

LONGMEADOW HIGH SCHOOL
INDEPENDENT STUDY
GENERAL INFORMATION

- Students may seek approval for credit granting study in areas of unique interest that are not adequately reflected in regular courses. While every effort is made to assist students in establishing the desired independent study, students are not guaranteed independent study approvals.

- Courses offered by LHS cannot be taken as an Independent study unless it is determined that over the course of the student's LHS enrollment, there is no possibility of taking the regular class, due to schedule conflicts that cannot be resolved (*as determined by the guidance counselor*).

- Independent studies are supervised by LHS faculty members or qualified administrators. Such supervision is done in addition to the standard contract workload. LHS personnel are neither expected nor required to agree to such supervision. At the discretion of the principal, a student may be granted special permission to take coursework outside of LHS supervision under the Independent Study option.

- Required approvals for Independent study
 - Supervising teacher (required for all IS contracts)
 - Department chair (required for all IS contracts)
 - Parent (required for all IS contracts)
 - Guidance counselor (required for all IS contracts)

- Contract forms are available in the Guidance Department. Fully completed and approved forms must be submitted by the 15th day of the quarter in which credit is being granted.

- Independent study may be available to students on either a graded or pass/fail basis for a maximum of 1.25 credits per quarter.

- The independent study option may replace one of the required six major courses in which LHS students are expected to enroll each year.

- An independent study is a contract and is the equivalent of a course. Students who enter into an independent study contract are expected to complete all agreed upon projects, research and other work. Students who are approved for independent studies are expected to observe all attendance and academic regulations. Additionally, those approved for independent study are expected to be highly motivated and able to work with minimal direct supervision.

Longmeadow High School – Independent Study Contract

Please print

1. Student: _____ ID#: _____
2. Expected year of graduation: _____ Homeroom #: _____
3. Faculty Advisor: ____Mr. Keller_____ Department: _Science__
4. Project Title: ____Multivariable Calculus_____

SCHEDULE

Circle the blocks and days involved with the Independent Study

- I. Block: A B C D E F G H
- II. Day: 1 2 3 4 5 6 7 8
- III. LHS Room # _222_

GRADING

- I. _X_ Graded (A-F) ___ Pass/Fail (P or F)
- II. Credits per quarter: _1_Q1 _1_Q2 ___Q3 ___Q4

APPROVAL SIGNATURES

1. **STUDENT:** I accept and understand the conditions of this contract and the expectations associated with independent learning.
Signature _____ Date _____
2. **PARENT:** I give permission for my child to pursue this contract.
Signature _____ Date _____
3. **FACULTY ADVISOR:** I agree to supervise the student and that this contract constitutes an educationally sound program. I agree to monitor and evaluate the student's performance according to the criteria outlined in the learning contract.
Signature _____ Date _____
4. **DEPARTMENT CHAIR:** I have reviewed this contract and certify that it is an appropriate alternative for credit in my department.
Signature _____ Date _____
5. **COUNSELOR:** This contract is consistent with the requirements of LHS and the student's course of study.
Signature _____ Date _____

Longmeadow High School – Independent Study Contract

Please Print

Project Title __Multivariable Calculus_____

Faculty Advisor __Mr. Keller_____

Start date: _____

Completion date: _____

Describe the project in detail. Be specific as to goals, objectives, research and learning outcomes.

 **Summarize the project**

Students will gain an introductory understanding of multivariable calculus through notes, problem sets, and frequent quizzes.

 **Learning goals and objectives:**

Students will understand the basics of three-dimensional geometry, vector functions, partial derivatives, and multiple integrals.

 **Project Outline:**

Week	Content
1	Parametric equations and curves
2	Polar coordinates
3	Conic sections
4	3D coordinate systems, vectors
5	Dot product and cross product
6	Equations of lines and planes
7	Equations of cylinders and quadratic surfaces
8	Vector functions and their derivatives
9	Arc length and curvature, motion in space
10	Functions of several variables
11	Partial derivatives
12	Tangent planes and linear approximations
13	The chain rule
14	Directional derivatives and the gradient vector
15	Minimum and maximum values, Lagrange multipliers
16	Introduction to double integrals and iterated integrals
17	Double integrals
18	Applications of double integrals and surface area

 **Learning activities: Describe what the student will do to meet course objectives**

Students will read notes provided and then use those ideas to complete a weekly problem set related to those notes. Understanding will be evaluated with a weekly quiz based upon those problem sets.

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Materials/texts/resources to be used in the project:

PDF notes provided by the instructor.

Evaluation criteria:

Students will take a quiz weekly based upon the notes of that week and the related practice problem set.