
Spacecraft Design-Build-Fly Lab

16/18-873



Fall 2023 – Spring 2024

First Assignment

1. Make sure you've joined the course Slack (argus-2.slack.com) and briefly introduce yourself in the #introductions channel.

First Assignment

The screenshot displays a Slack workspace interface. On the left is a dark purple sidebar with navigation options: Home, DMs, Activity, and More. Below these are icons for various channels and direct messages. The main area is divided into two sections. The top section shows the channel name '# introductions' with a search bar and a '25 days left in trial' banner. Below this is a list of channels: # avionics, # comms-and-ops, # general, # gnc, # introductions (highlighted), # mechanical, # social, # staff, # vision, and an option to 'Add channels'. The bottom section shows the channel's content, including a message from 'Zac' at 12:21 PM stating 'joined #introductions.' The message input area at the bottom includes a rich text editor with various formatting options and a 'Send' button.

SpacecraftDesignBui... 25 days left in trial

Channels

- # avionics
- # comms-and-ops
- # general
- # gnc
- # introductions
- # mechanical
- # social
- # staff
- # vision
- + Add channels

Direct messages

- Kyle McCleary
- Akshat Sahay
- blucia
- Clara Devaux
- Eric Grynberg
- Haoen Li
- Ibrahima Sow
- Neil Khera
- Pedro Cachim
- Varun Kumar
- Vishnu
- Zhaonan Shi

introductions

+ Add a bookmark

introductions

You created this channel today. This is the very beginning of # introductions. [Add description](#)

+ Add coworkers Forward emails to this channel

Today

Zac 12:21 PM
joined #introductions.

B I

Message #introductions

+ Aa

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First Assignment

Teams · cmu-argus-2

github.com/orgs/cmu-argus-2/teams


cmu-argus-2

Type to search

OverviewRepositories 1ProjectsPackagesTeams 5People 29Settings


Seamless communication with teams

Teams are a great way for groups of people to communicate and work on code together. Take a look at why they're great.




Flexible repository access

You can add repositories to your teams with more flexible levels of access (Admin, Write, Read).



Request to join teams

Members can quickly request to join any team. An owner or team maintainer can approve the request.








Team mentions

Use team @mentions (ex. @github/design for the entire team) in any comment, issue, or pull request.

[Learn more](#)

Find a team...

New team

<input type="checkbox"/> Select all		Visibility	Members
<input type="checkbox"/> Avionics		6 members 0 roles	0 teams
<input type="checkbox"/> Communications		5 members 0 roles	0 teams
<input type="checkbox"/> GNC		8 members 0 roles	0 teams
<input type="checkbox"/> Mechanical		8 members 0 roles	0 teams
<input type="checkbox"/> Vision		4 members 0 roles	0 teams

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3. Take a look at the issues on the Kanban.

First Assignment

The screenshot displays the GitHub interface for the 'Argus-2' project. The browser tabs show 'Tasks - Argus-2' and 'Requirements Definition - Issu...'. The address bar indicates the URL 'github.com/orgs/cmu-argus-2/projects/1/views/1'. The page header includes the project name 'cmu-argus-2 / Projects / Argus-2' and a search bar. Below the header, the 'Argus-2' project name is followed by an 'Add status update' button and icons for a checklist, a calendar, and a user profile. The main content area features a Kanban board with three columns: 'Todo' (2/5 items, Estimate: 0), 'In Progress' (0/5 items, Estimate: 0), and 'Done' (0 items, Estimate: 0). The 'Todo' column contains two items: 'documentation #1' with a sub-item 'Requirements Definition' and a tag 'Iteration', and 'documentation #2' with a sub-item 'Interface Definitions'. Each column has an 'Add item' button at the bottom. A filter bar at the top of the board allows filtering by keyword or by field, with 'Discard' and 'Save' buttons. The interface is clean and modern, with a light blue and white color scheme.

Tasks - Argus-2 x Requirements Definition - Issu... +

github.com/orgs/cmu-argus-2/projects/1/views/1

cmu-argus-2 / Projects / Argus-2

Search Type to search

Argus-2

Add status update

Tasks Team capacity + New view

Filter by keyword or by field

Discard Save

Todo 2 / 5 Estimate: 0

This item hasn't been started

documentation #1 Requirements Definition Iteration

documentation #2 Interface Definitions

+ Add item

In Progress 0 / 5 Estimate: 0

This is actively being worked on

+ Add item

Done 0 Estimate: 0

This has been completed

+ Add item

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4. Each team has to define their level 2 requirements and propose a test to verify that each requirement is satisfied.

First Assignment

Tasks - Argus-2

Mission Requirements - cmu-

+

github.com/cmu-argus-2/documentation/wiki/Mission-Requirements

cmu-argus-2 / documentation

Q Type to search

<> Code

Issues 2

Pull requests

Actions

Projects 1

Wiki

Security

Insights

Settings

Mission Requirements

Zac Manchester edited this page now · 3 revisions

Edit New page

Level 1

1. The spacecraft shall conform to the latest version of the CubeSat Design Specification
2. The spacecraft shall be compatible with the ExoLaunch EXOpod Nova deployment system
3. The spacecraft shall be compatible with the environments specified in the latest SpaceX Rideshare Payload User's Guide.
4. The spacecraft shall be capable of operating in a sun-synchronous orbit typical of SpaceX Transporter launches.
5. The spacecraft shall detumble to a residual angular velocity less than 3 deg/sec.
6. The spacecraft shall demonstrate orbit determination with absolute position errors less than 50 km.
7. The spacecraft shall downlink at least 10 images of the Earth in at least VGA (640x480) resolution.

Level 2

Mechanical

Structure

1. Requirement

Test/Verification

2. Requirement

Test/Verification

Thermal

Embedded

Pages 2

Find a page...

Home

Mission Requirements

Level 1

Level 2

Mechanical

Structure

Thermal

Embedded

Comms/Ops

GNC

Vision

+ Add a custom sidebar

Clone this wiki locally

https://github.com/cmu-argus-2/do

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5. Each team has to define their interfaces with every other team. Try to think of all hardware and/or software interactions.

First Assignment

The screenshot shows a Google Sheets spreadsheet titled "Argus-2 Interfaces". The spreadsheet has columns A through G and rows 1 through 37. The grid contains blue and green cells, with labels in column A: "Embedded" (row 1), "Comms\Ops" (row 11), "Vision" (row 20), and "GNC" (row 29). The blue cells are located in columns B, C, D, and E, while the green cells are located in columns B, C, and D. The "Embedded" label is in a blue cell, while the others are in green cells. The spreadsheet is viewed in a browser window with the URL "docs.google.com/spreadsheets/d/1wcYUgKcsbuGamVGXIRxTmKtg75OwHR4DsGFdZZPg9So/edit?gid=0#gid=0".

	A	B	C	D	E	F	G
1	Embedded						
2							
3							
4							
5							
6							
7							
8							
9							
10							
11	Comms\Ops						
12							
13							
14							
15							
16							
17							
18							
19							
20	Vision						
21							
22							
23							
24							
25							
26							
27							
28							
29	GNC						
30							
31							
32							
33							
34							
35							
36							
37							

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6. Everyone must make at least one git commit.

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6. Everyone must make at least one git commit.
7. Each team will present their requirements and interfaces next Wednesday.

Weekly Quad Chart

Concrete update *with images / figures w/ caption?*

What are your team's blockers, and which tasks are those blockers associated with?

What are your (new) tech requirements? What tools/software/etc do you need access to?

What were the major milestones achieved?

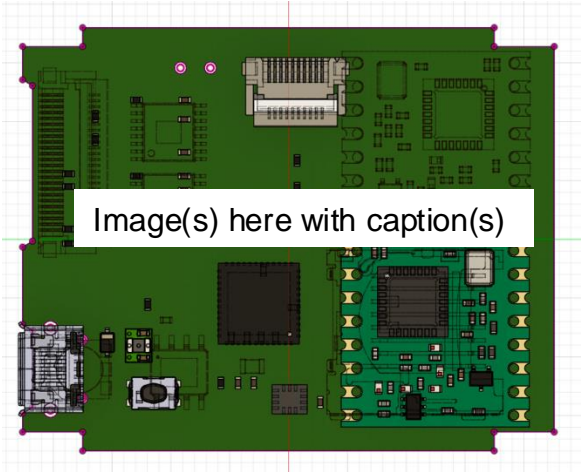
What are you doing this week, as concretely as possible and which milestones are those tasks attached to.

Is everything on schedule?

What are the cross-team issues and interfaces that require communication between your team and other teams?

What is your plan and timeline for communicating and merging your teams' plans?

Team Name - Week



Blockers

- No access to Pittsburgh Supercomputing Center for ML training
- Can't make camera work with test driver
- Two teammates out of town for 5 days

Requirements

- Need login information for PSC ML training cluster
- Need Ansys thermal modeling tool for chassis thermal evaluation

Weekly Results

What you did

Things that worked, things that didn't

Next Week

What's next on your plate?

Updated Key Milestones (past + present)

Milestone #1

MM/YY

Milestone #2

MM/YY

Milestone #3

MM/YY

Milestone #4

MM/YY

etc

Interfaces

Other Team 1

None

Other Team 2

Antenna placement

Battery testing

Other Team 3

Integration of sensor calibrations into software

Other Team 4

Need magnetic moment values for sim