Reasoning about Study Regulations in Answer Set Programming* (Extended Abstract)

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Study regulations govern our teaching at universities by specifying requirements to be met by students to earn a degree. This (that is, study regulations) involves different stakeholders: faculty members designing study programs, administrative and legal staff warranting criteria, like studyability, faculty members teaching the corresponding programs as well as supervising their execution on examination boards, study advisors consulting students, and of course, students studying accordingly [1].

Given this impressive spectrum of use cases, it is remarkable that study regulations are relatively sparse and leave many aspects to the common sense of the respective users. This is needed to cope with their inherent incomplete, inconsistent, and evolving nature. For instance, often study regulations leave open minor dependencies among modules. Sometimes associated courses overlap and certain modules cannot be taken in the same semester. And finally, studying happens over time, students' perspectives may change and faculty may rotate. Often these phenomena are compensated by changes, preferences, recommendations, defaults, etc. In fact, this richness in issues and notions from Knowledge Representation and Reasoning (KRR) makes study regulations a prime candidate for a comprehensive benchmark for KRR formalisms.

This work is part of a project at the University of Potsdam to assist different users by automatizing study regulations. These users range from study administrators, over faculty in different functions, to prospective and advanced students.

We started by analyzing more than a dozen different study regulations in order to identify their underlying principles. The conceptualization of the basic principles led us to a formal account of basic study regulations. For illustration, we provided the formalization of the master program *Cognitive Systems*. Further, more specialized concepts in other study regulations were formalized. These concepts include specializations, module dependencies, blocking modules and examination tasks. The formalization of study regulations reveals the properties of admissible study plans.

To automate reasoning about study regulations and their study plans, we captured their properties in Answer Set Programming (ASP; [3]), a declarative

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problem solving paradigm, tailored for knowledge representation and reasoning. The ASP-based encoding of basic study regulations was discussed. In addition, we showed how this encoding can be used together with an ASP-driven user interface to browse through study plans of given study regulations.

For our future work, we will be covering the concepts behind examination tasks and courses. We will also capture study regulations preferences within the solution space, as well as user definable constraints like, a limit on the number of modules and on the total credit points to take per semester.

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References

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