**Constraints and Quality**

Based on ISO/IEC 9126 [1] standard, the following quality criterias should been address in the design:

1. **Functionality**

The constraints described in this section address features that extend functionality to technical aspects.

* 1. Security
     1. The access to the system will be granted only by providing correct credentials (i.e. username and password)
     2. The password must have a length between 8 to 16 characters alphanumeric characters.
     3. The communication protocol must be encrypted (i.e. the system will be access by HTTPS)
     4. The user’s password will be stored encrypted in the database, using SHA-2
     5. After 10 minutes of inactivity, the system shall automatically logout the user.
     6. The system must provide the options to manage users and permissions.
  2. Interoperability
     1. The system must have the option to download the information in PDF and CSV format.
     2. The system must have the option to export the schedule to Outlook and Google calendars.
     3. The system must be have the option to be integrated (embedded) to the current University portal, if required (SSO)
     4. The system must have the option to be integrated to standard directory protocol (LDAP)
  3. Normative
     1. The system’s information must be archived for a period of 4 years.
     2. The system must complain the current Quebec normative for educational web applications.

1. **Reliability**
   1. Availability
      1. Since it is not mission critical, the system must have an annual uptime of 99.9% (i.e. the maximum annual downtime must be 87.6 hours)
   2. Recoverability
      1. On case of system failure, the maximum restore time must be 4 hours.
      2. On case of database failure, the maximum information lost must be 1 day.
2. **Usability**
   1. Understandability
      1. The system’s web user interface should be designed so the users do not require any other assistance (manual, external applications) to operate it (user friendly)
      2. The system must be offered in English and French. I must have to option to change its language.
   2. Accessibility
      1. To grant access to senior people, the minimum system’s font size will be 14px, along with soft, no high contrast colors.
      2. To grant access to blind people, the system should have menu voice assistance and screen readers (visually impaired user's technology)
3. **Efficiency**
   1. Time
      1. The system’s response time will be less than 3 seconds in all operations.
   2. Resources
      1. The system must designed to run on medium size server (4-8 Cores, 16-32 GB RAM)
4. **Maintainability**
   1. Scalability
      1. The system must be able to support 5.000 users, and allow a grow up to 20.000 users.
      2. The system must be able to serve 500 concurrent users.
   2. Support
      1. To help support, technical documentation about the system use, design, installation, configuration and troubleshooting must be created, and the source code must be documented.
   3. Testability
      1. Evidence about the test cases performed during its development must be provided.
5. **Portability**
   1. Adaptability
      1. The system must adapt its interface for both laptop/desktop browser and mobile devices with screens 8 inch or bigger.
      2. The system must work on the latest versions of Chrome and Firefox.
      3. The system must be build using modern web standards (HTML5, CSS3).

[1] ISO/IEC 9126-1:2001 Software engineering - Product Quality, http://www.iso.org/iso/catalogue\_detail.htm?csnumber=22749