

Maplets  **for Calculus**

and

Calculus at USC

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Gradual Deployment

Year	Trans Funct	# students per semester	Assessment
02-03	Late (VPR)	60 (1 section) [141] [142]	Overly optimistic; too much syntax; too much typing
03-04	Late (VPR)	170 (3 sections) [141] [142]	More reasonable; less typing/syntax; each week like a project
04-05	Early (ABD)	1000+ (all sections) [141] [142]	Begin to utilize M4C; labs are more “useful”
05-06	Early (ABD)	1000+ (all sections) [141] [142]	Fewer quizzes; extensive use of M4C

Projects & Project Reports

- Roller Coaster Design

Lab: <http://www.math.sc.edu/calclab/141L-S06/labs/RollerCoaster.pdf>

Project: <http://www.math.sc.edu/calclab/141L-S06/labs/Project1.pdf>

- Designer Goblets

Lab / Project:

<http://www.math.sc.edu/calclab/142L-S06/labs/GobletProj106s.pdf>

- Koch Snowflake

Lab / Project:

<http://www.math.sc.edu/calclab/142L-S06/labs/SnowFlakeProj206s.pdf>

- Project Report Guidelines

<http://www.math.sc.edu/calclab/142L-S06/labs/ReportDesc.pdf>

Maplets for Calculus

Collection of more than 50 maplets

... utilizing Maple's *symbolic, numeric, and graphic* capabilities

... to create *student-(and instructor-) friendly* environments

... for learning and teaching fundamental calculus *concepts, manipulations, theory, and applications.*

➤ Maplet

- ✦ Applet created in the Maple programming language

➤ Co-Authors

- ✦ Phil Yasskin (TAMU) and Doug Meade (USC)

Maplets for Calculus

- Pre-Calculus (13)
- Limits (4)
- Derivatives (19)
- Integrals (15)
- Differential Equations (2)
- Sequences / Series (3)
- Curvilinear Coordinates (2)

Maplets for Calculus

➤ Problem Definition

- ✦ Algorithmic problems provide almost endless practice problems
- ✦ Ability to enter user-defined problems allows for use on traditional homework

Maplets for Calculus

- Problem Solution / Checking
 - ✦ Step-by-step approach closely follows standard methods and terminology found in textbooks
 - ✦ Hints are available
 - ✦ Solution is checked **symbolically** step-by-step
 - ✦ Correct solution can be displayed

Maplets for Calculus

➤ Web Access

- ✦ USC/TAMU Students (secure)

<http://calclab.math.tamu.edu/maple/maplets/>

- ✦ TOC/Videos (non-secure)

<http://www.math.sc.edu/calclab/M4C/>

➤ Individual and Classroom Licenses

- ✦ available through Maplesoft's MapleConnect program

http://www.maplesoft.com/products/thirdparty/maplets_calc/

Maplets for Calculus

More Maplets for Calculus at ICTCM 18

- Saturday, March 18, 9:55 – 10:30, Maplesoft booth
 - ✦ Phil Yasskin & Doug Meade
 - ✦ *Demonstration of Maplets for Calculus, and a discussion with the authors.*

- Saturday, March 18, 12:30 – 1:15, Salon VII
 - ✦ Phil Yasskin
 - ✦ *Presentation of a collection of Maplets (applets written with Maple) to assist students and faculty with the learning and teaching of calculus.*