DP AA SL Planner – Unit 2: Derivative rules

Teacher(s)	Jessica Vaughn	**Subject group and course**	Mathematics – Analysis & Approaches		
Course part and topic	Topic 5 – Derivative rules AA SL 5.3, 5.4, 5.6 Differentiation Review AA SL 1.9, 2.1-2.11	**SL or HL/Year 1 or 2**	SL, Yr 2	**Dates**	Late August – Late October
Unit description and texts		**DP assessment(s) for unit**			
Measuring and describing change in two variables. Identifying limits, continuity, average rate of change, and instantaneous rate of change. Oxford AA textbook: Chapter 5: Measuring change: Differentiation		Assessment #2 (5.1-5.2, 1.1-1.3) Assessment #3 (5.3, 5.4, 5.6, 1.7, 1.9, 2.1-2.2) Assessment #4 (5.6, 2.3-2.7) All assessments will use previous IB exam questions from the Questionbank			

INQUIRY: establishing the purpose of the unit

Transfer goals *List here one to three big, overarching, long-term goals for this unit. Transfer goals are the major goals that ask students to "transfer" or apply, their knowledge, skills, and concepts at the end of the unit under new/different circumstances, and on their own without scaffolding from the teacher.*
Students should be able to: ● Identify limits of functions from tables and graphs. ● Explain average and instantaneous rates of change. ● Connect average rate of change to the concept of a derivative. ● Understand all basic derivative rules.

ACTION: teaching and learning through inquiry

Content/skills/concepts—essential understandings	**Learning process** *Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.*
<u>Students will know the following content:</u> ● Derivative rules: o Power rule o Derivative of sin and cos o Product rule and quotient rule o Chain rule <u>Students will develop the following skills:</u> ● Take derivatives of many types of functions including: polynomial, rational, trig, composite, and combinations of these types. ● Implement the derivative rules to accurately find derivative functions. <u>Students will grasp the following concepts:</u> ● Find and use derivatives for most types of functions.	Learning experiences and strategies/planning for self-supporting learning: ☒Lecture ☐Socratic seminar ☒ Small group/pair work ☒ PowerPoint lecture/notes ☒ Individual presentations ☐ Group presentations ☐ Student lecture/leading ☐ Interdisciplinary learning Details: Each section will start with direct instruction and introduction from the instructor. Students will work in small groups to solve problems and complete explorations. Discussions regarding method, alternate approaches, and efficiency will be regularly included in the class. Teacher will provide multiple resources electronically and in person to support student learning. ☐ Other/s:
	Formative assessment: IB Questionbank Practice problems TOTD – quick checks HW quizzes: properties of derivatives, product rule

	Summative assessment: Assessment #2 (5.1-5.2, 1.1-1.3) Assessment #3 (5.3, 5.4, 5.6, 1.7, 1.9, 2.1-2.2) Assessment #4 (5.6, 2.3-2.7) Summative assessments include spiral review from year 1 content
	Differentiation: ☒Affirm identity—build self-esteem ☐Value prior knowledge ☒Scaffold learning ☒ Extend learning Details: Derivative rules will build on the concept of derivatives in unit 1. Derivatives will be the focus of most of first semester, so it is important that the concept and all rules are understood. Many representations of derivatives and many resources will be used in class with access to additional resources for students who want or need more practice.

Approaches to learning (ATL)

Check the boxes for any explicit approaches to learning connections made during the unit. For more information on ATL, please see the guide.

☒Thinking
☒ Social
☒ Communication
☐ Self-management
☐ Research

Details:

Thinking - making connections within the content and applications

Social – partner work

Communication – utilizing the language and notation of calculus

Language and learning *Check the boxes for any explicit language and learning connections made during the unit. For more information on the IB's approach to language and learning, please see the guide.*	**TOK connections** *Check the boxes for any explicit TOK connections made during the unit*	**CAS connections** *Check the boxes for any explicit CAS connections. If you check any of the boxes, provide a brief note in the "details" section explaining how students engaged in CAS for this unit.*
☐Activating background knowledge ☐ Scaffolding for new learning ☒ Acquisition of new learning through practice ☒ Demonstrating proficiency **Details:** The topic of calculus will be new to the students. The vocabulary and notation will be demonstrated and learned through practice. Multiple notations are commonly accepted in calculus, all will be taught and used throughout the unit. Students will have ample opportunities to utilize the vocabulary and notation in class to get feedback from both the instructor and other students.	☐ Personal and shared knowledge ☐ Ways of knowing ☒ Areas of knowledge ☐ The knowledge framework **Details**: Students will be shown proofs of the different derivative rules to solidify understanding.	☐ Creativity ☐ Activity ☐ Service **Details**: N/A

Resources *List and attach (if applicable) any resources used in this unit*
Textbook - Mathematics: Analysis & Approaches. Chapter 5 IB QuestionBank Calculus, A Complete Course by Mark Sparks Master Math Mentor Khan Academy Delta Math www.flippedmath.com