15. međunarodni simpozij Kopački rit jučer, danas, sutra 2026.

USKLAĐENOST SADRŽAJA SILABUSA PRIRODOSLOVNIH KOLEGIJA S ODGOJNO-OBRAZOVNIM ISHODIMA KURIKULUMA PRIRODOSLOVLJA

ALIGNMENT OF SYLLABI CONTENT OF NATURAL SCIENCE COURSES WITH THE EDUCATIONAL OUTCOMES OF THE NATURAL SCIENCE CURRICULUM

KREŠIMIR VIDAČIĆ [1*], IRELLA BOGUT [1], MILA BULIĆ [2], IRENA KIŠMARTIN [1]

[1] J. J. Strossmayer University of Osijek, Faculty of Education, Cara Hadrijana 10, Osijek, Croatia
[2] University of Split, Faculty of Humanities and Social Sciences, Poljička cesta 35, Split, Croatia
* email: kvidacic@foozos.hr

With Croatia's 2023 experimental full-day primary school programme, the new subject Natural Science introduced outcomes not previously covered in Nature and Society, raising questions about initial teacher education. This study analyses to what extent science and teaching methodology syllabi in integrated teacher education programmes in Croatia explicitly include outcomes and content on force, gravity, friction, and magnetic interactions, as defined by outcome PRI OŠ B.2.2 for grade 2. It also examines whether they guide pre-service teachers in teaching these concepts.

Based on qualitative content analysis of 56 publicly available syllabi from seven programmes, the study explores the representation of these concepts and their alignment with primary science curriculum expectations, providing a basis for improving teacher education.

Coding identified thematic patterns and the representation of scientific concepts in course syllabi, focusing on explicit content and learning outcomes for PRI OŠ B.2.2. The codes were: C1 – effects of force on an object; C2 – gravitational force/interaction; C3 – frictional force; C4 – magnetic interaction; and P – explicit link to practical application or everyday life. Codes were assigned only for explicit links; broader areas (mechanics, astronomy, fluids) and other meanings of "force" were not treated as evidence unless directly tied to C1–C4.

Code	Category	Operational Definition	Inclusion Criterion	Exclusion Criterion
C1	Effect of Force on a Body/Object	The effect of force and its consequences on a body	Explicit reference to force or its effect on the motion/shape of a body	Motion or other processes without an explicit connection to force
C2	Gravitational force / Gravitational Interaction	Gravitational effect on bodies	Weight, gravity, gravitational force/effect	Astronomy, celestial bodies, and similar content without explicit reference to gravity
C3	Frictional Force	Interaction associated with friction between bodies/surfaces	Friction, frictional force, coefficient of friction	Motion or contact between bodies without explicit reference to friction
C4	Magnetic Interaction	The effect of magnets and magnetic interaction	Magnet, magnetism, magnetic effect/force, properties of magnets	Electricity or other content without explicit magnetic content
P	Application in Everyday Life	Secondary code for the practical/everyday application of C1–C4	Explicit application of one of the coded concepts	An everyday example not related to C1–C4

Table 1. Analytical framework and criteria for coding syllabus content

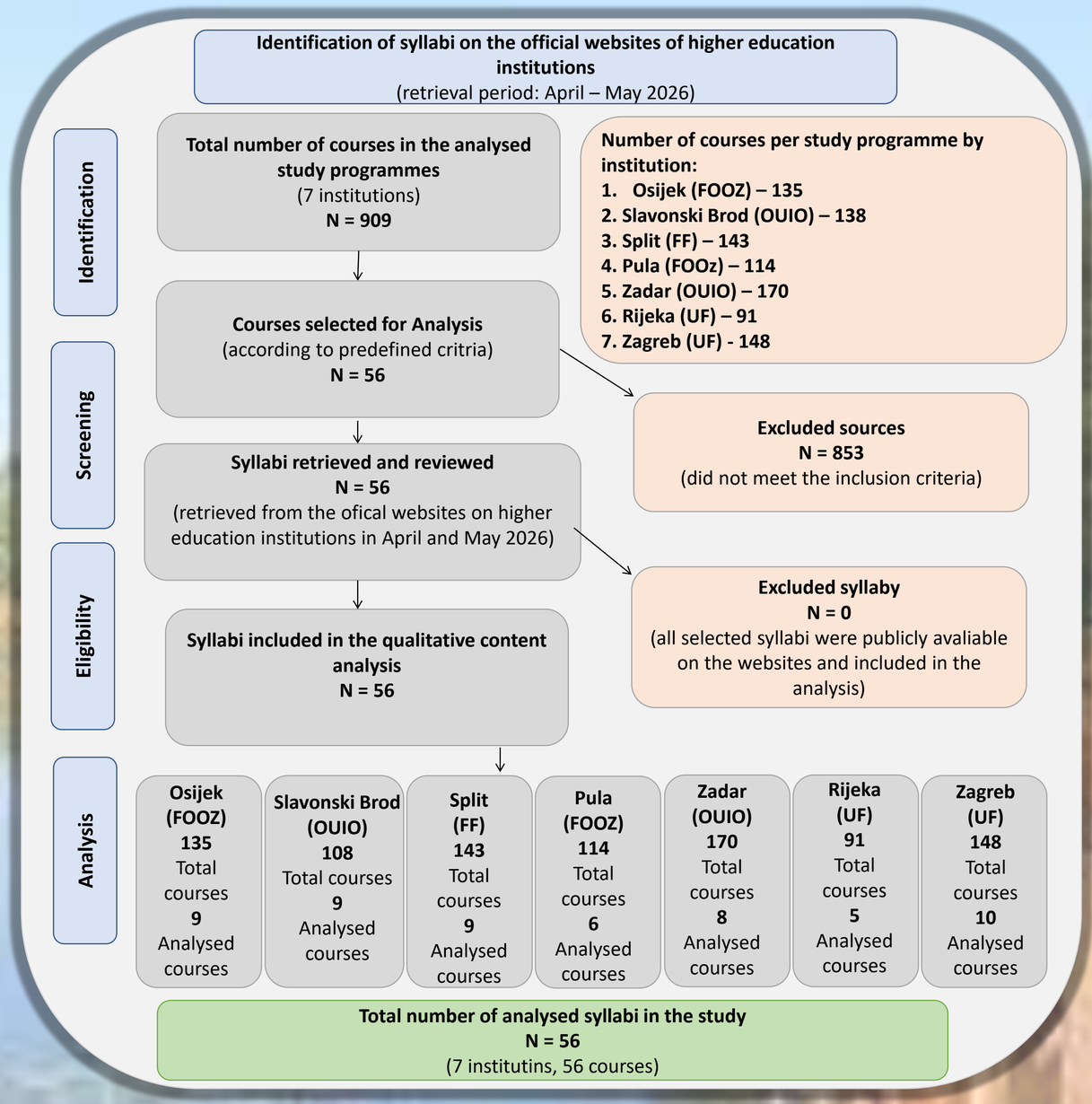


Figure 1. Flowchart of the identification, selection, and analysis of syllabi

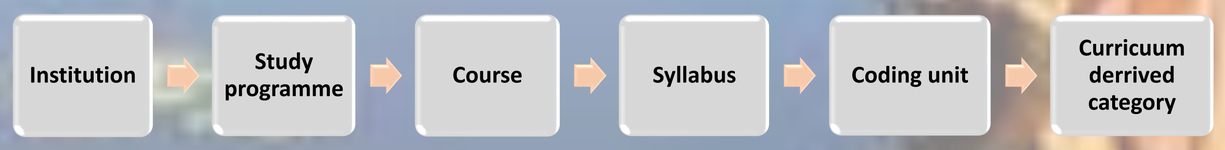


Figure 2. Analytical pathway from institutional selection to curriculum-derived coding categories

The analysis of teacher education syllabi in Croatia shows that content on forces is represented only to a limited extent and is not systematically documented, even though the Science Curriculum requires primary school teachers to teach force-related topics—including effects of forces, gravitational force, friction, and magnetic interactions—as early as the second grade. The findings therefore point to the need for clearer documentation of the link between initial teacher education and the specific requirements of the school curriculum.