LMS LTI Integration Guide

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Introduction

This is the NETLAB+ LMS LTI Integration Guide for the virtual edition of NETLAB+. The material in this guide includes instructions on configuring NETLAB+ to integrate with your school's Learning Management System (LMS).

It has become increasingly popular in institutes of higher education to use a Learning Management System (LMS), education technology that provides a cohesive online environment and facilitates the sharing of resources such as syllabus information and other course-related content. The LMS environment can also be beneficial as a means of communication between instructor/student and for facilitating grading and assessment of assignments. An LMS may also function as a communications hub to support student collaboration.

Some of the most widely used LMS applications include Blackboard, Moodle, and Canvas; these applications are often branded and customized to reflect the school's unique identity and contribute to fostering a sense of community, recognizing that the online environment beyond the classroom is vitally important in meeting the needs of today's students.

Another compelling reason for a school to use an LMS is that it can act as a one-stop destination for students and instructors to access externally-hosted learning tools used to enhance the educational experience. Students will have the advantage and convenience of access to labs, along with other class materials, through a single sign-on.

NETLAB+ supports LMS-LTI integration using Learning Tools Interoperability (LTI), a standard protocol developed by the IMS Global Learning Consortium for integrating any Learning Management System (LMS) with any learning application. LTI is essentially plug-and-play; the NETLAB+ administrator or instructor integrates access to NETLAB+ from their LMS using the LMS access key and common cartridge.
1 Understanding LTI Integration with NETLAB+

There are several considerations to be aware of regarding the implementation of LTI Integration. If you choose to use LTI Integration, students will perform all lab activities (scheduling and attending lab reservations) through the LMS. Students will not have the ability to log in to your NETLAB+ system directly.

Accounts created automatically by NETLAB+ to support LTI Integration function differently from accounts created by NETLAB+ administrators and instructors to use NETLAB+ directly. Accounts created through LTI Integration can be accessed only through the LMS.

A summary of the notable differences between using LTI Integration and using your NETLAB+ system directly is shown in the table below.

<table>
<thead>
<tr>
<th></th>
<th>LTI Integration</th>
<th>NETLAB+ Direct</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Account Creation</strong></td>
<td>Student accounts are created automatically by NETLAB+, a student's account is created during the student's first-time access to the labs, through the LMS.</td>
<td>Student accounts must be created by the instructor or NETLAB+ administrator (via the accounts management form or by importing a list).</td>
</tr>
<tr>
<td><strong>Student Access to Schedule and Attend Lab Reservations</strong></td>
<td>Students perform all activities through the LMS.</td>
<td>Students sign in to their NETLAB+ account to perform all activities.</td>
</tr>
<tr>
<td><strong>Instructor Access to Schedule and Attend Lab Reservations, and Management Tools</strong></td>
<td>Instructors may access through the LMS or log in directly to NETLAB+ using their instructor account.</td>
<td>Instructors log in to their NETLAB+ instructor account.</td>
</tr>
<tr>
<td><strong>Student Team Assignments (optional)</strong></td>
<td>Team assignments are made by the instructor or NETLAB+ administrator. Because student accounts are created at the time of their initial access, a team assignment may only be made after the student has completed their first-time access to the lab material.</td>
<td>Team assignments are made by the instructor or NETLAB+ administrator any time after account creation.</td>
</tr>
</tbody>
</table>
2 Enabling LTI Integration in NETLAB+

LMS-LTI integration is configured at the community level. A NETLAB+ system includes one or more communities. A community is a distinct group of instructors, students, and classes. An Instructor may only manage students and classes within their own community. The ability to support multiple communities on NETLAB+ is designed to facilitate the sharing of a NETLAB+ system among several different groups (schools, institutions, academies, etc.).

Multiple communities are optional. Keep in mind that each instructor, student, and class can belong to only one community. If you do not wish to use communities, all of your accounts and classes must reside in the default community.

2.1 Community Settings for LTI Integration

1. From the Communities option on the Administrator home page, select a community record to edit. If your NETLAB+ system has not been configured to have multiple communities, it will contain only one community, the default.

For details on selecting and editing a community, please see the Manage Communities section of the NETLAB+ VE Administrator Guide.

2. The community record includes several settings used to configure LMS-LTI integration with NETLAB+. To display these settings, select the checkbox to Enable LTI Integration.
3. The additional settings for LTI integration will be displayed (see above). The fields are described in detail below.

Field Descriptions - Community Edit Record – LMS LTI Settings

- **LTI Integration**: Enable and disable NETLAB+ LTI integration features for an LMS. Learning Tools Interoperability (LTI) is a standard protocol developed by the IMS Global Learning Consortium for integrating any Learning Management System (LMS) with any learning application.

- **LTI Keys Visible to Instructors**: If enabled, instructors will be provided with this community's Consumer Key and Shared Secret when exporting an LMS Common Cartridge for their class. These keys will be required to use NETLAB+ as an external tool within an LMS. If disabled, instructors will be referred to the NETLAB+ administrator to provide the keys or enable the NETLAB+ external tool for the LMS.

- **LTI Consumer Key**: A key that is used to identify this community as a consumer to an LMS. This will be required to configure NETLAB+ as an external tool. Changing this value will invalidate any existing NETLAB+ external tools for this community on the LMS. The button on the right of the field can be used to generate a random value, but custom values may be used. If this value is changed unintentionally, its submission can be prevented by unchecking the checkbox on the left.

- **LTI Shared Secret**: A secret used by this community to establish ownership of the Consumer Key. This will be required to configure NETLAB+ as an external tool. Changing this value will invalidate any existing NETLAB+ external tools for this community on the LMS. The button on the right of the field can be used to generate a random value, but custom values may be used. If this value is changed unintentionally, its submission can be prevented by unchecking the checkbox on the left.

2.2 Export the LTI Cartridge for a Class

Follow the steps below to obtain the common cartridge needed for LTI integration for a class. An LTI cartridge may be exported by the NETLAB+ administrator or by an instructor if the option to make LTI Keys Visible to instructors has been enabled by the NETLAB+ administrator.

1. Select the class record in NETLAB+. If the option to enable LTI Integration has been enabled at the community level, you may select the option to **Export an LTI Cartridge** that you can import into your school's LMS in order to configure access to the class.
2. The **Export Class Common Cartridge** page will be displayed. Clicking the **Export** button will prompt you to download an `.imscc` file that is conformant with the IMS Common Cartridge v1.0 standard. If you have the necessary permissions, you may import the cartridge into your LMS class to add the associated content.

   **Export Class Common Cartridge**

   Clicking the export button below will prompt you to download an `.imscc` file that is conformant with the IMS Common Cartridge v1.0 standard. If you have the necessary permissions, you may import the cartridge into your LMS class to add the associated content. Please refer to your LMS's documentation regarding the importation of Common Cartridge files as well as the configuration and use of LTI external tools. After the file is uploaded to the LMS, you will need the **Consumer Key** and the **Shared Secret** to configure the NETLAB+ VE external tool for your class.

   **Export** | **Cancel**

   Please refer to your LMS's documentation regarding the importation of Common Cartridge files as well as the configuration and use of LTI external tools. After the file is uploaded to the LMS, you will need the **Consumer Key** and the **Shared Secret** to configure the NETLAB+ VE external tool for your class.
3  Enabling Access to NETLAB+ Within Your LMS

⚠️ LMS systems are often branded and customized specifically for an organization. The appearance of your LMS and the functionality of the user interface may vary from others due to a variety of variables, including LMS version, software updates, customization, branding, and instructor permission levels.

We recommend that you contact the administrator of your school’s LMS for guidance on enabling access to NETLAB+ within your LMS. You will need the Consumer Key and Shared Secret for your class (available through NETLAB+ as part of class settings; see the previous section, *Export the LTI Cartridge for a Class*).