Capstone Class

Digitizing the Graduate Plan of Study Workflow for Virginia Tech CS

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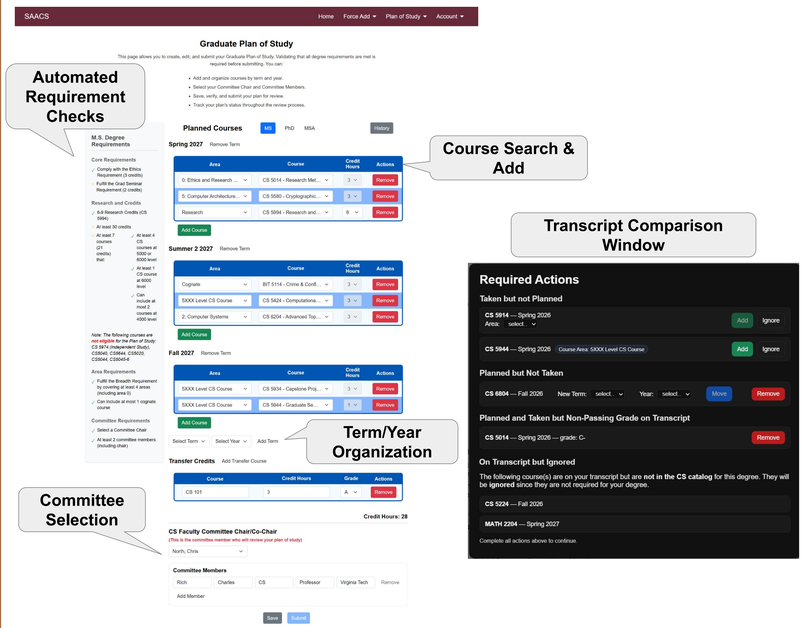
Problem Summary

- CS grad students currently build their Plan of Study using static forms and HokieSPA, with limited guidance on degree rules or course eligibility, and no single place to track POS status, history, or changes over time.
- Requirements are checked manually, which leads to frequent errors in credit counts, committee composition, and course selection, since advisors and coordinators cannot easily compare a student's POS against their transcript in one integrated view.
- Communication about approvals and revisions is scattered across emails and systems, so students often do not know what to fix, why it was rejected, or where their POS sits in the pipeline, making the overall process slow, error prone, and opaque for both students and faculty.

Our Solution

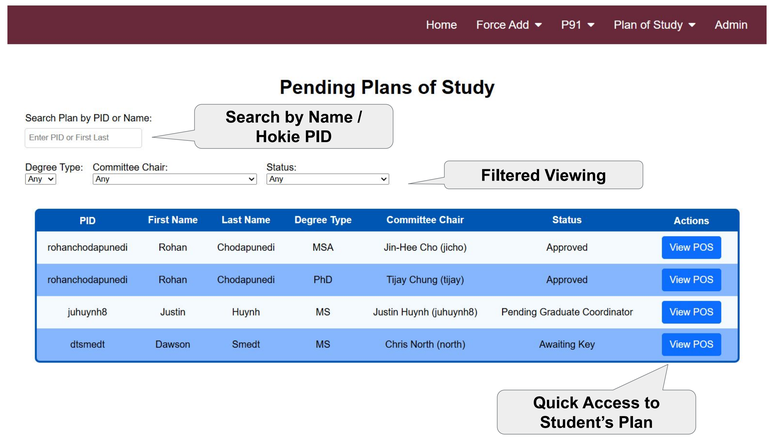
- Full-stack web application that lets CS grad students build, edit, and submit their Plan of Study online, with role-based dashboards for students, advisors, committee members, and coordinators.
- Automated validation and transcript-aware checks that enforce degree rules, flag issues before submission, track status and history, and trigger email notifications to streamline multi-stage approvals.

Graduate Student Plan Builder



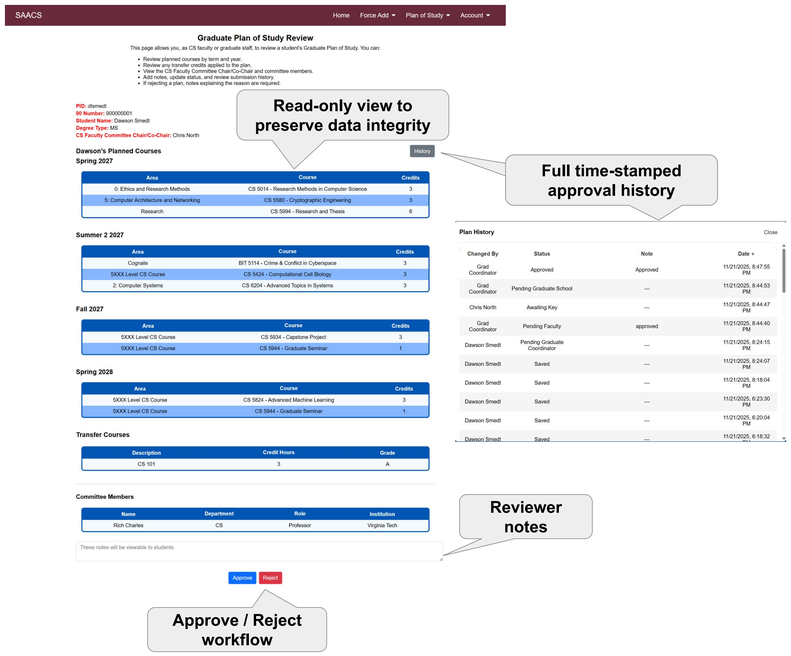
- Students can draft, update, and validate their plan in real time.
- Built-in requirement validation prevents incorrect submissions.
- Students see exactly what is missing before they hit submit.

Student Search



Faculty and coordinators can quickly locate any student, check submission status, and open their plan of study for review.

Faculty Review & Approval Interface



Advisors and committee members review the student plan, leave comments, and approve or reject submissions in a clean, auditable interface.

Key Features

Student Experience

- Guided POS builder (MS / PhD)
- Live degree requirement checks
- Real time transcript comparison
- Visual progress toward completion
- Track POS status through every approval stage

Faculty & Approval Workflow

- Role based faculty dashboards
- Student lookup with filters
- Full status and comment history
- Email notification when a plan requires faculty review

System & Automation

- React + Node + MySQL + Docker
- Integrated with VT CAS & SAACS
- Nightly email notifications
- Business rules enforced in backend
- Adaptable to future degree requirement modifications

Future Improvement

- **Integration with Hokie SPA Course Planning:** Automatically suggest eligible courses based on availability, prerequisites, and student program history.
- **Enhanced Analytics Dashboard:** Provide faculty and coordinators with insights into trends such as common rejection reasons, missing requirements, and enrollment patterns.
- **Multi-Program Expansion:** Extend support beyond CS to additional graduate programs within the College of Engineering (or campus-wide), using the same infrastructure.