2020-2021 Pacing Guide **Course: Computer Aided Engineering II** **Grade: 11th and 12th**

Months/Days	UNITS	STANDARDS	CONTENT Topics being covered? What do students need to know? (*nouns*)	ACTIVITIES w/Integration of Technology & Career Ready Practices	ASSESSMENTS What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered?
September - October	**Marking Period 1** CAE-II-Unit 1A Hardware-Software Operating-Systems and Acronyms	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	File management, Scale, printing, Computer terminology, operating system components, input and output devices, hardware, software, Acronyms: CAD, CAFM, CAM, CPU, DOS, FAO, GUI, ROM, RAM, TSOS, VMS	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
October - November	CAE-II- Unit 1B- Hardware-Operating-Systems - Drawing File Extensions	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Ideas and core processes central to this lesson is the software that open the following files: .pdf, .rvt, .bak, .dwg, .dxf, .dxf, .stl, .pln, .ipt	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
October-	CAE-II- Unit 1C-Hardware-Operating-Systems-File Management- Plotting	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Naming Conventions, Folder Systems , Sub-folders, Revision Conventions, drawing scale model space, paper space ASME standards sheet sizes, plot styles , page set up, floating viewport, layout (tiled viewport)	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
November	**Marking Period 2** CAE-II- Unit 2A-Create-Manipulate-Dwg-Information- Orthographic-Coordinates	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Absolute Coordinates Polar Coordinates Relative Coordinates Development drawing view Full Auxiliary drawing view Full section drawing view Isometric drawing view	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
December – January	CAE-II- Unit 2B-Create-Manipulate-Dwg-Information- Pictorial Drawings and	1, 2, 3, 4, 5, 6, 7, 8,	Aligned Sections, Assembly Sections, Explain Axonometric	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5

	Sections	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Drawings (Isometric, Dimetric, Trimetric), Broken-out sections, Full sections, Half sections, Oblique Drawings (Cavalier, Cabinet), Offset sections, Perspective Drawings (One point, Two Point, Three Point), Removed sections, Rotated or revolved sections		
January	CAE-II- Unit 2C-Create-Manipulate-Dwg-Info –AutoCAD 3D commands	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Wireframe display, hidden display, mesh display, primitives, solid models, surface models composite solid, preset ortho viewpoints, 3D coordinates, polysolids, regions, Boolean operations, INTERSECT and HELIX commands, right-hand rule	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
February	**Marking Period 3** CAE-II- Unit 3A-Create-Manipulate-Drawing Information-Dimensioning	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Aligned dimensioning, Progressive dimensioning, Unidirectional dimensioning, baseline dimensioning, bilateral dimensioning, limit dimensioning, unilateral dimensioning,	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
March	CAE-II- Unit 3B-Interpret-Read-Blueprints-Dimensioning - Engineering Tools	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Calipers measures inside/ outside diameters, dial-Type, Digital and vernier calipers, outside, micrometer, depth micrometer, micrometers, inside micrometer	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
April	**Marking Period 4** CAE-II- Unit 4A-Draw-Design-Drawing Assemblies	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	Assembly Drawings, Sub Assembly Drawings, Parts lists (Bill of Materials), General Assembly Drawings, Working assembly drawing, Ballooning, Revision, Sectional views often used when drawing assemblies	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5
May	CAE-II- Unit 4B-Draw-Design-Assemblies-	1, 2, 3, 4, 5, 6, 7, 8,	Reverse engineering, goals,	1, 2, 3, 4, 5, 6, 7, & 8	1, 2, 3, 4, & 5

	Reverse Engineering	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	analysis, device's design and function, redesign, disassembling devices, key components, cost effectiveness, engineering improvements, object functionality		

ASSESSMENTS

1. Lab Activities- Formative
2. Marking period assessments
3. Student peer grading
4. Reflective Discussion
5. Problem Solving- Performance based 3D Assignments that incorporate the lesson topics.

STANDARDS

1. CAEP.9.2.12.C.2- Modify Personalized Student Learning Plans to support declared career goals.
2. CAEP.9.2.12.C.3- Identify transferable career skills and design alternate career plans.
3. CAEP.9.2.12.C.4- Analyze how economic conditions and societal changes influence employment trends and future education.
4. CAEP.9.2.12.C.5- Research career opportunities in the United States and abroad that require knowledge of world languages and diverse cultures.
5. CAEP.9.2.12.C.6- Investigate entrepreneurship opportunities as options for career planning and identify the knowledge, skills, abilities, and resources required for owning and managing a business.
6. CAEP.9.2.12.C.7- Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.
7. CAEP.9.2.12.C.9- Analyze the correlation between personal and financial behavior and employability.
8. ARCH.9-12.9.4.12.B.(1).11 Apply basic organizational, spatial, structural, and constructional principles to the design of interior and exterior space so that design plans are effective.
9. ARCH.9-12.9.4.12.B.(1).2 Employ appropriate representational media to communicate concepts and design.
10. ARCH.9-12.9.4.12.B.(1).9 Develop technical drawings drafted by hand and computer-generated plans to design structures.
11. ARCH.9-12.9.4.12.B.1 Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
12. ARCH.9-12.9.4.12.B.14 Develop and interpret tables, charts, and figures to support written and oral communications.
13. ARCH.9-12.9.4.12.B.18 Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
14. ARCH.9-12.9.4.12.B.19 Employ critical thinking and interpersonal skills to resolve conflicts.
15. ARCH.9-12.9.4.12.B.2 Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
16. ARCH.9-12.9.4.12.B.21 Conduct technical research to gather information necessary for decision-making.
17. ARCH.9-12.9.4.12.B.22 Create and implement project plans to accomplish realistic planning in design and construction situations, considering available resources and requirements of a project/problem.
18. ARCH.9-12.9.4.12.B.23 Describe how design and construction project plans and schedules respond to unexpected events and conditions.
19. ARCH.9-12.9.4.12.B.3 Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities.

20. ARCH.9-12.9.4.12.B.31 Employ collaborative/groupware applications to facilitate group work.
21. ARCH.9-12.9.4.12.B.33 Use computer-based equipment (containing embedded computers or processors) to control devices.
22. ARCH.9-12.9.4.12.B.37 Examine how roles and responsibilities among trades/professions work in concert to complete a project/job.
23. ARCH.9-12.9.4.12.B.38 Examine all factors affecting the project planning process.
24. ARCH.9-12.9.4.12.B.47 Employ leadership skills to accomplish goals and objectives.
25. ARCH.9-12.9.4.12.B.52 Employ mentoring skills to assist others.
26. ARCH.9-12.9.4.12.B.59 Identify and demonstrate positive work behaviors and personal qualities needed to succeed in the classroom and/or to be employable.
27. ARCH.9-12.9.4.12.B.61 Demonstrate skills related to seeking and applying for employment in a desired job.
28. ARCH.9-12.9.4.12.B.62 Maintain a career portfolio to document knowledge, skills, and experience in a career field.
29. ARCH.9-12.9.4.12.B.68 Examine licensing, certification, and credentialing requirements at the national, state, and local levels to maintain compliance with industry requirements.
30. ARCH.9-12.9.4.12.B.69 Examine employment opportunities in entrepreneurship as an option for career planning.
31. ARCH.9-12.9.4.12.B.7 Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.
32. ARCH.9-12.9.4.12.B.74 Read, interpret, and use technical drawings, documents, and specifications to plan a project.
33. ARCH.9-12.9.4.12.B.75 Use and maintain appropriate tools, machinery, equipment, and resources to accomplish project goals.

ACTIVITIES- Career Ready Practices

1. MANU.9-12.9.4.12.M.(1).5 Strategize ways to improve production processes in order to achieve manufacturing goals and meet customer and product standards.
2. MANU.9-12.9.4.12.M.(3).5 Develop hands-on knowledge of equipment operation to identify maintenance needs and maximize performance.
3. MANU.9-12.9.4.12.M.12 Develop and interpret tables, charts, and figures to support written and oral communications.
4. MANU.9-12.9.4.12.M.13 Listen to and speak with diverse individuals to enhance communication skills.
5. MANU.9-12.9.4.12.M.27 Employ computer operations applications to manage tasks.
6. MANU.9-12.9.4.12.M.63 Employ information management techniques and strategies to assist in decision-making.
7. MANU.9-12.9.4.12.M.64 Employ planning and time management skills and tools to enhance results and complete work tasks.
8. MANU.9-12.9.4.12.M.65 Describe and employ technical knowledge and skills required for careers in manufacturing in order to perform basic workplace activities.