

# **A Complete and Automated UV Light-Based Pathogen Reduction Technology for Indoor Learning Spaces**

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The Covid-19 pandemic has forced nearly a billion students worldwide to stay at home and continue their education via other means. However, sooner or later students will be back on school and college campuses and back in the classrooms in one way or another. An enclosed environment with tens of students relatively close to one another could pose a risk of wide-scale transmission particularly because classrooms are used by several groups of students one after the other. Finding solutions, or Pathogen Reduction Technologies (PRTs), to minimize transmission, between the students is critical in order to reopen campuses and bring back the students into the classrooms safely and hopefully permanently. These solutions can vary from controlling air quality and fresh-air circulation rate in enclosed spaces, imposing safe distancing measures, physical barriers, and face masks among other approaches. In this proposal, a complete and automated UV-based solution is explored for disinfecting the common surfaces in the classroom during the recess between one class and the next. The system also contains the necessary safety mechanisms in order to eliminate any potential exposure to individuals that enter the room during operation, including an auto shutoff motion detector. In this proposal, the design and fabrication of this UVC-based PRT is focused on the following aims: maximizing pathogen-deactivation effectiveness (particularly against Covid19), minimizing cost and operation time and finally built-in safety mechanisms.