

# LOCALLY DEVELOPED COURSE OUTLINE

Competencies in Math15-3

Competencies in Math15-5

Submitted By:

**Chinook's Edge School Division No. 73**

Submitted On:

**Jun. 4, 2014**

## Course Basic Information

| <u>Outline Number</u> | <u>Hours</u> | <u>Start Date</u> | <u>End Date</u> | <u>Development Type</u> | <u>Proposal Type</u> | <u>Grades</u> |
|-----------------------|--------------|-------------------|-----------------|-------------------------|----------------------|---------------|
| 15-3                  | 62.50        | 09/01/2014        | 08/31/2018      | Acquired                | New                  | G10 G11 G12   |
| 15-5                  | 125.00       | 09/01/2014        | 08/31/2018      | Acquired                | New                  | G10 G11 G12   |

### Course Description

**This 5 credit course aims to build confidence in students by addressing cross-curricular competencies in the context of mathematics. The course will provide learning opportunities that will develop student competency in knowing how to learn, thinking critically, applying multiple literacies, identifying and solving complex problems, and demonstrating good communication skills. The course will enhance numeracy skills in students, develop their critical thinking and problem solving abilities, and set them up for success in future courses in mathematics.**

### Course Prerequisites

## **Sequence Introduction (formerly: Philosophy)**

**This course aims to improve student mastery of mathematical skills, concepts and ideas. Students will extend their knowledge beyond performing routine operations and will be encouraged to explore a deeper understanding of mathematical concepts through critical thinking and exploration exercises. Students will collaborate with their teacher and peers on exploring multiple ways to solve problems. As such, students will be challenged to become engaged learners, critical thinkers, and competent problem solvers.**

## **Student Need (formerly: Rationale)**

**Inspiring Education has outlined the skills and attributes we expect students to possess as they graduate from high school.**

**We want students to be numerate, have good communications skills, be critical thinkers and problem solvers. The study of mathematics plays a pivotal role in developing these skills, and as such it is important that students experience success in a high school math program that best supports their aspirations in high school and beyond. However, the study of mathematics is not a positive experience for all students. Some students struggle to make sense of mathematics as they experience gaps in previous learning and may require additional resources and strategies to fill in these gaps. While the required help is often within reach in their school environment, the one resource that is often lacking is time as the rate at which the content is covered may not allow for mastery learning of important skills.**

This course aims to give these students an opportunity to be successful in mathematics and have them reach their their full potential as engaged learners by providing them with additional strategies, resources and time.

## **Scope and Sequence (formerly: Learner Outcomes)**

**In general, the goal of this course is to enhance the numeracy and literacy skills of students. Student will use numeracy willingly and confidently in their everyday lives and will be able to communicate effectively using the language of mathematics.**

**Specifically, the aims of the Competencies in Mathematics Course are to enable students to:**

- 1) Enjoy mathematics, and develop an appreciation for the role of mathematics their everyday lives
- 2) Communicate clearly and confidently using the language of mathematics
- 3) Develop logical, critical and creative thinking
- 4) Develop patience and persistence in problem solving
- 5) Demonstrate fluency with mental math and estimation
- 6) Appreciate the role of technology in creating deeper mathematical understanding
- 7) Appreciate the contribution of mathematics to other disciplines

## **Guiding Questions (formerly: General Outcomes)**

- 1 Students will communicate mathematical ideas in a variety of ways and contexts, and begin to view mathematics as useful and relevant by making connections to other disciplines.**
- 2 Students will gain knowledge, understanding, and skills through study and interaction with others.**
- 3 Students will identify and solve complex problems.**
- 4 Students will be able to think critically and use mathematical reasoning to make sense of mathematics.**
- 5 Students will select and apply multiple literacies to solve problems and to enhance learning.**

## Learning Outcomes (formerly: Specific Outcomes)

|   |           |
|---|-----------|
| <b>1 Students will communicate mathematical ideas in a variety of ways and contexts, and begin to view mathematics as useful and relevant by making connections to other disciplines.</b> | 15-3 15-5 |
| 1.1 Communicate effectively using the language of mathematics.  | X X       |
| 1.2 Apply language, knowledge, and strategies to build common understandings across disciplines.  | X X       |
| <b>2 Students will gain knowledge, understanding, and skills through study and interaction with others.</b>   | 15-3 15-5 |
| 2.1 Implement and refine strategies to maximize learning in a variety of authentic learning situations.   | X X       |
| 2.2 Apply knowledge of patterns, number, shape, space, statistics and probability to help me observe, investigate and interact with the world.  | X X       |
| 2.3 Apply efficient and mental calculation strategies intuitively when solving complex problems.  | X X       |
| <b>3 Students will identify and solve complex problems.</b>   | 15-3 15-5 |
| 3.1 Establish clear criteria to solve problems.   | X X       |
| 3.2 Develop and apply problem solving strategies to generate possible solutions using a variety of techniques, strategies, and processes.   | X X       |
| 3.3 Develop the best possible solution by evaluating the validity of alternate solutions.   | X X       |
| <b>4 Students will be able to think critically and use mathematical reasoning to make sense of mathematics.</b>   | 15-3 15-5 |

|   |     |
|---|-----|
| 4.1 Express generalizations about numbers, quantities, and relations and functions when analyzing data. | X X |
| 4.2 Analyze patterns effectively to identify rules and trends and make predictions.                     | X X |
| 4.3 Evaluate reasoning and strategies used in the problem solving process.                              | X X |

|  |                  |
|--|------------------|
| <b>5 Students will select and apply multiple literacies to solve problems and to enhance learning.</b>   | <b>15-3 15-5</b> |
| 5.1 Demonstrate effective use of technology as a problem solving tool.                                   | X X              |
| 5.2 Simplify complex problems through the use of technology.   | X X              |
| 5.3 Integrate multiple literacies in the problem solving process.  | X X              |
| 5.4 Demonstrate the use of concrete materials, technology, and visual representations to solve problems. | X X              |

## Facilities or Equipment

### Facility

There are no special facilities or spaces required to teach this course. A standard classroom is suitable and sufficient.

Facilities:

## **Equipment**

There is no special equipment recommended or required to teach this course.

## **Learning and Teaching Resources**

As this is a new course, a ready made resource is currently not available. As such, a variety of resources will be developed by the teacher(s) of the course. This will include a variety of assignments and projects (which will require the use of technology and/or manipulatives) as well as assessment materials.

## **Sensitive or Controversial Content**

It is expected that all issues and texts that may be controversial or sensitive in nature, be discussed with the school administration prior to their coverage in class.

## **Issue Management Strategy**

## **Health and Safety**

All Chinook's Edge School Division No. 73 procedures regarding planning, parental permission, risk assessment, etc., will be followed in accordance with Chinook's Edge Administrative Procedure 2-09 *Field Trips & Excursions*, in the event that students are taken off campus.

## **Risk Management Strategy**

### **Statement of Overlap with Existing Programs**

**There is no significant overlap with provincial programs of study. The course is designed to enhance communication, critical thinking and problem solving skills to prepare students for success in future mathematics courses.**

### **Student Assessment**

**Formative assessment may be determined by incorporating a daily journal and will include teacher/student discussions in regards to strengths, weaknesses and areas of improvement in critical thinking, problem solving and communication.**

**Summative assessment will include completion of daily assignments, quizzes and unit exams that focus on what the course objectives. Project based activities may be used for either formative or summative assessments.**

### **Course Approval Implementation and Evaluation**

The Associate Superintendent of Learning Services, in collaboration with the school Principal, will evaluate and monitor courses to ensure that all requirements by Alberta Education, the developing school board, and by Chinook's Edge School Division No. 73 are met. The school Principal will supervise course implementation at the school level, and course pre-requisites, copyright privileges, and conditions listed by the developing board will be adhered to.

