## شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية


## الخطة الفصلية المسار المتقدم



## التواصل الاجتماعي بحسب الصف الثاني عشر المتقدم


## روابط مواد الصف الثاني عشر المتقدم على تلغرام

| | | | |
|---|---|---|---|
| التربية الاسلامية | اللغة العربية | اللغة الانجليزية | الرياضيات |

## المزيد من الملفات بحسب الصف الثاني عشر المتقدم والمادة رياضيات في الفصل الثاني

| | |
|---|---|
| 1 | أسئلة الامتحان النهائي الالكتروني والورقي - بريدج |
| 2 | حل اختبار تجريبي يحاكي الامتحان النهائي وفق الهيكل الوزاري |
| 3 | اختبار تجريبي يحاكي الامتحان النهائي وفق الهيكل الوزاري |
| 4 | حل تجميعة أسئلة بونس متوقعة في الامتحان النهائي |
| 5 | تجميعة أسئلة بونس متوقعة في الامتحان النهائي |

UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

الإمارات العربية المتحدة
وزارة التربية والتعليم

# Grade 12 Advanced Stream Mathematics
# Scheme of Work, Term 2, Academic Year 2022-2023

**Purpose**
- to define the **required** Advanced Stream Mathematics Student Learning Outcomes to be covered during the term for this grade
- to **recommend** the pace at which the Student Learning Outcomes are to be covered. The term's content is broken down into nine teaching weeks, allowing the coverage of topics within each week to be flexible.

**Assessment**
- Assessment details for Term 2 will be communicated separately.

Teachers should incorporate the Standards for Mathematical Practice (SMPs) in their instruction when and where appropriate. The Standards for Mathematical Practice are

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

**Why are the Standards for Mathematical Practice important?**
The Standards for Mathematical Practice set expectations for using mathematical language and representations to reason, solve problems, and model in preparation for careers and a wide range of college majors.

| Week 1: Jan. 2 – 6, 2023 | | |
|---|---|---|
| **Chapter 4 – Applications of Differentiation** | | |
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C4L3 – Maximum and Minimum Values | • Learn the notions of local and absolute extrema<br>• Find the critical points of a given function<br>• Find the local extrema of a given function<br>• Find the absolute extrema of a given function | • Apply first Derivatives to find critical points of various functions<br>• Find maximum and minimum values<br>• Find the equations of tangent and normal lines to various functions |
| C4L4 – Increasing and Decreasing Functions | • Identify increasing and decreasing functions<br>• Find the local extrema of a given function using the First Derivative Test | • Find the intervals of increase or decrease of a function<br>• Find the local extrema<br>• Identify the type of local extrema |



| Week 2: Jan. 9 – 13, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C4L5 – Concavity and the Second Derivative Test | • Determine the concavity of a function using the first and second derivatives<br>• Learn the notion of an Inflection Point and find one<br>• Find the local extrema of a function using the Second Derivative Test | • Apply the second derivative test to identify the inflection point of a function<br>• Apply the second derivative test to identify the concavity of a function |
| C4L6 – Overview of Curve Sketching | • Sketch the graph of a given function using its properties and its first and second derivative | • Draw the graph of various functions by using the derivative concepts |

| Week 3: Jan. 16 – 20, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C4L7 – Optimization | • Solve mathematical and real-life optimization problems | • Solve optimization problems<br>• Use differentiation techniques to solve real life problems on optimization |

| Week 4: Jan. 23 – 27, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C4L8 – Related Rates | • Solve mathematical and real-life problems on related rates | • Solve related rate problems |
| C4L9 – Rates of Change in Economics and the Sciences | • Solve economical and scientific problems on extrema | • Use differentiation techniques to solve real life problems on rates of change in economic and science |



| Week 5: Jan. 30 – Feb. 3, 2023 | | |
|---|---|---|
| **Chapter 5 – Integration** | | |
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C5L1 – Antiderivatives | • Find the antiderivative of a given function<br>• Understand the notion of indefinite integral as an finding an antiderivative<br>• Compute straightforward indefinite integrals | • Find an antiderivative for a given function<br>• Recognize the indefinite integral as an antiderivative for all functions<br>• Find the indefinite integral of various functions |

| Week 6: Feb. 6 – 10, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C5L2 – Sums and Sigma Notation | • Use sigma notation to compute basic summation | • Use sigma notation to find sums for expressions involving constants "c", "i","i squared" |
| C5L3 – Area | • Estimate the area under a curve on a given interval using rectangles<br>• Compute the area under a curve using summations and limits | • Estimate the area under a curve by using rectangular partitions and sigma notation<br>• Find the area under a curve using Riemann sum |

| Week 7: Feb. 13 – 17, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C5L4 – The Definite Integral | • Understand the notion of a definite integral<br>• Compute a definite integral using Riemann sums<br>• Find the area under a curve on a given interval using Riemann sums<br>• Learn the properties of definite integrals<br>• Apply the Integral Mean Value Theorem | • Define the definite integral on a certain closed interval<br>• Find the area under the curves using definite integral<br>• Find the area between two curves using definite integral<br>• Apply the Mean Value Theorem |

| Week 8: Feb. 20 – 24, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C5L5 – The Fundamental Theorem of Calculus | • Learn the Fundamental Theorem of Calculus (Part I) and use it to compute various definite integrals<br>• Learn the Fundamental Theorem of Calculus (Part II) and use it to compute derivatives of functions defined as definite integrals<br>• Write the equation of a tangent line at a given point to a function defined as definite integral | • Apply the Fundamental Theorem of Calculus for different functions<br>• Understand the converse of Fundamental Theorem of Calculus<br>• Write the equation of tangent and normal line at a given point |

| Week 9: Feb. 27 – March 3, 2023 | | |
|---|---|---|
| **Lessons** | **Student Learning Outcomes** | **MOE Standards** |
| C5L6 – Integration by Substitution | • Compute integrals using substitution | • Use the substitution method to find different integrals |

| Week 10: March 6 – 10, 2023<br>Week 11: March 13 – 17, 2023<br>Week 12: March 20 – 24, 2023 |
|---|
| **Term 2 Revision and End-of-Term Exam**<br>**Exam date to be determined by the Assessment Directorate** |