

Hungarian Civil Engineering BSc - MSc Program

Antal LOVAS

Dean of Faculty of Civil Engineering

Budapest University of Technology and Economics (BME)



Institutum Geometricum Hydrotechnicum

Established in 1782

- Faculty of Civil Engineering
- Faculty of Mechanical Engineering
- Faculty of Architecture
- Faculty of Chemical Engineering
- Faculty of Electrical Engineering
- Faculty of Transportation Engineering
- Faculty of Economic Sciences
- Faculty of Natural Sciences

Faculty of Civil Engineering, BME

10 Departments

- Teaching staff (143 + 9 Prof. em. + 24 HAS empl.)
 - 14 member of the Hungarian Academy of Sciences (HAS)
 - 16 HAS doctor + 10 dr.habil
 - 49 PhD + 31 dr.tech/dr.univ
- Technicians, Administration (69)
- Students
 - 1973 full-time students (342 BSc students)
 - 260 post-graduate students
 - 33 full-time PhD students + ~ 30 part-time PhD students

Admission requirements

- Elementary + Secondary school: 12 years and maturity
- Admission: Based on points brought from secondary school and/or got at admission exam (max. 120+14 points, applicants are ranked in decreasing order of points)
- Point threshold due to the skeleton number given by the Ministry

In the mid 1960's the program was organized into four branches

- Transportation Engineering;
- Structural Engineering;
- Hydraulic and Water Resources Engineering;
- Surveying.

The integrated civil engineering program was introduced in 1992

- Civil Engineering program
 - Branch of Structural Engineering
 - Branch of Infrastructural and Environmental Engineering
- Land Surveying and Geoinformatics program
- Expert training
- PhD training
- Continuing education

System of education

- Subject types:
 - Obligatory (200 cr.)
 - compulsory facultative (25+15+30 cr.)
 - technical and non-technical elective (15+15 cr.)
- „Milestone” requirements:
 - professional experience (4 weeks)
 - language „State exam”
 - physical education
 - global exams

Theoretically 10 semesters of basic education

- 14 teaching weeks per semester
- 24-30 contact hours per week
- 4-6 weeks of exam period (5-6 exams)
- Laboratory/surveying fieldwork
- global exams, diploma work, final exam
- 300 credits
- Diplomawork (from main major)

Graduating

- MSc. in Civil Engineering
- MSc. in Land Surveying and Geoinformatics
- Majors are shown in diploma supplement
- Faculty declaration about fulfilling the basic requirements of designer's entitlement

Accredited BSc -MSc Training in English (1984-)

- 4+2 years
- 3 branches:
 - Structural Engineering
 - Infrastructural and Environmental Engineering
 - Land Surveying and Geoinformatics
- 4+1.5 years (from 2005)

BSc. in Civil Engineering on the Faculty of Civil Engineering, BUTE (from 2005)

- Admission requirements
- ECTS credit system
- System of education
- Structure of the curriculum
- Schedule of semester

Theoretically 8 semesters of basic education

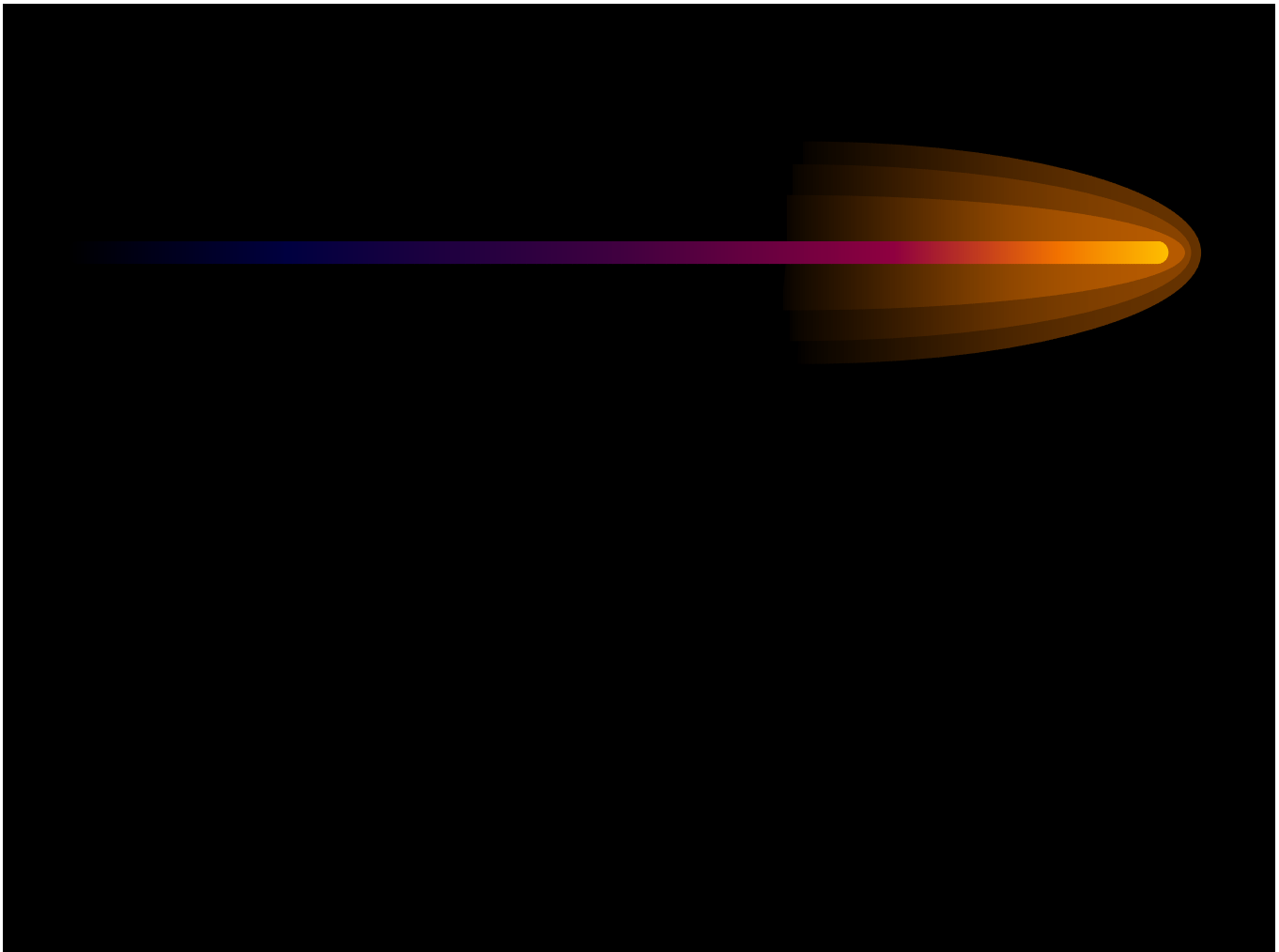
- 240 credits
- 3000 contact hours
- 21 days of fieldwork
- 4 weeks of practical placement

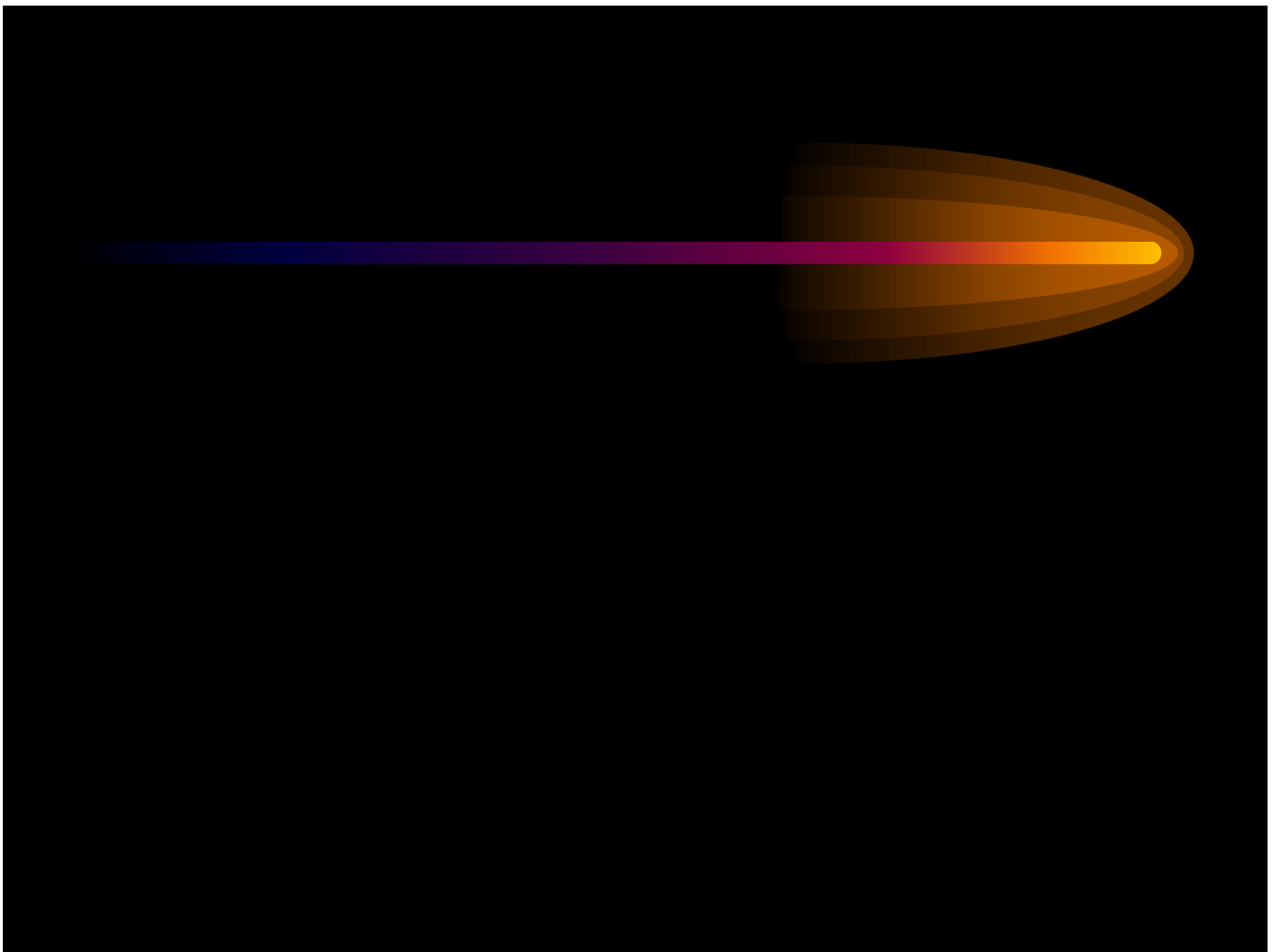
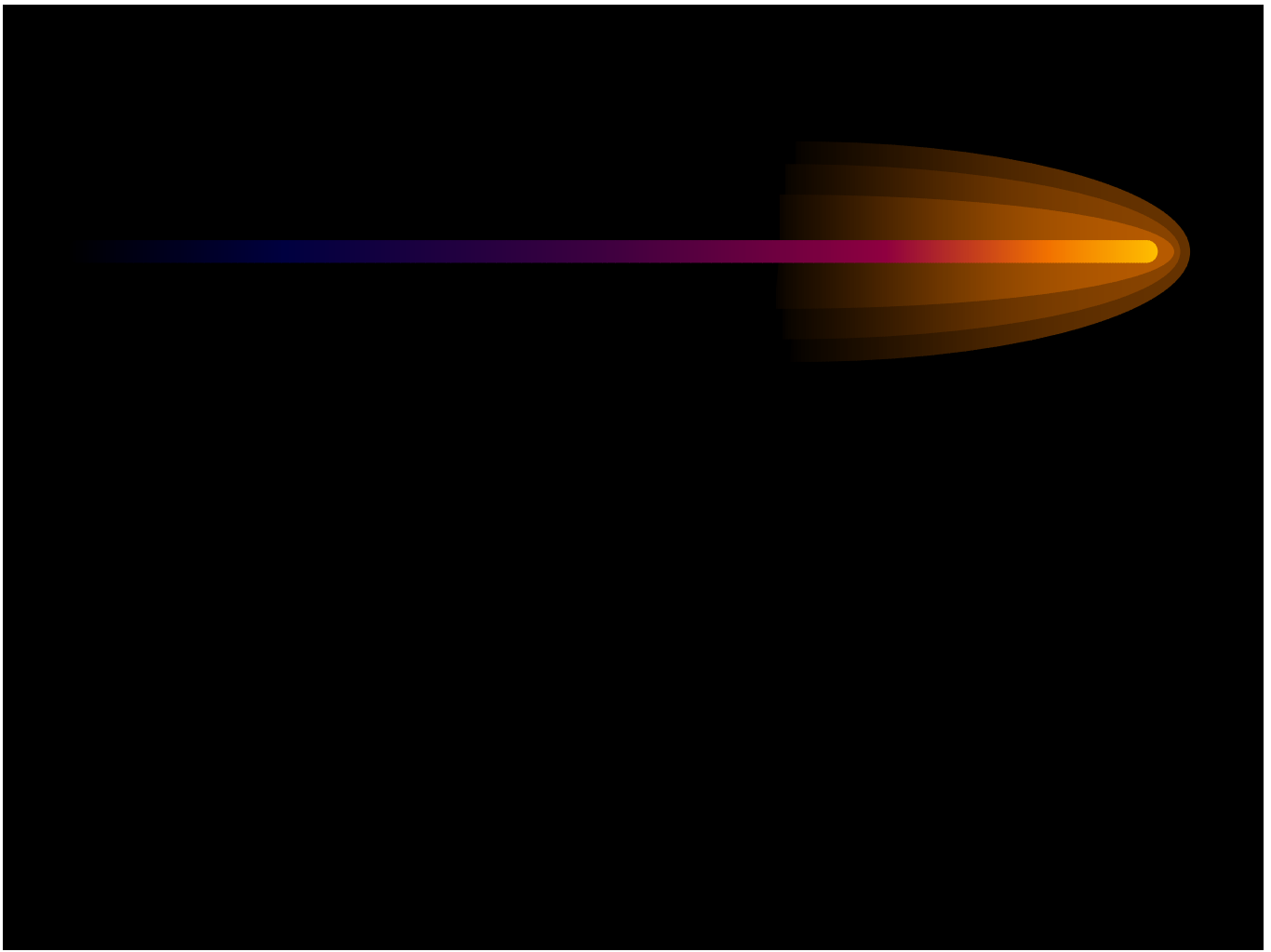
BSc branches and majors

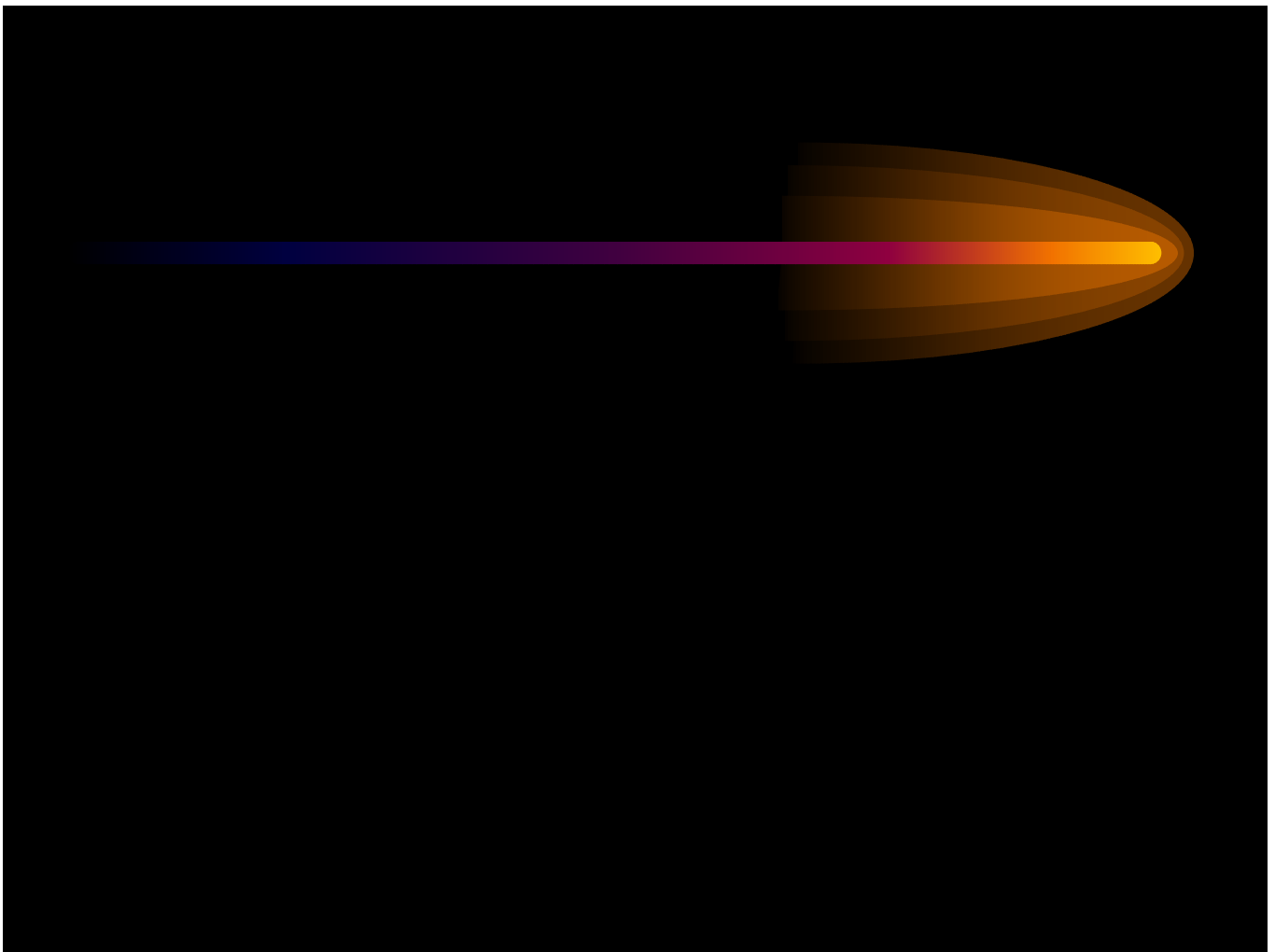
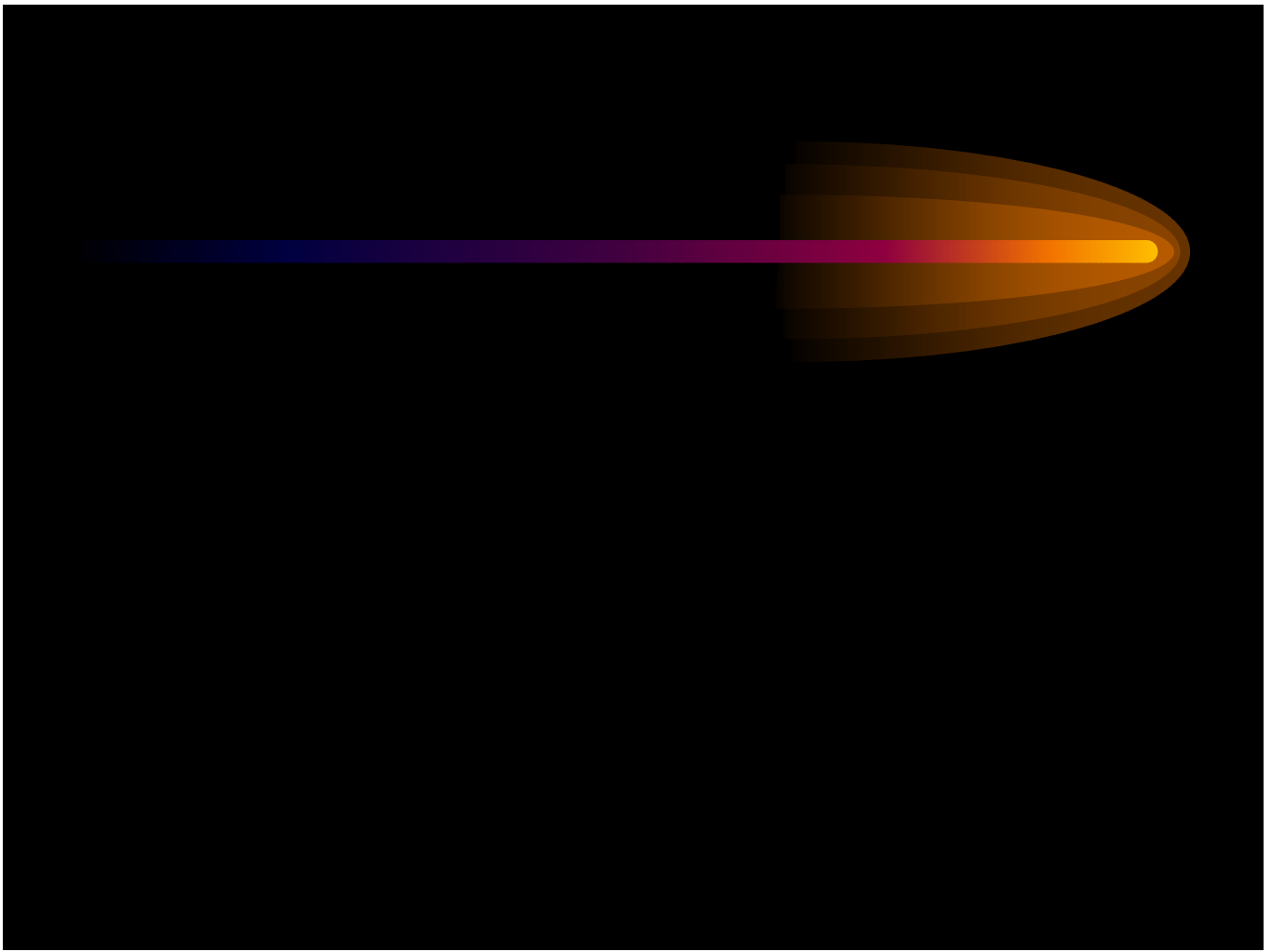
- **Branch of Structural Engineering**
 - Buildings
 - Bridges and CE Structures
 - Geotechnics
 - Construction Management
- **Branch of Infrastructural Engineering**
 - Transportation Engineering
 - Hydraulic Engineering
 - Municipal Engineering
 - Environmental Engineering
- **Branch of Geoinformatical Engineering**
 - Geodesy and Surveying
 - Geoinformatics

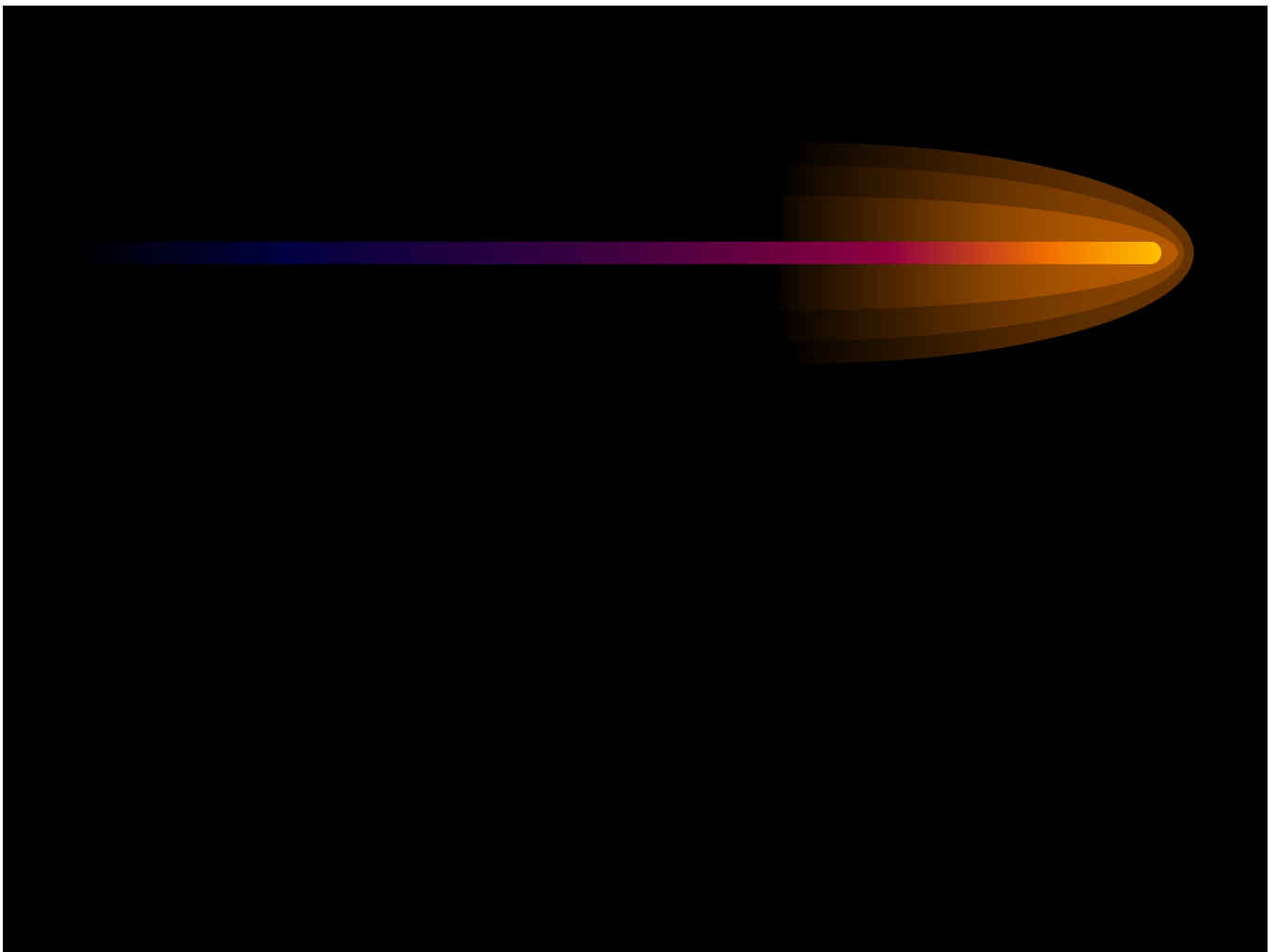
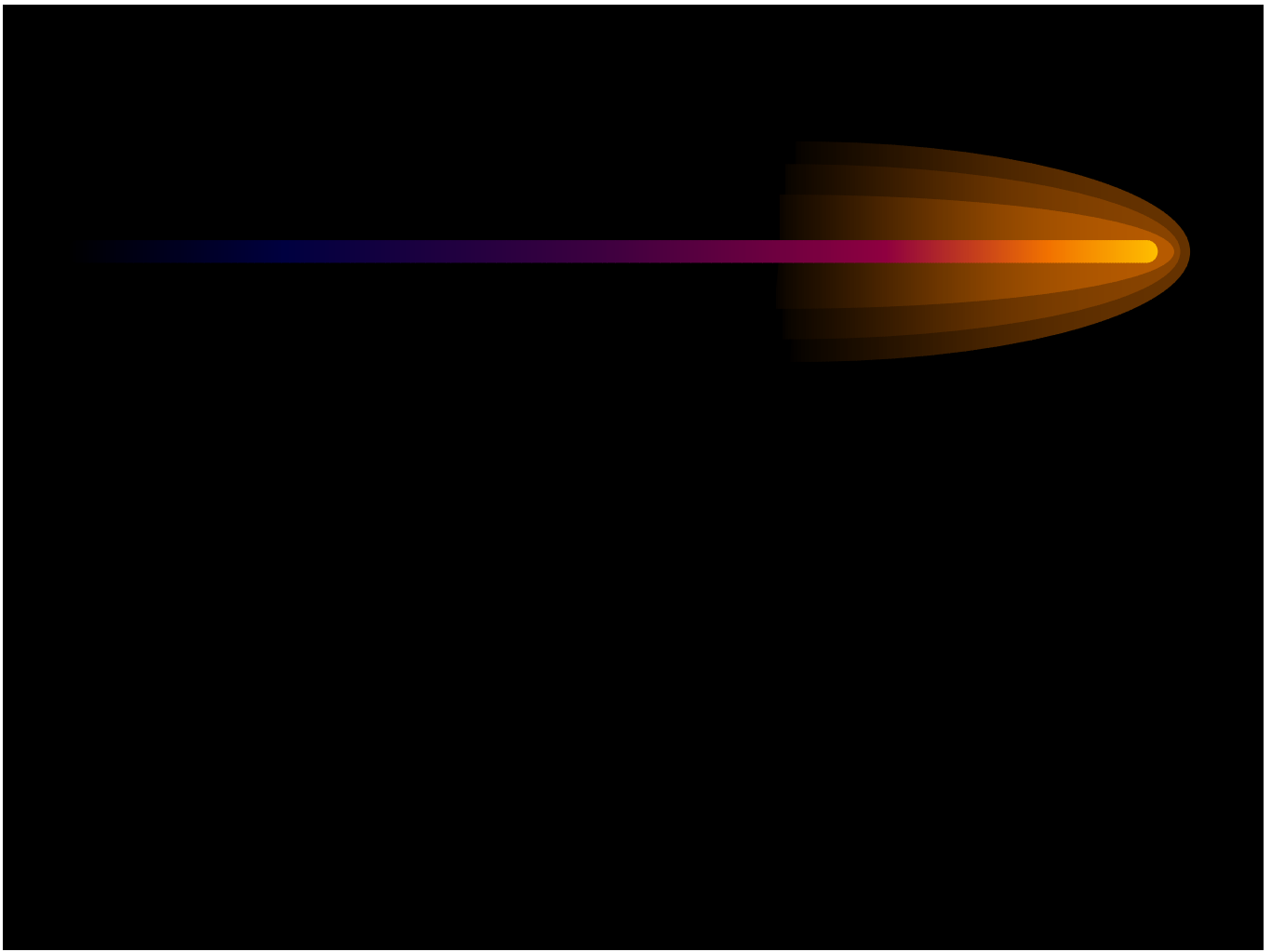
European Civil Engineering Education and Training (EUCEET) course categories

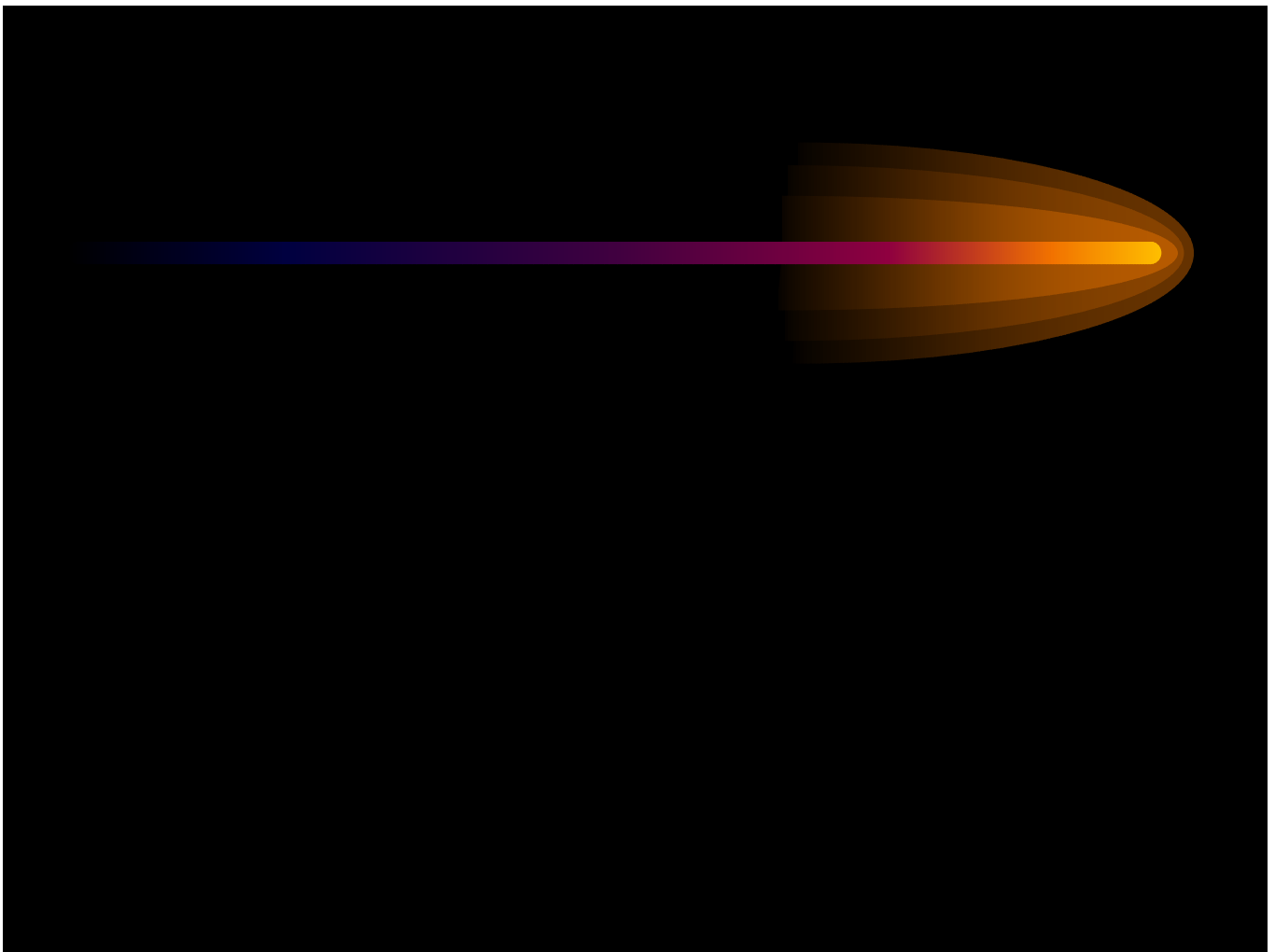
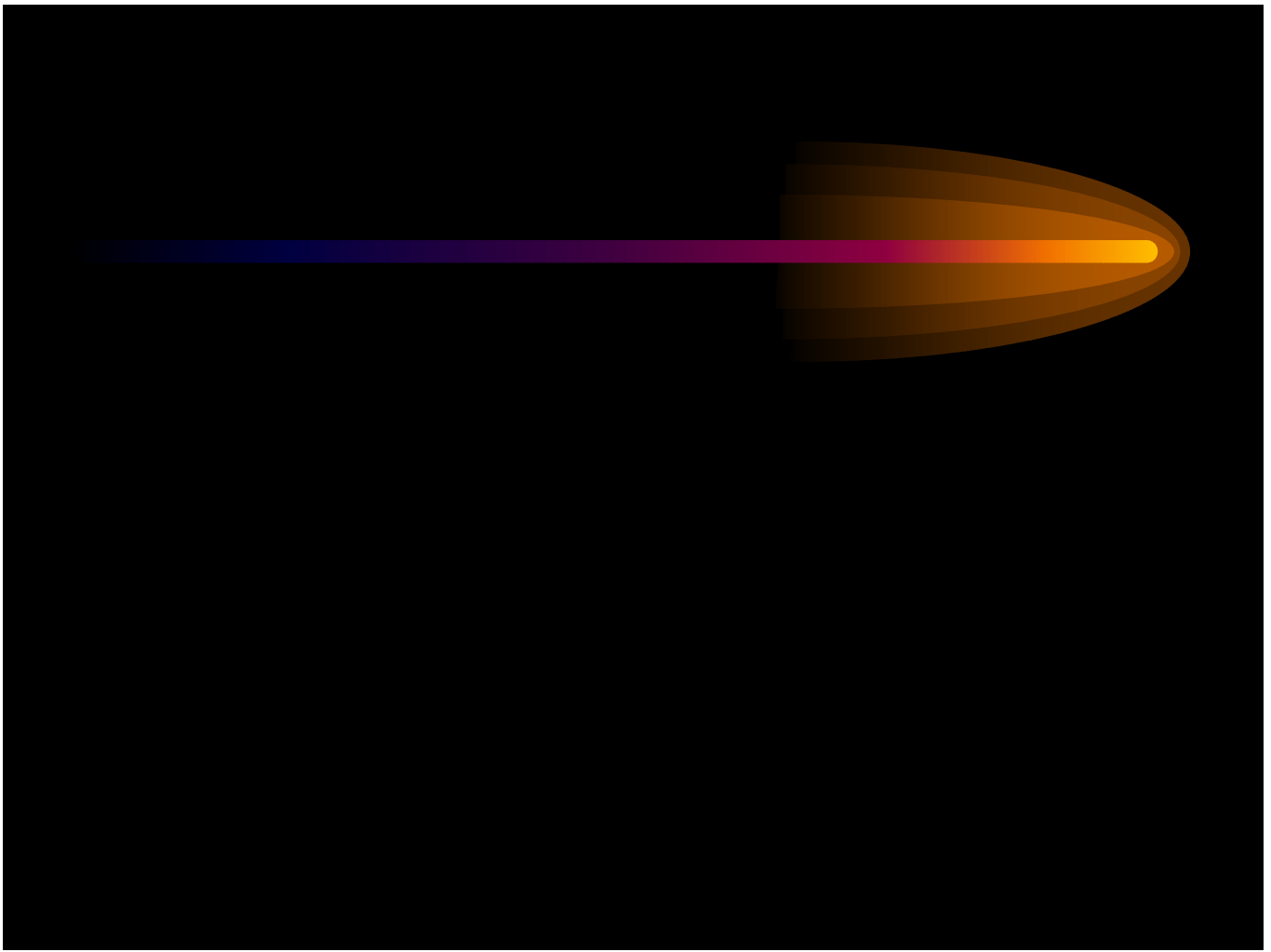
- A: Basic Sciences (~10 %)
- B: Engineering Sciences (~9 %)
- C: Core Civil Engineering Subjects (~27 %)
- D: Engineering Specialization (~27 %)
- E: Economics and Management Subjects (~9 %)
- F: Humanities, Social Sciences, Languages and Physical Education (~6 %)
- G: Fieldwork (~3 %)
- H: Diplomawork (~10 %)

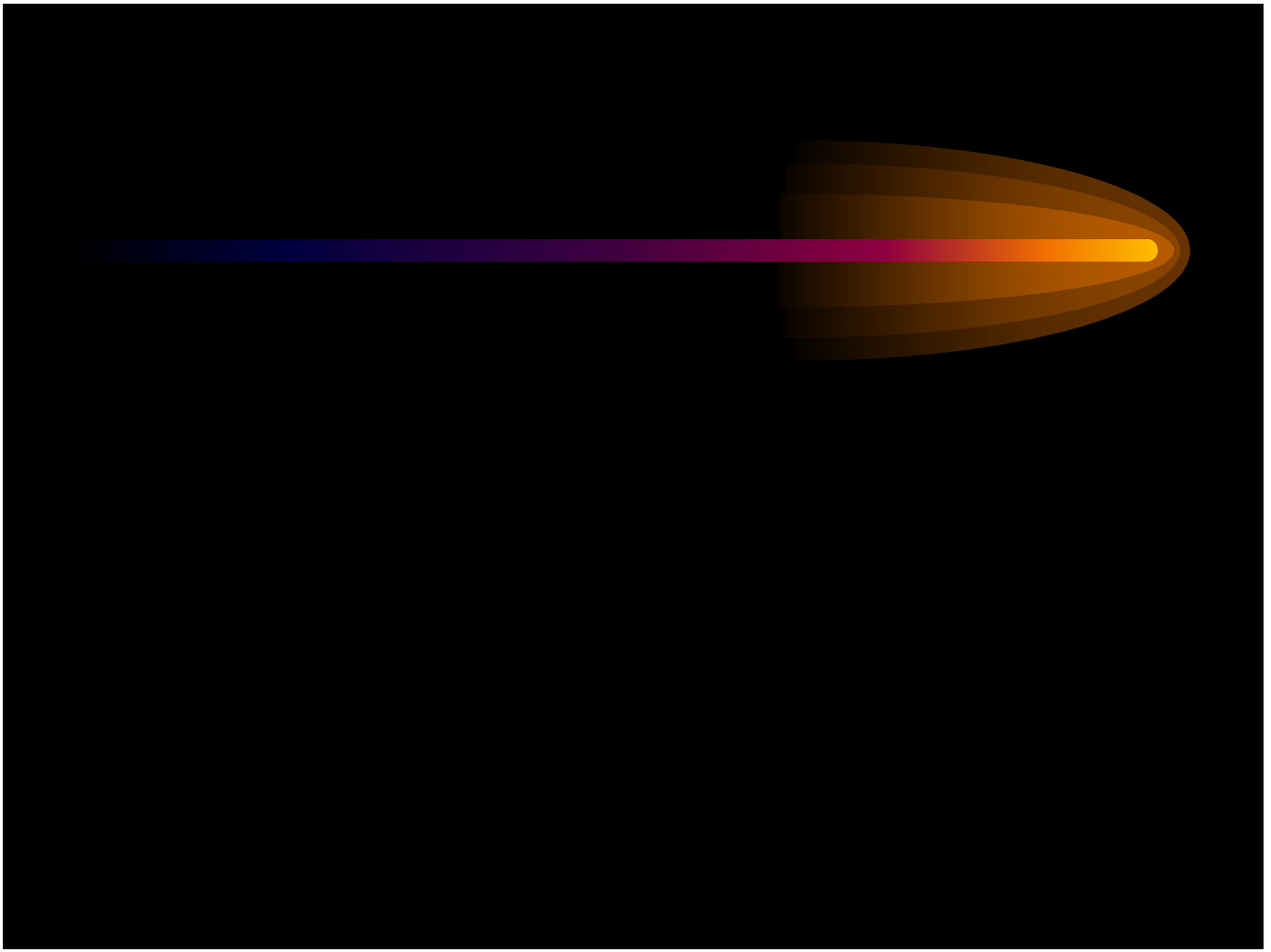
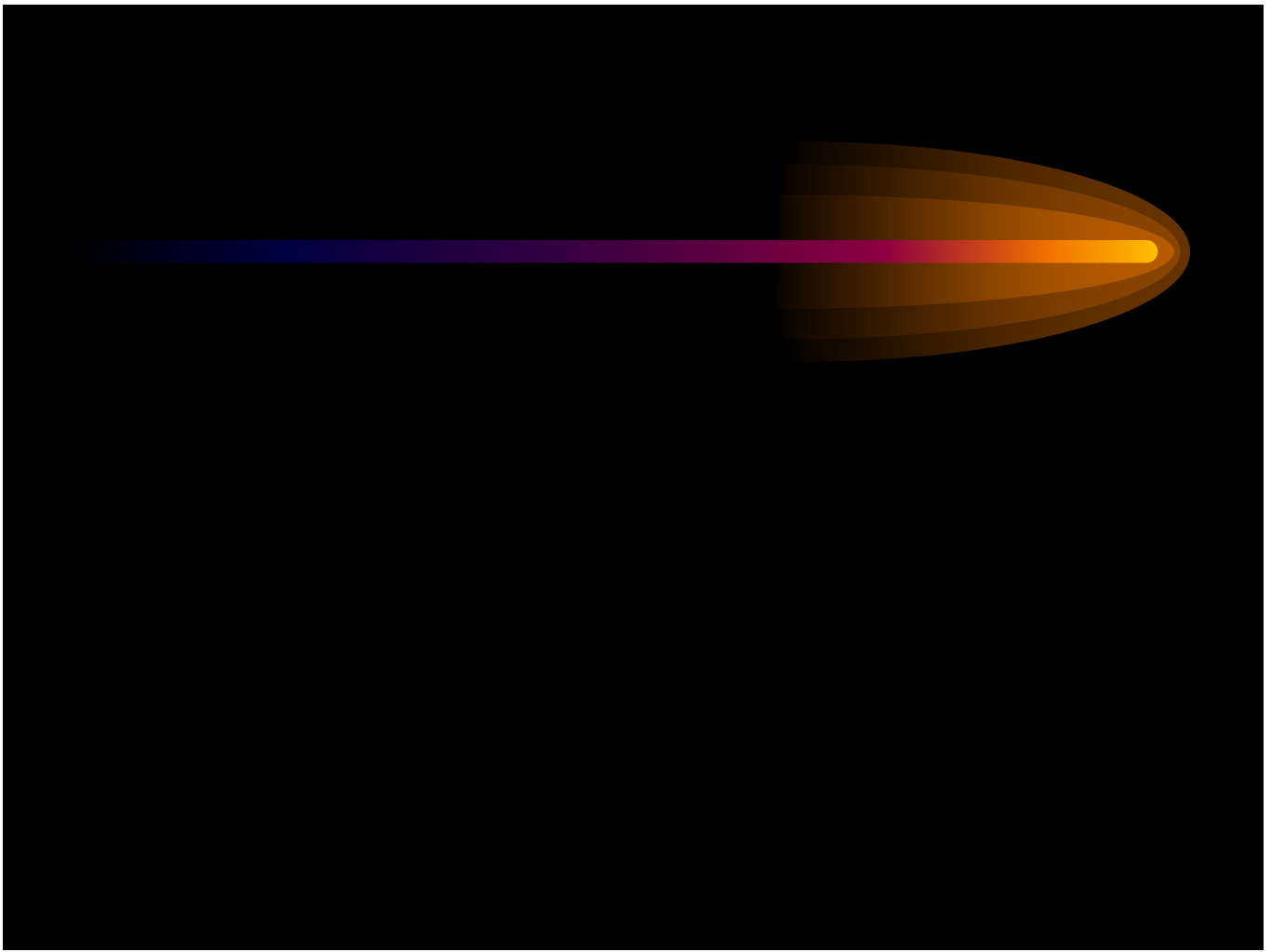












Majors of the Structural Engineering Branch



- Building Construction and Reconstruction
- Structural Informatics
- Structures and Geotechnics
- Real Estate Engineering
- Engineering Geology

Majors of the Infrastructural Engineering Branch



- Highway and Railway Engineering
- Municipal Engineering
- Hydraulic and Water Environmental Engineering

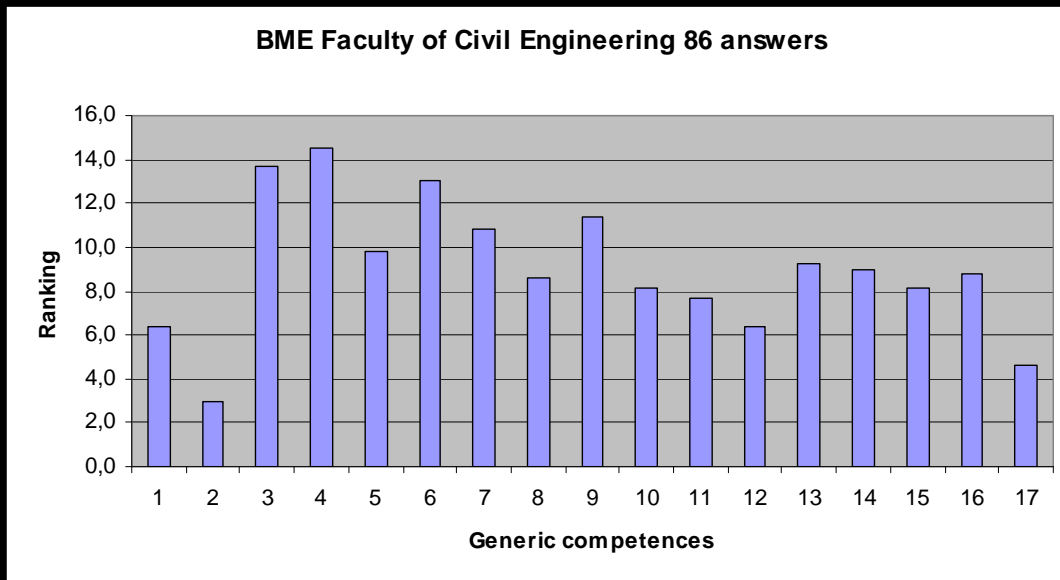
Majors of the Surveying and Geoinformatics Branch:

- Surveying
- Geoinformatics

EUCEET - TUNING

- 1998- European Civil Engineering Education and Training
- 2004 Tuning Educational Structures in Europe
- 7/05/2004 Malta EUCEET-Tuning synergy group
- 2 on-line surveys: (academics,employers)
 - Generic competences (academics,employers)
 - Specific competences (academics)
- Hungary on-line and hard-copy answers

Generic Competences (provided by Academics)



The 5 highest ranking generic competences Ranking 1 to 17

- | | |
|---|------|
| 1. Basic knowledge of the profession | 14,5 |
| 2. Basic knowledge of the field of study | 13,7 |
| 3. Capacity for applying knowledge in practice | 13,1 |
| 4. Capacity to learn | 11,3 |
| 5. Capacity for generating new ideas (creativity) | 10,8 |

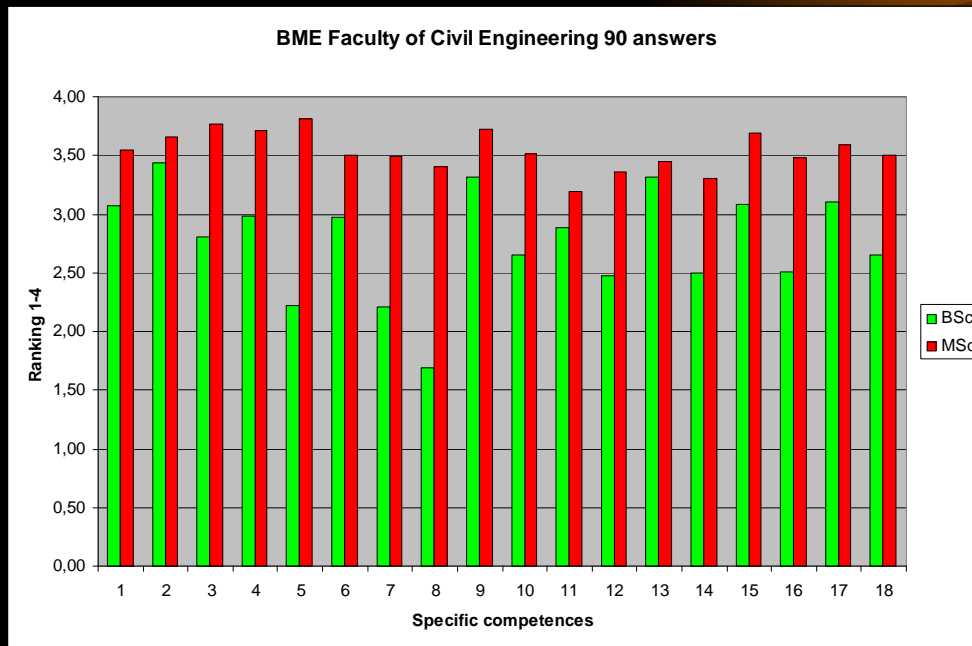
*The 5 highest ranking generic competences
Hungarian employers 10 received answers
Ranking 1 to 5*

1. Basic knowledge of the profession	3,50
2. Capacity for applying knowledge in practice	2,40
3. Capacity for generating new ideas (creativity)	2,40
4. Basic knowledge of the field of study	1,00
5. Interpersonal skills	0,90

*Evaluation of the importance of specific
competences for civil engineering*

- First Cycle is leading to a degree being by itself "relevant to the European labour market", as required by the Bologna Declaration.
- Some of the competences are adapted from the outcomes defining the "Body of knowledge" developed in 2003 by a Committee of the American Society of Civil Engineers.
- Three levels of competence are defined, as follows:
 - Level 1 (Recognition) Level 2 (Understanding) Level 3 (Ability)
- Importance: 1 = None, 2 = Weak, 3 = Considerable, 4 = Strong.

Specific Competences (provided by Academics)



The 5 highest ranking specific competences Importance for first cycle

1. An ability to use knowledge of mechanics, applied mechanics and of other core subjects relevant to civil engineering
BSc: 3,43 (MSc: 3,66)
2. An ability to use the techniques, skills and modern engineering tools, including IT, necessary for engineering practice
BSc: 3,31 (MSc: 3,72)
3. An understanding of professional and ethical responsibility of civil engineers
BSc: 3,31 (MSc: 3,44)
4. A recognition of the need for, and the ability to engage in, life-long learning
BSc: 3,10 (MSc: 3,59)
5. An ability to communicate effectively
BSc: 3,08 (MSc: 3,69)

The 5 highest ranking specific competences Importance for second cycle

1. An ability to identify, formulate and solve complex civil engineering problems
MSc: 3,81 (BSc:2,22)
2. An ability to design a system or a component to meet desired needs
MSc: 3,77 (BSc:2,81)
3. An ability to use the techniques, skills and modern engineering tools, including IT, necessary for engineering practice
MSc: 3,72 (BSc:3,31)
4. An ability to identify, formulate and solve common civil engineering problems
MSc: 3,71 (BSc:2,99)
5. An ability to communicate effectively
MSc: 3,69 (BSc:3,08)

Thanks for your attention!

