

# New Master Specialization in "Knowledge Engineering"

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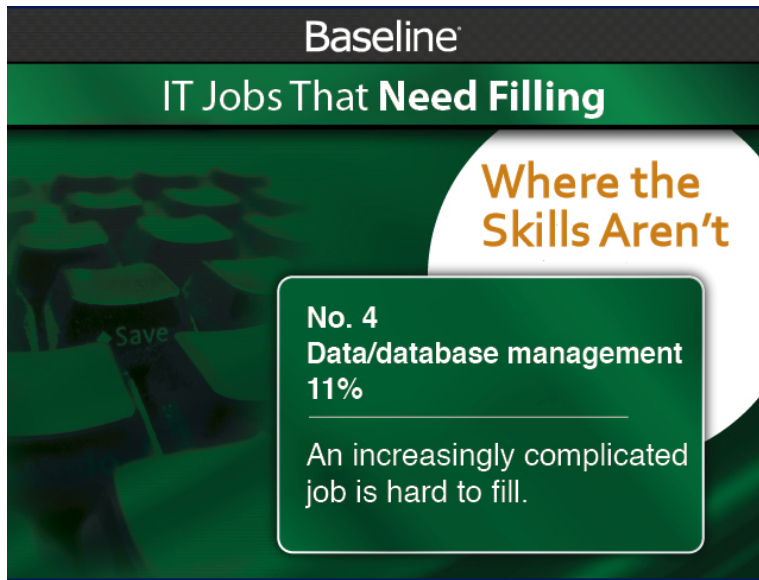
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<http://www.fit.cvut.cz/en>

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## Business intelligence job market



# Education of BI specialists

- Private companies
  - ▶ Specialized BI software intensive training or summer school
  - ▶ On-the-job BI training



- Universities
  - ▶ Fragmented BI related modules
  - ▶ Seldom comprehensive BI program

# Czech Technical University in Prague

## About the University

CTU has altogether 25 thousand students and over 1,500 academic staff.

It offers 80 academic programmes and 315 branches of study within the scope of these programmes.

- Faculty of Civil Engineering
- Faculty of Mechanical Engineering
- Faculty of Electrical Engineering
- Faculty of Nuclear Sciences and Physical Engineering
- Faculty of Architecture
- Faculty of Transportation Sciences
- Faculty of Biomedical Engineering
- Faculty of Information Technology

# Faculty of Information Technology

## About the Faculty

CTU's youngest faculty, first students in 2009.

Currently over 1200 students in bachelor, master and doctoral programmes. Master program Informatics opened this year.



Expanding to over 3000 students in 2 years ...

## Knowledge engineering master specialization

Due to the strong demand from industry, we are opening new master specialization on Knowledge Engineering. A successful graduate of our specialization will predominate with **strong programming background** and **deep theoretical insight** when compared to graduates enrolling related specializations abroad.

### Keywords

- Data Mining, Analysis, Integration, Preparation, Reporting, Visualization
- Pattern Recognition, Statistics and Probability
- Computational Intelligence Methods, Neural Networks, Evolutionary Algorithms, Swarms, Nature Inspired Methods
- Knowledge Discovery from Databases, Deployment, Business Intelligence
- Functional and Logical Programming, Lisp, Prolog
- Information Systems, Database Systems

Our students can be both theoretically and practically oriented and continue in our doctoral programme with the same specialization or become industrial experts in the field.

## Prerequisites and related bachelor program modules

Enrolling students should be familiar with the *basic statistic* which is obligatory for majority of bachelor programmes worldwide. We prefer students with excellent *algorithmization* skills and programming background in Java or C++. Basic knowledge of *databases* is also important.

Our bachelor program offers the following modules:

- Database Systems
- Introduction to Probability and Statistics
- Searching Web and Multimedia Databases
- Information Systems Design
- Data Mining

# Core modules

## KE core modules

- Data Preprocessing
- Pattern Recognition
- Computational Intelligence Methods
- Knowledge discovery from databases
- Functional and Logical Programming
- Advanced Information Systems
- Advanced Database Systems
- Statistics for Informatics



And several individual project modules ...

# Optional and supplementary modules

## Related modules in the Informatics master program @ FIT CTU

- Web Data Mining
- Retrieval of Multimedia Content on the Web
- Web 2.0
- Semantic Web
- Integration in Information Systems
- Management of Business Informatics
- User Interface Design
- Advanced Algorithms
- Modern Internet Technologies
- Web Services and Middleware
- Modelling of Business Processes
- Security and Secure Programming

## Involvement of industrial partners in education

We plan to use commercial business intelligence software in application oriented modules and open source software in theory oriented modules. In application oriented modules, part of lectures will be given by top industrial experts, who will formulate topics and supervise part of student theses.

### Example

- Data mining exercises to be prepared in SAS commercial software.
- SPSS and SAS industrial experts have invited lectures in Data preprocessing and KDD modules.

# Students involvement in research and open source projects

## Selected research projects

- Automated knowledge extraction
- Metalearning and metaoptimization
- Data preprocessing for data mining
- New ensemble methods

## Selected open source projects

- FAKE GAME
- JCOOL
- JCOP

# Conclusion

The flexibility of the public education is increasingly important as job markets change rapidly. Our faculty offers new specializations designed for future informatics positions.