GENERAL MESA COURSE, PACING GUIDE

**Purpose:** To use STEM projects, mind-sets, and disciplines to each and reenforce academic and personal growth in MESA school cohorts.

August - October

**Focus:** Facilitate the development of a STEM classroom culture and prepare students for

MESA Engineering projects.

**GOALS AND OBJECTIVES**

# Goal: Introduction to MESA

*Objectives:*

* 1. Use MESA resources to inform/recruit students, i.e. video, PowerPoint presentation, pamphlet/brochures, etc.
  2. Have students complete online application/registration for program
  3. Pass out and collect completed Parental Authorization forms and enroll students by your center’s given deadlines.
  4. Attempt to meet with parents during the school’s Back to School Night or another convenient time in early Fall to gain parental buy-in.

*Time:*

2-3 class periods AND one afterschool period

1. **Goal: Build a “Sense of Belonging” and Set the Stage for Team/Project Based Learning**

*Objectives:*

* 1. Engage in class and team-building activities
  2. Do “introductory activities/projects” and “introductory/small scale investigations” to to set the stage for MESA projects
  3. Engage in MESA Legacy Project (eg. Legacy Egg Drop, Mousetrap Car, etc.)

*Time:*

2-3 weeks (5 -7 Introductory Projects over 1-2 weeks, 1 week for challenge)

# Goal: Introduce Engineering thinking and begin units

Objectives:

* 1. Review and/or teach the Engineering Design Process. Use resources provided (through MARS site) if needed.
  2. Review “Engineering Lab Book” and its requirements
  3. Begin implementing MESA curriculum units and work on MESA projects.

*Time:*

4-6 weeks (1 week for MESA Day discussion and EDP, the rest for first unit)

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**Calendar Snapshot**

|  |  |  |
| --- | --- | --- |
| August | September | October |
| * Recruit and enroll students\_\_\_\_ * Discuss history and purpose of MESA\_\_\_\_\_ * Begin class and team building activities\_\_\_\_\_ * Begin Introductory activities\_\_\_\_\_ | * Continue “Introductory Activities”\_\_\_\_\_ * Meet with parents at open house, back to school, etc.   \_\_\_\_\_\_\_   * Share plan for preparing for MESA day and/or other MESA challenges\_\_\_\_\_ * Review Engineering Design Process, Lab Book, etc.\_\_\_\_\_ | * Begin MESA Curriculum/Project Units\_\_\_\_\_\_\_\_\_\_ |

November - January

**Focus:** Intensify focus in preparing for MESA Day by engaging students STEM learning and problem solving.

**GOALS AND OBJECTIVES**

1. **Goal: Work on MESA Curriculum Units/Projects**

*Objectives:*

* 1. Continue using UCR MESA Project Curriculum to support the implementation of MESA projects.

*Time:*

6-8 weeks

# Goal: Encourage the Development of a “Preparing for College” Mentality *Objectives:*

* 1. Have your local center engage in MESA Individual Academic Planning (IAP) with your students (MESA Staff and IAP Facilitators).
  2. Continue facilitating college/university workshops at your school (MESA Staff)

*Time:*

2-3 class periods

# Goal: Prepare for MESA Day Competitions

*Objectives:*

* 1. Introduce students to MESA Projects, rules, etc..
  2. Inform students regarding sequence of MESA projects leading up to MESA Day.
  3. Assess interest in various projects.
  4. Organize students in teams according to their interest and commitment to projects.
  5. Secure transportation, chaperones, other considerations for trip.
  6. Host local school competition (optional).t

*Time:*

2-3 class periods/out of school time

**Calendar Snapshot**

|  |  |  |
| --- | --- | --- |
| November | December | January |
| * MESA Curriculum/Project Units\_\_\_\_\_ * Continue IAP Presentations/Workshops (MESA Staff)\_\_\_\_\_\_ | * MESA Curriculum/Project Units\_\_\_\_\_ | * Assign teams to MESA Projects\_\_\_\_\_\_ * MESA Curriculum/Project Units\_\_\_\_\_ * Register teams for competitions\_\_\_\_\_ * Host Pre-Competition at local school (optional)\_\_\_\_\_\_ |

February - April

**Focus:** Encourage excitement about math and science through MESA Day, MESA Day Regionals

**GOALS AND OBJECTIVES**

# Goal: Students *participate* in MESA Day

*Objectives:*

* 1. Students come to MESA Day prepared to have fun, compete and demonstrate a level of competency..
  2. Confirm pre-registration of teams for competitions.
  3. Confirm transportation, chaperones, other considerations for trip.

*Time:*

Out of school time

# Goal: Evaluate MESA Day participation and results

*Objectives:*

* 1. Assess performance of your students. Congratulate students that you feel did well in competition.
  2. Have students reflect on performance of projects; how could they have improved their projects?
  3. Have students reflect on their experience at MESA Day; what did they like? What would they change about the day?
  4. Continue working on MESA curriculum.

*Time:*

2-3 class periods

1. **Goal: Work on MESA Curriculum Units/Projects**

*Objectives:*

* 1. Continue using MESA Project Curriculum to support the implementation of MESA projects.

*Time:*

6-8 weeks

|  |  |  |
| --- | --- | --- |
| February | March | April |
| * Begin final intensive preparation for MESA Day Competitions\_\_\_\_\_ * MESA Curriculum/Project Units\_\_\_\_\_ | * MESA Day Project Competition (Prelims)\_\_\_\_\_ | * MESA Day Regional Competition\_\_\_\_\_\_ * MESA Curriculum/Project Units\_\_\_\_\_ |

May - June

**Focus:** Finish the year well, with continued excitement for STEM and MESA.

**GOALS AND OBJECTIVES**

# Goal: Students participate in MESA Capstone Project

*Objectives:*

* 1. Have students asses their year in MESA, projects built, competitions, etc.
  2. Have students determine their most interesting projects and activities
  3. Organize students in teams according to their interests and such
  4. Inform students regarding a “Capstone Project” and what it means
  5. Students choose a project, and begin working on it
  6. Students accomplish project, and present findings

*Time:* 3-4 weeks

# Goal: Reward Students and Close the Year

*Objectives:*

* 1. Incentives for most active middle school and high school.
  2. Host local event to acknowledge what students achieved in MESA.
  3. Participate in year-end recognition banquet.
  4. Begin recruiting students for next year.
  5. Coordinate with school Counselors to schedule students for MESA at next grade level.

*Time:*

2-3 class periods/out of class time

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| --- | --- | --- |
| May | June | July |
| * MESA Capstone Project\_\_\_\_ * MESA Capstone Project presentation, assessments\_\_\_\_\_ * School site end of year festivities\_\_\_\_\_ | * End of year | VACATION!!!!!!! |