

Research Planning

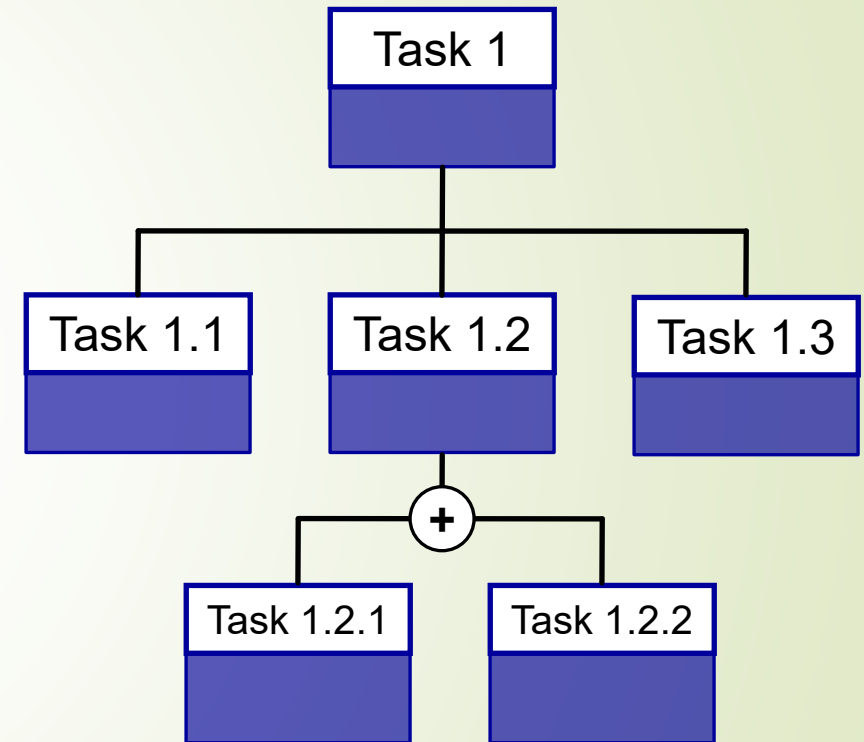
Part 2: Project Planning Tools

Project Planning

- Once you have a good hypothesis and have decided how to test it, you still need to plan out how to carry out the testing
- Have you ever started a task only to find...
 - Missing some necessary material
 - Should have done things in a different order
 - Not enough time was allocated to a given task
 - Need some help from another person
 - Other problems?

Project Planning: Task Trees

- ▶ Tool for _____ of project
- ▶ Displays a _____ associated with a project
- ▶ Highest or “root” level
 - ▶ Primary task
 - ▶ Should only have one
 - ▶ For your proposal, this would be the *medium term objective (e.g., testing a hypothesis)*
- ▶ Parent and descendent tasks
 - ▶ Each task broken into subtasks
 - ▶ Descendent tasks make up the “leaves” of the task tree
 - ▶ Objectives of each descendent task must be achieved to accomplish the parent task
- ▶ What if more than one option is available for achieving a task?
 - ▶ Use an “or” operator (circle with a + in it)

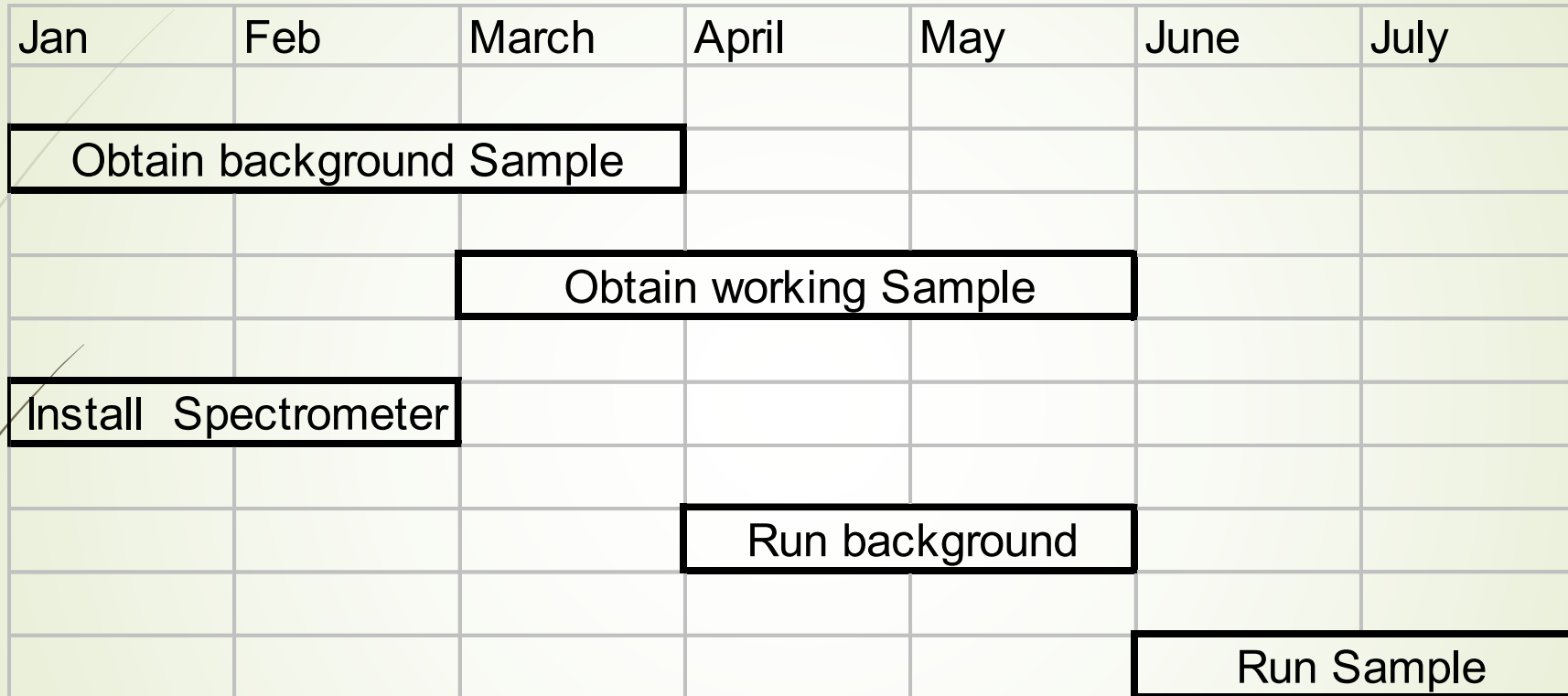


Freeware resource: *Freemind* –for “mind maps” (brainstorming) and task trees

Project Planning: Gantt Charts

- Sometimes called a [milestone chart](#)
- Developed by Henry Gantt in early 1900s
 - Mechanical engineer & industrial manager; ASME award in his honor
- Primary value
 - **Scheduling of tasks**
 - **Monitoring progress (milestones)**
- Very common – among most widely used tools for scheduling
- Format:
 - **Horizontal bar graph or table**
 - Two axes
 - **Tasks and subtasks**
 - **Time**
 - Can be modified to include other information as well

Project Planning: Gantt Charts



- Note two “axes”
- Easy to make overcomplicated
- Several free software tools available for making these, including spreadsheet templates

Project Planning: Deployment Charts

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- Most research projects done in teams
 - In academia
 - Professors
 - Students
 - Research staff
 - External Collaborators
- Challenge:
 - Who is going to be responsible for a task?
 - Will more than one person work on a task or subtask?
 - What will the roles of individual team members be if multiple people are involved?
 - Where will work be done?

- Form
 - Table
 - Tasks in rows
 - Team members in columns
- Other considerations
 - Will samples need to be shipped?
 - How will various team members communicate?
 - Will travel be required?

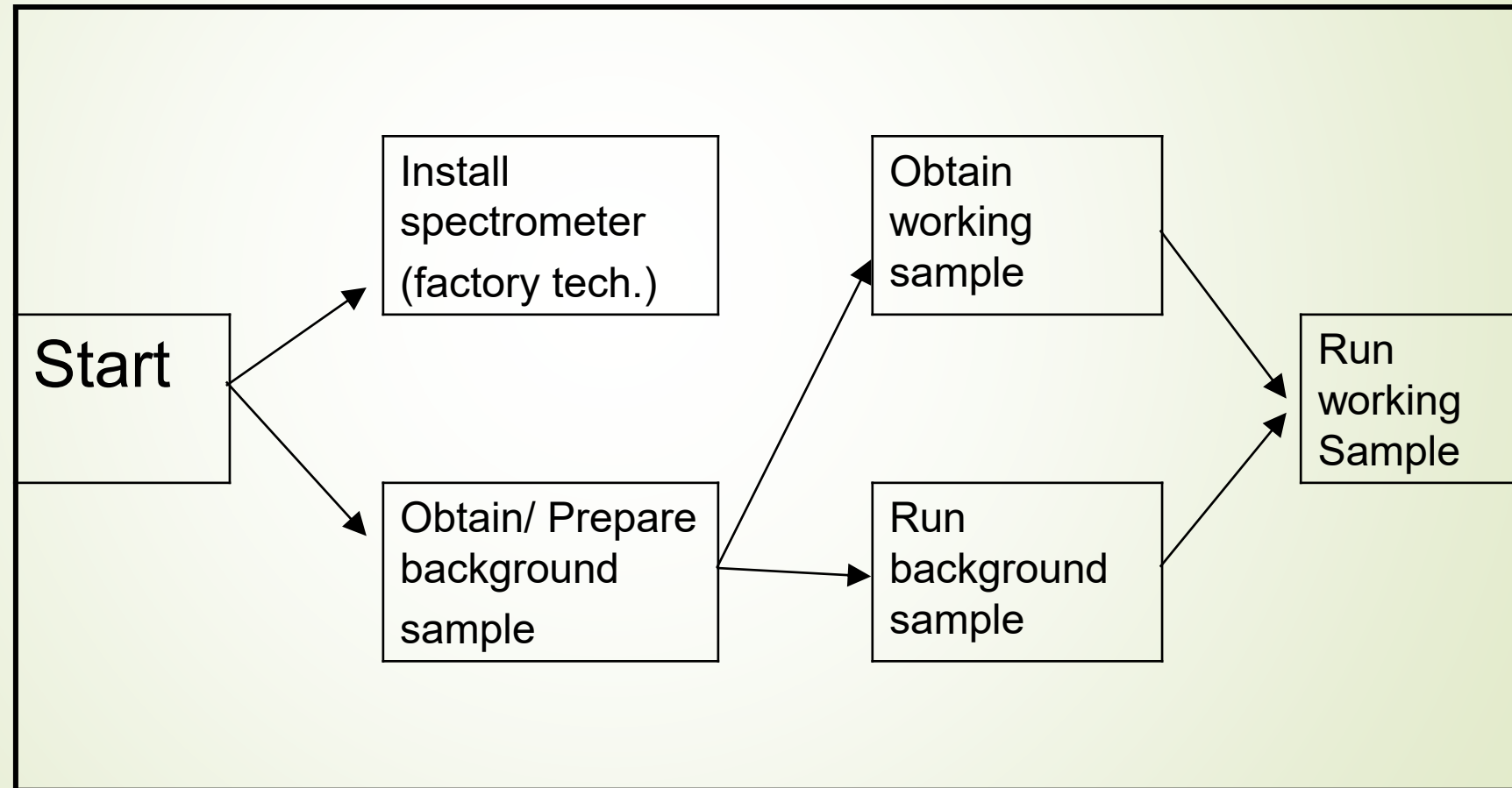
	John	Jane	Joe	Jill
Task 1	Trainer			X
Task 2		X		Advisor
Task 3			X	

Project Planning: Critical Path

➤ Goals:

- Identify _____ : actions/steps/results that **MUST** occur or be obtained before other steps.
- _____,
- Identify critical nodes : those that can **stop the project** if not achieved.
- Help you focus on most important tasks – so as to prioritize
- Form – flow chart or timeline
- Recall the Thanksgiving dinner example :
 - Turkey needs to be put in the oven early – takes 7 hours to cook!
 - Preparing the pie crust not critical – could become critical if put off to long

Project Planning: Critical Path



Project Planning: Budgeting

- Not necessary of proposal in this class
- **CRITICAL** for any real project
- Primary categories:
 - Personnel
 - Wages/stipends
 - Consultant fees
 - Equipment
 - Large capital items
 - Many federal agencies don't allow much for this
- Primary categories cont.
 - Supplies
 - Consumable items
 - Services
 - User fees
 - Machining
 - Glass blowing
 - Other??
 - Travel
 - Conferences
 - Visiting collaborators
 - Facilities & Administration

Project Planning – Your Proposal

- In your research plan:
 - Break the work down into subtasks
 - Estimate how much time each will take
 - **Easy to underestimate the time it will take**
 - Good rule of thumb – however long you think a task should take, allow double that
 - What order will the tasks be done?
 - Whenever possible, do tasks in parallel
 - What tasks are critical – will stop progress if not completed
 - What kinds of resources are needed?
 - Equipment
 - Software
 - Supplies
 - Other?

The End