

Glendale College Course Outline of Record Report

Course ID 010776
Created - May 2025

CAM101 : Geometric Dimensioning and Tolerancing

General Information

Author:	• Jorge Palma
Course Code (CB01) :	CAM101
Course Title (CB02) :	Geometric Dimensioning and Tolerancing
Department:	CAM
Proposal Start:	Spring 2026
TOP Code (CB03) :	(0956.80) Industrial Quality Control*
CIP Code:	(15.0702) Quality Control Technology/Technician.
SAM Code (CB09) :	C - Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000654126
Curriculum Committee Approval Date:	05/28/2025
Board of Trustees Approval Date:	07/08/2025
Last Cyclical Review Date:	05/28/2025
Course Description and Course Note:	CAM 101 is an introductory course in the interpretation and application of geometric dimensioning and tolerancing concepts using the latest revision of the American Society of Mechanical Engineers (ASME) Standard Y14.5. This course is designed for students interested in working in the fields of Computer Aided Drafting (CAD), machining, manufacturing, and quality control. This course includes a hands-on inspection lab component for part features and tolerance verification.
Justification:	New Course
Academic Career:	• Credit
Mode of Delivery:	• In-Person
Author:	• Jorge Palma
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	• Manufacturing Technology (Quality control, process control)
Alternate Discipline:	No value
Alternate Discipline:	No value

File Upload

File Upload

Quality Control Inspectors _ Occupational Outlook Handbook_ _ U.S. Bureau of Labor Statistics.pdf

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	108
Total Course Out-of-Class Hours	54
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience Education Status (CB10)

Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	1.5	3
Laboratory Hours	4.5	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	27
Laboratory	81
Studio	0
Total	108
Course Out-of-Class Hours	
Lecture	54
Laboratory	0
Studio	0
Total	54

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation

Prerequisite

ENGR102 - Engineering Print Reading For Industry

Objectives

- Recognize various drafting standards employed in prints.
- Explain GD&T symbols and terminology referenced in a feature control frame such as, datums, features and features of size, material conditions, form tolerances, and location.
- Read dimensions to determine the size of a feature in a drawing.
- Interpret technical blueprints including machine shop methods for forming and finishing metals, including holes and gears.

Entry Standards

Entry Standards	Description
-----------------	-------------

No value

No value

Course Limitations

Cross Listed or Equivalent Course

Description

No value

No value

Requisite Validation**Upload Statistical Validation and/or other documents (if necessary)**

No Value

Specifications**Methods of Instruction**

Methods of Instruction

Lecture

Methods of Instruction

Discussion

Methods of Instruction

Demonstrations

Methods of Instruction

Multimedia

Methods of Instruction

Presentations

Methods of Instruction

Laboratory

Out of Class Assignments

- Assignments that demonstrate critical thinking
- Analyzing technical drawings for compliance to ANSI Y14.5 standard

- Calculating the tolerances call out on the drawing

Methods of Evaluation

Rationale

Exam/Quiz/Test

Exams, Quizzes, and Tests will provide feedback to the instructor

Activity (answering journal prompt, group activity)

Class participation in different projects

Writing Assignment

Written assignments evaluating a drawing

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Bruce A. Wilson	GD&T: Application and Interpretation, 8th Edition	Goodheart-Wilcox Company	2025	979-8-89118-936-2

Other Instructional Materials (i.e. OER, handouts)

No Value

Learning Outcomes

Course Objectives

Define the symbols associated with ANSI Y14.5.

Identify the proper application and interrelationship of geometric symbols.

Analyze blueprints using the ANSI Y14.5 standard.

Evaluate technical drawings for proper usage of and application of Y14.5.

SLOs

Identify geometric tolerance and dimension symbols for inspection.	Expected Outcome Performance: 70.0
Calculate position tolerance using geometric dimension and tolerance.	Expected Outcome Performance: 70.0
Establish a systematic approach to understanding the information presented on a blueprint.	Expected Outcome Performance: 70.0

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Introduction (3 hours)

- History and theory
- ANSI Y 14.5 and related standards
- Symbols, terms, and modifiers
- Feature, features-of-size
- Basic dimensions
- Virtual size
- General rules

Datums (3 hours)

- Definitions and types
- Three-plane concept
- Datum precedence
- Functional selection
- Datums-of-size
- Datum targets

Tolerances of location (true positions) (3 hours)

- True position vs. coordinate tolerances
- Conversion calculations
- Composite Tolerance
- Projected tolerance zone
- Zero tolerances
- Simultaneous vs. separate requirements
- Mathematical and graphical analysis
- Fixed and floating fasteners

Tolerances of Concentricity, runout, orientations, profile, and form (18 hours)

- Concentricity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Perpendicularity
 - Definition
 - Interpretation and application

- Use of MMC, RFS and LMC
 - Use of Datums
- Angularity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Parallelism
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Total Runout
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Profile of a line
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Profile of a surface
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Flatness
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Straightness
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Roundness
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Circularity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Symmetry
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Datums

Total Hours: 27

Laboratory/Studio Content

Introduction (3 hours)

- History and theory
- ANSI Y 14.5 and related standards
- Symbols, terms, and modifiers
- Feature, features-of-size
- Basic dimensions
- Virtual size

- General rules

Datums (15 hours)

- Definitions and types
- Three-plane concept
- Datum precedence
- Functional selection
- Datums-of-size
- Datum targets

Tolerances of location (true positions) (15 hours)

- True position vs. coordinate tolerances
- Conversion calculations
- Composite Tolerance
- Projected tolerance zone
- Zero tolerances
- Simultaneous vs. separate requirements
- Mathematical and graphical analysis
- Fixed and floating fasteners

Tolerances of Concentricity, runout, orientations, profile, and form (48 hours)

- Concentricity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Perpendicularity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Angularity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Parallelism
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Total Runout
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Profile of a line
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Profile of a surface
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Flatness
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Straightness
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums

- Roundness
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Circularity
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Use of Datums
- Symmetry
 - Definition
 - Interpretation and application
 - Use of MMC, RFS and LMC
 - Datums

Total Hours: 81

Additional Information

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Is it possible this course will have a material fee?

No

I have contacted my library liaison (<https://campusguides.glendale.edu/faculty/liaisons>):

No

What term(s) will this course be offered?

Fall/Spring

Will any additional resources be needed for this course? (Click all that apply)

- New Equipment

If additional resources are needed, add a brief description and cost in the box provided.

New Computers for the lab (grant money hopefully)