The Mathematical Sciences Learning Laboratory:

Transforming Teaching and Learning in UD's Introductory Mathematics Courses

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Department of Mathematical Sciences

Summer Faculty Institute
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Acknowledgments

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- Dr. John Pelesko

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- An initiative of the College of Arts and Sciences, led by the Math Department
- A physical space for course instruction, testing, and tutorial services
- A new model for teaching and learning in undergraduate mathematics courses

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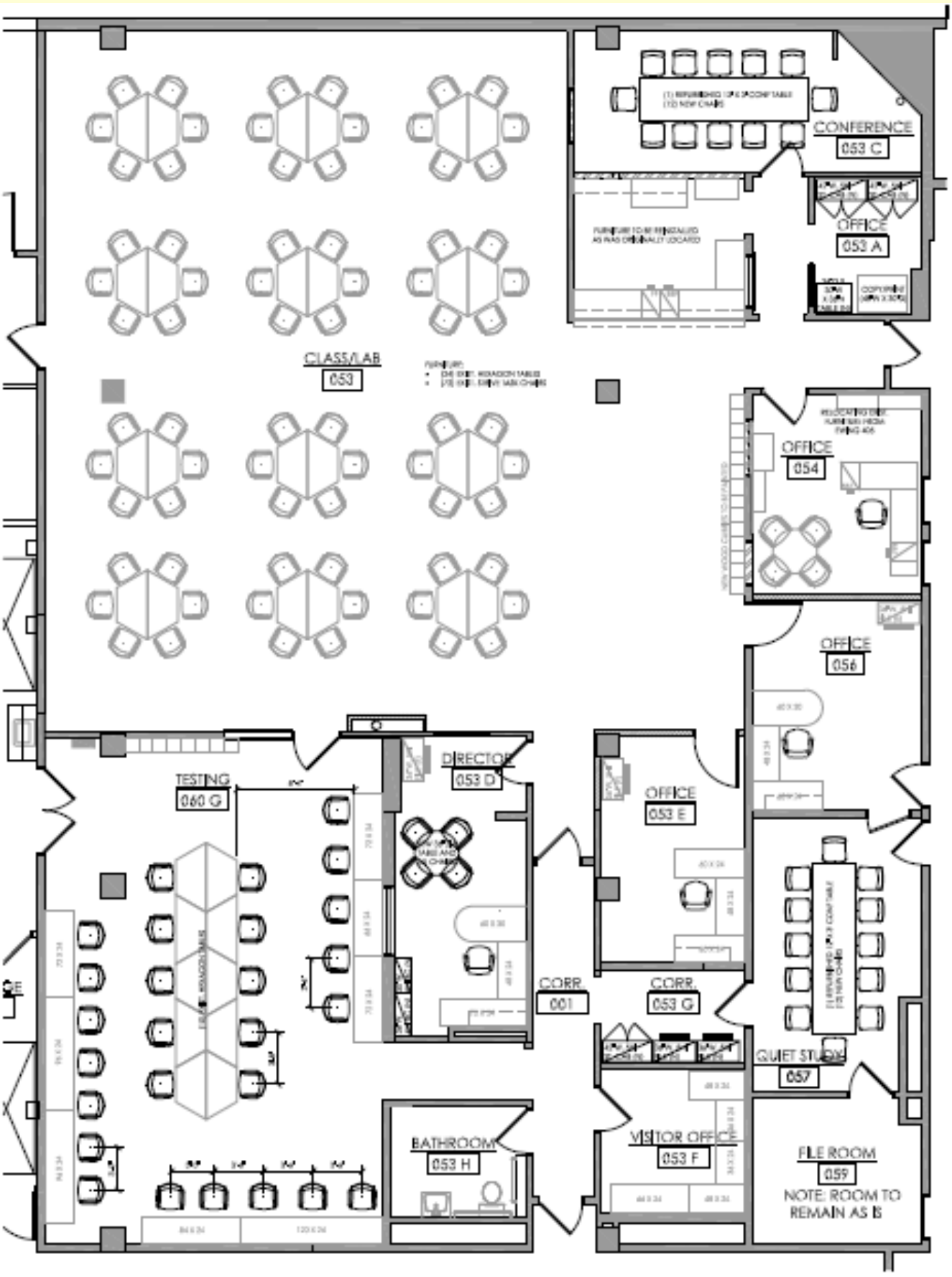
CONFERENCE
053 C
OFFICE
053 A
CLASS/LAB
053
OFFICE
054
OFFICE
056
TESTING
060 G
DIRECTOR
053 D
OFFICE
053 E
CORR
001
CORR
053 G
QUIET STUDY
057
BATHROOM
053 H
VISITOR OFFICE
053 F
FILE ROOM
059
NOTE: ROOM TO
REMAIN AS IS

Class Time

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Drop-In Tutoring Time

Testing Lab

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- Spring 2015 = First cohort
  - Total of 7 sections, ~300 students
  - 3 “core team” faculty

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- Spring 2015 = First cohort
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  - 3 “core team” faculty
- Fall 2015 = Second cohort
  - Total of 13 sections, ~850 students
  - 3 “core team” faculty + 3 new instructors

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- High DFW rates in mathematics courses
- Low retention rates in STEM majors
- Multiple, serious calls for a rethinking of undergraduate STEM education

MSLL – Changes to Instruction

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Provide a space that offers a “one-stop shop”	• Build a sense of community among students and instructors

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Students are allowed 2 attempts on each exam.	• Enables a mastery-based approach via required minimum score on 1st attempt • Supports students' learning and success

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- Treat the courses as objects of empirical study
- Engage in repeated design cycles to systematically improve the courses over time
  - Revisit and adjust the learning goals
  - Revise the classroom activities
  - Revise the assessments
  - Provide professional development for instructors

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  - Compare past and current DFW rates
  - Compare performance on final exam items
  - Examine pre-post performance on Placement Test
  - Examine student success in later math courses
  - Administer MSLL survey to solicit student feedback

Early Feedback

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- Students…
  - Enjoy working in groups
  - Appreciate that ALEKS is individualized
  - Appreciate the flexibility in exam scheduling
  - Do NOT like the required 1 hour/week of lab time
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- Faculty…
  - Enjoy having offices that are on site
  - Are grappling with “letting go” during instruction
  - Are concerned about the balance between procedures (ALEKS) and concepts (PBL)

Thank you!

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Individualized Instruction: ALEKS

- Pie chart represents student's knowledge state