







Finally, in the web platform the students also can find links to several free software (e.g. Stereo32, a program to display and evaluate discontinuity data in rock mechanics).

Additionally, a broad number of technical regulations on digital format, webpage links, other geotechnical on-line videos from YouTube™, etc. are available for students on the web platform.

All this digital resources can be freely downloaded from the web platform from the GInTE [4] providing a very useful complementary tool for a whole understanding of geotechnical concepts and laboratory standard procedures, concept and interpretation.

#### 4. Conclusions

In this work virtual resources for soil and rock mechanics laboratory practices of Erasmus Mundus Masters are presented. These resources will allow the students to perform a more efficient virtual learning (also called e-learning).

The proposed individual and remote methodology using a web platform will be very useful for complementing the theory sessions developed by the teacher. Furthermore this methodology will allow the student to perform the laboratory practices remotely (e.g. from home) and repeatedly (as often as required or desired) and also will allow them to know the apparatus and the equipment required by the tests, the sample preparation, the test procedures (even for long-term tests) and the interpretation and representation of the results. A remarkable advantage is that the whole number of available resources (Adobe® Flash® Player animations, digital videos, Excel® worksheets and other additional resources) are available in a

unique place which can be frequently and easily updated.

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#### 6. References

- [1] S.Campanella, G.Dimauro, A.Ferrante, D. Impedovo, S.Impedovo, M.G.Lucchese, R. Modugno, G.Pirlo, L.Sarcinella, E. Stasolla and C. A.Trullo, "Engineering e-learning surveys: a new approach". *International journal of education and information technologies*, 1, 127-135, 2007.
- [2] M.L.Martínez, J. Fdez and G. Romero, "WEB3D graphics in the WEBD Project: new trend in a collaborative environment". *Int. Workshop on "New WEB technologies for collaborative design, learning and training*, Nov. 2003, Turín (Italia), 2003.
- [3] A.Chegenizadeh and Hamid Nikraz, "Review on WEB Resources in Teaching of Geotechnical Engineering", *World Academy of Science, Engineering and Technology*, 66, 255-257, 2012.
- [4] Grupo de Innovación Tecnológica-Educativa de Ingeniería del Terreno (GInTE), <http://web.ua.es/es/ginter/>.