

**MUNI**  
**ARTS**

# **Otevřené vzdělávání a otevřená věda, MOOC, SOOC, občanská věda, Wikipedie, wiki přístup, wiki komunity, nelineární učení**

Michal Černý

# Otevřené učení

- Otevřené vzdělávací zdroje
- Otevřené kurikulum
- Otevřená data ve vědě
- Otevřené zdroje
- Občanská věda
- ....

# MOOC

- Masivní: jsou tak velké, že není možný individuální přístup, což implikuje jiné didaktické přístupy
- Online
- Otevřený: otevřený znamená, že neklade zbytečné překážky, jako jsou formální požadavky na vzdělání.
- Kurz: problematický pojem – jak velký je kurz? Kolik stran textu nebo hodin videa?
  
- Podle MŠMT ČR je MOOC multimediální

# MOOC


- Velice malá míra dokončení (cca 5 %)
- Sociální exkluze
- Problematická motivace
- Nižší kvalita než běžné kurzy
- Jak standardizovat?
  
- Ale je to velký a zajímavý trh.

# Coursera

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[Skip to Main Content](#) | Project Management



## Google Project Management: Professional Certificate

Start your path to a career in project management. In this program, you'll learn in-demand skills that will have you job-ready in less than six months. No degree or experience is required.

Instructor: [Google Career Certificates](#) [View instructor](#)

[Enroll for Free](#) Starts Mar 31 [Financial aid available](#)

★ <b>4.8/5</b> 76,133 ratings 1,037,185 already enrolled	<b>6 Months</b> Under 10 hours of study a week	<b>English</b> Subtitles: English	<b>Beginner Level</b> No prior experience required.	<b>Earn credits</b> Part of Bachelor of Applied Arts and Sciences <a href="#">Learn More</a>
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**Build job-ready skills by learning from the best**

Get started in the in-demand field of project management with a Professional Certificate from Google. Learn how to manage projects using traditional and agile methods, create project documentation, and develop strategic communication skills.

**Common job titles:** Project Manager, Project Coordinator, IT Project Manager

<sup>1</sup>Lightcast<sup>SM</sup> US Job Postings (median salary with 0-5 years experience), Jan. 1, 2022 - Oct. 31, 2022.  
<sup>2</sup>Career improvement (e.g. new job/career, promotion, raise) within 6 mos. of completion based on cert. grad survey responses, U.S. 2021.

**\$68,000+**  
median salary for project management<sup>1</sup>

**75%**  
of Google certificate grads report career improvement<sup>2</sup>

**715,000+**  
U.S. job openings in project management<sup>1</sup>

**150+**  
Connect with over 150 U.S. employers post-completion

**Skills you will gain**

- Organizational Culture
- Career Development
- Strategic Thinking
- Change Management
- Project Management
- Stakeholder Management
- Business Writing
- Project Charter
- Project Planning
- Risk Management
- Task Estimation
- Procurement

There are 6 Courses in this Professional Certificate

COURSE

1

### Foundations of Project Management

★★★★★ **4.9** 60 856 ratings

This course is the first in a series of six to equip you with the skills you need to apply to introductory-level roles in project management. Project managers play a key role in leading, planning and implementing critical projects to help their organizations succeed. In this course, you'll discover foundational project management terminology and gain a deeper

[SHOW ALL](#)

COURSE

2

### Project Initiation: Starting a Successful Project

★★★★★ **4.8** 13 966 ratings

This is the second course in the Google Project Management Certificate program. This course will show you how to set a project up for success in the first phase of the project life cycle: the project initiation phase. In exploring the key components of this phase, you'll learn how to define and manage project goals, deliverables, scope, and success criteria. You'll discover

[SHOW ALL](#)

COURSE

3

### Project Planning: Putting It All Together

★★★★★ **4.8** 8 315 ratings

This is the third course in the Google Project Management Certificate program. This course will explore how to map out a project in the second phase of the project life cycle: the project planning phase. You will examine the key components of a project plan, how to make accurate time estimates, and how to set milestones. Next, you will learn how to build and manage

[SHOW ALL](#)

COURSE

4

### Project Execution: Running the Project

★★★★★ **4.8** 5 381 ratings


This is the fourth course in the Google Project Management Certificate program. This course will delve into the execution and closing phases of the project life cycle. You will learn what aspects of a project to track and how to track them. You will also learn how to effectively manage and communicate changes, dependencies, and risks to your project's stakeholders.

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# EdX


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**Master of Science in Artificial Intelligence (MSAI)**  
The University of Texas at Austin

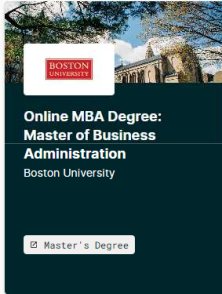
Master's Degree



**Online Master's Degree in Public Health**  
Boston University

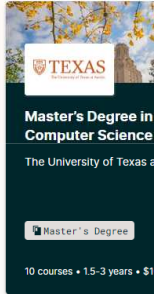
Master's Degree

6 Modules • 24 Months • \$24,000



**Online MBA Degree: Master of Business Administration**  
Boston University

Master's Degree



**Master's Degree in Computer Science**  
The University of Texas at Austin

Master's Degree

10 courses • 1.5-3 years • \$10,000

## The 30-credit hour curriculum

The University of Texas at Austin designed its flexible online MSAI for learners ready to make a real impact in the fast-paced field of artificial intelligence. Online MSAI learners develop high-powered technical skills to succeed in their careers as, among others, software engineers, data scientists, and AI consultants. Learners complete four required courses (12-credit hours) and six elective courses (18-credit hours) to understand the broad scope of AI capabilities. The elective courses give learners the opportunity to specialize in areas such as machine learning, artificial intelligence, or advanced systems design. Courses include:

### Required courses:

- Deep Learning
- Machine Learning
- Reinforcement Learning
- Planning, Search, and Reasoning Under Uncertainty

### Elective courses:

- Optimization
- Online Learning and Optimization
- Automated Logical Reasoning
- Natural Language Processing
- Case Studies in Machine Learning
- Ethics in AI
- AI for Health

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Oxford Saïd

Executive Education



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LSE

Executive Education



**Higher Education Teaching Certificate**  
HarvardX

Executive Education



**Blockchain Techno Business Innovation Application**  
MIT Sloan School of Management

Executive Education

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# Futurelearn, Khan Academy, Udemy, ...



## Broad selection of courses

from 213,000 online video courses with new additions published every month

Excel Web Development JavaScript Data Science AWS Certification Drawing

## Expand your career opportunities with Python

one of Udemy's range of Python courses and learn how to code using this incredibly useful language. Its simple syntax and readability makes Python perfect for Flask, Django, data science, and machine learning. You'll learn how to build everything from games to sites to apps. Choose from a range of courses that will appeal to...

Explore Python

**Complete Python Bootcamp for Zero to Hero in Python**  
Pierrelia  
★★★★★ (457,483)  
\$99

**Automate the Boring Stuff with Python Programming**  
Al Sweigart  
4.6 ★★★★★ (105,400)  
€49.99

**Machine Learning A-Z™: AI, Python & R + ChatGPT Bonus...**  
Kirill Erementsko, Hadelin de Ponteves...  
4.6 ★★★★★ (167,517)  
€94.99

**100 Days of Code: The Complete Python Pro Bootcamp for 2023**  
Dr. Angela Yu  
4.7 ★★★★★ (188,009)  
€94.99  
**Bestseller**

learners like you are achieving their goals

Kurzy ▾
Vyhledávání 
Khan Academy
Dárkovství Přihlášení Registrace

**Pro každého studenta, pro každou třídu. Opravdu to funguje.**

Jsmo nezisková organizace a naším cílem je poskytovat kvalitní vzdělávání komukoli, kdekoli na světě a to zcela zdarma.

Studenti
Učitelé
Rodiče

**Matematika**

- Matematika pro nejmenší
- Aritmetika
- Pokročilá aritmetika
- Základy algebry
- Základy geometrie
- Výrazy
- Funkce

**Umění a humanitní vědy**

- Hudba
- Jak se nevzdávat a uspět
- Jak se tvoří příběhy

**Matematika podle tříd**

- 1. třída
- 2. třída
- 3. třída
- 4. třída
- 5. třída
- 6. třída
- 7. třída
- 8. třída
- 9. třída

**Počítačové vědy**

- Informatika – Teorie informace
- Informatika – Počítače a internet
- Hodina kódu
- Programování
- V zákulisí studia Pixar

**Opáčko matematiky**

- Hurá do 2. třídy!
- Hurá do 3. třídy!
- Hurá do 4. třídy!
- Hurá do 6. třídy!
- Hurá do 7. třídy!
- Hurá do 8. třídy!

**Ekonomie a finance**

- Finance a kapitálové trhy

**Pro vyučující a rodiče**

- Informace pro rodiče a učitele
- Khan Academy pro vyučující

7 Zápatí prezentace

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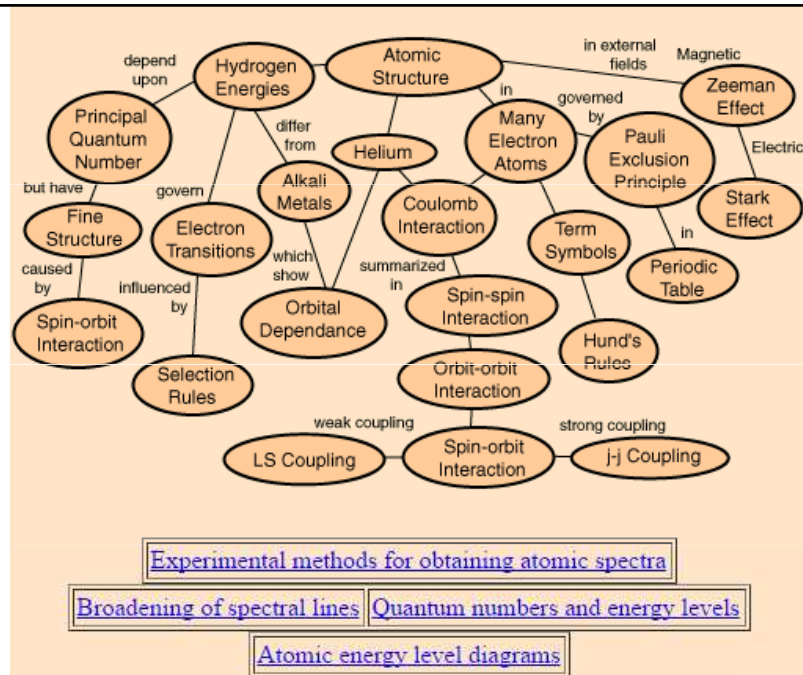
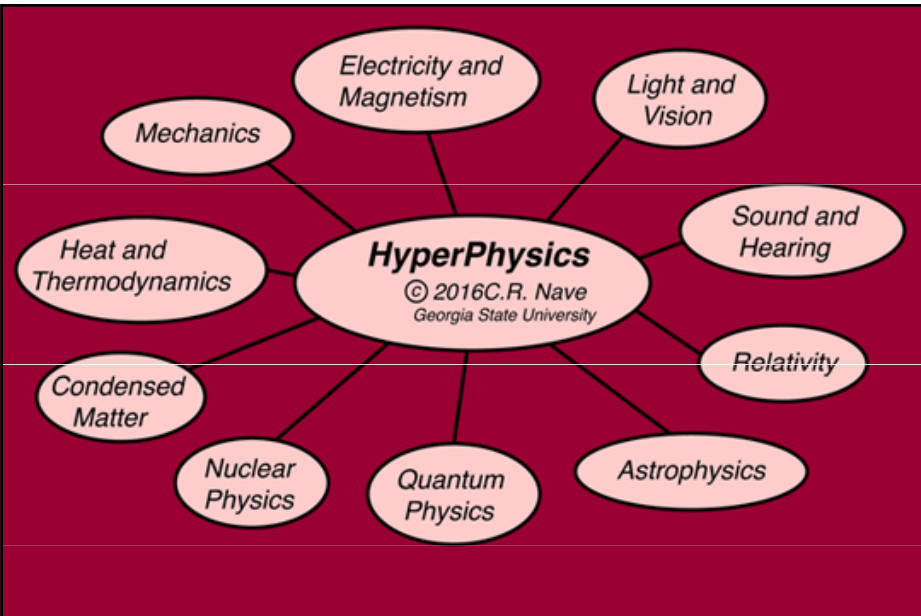
Subscribe to Unlimited

\*Some short courses are exempt. Does not include Microcredentials or ExpertTracks.

# SOOC

- Small nebo Social
- Důraz je kladený na to, že jde o malou skupinu, která se vzájemně podporuje, motivuje a může jít více do hloubky
- Typicky cca 20 – 50 osob
- V čem se mění design?
- K čemu je to dobré?

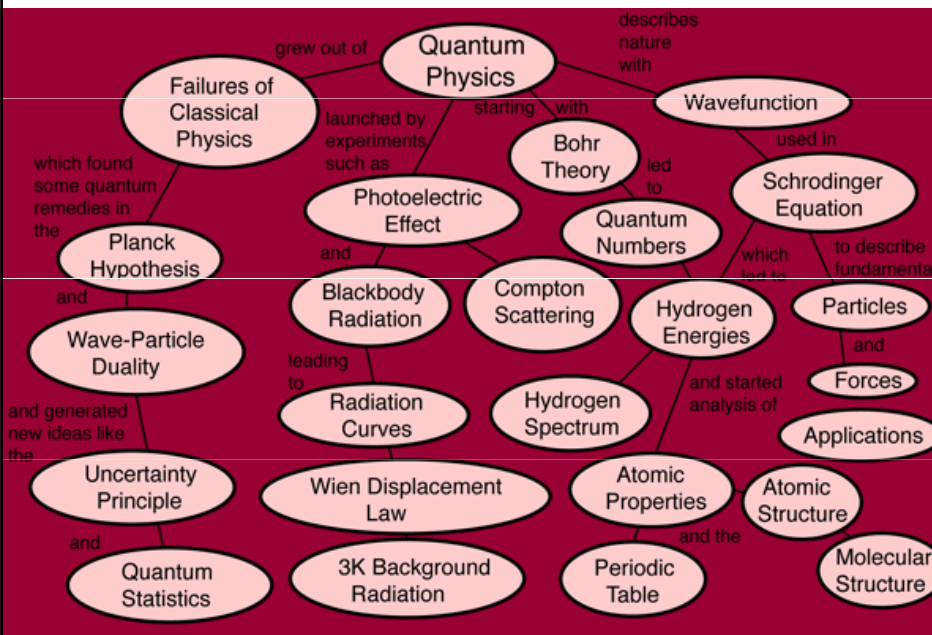




[Experimental methods for obtaining atomic spectra](#)

[Broadening of spectral lines](#)   [Quantum numbers and energy levels](#)

[Atomic energy level diagrams](#)



## Spin-Spin Interaction

The effect of the spin-spin interaction is noted in [Hund's rule #1](#). If you have two electrons, then the state in which their spins are parallel (S=1, triplet state) will be lower in energy than the state in which their spins are antiparallel (S=0, singlet state).

This result is correlated with the fact that the two electrons are identical [fermions](#), and a wavefunction which describes the pair must be antisymmetric with respect to exchange of the electrons (a requirement of the [Pauli exclusion principle](#)). The wavefunction can be considered to be the product of the space and spin wavefunctions:

$$\Psi_{2e(\text{antisymmetric})} = \Psi_{\text{spin}(\text{symmetric})} \times \Psi_{\text{space}(\text{antisymmetric})}$$

The fact that the spins are parallel makes the spin part of the wavefunction symmetric, and forces the space part to be antisymmetric. An anti-symmetric space wavefunction for the two electrons implies a larger average distance between them than a symmetric function of the same type. The probability is the square of the wavefunction, and from a simple functional point of view, the square of an antisymmetric function must go to zero at the origin. So in general, the probability for small separations of the two electrons is smaller than for a symmetric space wavefunction. If the electrons are on the average further apart, then there will be less shielding from the nucleus by the other electron, and a given electron will therefore be more exposed to the nucleus. This implies that it will be more tightly bound and of lower energy.

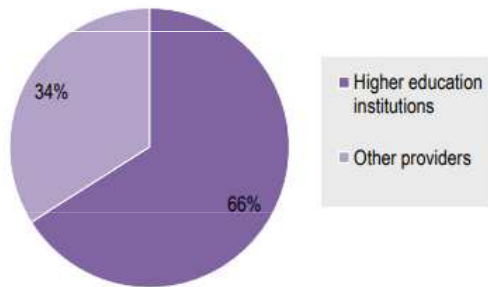
[Example of ortho- and para-helium](#)

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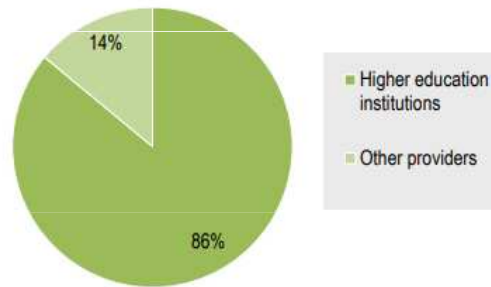
# **Mikrokredity - mikrocertifikáty**

# Současná situace (OECD, 2021)

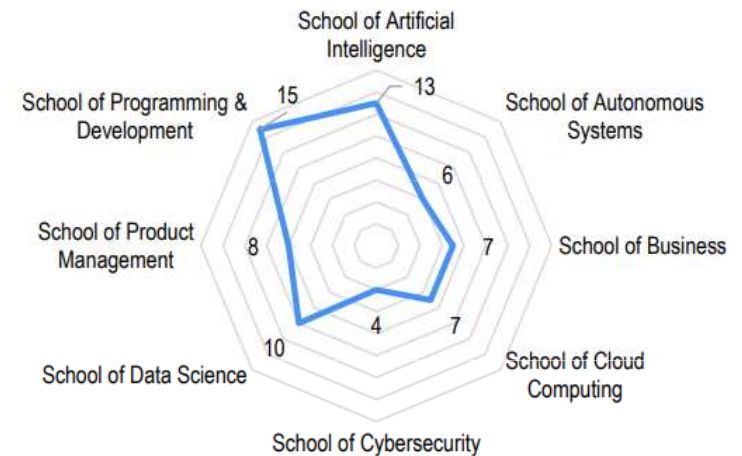
edX Professional Certificate



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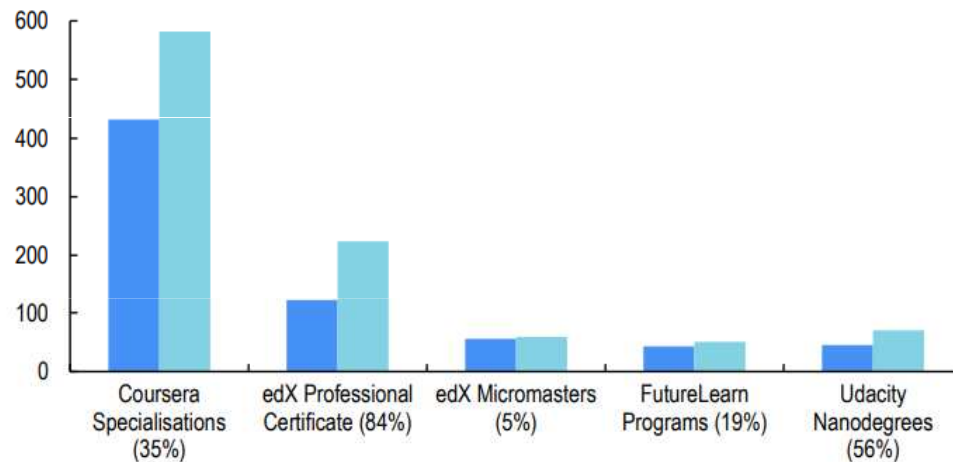


Udacity micro-credentials classified by "school"



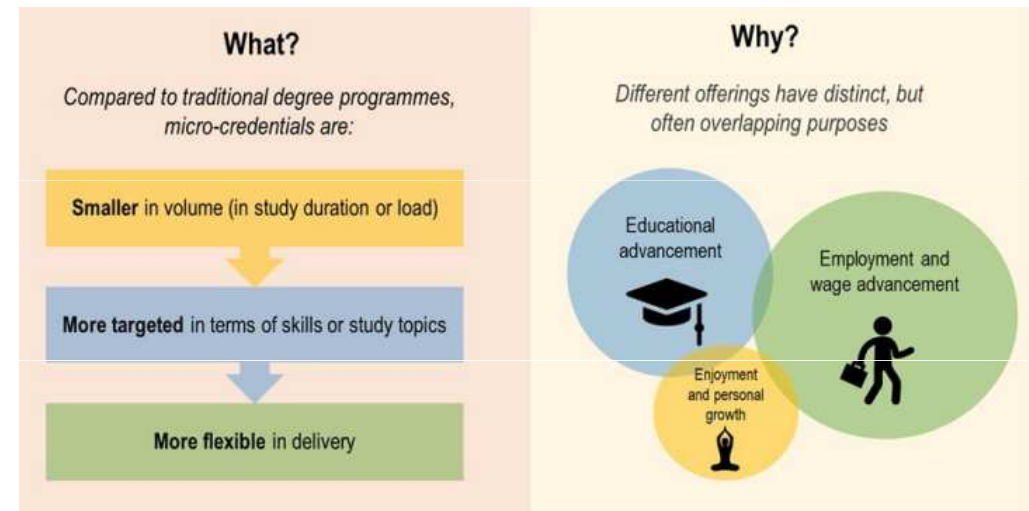
■ May 2020 ■ May 2021

Number of micro-credentials



# Mikro kredity podle OECD ([URL](#), 2021)

Targeted [breadth]	Rapid [duration]	Flexible [sequencing or timing]	Stackable [within Institution]
Learning outcomes assessed [using sectoral or national assessment framework]	External assurance of programme or provider	Portable [applicable to study programmes in other HEIs]	Study load expressed in credits
Located with National Qualification Framework	Employer role in credential design/approval	Wage and occupation reporting	Self-sovereign digital identity [recipient ownership, vendor independence]



# MicroBachelors a MicroMasters na EdX

- V případě EdX jde o balíček 2-7 kurzů, které je možné transformovat v kredity na konkrétní instituci
- Výhody:
  - Nižší cena za kredit
  - Absence minimálního počtu kreditů
  - „Studium na zkoušku“
  - Je to online
  - Méně stresu
  - Možnost rozložení zátěže
  - Fokuse na konkrétní aspekt kurikula spojený s přenositelnými kompetencemi
  - Důraz na možnost „pochlubit se“ tímto balíčkem
  - Typicky se transformují na 3-9 kreditů na univerzitě
  - „Zelená políčka v ISu ještě před začátkem studia“
- Nevýhody:
  - Omezená přenositelnost mezi univerzitami

# Sociální aspekty

- Stigmatizace neúspěchu a prodlužování studia, ne zcela funkční poradenství na úrovni SŠ a VŠ
- EDUCACE HR: potřebujeme adaptaci na nezvyklé studijní cesty:
  - Kombinovaní studenti
  - Rodiče s malými dětmi
  - Studenti pečující o své rodiče, blízké osoby
  - Studenti pracující nemající čas na studium v plném časovém rozsahu
- Budování odolné společnosti
- Některé alternativní modely jsou zajímavé, ale stále náročné:
  - Profesně orientované vzdělávání
  - Trimestrální modely studia
  - ...

# Ekonomické aspekty

- Možnost otestovat si školu
- Postupný nástup do studia
- Typicky „levnější kredity“ v USA, u nás omezení poplatků za prodlužování studia
- Podpora adaptace na měnící se trh práce a povolání
- Rozšiřování a prohlubování kvalifikace
- Na úrovni EU důraz na společnou politiku a zaměstnanost
- Adaptace na trh práce ([URL](#))
- Silná akcelerace COVID-19 situací