



**LEARNING SPACE  
ON THE GROUND**

1  
00:00:00,506 --> 00:00:23,226  
[ Music ]

2  
00:00:23,726 --> 00:00:27,956  
>> We can simulate what it is  
like to be in a spacecraft.

3  
00:00:28,176 --> 00:00:30,756  
So the isolation,  
the confinement,

4  
00:00:31,116 --> 00:00:32,446  
the controlled environment  
[Background Music].

5  
00:00:34,556 --> 00:00:37,796  
The research investigations  
are aimed at answering some

6  
00:00:37,796 --> 00:00:41,276  
of the questions that we need  
to answer before we send people

7  
00:00:41,276 --> 00:00:43,646  
on those extremely  
long duration missions,

8  
00:00:43,646 --> 00:00:47,366  
such as to an asteroid  
or to mars.

9  
00:00:50,576 --> 00:00:52,636  
It's probably about the size

10  
00:00:52,716 --> 00:00:58,636  
of I'll say maybe a one bedroom  
apartment that's not terribly

11  
00:00:58,706 --> 00:00:59,886

terribly luxurious.

12

00:01:00,356 --> 00:01:02,816

But on the other hand it's--

13

00:01:03,366 --> 00:01:07,446

it emulates what you

might see in a spacecraft.

14

00:01:08,156 --> 00:01:09,746

A lot of the things

that you have

15

00:01:09,746 --> 00:01:13,336

on the first floor are things

like workstations, you know some

16

00:01:13,336 --> 00:01:14,406

of the computer and some

17

00:01:14,406 --> 00:01:17,096

of the simulation devices

are on the first floor.

18

00:01:17,696 --> 00:01:19,946

We have a lot of capabilities

19

00:01:19,946 --> 00:01:22,336

for performing different

kinds of experiments.

20

00:01:22,336 --> 00:01:27,276

The second floor is kind

of like your living room.

21

00:01:27,826 --> 00:01:30,026

There's a table that the

group members can sit

22

00:01:30,026 --> 00:01:31,616  
at and eat their meals.

23

00:01:31,616 --> 00:01:33,906  
All of our food right  
now is coming

24

00:01:33,996 --> 00:01:36,076  
from the Johnson  
Space Center food lab,

25

00:01:36,496 --> 00:01:38,486  
which means it's the  
same food that goes

26

00:01:38,576 --> 00:01:40,106  
to the International  
Space Station.

27

00:01:40,426 --> 00:01:42,956  
There's also a capability  
for them

28

00:01:42,956 --> 00:01:45,816  
to play videos or  
to watch movies.

29

00:01:46,946 --> 00:01:49,076  
We have a couple of  
exercise devices;

30

00:01:49,166 --> 00:01:51,486  
a bicycle in particular,

31

00:01:51,486 --> 00:01:53,256  
and then we also have  
some free weights.

32

00:01:53,726 --> 00:01:56,586  
We find that a lot of our

crew members will also do some

33

00:01:56,796 --> 00:01:59,956

calisthenics and  
stretching, maybe some yoga

34

00:02:00,036 --> 00:02:02,406

so there's a little tiny  
little pace for them

35

00:02:02,406 --> 00:02:03,306

to be able to do that.

36

00:02:05,516 --> 00:02:09,336

The final level, fi you will,  
is really not a full story;

37

00:02:09,606 --> 00:02:11,146

it's really the sleep quarters.

38

00:02:11,696 --> 00:02:13,066

It's bigger than a pup tent.

39

00:02:13,506 --> 00:02:16,746

Each crew member has his  
or her own sleep quarters;

40

00:02:17,436 --> 00:02:20,616

it's actually very  
cozy, very comfortable.

41

00:02:20,976 --> 00:02:24,176

The hygiene module  
has a flushing toilet.

42

00:02:25,156 --> 00:02:28,616

We have a standup shower with  
hot and cold running water

43

00:02:28,616 --> 00:02:31,466  
and we also have a sink with  
hot and cold running water.

44

00:02:31,596 --> 00:02:36,806  
The final element of the  
module is a very small module

45

00:02:36,806 --> 00:02:41,806  
that is an airlock and we do  
isolate or subdivide the crew

46

00:02:42,316 --> 00:02:46,156  
such that two crew members will  
go into the airlock and that is

47

00:02:46,156 --> 00:02:48,896  
where they'll do their  
virtual reality EVAs from.

48

00:02:49,516 --> 00:02:54,546  
[ Music ]

49

00:02:55,046 --> 00:02:56,716  
>> I'm excited for  
the challenge.

50

00:02:56,716 --> 00:02:58,926  
I love a good challenge.

51

00:02:58,926 --> 00:03:01,436  
I'm a professor at Grand  
Valley State University;

52

00:03:01,766 --> 00:03:03,226  
I teach biology.

53

00:03:03,226 --> 00:03:06,346  
I feel like I'm actually  
playing it's a small role

54

00:03:06,396 --> 00:03:09,666

but it's a real tangible  
important role

55

00:03:10,126 --> 00:03:11,846

in getting people to mars.

56

00:03:12,276 --> 00:03:14,826

The first thing I saw about  
this was on a Facebook posting

57

00:03:15,076 --> 00:03:18,776

and a couple of former  
HERA crew people had posted

58

00:03:18,916 --> 00:03:20,216

that they were-- that  
they had just come out.

59

00:03:20,406 --> 00:03:22,056

I didn't think I  
would be selected

60

00:03:22,096 --> 00:03:24,526

and you know I just  
kind of did it on a lark

61

00:03:24,646 --> 00:03:26,476

and it worked out awesome.

62

00:03:26,936 --> 00:03:30,076

They are measuring us in more  
ways than I could have imagined.

63

00:03:30,536 --> 00:03:33,066

We've given a lot of biological  
samples of various types.

64

00:03:33,156 --> 00:03:36,696

They're measuring our  
heart rate, our brainwaves.

65

00:03:36,696 --> 00:03:40,236

They're doing a tremendously  
large number

66

00:03:40,236 --> 00:03:41,816

of psychological tests on us.

67

00:03:42,516 --> 00:03:46,656

[ Music ]

68

00:03:47,156 --> 00:03:50,396

>> This mission the crew members  
are going to an asteroid.

69

00:03:51,456 --> 00:03:55,176

So while they are on their way  
to the asteroid they are going

70

00:03:55,286 --> 00:03:58,026

to practice their flying skills.

71

00:03:58,326 --> 00:04:00,416

Once they get to the  
destination they're also going

72

00:04:00,416 --> 00:04:03,496

to be conducting some  
virtual reality EVAs,

73

00:04:03,816 --> 00:04:07,676

so on the way there they're  
also practicing those skills.

74

00:04:08,176 --> 00:04:10,866

We have the housekeeping  
tasks for them;

75

00:04:11,106 --> 00:04:16,296

we have maintenance  
types of tasks.

76

00:04:16,916 --> 00:04:20,356

A primary purpose for the  
mission controllers is really

77

00:04:20,466 --> 00:04:24,006

to ensure the safety and  
well-being of the crew members

78

00:04:24,076 --> 00:04:26,096

who are inside the  
HERA to make sure

79

00:04:26,096 --> 00:04:29,436

that everything is going well,  
but it's really also to as much

80

00:04:29,436 --> 00:04:30,936

as possible to keep all

81

00:04:30,936 --> 00:04:35,286

of the scientific investigations  
happening as they're scheduled

82

00:04:35,366 --> 00:04:37,846

on time to answer any  
kind of questions.

83

00:04:39,136 --> 00:04:42,626

We provide some input, you  
know, a newspaper if you will,

84

00:04:42,886 --> 00:04:45,706

electronically to  
the crew members

85

00:04:45,796 --> 00:04:47,956

in their I'll call it  
their morning mail.

86

00:04:47,956 --> 00:04:51,946

Not allowing the internet  
access really does allow us

87

00:04:51,946 --> 00:04:56,216

to keep the crew members really  
engaged in the mission and not

88

00:04:56,216 --> 00:04:59,506

to be, you know, concerned  
about things that are going

89

00:04:59,506 --> 00:05:01,016

on in the outside world.

90

00:05:01,806 --> 00:05:04,836

The one little luxury,  
if you will,

91

00:05:04,836 --> 00:05:09,546

that they have is approximately  
once a week we schedule them

92

00:05:09,636 --> 00:05:13,366

for a private family  
conference, so a telephone call

93

00:05:13,416 --> 00:05:16,746

that is patched in on  
a private phone line.

94

00:05:17,766 --> 00:05:19,856

We do plan to keep  
the HERA operating

95

00:05:19,976 --> 00:05:22,066  
for at least another  
four or five years.

96  
00:05:22,556 --> 00:05:25,626  
The 45 day missions we're  
always going to be looking

97  
00:05:25,736 --> 00:05:28,916  
for qualified crew members to  
be able to come and join us