF_FIMG, MPF_FIFI	

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Topic / Sub-Topic	Learning Objective	Tax.		
Financial Systems				
Role and Structure of Financial Systems				
	Describe the role and main forms of national and international financial markets.	A1	BPF_ZAFI, MPF_MEZF	
	Explain the relationship between finance and the real resources and objectives of an organization.	B2	BPF_ZAFI	
	Explain the relationship between finance and the real resources and objectives of a nation.	B2	BPF_ZAFI	
	Describe the role of private and personal interests in decision making in government and private institutions, and explain agency theory and prohibitions of conflicts of interest and duty.	B2		
Participants in financial systems				
	Describe the main features of the following institutions and analyze their influence on the financial markets: national governments, central banks, investment exchanges, national and international financial bodies, national and international regulators.	B4	BPF_ZAFI, MPF_MEZF	
	Describe the main participants in financial markets and explain their objectives and roles (examples include investment banks, retail banks, investment management companies, pension funds, insurance and re-insurance companies, non-financial corporations, sovereign funds, micro-finance providers, unregulated organizations).	B2	BPF_ZAFI	
	Describe typical operating and corporate governance models for the following institutions and explain how they allow the institutions to meet their objectives: insurance company, re-insurance company, pension fund, retail bank, investment management company.	C2	MPF_EARB, MPF_EARP	
Financial products and benefits				
	Describe the main types of social security benefits and financial products and explain how they meet the objectives of issuers and beneficiaries.	B2	BPF_POJ1	

	Explain the main principles of insurance and pensions that impact on these benefits and products.	B2	BPF_POJ1	
Factors affecting financial system development and stability				
	Describe major factors affecting the development of financial systems (including demographic changes, economic development, technological changes and climate change).	B1		
	Explain the main elements and purpose of prudential and market regulation.	B2		
	Explain the main risks to the stability of national and global financial systems.	B2		

AAE Core Syllabus			Alternativy kombinací kurzů, kterými je oblast pokryta	**Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)**
Topic / Sub-Topic	Learning Objective	Tax.		
Assets Investment and markets				
	Describe the characteristics of the main investment assets and of the markets in such assets.	A1	MPF_ACP1	
	Describe the characteristics of the main derivative investments (including forwards, futures, options and swaps) and of the markets in such investments.	A1	M5123, MPF_FIDE, MF003	
	Explain the principal economic influences on investment market price levels and total returns.	B2	BPF_FITR	
	Describe and explain the theoretical and historical relationships between the total returns and the components of total returns on the main asset classes and key economic variables.	B2	BPF_FITR	
Asset valuation				
	Use the Capital Asset Pricing Model to calculate the required return on a particular asset, given appropriate inputs, and hence calculate the value of the asset.	B3	MPF_TEPO	
	Use a multifactor model to calculate the required return on a particular asset, given appropriate inputs, and hence calculate the value of the asset.	B3	MPF_TEPO	
	Explain the concepts of: efficient market, complete market, no-arbitrage, hedging.	B2	M5123	
	Explain the concepts underlying the risk-neutral or state price deflator approaches to valuing derivative securities and apply them in simple situations.	B3	MF002, MF003	
	Describe the properties of various stochastic models of the term structure of interest rates.	B2	MF003	
	Explain the limitations of the models described above and describe attempts to address them.	B2	MF003	
Portfolio management				
	Explain the principles and objectives of investment management and analyze the investment needs of an institutional or individual investor.	B4	BPF_FITR	
	Describe methods for the valuation of asset portfolios and explain their appropriateness in different situations.	B2	MPF_TEPO	

	Use mean-variance portfolio theory to calculate an optimum portfolio and describe the limitations of this approach.	B3	MPF_TEPO	
	Use mean-variance portfolio theory to calculate the expected return and risk of a portfolio of many risky assets, given appropriate inputs.	B3	MPF_TEPO	
Investment strategy and performance measurement				
	Explain how asset/liability modelling can be used to develop an appropriate investment strategy.	B2	MPF_EARB	
	Explain methods of quantifying the risk of investing in different classes and sub-classes of investment.	B2	MPF_RRFI	
	Explain the use of a risk budget for controlling risks in a portfolio.	B2		
	Analyze the performance of an investment portfolio relative to a benchmark.	B4	MPF_TEPO	

AAE Core Syllabus			Alternativy kombinací kurzů, kterými je oblast pokryta	**Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)**
Topic / Sub-Topic	Learning Objective	Tax.		
Data and systems				
Data as a resource for problem solving				
	Describe the possible aims of a data analysis (e.g. descriptive, inferential, predictive).	B2	MF004, M8DM1	
	Describe the stages of conducting a data analysis to solve real-world problems in a scientific manner and describe tools suitable for each stage.	C2	M8DM1 ,BPF_STAF	
	Describe sources of data and explain the characteristics of different data sources, including extremely large data sets.	B4	M8DM1, BPF_STAF, MPF_AIIF	
	Describe common data structures and data storage systems.	A1	M8DM1, MPF_AIIF	
	Describe and explain measures of data quality.	B2	M8DM1	
	Use appropriate tools for cleaning, restructuring and transforming data to make it suitable for analysis.	C3	M8DM1, MPF_AIIF	
Data analysis				
	Describe the purpose of exploratory data analysis.	B2	M8DM1, MF004, BPF_STAF	
	Use appropriate tools to calculate suitable summary statistics and undertake exploratory data visualizations.	C4	M8DM1, MF004, BPF_STAF	
	Use Principal Components Analysis to reduce the dimensionality of a complex data set.	C4	M8DM1, MPF_AIIF	
	Use a computer package to fit a statistical distribution to a dataset and calculate appropriate goodness of fit measures.	C4	M7988	
	Use a computer package to fit a single or multiple linear regression model to a data set and interpret the output.	C4	MF004, BPF_STAF	
	Use a computer package to fit a survival model to a data set and interpret the output.	C4		
	Use a computer package to fit a generalized linear model to a data set and interpret the output.	C4	MF004	
Statistical learning				
	Explain the meaning of the terms statistical learning and machine learning and the difference between supervised learning and unsupervised learning.	B2	M8DM1, MF004, MPF_AIIF	

	Explain when machine learning is an appropriate approach to problem solving and describe examples of the types of problems typically addressed by machine learning, explaining the difference between discrete and continuous approaches.	B2	M8DM1, MF004, MPF_AIIF		
	Describe commonly used machine learning techniques in each of the four areas defined by the supervised/unsupervised and discrete/continuous splits.	B2	M8DM1, MPF_AIIF		
	Use an appropriate computer package to apply neural network and decision tree based techniques to simple machine learning problems.	C3	M8DM1, MF004, MPF_AIIF		
Professional and risk management issues					
	Explain the ethical and regulatory issues involved in working with personal data and extremely large data sets.	B2	MPF_RDFT		
	Explain the main issues to be addressed by a data governance policy and its importance for an organization.	B2			
	Explain the risks associated with use of data (including algorithmic decision making).	B2			
Visualizing data and reporting					
	Create appropriate data visualizations to communicate the key conclusions of an analysis.	C6	M8DM1, MF004		
	Explain the meaning and value of reproducible research and describe the elements required to ensure a data analysis is reproducible.	B2			

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Topic / Sub-Topic	Learning Objective	Tax.		
Actuarial models				
Principles of actuarial modelling				
	Describe why and how models are used including, in general terms, the use of models for pricing, reserving, and capital modelling.	C2	M8F10	
	Explain the benefits and limitations of modelling and analyze realistic examples.	B4	M8F10	
	Explain the difference between a stochastic and a deterministic model, and identify the advantages/disadvantages of each.	B2	M8F10	
	Describe the characteristics of, and explain the use, of scenario-based and proxy models.	B2		
	Describe, in general terms, how to decide whether a model is suitable for any particular application.	C2	M7988	
	Explain the difference between the short-run and long-run properties of a model, and how this may be relevant in deciding whether a model is suitable for any particular application.	B2		
	Describe, in general terms, how to analyze the potential output from a model, and explain why this is relevant to the choice of model.	B2		
	Explain the desirable properties of a risk measure.	B2		
	Calculate risk measures, including Value at Risk and Tail Value at Risk, and explain their properties, uses and limitations.	C3	M5KPM	
	Carry out sensitivity and stress testing of assumptions and explain why this forms an important part of the modelling process.	C3		
	Produce an audit trail enabling detailed checking and high-level scrutiny of a model.	C6		
	Explain the factors that must be considered when communicating the results following the application of a model and produce appropriate documentation.	C6		
Fundamentals of severity models				
	Recognize classes of distributions, including extreme value distributions, suitable for modelling the distribution of severity of loss and their relationships.	B4	M5KPM, M7988	

	Apply the following techniques for creating new distributions: multiplication by a constant, raising to a power, exponentiation, mixing.	C3	M5KPM	
	Calculate various measures of tail weight and interpret the results to compare the tail weights.	B5	M5KPM	
Fundamentals of frequency models				
	Explain the characteristics of distributions suitable for modeling frequency of losses, for example: Poisson, mixed Poisson, binomial, negative binomial, and geometric distributions.	B2	M5KPM, M8F10	
	Identify applications for which each distribution may be used; explain the reasons why; and apply the distribution to the application, given the parameters.	B3	M5KPM	
Fundamentals of aggregate models				
	Compute relevant moments, probabilities and other distributional quantities for collective risk models.	C3	M5KPM, M8F10	
	Compute aggregate claims distributions and use them to calculate loss probabilities. Apply Panjer recursion and Fast Fourier Transform as numerical methods.	C3	M5KPM, M8F10	
	Evaluate the effect of coverage modifications (deductibles, limits and coinsurance) and inflation on aggregate models.	C3	M5KPM	
Survival models				
	Apply multiple state Markov chain and Markov process models.	C3		
	Derive maximum likelihood estimators for the transition intensities in models of transfers between multiple states with piecewise constant transition intensities.	C3		
	Explain the concepts of survival models.	B2	M6110	
	Calculate and interpret standard probability functions including survival and mortality probabilities, force of mortality, and complete and curtate expectation of life.	C3	M6110	except complete and curtate expectation of life
	For models dealing with multiple lives and/or multiple states, explain the random variables associated with the model; calculate and interpret marginal and conditional probabilities, and moments.	C3		
	Describe the principal forms of heterogeneity within a population and the ways in which selection can occur.	B2		

Actuarial applications	Define simple contracts for contingent payments dependent on the state of a single entity (for example life insurance or annuity benefits) on the occurrence of a particular event; develop and evaluate formulae for the means and variances of the present values of the payments under these contracts, assuming constant deterministic interest.	B3	M6110	
	Apply survival models to simple problems in long-term insurance, pensions and banking such as calculating the premiums and reserves for a life insurance contract, and the potential defaults on a book of loans for a bank.	C3		
	Define simple contracts for contingent payments dependent on the state of multiple entities; develop and evaluate formulae for the means of the present values of the payments under these contracts, assuming constant deterministic interest.	B3		
	Describe and apply methods of projecting and valuing expected cash flows that are contingent upon multiple state and multiple decrement events, and apply these contracts to insurance and pension problems.	C3		
	Describe and apply projected cash flow techniques in pricing, reserving, and assessing profitability of contracts for contingent payments with appropriate allowance for expenses (including life insurance, short term insurance and pension fund applications).	C3		
	Describe and apply techniques for analysing a delay (or run-off) triangle and projecting the ultimate position. Compare deterministic and stochastic claims reserving methods and describe the claims development result.	C3	M6110	except staochastic claims reserving
	Describe different methods of pricing a non-life insurance portfolio, explain their relative advantages and disadvantages. Apply different methods in appropriate situations: a) GLM on a heterogeneous portfolio, e.g. car insurance b) Credibility method on a portfolio with volatile risks, e.g. due to small volumes.	C3		
	Describe and apply techniques to calculate basic reinsurance contracts.	C3		

AAE Core Syllabus			Alternativy kombinací kurzů, kterými je oblast pokryta	**Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)**
Topic / Sub-Topic	Learning Objective	Tax.		
Actuarial Risk Management				
The risk environment				
	Apply the concepts of the actuarial control cycle to the risk management process.	B3		
	Explain the concept of enterprise risk management (ERM).	B2		
	Analyze aspects of the operating environment and their relevance to the ERM process: a) the legislative and regulatory environment b) financial and investment markets c) sustainability and environmental factors d) the operating sector of the organization, including demand for particular products	B4	MPF_EARP	
	Explain why financial institutions need capital and describe different capital measures, including regulatory capital and economic capital.	B2	MPF_EARP	
	Define risk appetite and risk culture explain the importance of attitudes towards risk of key stakeholders.	B2		
	Evaluate the elements of an ERM framework for an organization.	C5		
Risk identification				
	Describe and classify different types of risk including: financial risk, insurance risk, environmental risk, operational risk and business risk.	B2	MPF_EARP	
	Explain how the design of different products and services affects the risk exposure of the parties to a transaction and analyze the exposures for a particular transaction.	B4		
	Explain how the characteristics of the parties to a transaction affect the nature of the risk borne by each and analyze the exposures for a particular transaction.	B4		
	Explain the purpose of risk classification.	B2		
	Explain the difference between risk (measurable) and uncertainty (immeasurable).	B2		
	Explain the concept of risk pooling and the portfolio approach to the overall management of risks.	B2		

Risk measurement and modelling	Explain the use of models for risk management in the context of: a) Pricing b) Reserving c) Valuation d) Capital management including appropriate allowance for expenses.	B2		
	Explain the principles and process of setting assumptions for model inputs.	C2		
	Describe different methods of risk aggregation, explain their relative advantages and disadvantages and use these techniques to model dependencies.	C3		
	Explain the diversification benefits, allocation principles and risk contributions and how they can be used to allocate capital to risk faced by different business lines.	C2		
	Apply various concepts of risk measures, including Value-at-Risk, Expected Shortfall and Stress scenarios/testing in relation to capital management.	C3		
	Apply these models to practical problems in insurance, pensions or an emerging area of actuarial practice.	C5		
Risk mitigation and management	Explain the most common risk mitigation and management techniques: a) Avoidance b) Acceptance c) Reduction d) Transfer e) Monitoring.	C2	BPF_ARMI	
	Describe the principles of asset / liability management and apply them to the main types of liability held by financial institutions.	C3	MPF_EARB	
	Analyze the risk management aspects of a particular business issue and recommend an appropriate risk management strategy.	C6		
	Identify and analyze various stakeholders, their interests and their influence on risk management strategy.	C6		

	Explain the implication of risk for capital requirement, including economic and regulatory capital requirements.	B2		
Risk monitoring and communication	Explain how data collection and analysis for monitoring risk experience depends on the other stages of the control cycle and produce a data collection plan for a given risk profile.	C6		
	Explain the use of experience monitoring and apply the results of a monitoring exercise to revise models and assumptions and improve future risk management.	C3		
	Describe well-argued choices in the field of risk measurements and risk management to managers and stakeholders.	C3		

AAE Core Syllabus			Alternativy kombinací kurzů, kterými je oblast pokryta	**Poznámky (řazené dle jednotlivých alternativ v předchozím sloupci)**
Topic / Sub-Topic	Learning Objective	Tax.		
Personal and actuarial professional practice				
Effective communications				
	Explain common techniques used to produce effective written and oral communications.	B2		
	Use effective technical communications to communicate actuarial work results for a relevant audience of peers, managers or clients.	C6		
	Produce a comprehensive summary of technical actuarial results.	B6		
	Produce an effective executive summary for an actuarial work product.	B6		
	Explain matters to be addressed in a summary of conclusions following a peer review of another actuary's work.	B2		
	Evaluate a problem in consultation with a manager to ensure work project is understood well enough to proceed.	B4		
	Explain the importance of ensuring, where relevant, that the uncertainty surrounding a solution has been effectively communicated.	B2		
	Create appropriate permanent documentation for a work product.	A6		
Problem solving and decision making				
	Apply the actuarial control cycle appropriately.	C3		
	Evaluate whether all material factors have been considered when designing a solution.	A4		
	Analyze and prioritize stakeholder needs when designing a solution.	A5		
	Distinguish material factors from other factors (e.g. material external forces from other external forces).	A5		
	Understand the purpose of a strategy and how it relates to competitive advantage.	B2		
	Explain how the culture and structure of an organization affect decision-making processes.	C2		
	Apply a decision-making process to a particular case study.	C3		
	Apply common time management techniques in small project for the benefits of own work and team work.	C3		

	Explain the factors to consider when deciding whether to escalate a project decision to a higher level of management.	D2	
	Use common project management techniques to design and implement a work plan.	C6	
Professional standards			
	Explain the distinguishing features of a profession.	A2	
	Understand the importance of professional standards (code of conduct, qualification standards, standards of practice, etc.) and ethics in an actuary's work.	A2	
	Explain the need for a discipline process for a profession.	A2	
	Understand the circumstances which could give rise to a charge of professional misconduct and how the association's discipline process could apply to such a case.	A2	
	Explain how association's standards of practice may affect a work assignment.	C2	
	Explain the structure and governance of the student's actuarial association and the role of the actuarial association.	A2	
	Explain the actuary's obligations to clients, regulators, other stakeholders and the wider public.	D2	
	Explain the need to prioritize professional responsibility and public interest over personal gain with respect to a work assignment.	C2	
Professionalism in practice			
	Analyze typical situations that could lead to an accusation of professional misconduct and identify actions which could be taken to avoid misconduct.	A5	
	Analyze situations where an actuary's integrity could come under pressure and develop a plan for handling the situation successfully.	A5	
	Explain the importance of documenting work and the elements of acceptable documentation to achieve a satisfactory audit trail.	A2	
	Understand the importance of checking work and the need to consider peer review.	A2	
	Apply professional standards and ethics appropriately to a situation outlined in a case study.	B5	

	Describe how to monitor changes to standards of practice and how to determine which statements apply to a particular work assignment.	D1	
	Understand how to determine which standards apply, and are paramount, when an assignment may be governed by professional standards of more than one actuarial organization.	A2	
	Evaluate current level of own professional development and personal limitations to accept a particular actuarial work assignment.	D5	
International and institutional awareness of professional standards			
	Explain the role and key features of the International Actuarial Association (IAA) including governance structure, protocols for member associations, sections, colloquia and congress.	B2	
	Explain the role and key features of the Actuarial Association of Europe (AAE), including governance structure and the Mutual Recognition Agreement.	B2	
	Explain the role of a Full Member Association (FMAs) in relation to (activities of) local associations.	B2	

Bloom's Taxonomy as used in the AAE Core Syllabus

Verbs ↓ Objects	1. **REMEMBER** Recognize, Recall	2. **UNDERSTAND** Interpret, Exemplify, Classify, Summarize, Infer, Compare, Explain	3. **APPLY** Execute, Implement	4. **ANALYSE** Differentiate, Organize, Attribute	5. **EVALUATE** Check, Critique	6. **CREATE** Generate, Plan, Produce
A. Factual Knowledge	A1	A2	A3	A4	A5	A6
B. Conceptual Knowledge	B1	B2	B3	B4	B5	B6
C. Procedural Knowledge	C1	C2 →	C3	C4	C5	C6
D. Metacognitive Knowledge	D1	D2	D3	D4	D5	D6

There is a natural order for cognitive processes from the lowest order thinking skills “Remember”, through “Understand”, “Apply”, “Analyze” and “Evaluate” to the highest cognitive order “Create”. The order does not mean to imply difficulty in succeeding at the cognitive level but rather that the lower cognitive process will be subsumed by another higher cognitive process. For example, you would often need to “Remember” to “Create”.