The Embedded Scientist Program

Dr. Andrea Krafft

Georgia Tech Astrobiology

1
00:00:00,820 --> 00:00:09,339
[Music]

2
00:00:13,730 --> 00:00:12,110
hi everybody the embedded scientists

3
00:00:15,700 --> 00:00:13,740
program which is funded by Georgia Tech

4
00:00:17,660 --> 00:00:15,710
strategic plan advisory group

5
00:00:19,400 --> 00:00:17,670
strengthens connections between the

6
00:00:23,060 --> 00:00:19,410
humanities and STEM disciplines for

7
00:00:26,269 --> 00:00:23,070
undergraduate students during fall 2017

8
00:00:28,279 --> 00:00:26,279
and spring 2018 respectively dr. Kendall

9
00:00:30,290 --> 00:00:28,289
Lynch is back there at dr. George Sarris

10
00:00:32,089 --> 00:00:30,300
gute were both embedded within first

11
00:00:34,220 --> 00:00:32,099
year composition and upper level

12
00:00:35,720 --> 00:00:34,230
technical communication courses which

13
00:00:38,389 --> 00:00:35,730

are taught by Tina Colvin

14
00:00:40,910 --> 00:00:38,399
Katie home are here myself Rebecca

15
00:00:42,170 --> 00:00:40,920
Fitzsimmons and Rebecca green all of

16
00:00:44,209 --> 00:00:42,180
whom are Mary and Albert and

17
00:00:47,569 --> 00:00:44,219
postdoctoral fellows in the writing and

18
00:00:49,549 --> 00:00:47,579
communication program everyone involved

19
00:00:52,040 --> 00:00:49,559
in this program shared a number of goals

20
00:00:53,330 --> 00:00:52,050
including but not limited to increasing

21
00:00:54,889 --> 00:00:53,340
students as knowledge of science

22
00:00:57,229 --> 00:00:54,899
communication particularly for

23
00:00:58,849 --> 00:00:57,239
non-specialist audiences exploring

24
00:01:01,099 --> 00:00:58,859
points of contact between the sciences

25
00:01:02,510 --> 00:01:01,109
and humanistic issues connecting

26
00:01:04,429 --> 00:01:02,520
concepts from historical and cultural

27
00:01:06,980 --> 00:01:04,439
texts to contemporary scientific

28
00:01:08,660 --> 00:01:06,990
research providing a holistic value to

29
00:01:10,670 --> 00:01:08,670
the class through the combined expertise

30
00:01:12,469 --> 00:01:10,680
of the co teachers and improving

31
00:01:15,620 --> 00:01:12,479
students this transfer of skills such as

32
00:01:17,980 --> 00:01:15,630
communication writing multi-modality and

33
00:01:20,270 --> 00:01:17,990
collaboration to the STEM disciplines

34
00:01:21,830 --> 00:01:20,280
the individual courses in this program

35
00:01:23,780 --> 00:01:21,840
varied in their approaches to these

36
00:01:25,399 --> 00:01:23,790
outcomes drawing on the research areas

37
00:01:27,710 --> 00:01:25,409
of the postdoctoral instructors and

38
00:01:31,249 --> 00:01:27,720

communication so some of the English

39
00:01:32,480 --> 00:01:31,259
1102 courses involved printers which

40
00:01:33,950 --> 00:01:32,490
considered how animals and our

41
00:01:37,580 --> 00:01:33,960
relationships with them affect the

42
00:01:39,109 --> 00:01:37,590
design and purposes of Technology the

43
00:01:41,240 --> 00:01:39,119
history and rhetoric of science writing

44
00:01:42,620 --> 00:01:41,250
for children which addresses scientific

45
00:01:45,950 --> 00:01:42,630
principles and children's literature

46
00:01:47,870 --> 00:01:45,960
from 1800s to the present the

47
00:01:49,280 --> 00:01:47,880
singularity which examined science

48
00:01:50,660 --> 00:01:49,290
fiction and science fact about

49
00:01:52,910 --> 00:01:50,670
accelerating changes involving

50
00:01:56,450 --> 00:01:52,920
artificial intelligence nanotechnology

51
00:01:57,940 --> 00:01:56,460
and biotechnology and evolutions which

52
00:02:00,560 --> 00:01:57,950
studied the changing face of humanity

53
00:02:02,539 --> 00:02:00,570
our responsibilities as creators and the

54
00:02:04,850 --> 00:02:02,549
development of other forms of life some

55
00:02:07,490 --> 00:02:04,860
of them hybrid some of them alien most

56
00:02:10,490 --> 00:02:07,500
of the monstrous or weird as pictured

57
00:02:11,110 --> 00:02:10,500
here so what remains of our presentation

58
00:02:13,210 --> 00:02:11,120
members of

59
00:02:14,979 --> 00:02:13,220
team will reflect on their experience in

60
00:02:17,170 --> 00:02:14,989
the project addressing the benefits of

61
00:02:19,000 --> 00:02:17,180
this pedagogical model for students as

62
00:02:19,780 --> 00:02:19,010
well as for postdoctoral teachers and

63
00:02:21,640 --> 00:02:19,790

researchers

64
00:02:23,530 --> 00:02:21,650
we'll begin with dr. Katie Hummer who

65
00:02:27,190 --> 00:02:23,540
will talk about her English 1102 course

66
00:02:29,890 --> 00:02:27,200
from fall 2017 hello my section of

67
00:02:31,839 --> 00:02:29,900
English 1102 was called remix in gothic

68
00:02:33,850 --> 00:02:31,849
contradictions and it focused on

69
00:02:36,160 --> 00:02:33,860
representations of science and classic

70
00:02:37,780 --> 00:02:36,170
19th century novels as a tale a

71
00:02:40,449 --> 00:02:37,790
fictional tale about the creation of

72
00:02:42,490 --> 00:02:40,459
life in the lab Mary Shelley's 1818

73
00:02:44,619 --> 00:02:42,500
Frankenstein of course played a major

74
00:02:46,720 --> 00:02:44,629
role in this class getting an

75
00:02:48,699 --> 00:02:46,730
astrobiologist perspective enriched our

76
00:02:51,089 --> 00:02:48,709
discussions of a novel that straddles

77
00:02:53,170 --> 00:02:51,099
gothic and science fiction genres

78
00:02:55,539 --> 00:02:53,180
Frankenstein not only has a long

79
00:02:57,550 --> 00:02:55,549
afterlife in monster movie adaptations

80
00:03:00,699 --> 00:02:57,560
but it's also evoke Tinh discussions

81
00:03:03,640 --> 00:03:00,709
about scientific developments from AI to

82
00:03:05,979 --> 00:03:03,650
medical ethics to genetic engineering in

83
00:03:08,140 --> 00:03:05,989
a class that also focused a lot on

84
00:03:09,880 --> 00:03:08,150
gothic tropes in pop culture

85
00:03:11,589 --> 00:03:09,890
Kenda highlighted this contemporary

86
00:03:13,780 --> 00:03:11,599
scientific angle through her

87
00:03:16,690 --> 00:03:13,790
conversations with students and in a

88
00:03:18,580 --> 00:03:16,700

presentation about synthetic biology she

89
00:03:20,979 --> 00:03:18,590
not only explained the ways scientists

90
00:03:23,170 --> 00:03:20,989
have been able to engineer DNA but also

91
00:03:25,809 --> 00:03:23,180
lets students to debate the ethics of

92
00:03:27,879 --> 00:03:25,819
these technologies Kenda's insights

93
00:03:30,819 --> 00:03:27,889
specifically contributed to the critical

94
00:03:32,680 --> 00:03:30,829
annotated essay project here's a little

95
00:03:34,420 --> 00:03:32,690
bit of background despite a plot that

96
00:03:36,030 --> 00:03:34,430
involves the creation of life Arctic

97
00:03:38,680 --> 00:03:36,040
exploration murder and mayhem

98
00:03:40,689 --> 00:03:38,690
Frankenstein is chock-full of archaic

99
00:03:42,869 --> 00:03:40,699
scientific philosophical and literary

100
00:03:45,430 --> 00:03:42,879
allusions that vex contemporary readers

101
00:03:47,589 --> 00:03:45,440
the goal of our project was for students

102
00:03:49,930 --> 00:03:47,599
to research these arcane references in

103
00:03:51,849 --> 00:03:49,940
just one passage of the novel and create

104
00:03:54,729 --> 00:03:51,859
hyperlinks to resources that explain

105
00:03:56,470 --> 00:03:54,739
those allusions students then wrote up

106
00:03:59,199 --> 00:03:56,480
their results as though creating a

107
00:04:01,599 --> 00:03:59,209
report for a book publisher that is they

108
00:04:04,479 --> 00:04:01,609
justified why they chose sources from

109
00:04:07,119 --> 00:04:04,489
scholarly articles to historic images of

110
00:04:08,949 --> 00:04:07,129
scientific apparatus to movie clips and

111
00:04:11,039 --> 00:04:08,959
applications of Shelley's novel in

112
00:04:13,180 --> 00:04:11,049
contemporary media coverage of science

113
00:04:15,220 --> 00:04:13,190

working with an astrobiologist

114
00:04:17,110 --> 00:04:15,230
emphasized the contemporary relevance of

115
00:04:19,060 --> 00:04:17,120
Frankenstein as kind of shared both her

116
00:04:20,259 --> 00:04:19,070
own research and that of colleagues

117
00:04:21,879 --> 00:04:20,269
working in the field of synthetic

118
00:04:23,740 --> 00:04:21,889
biology

119
00:04:25,809 --> 00:04:23,750
students explored how Frankenstein is

120
00:04:28,320 --> 00:04:25,819
used in contemporary representations of

121
00:04:30,429 --> 00:04:28,330
science and thought critically about how

122
00:04:32,260 --> 00:04:30,439
oversimplified understandings of this

123
00:04:35,529 --> 00:04:32,270
novel impact the public's understanding

124
00:04:37,450 --> 00:04:35,539
of science today our discussions also

125
00:04:39,670 --> 00:04:37,460
compared the ways more specialized

126
00:04:41,980 --> 00:04:39,680
commentators like literary critics and

127
00:04:44,020 --> 00:04:41,990
medical ethicists have also turned to

128
00:04:46,209 --> 00:04:44,030
Shelley's novel through combined

129
00:04:47,709 --> 00:04:46,219
expertise in the humanities and sciences

130
00:04:50,469 --> 00:04:47,719
students went beyond surface

131
00:04:52,300 --> 00:04:50,479
understandings of Frankenstein in turn

132
00:04:54,490 --> 00:04:52,310
they created a project that encourages

133
00:04:57,279 --> 00:04:54,500
deeper ways of engaging with an iconic

134
00:04:59,320 --> 00:04:57,289
novel it's pop culture after lives and

135
00:05:01,029 --> 00:04:59,330
contemporary media coverage of science

136
00:05:02,830 --> 00:05:01,039
and now I'm going to hand the mic over

137
00:05:05,200 --> 00:05:02,840
to Kenda to talk a bit about her

138
00:05:07,149 --> 00:05:05,210

experiences being an embedded scientist

139
00:05:11,170 --> 00:05:07,159
I'm gonna just keep it very short and

140
00:05:12,879 --> 00:05:11,180
sweet it was really a pleasure to first

141
00:05:16,029 --> 00:05:12,889
and foremost with across the embedded

142
00:05:18,909 --> 00:05:16,039
science program to see kind of the the

143
00:05:22,059 --> 00:05:18,919
modern reboot of what many of us back in

144
00:05:24,279 --> 00:05:22,069
of a sudden of us of a certain age of

145
00:05:26,200 --> 00:05:24,289
our you know first-year rhetoric course

146
00:05:28,390 --> 00:05:26,210
that in my time you had to just get

147
00:05:30,640 --> 00:05:28,400
through and in this case the Georgia

148
00:05:33,730 --> 00:05:30,650
Tech class truly is teaching these

149
00:05:35,320 --> 00:05:33,740
students how to communicate in a modern

150
00:05:37,480 --> 00:05:35,330
technological world and communicate

151
00:05:38,920 --> 00:05:37,490
across all different kind of formats and

152
00:05:40,240 --> 00:05:38,930
in particular learning how to

153
00:05:42,249 --> 00:05:40,250
communicate science at least in the

154
00:05:43,899 --> 00:05:42,259
sections that we were in so the katys

155
00:05:46,390 --> 00:05:43,909
class it was quite interesting and fun

156
00:05:47,709 --> 00:05:46,400
to be able to bring this gothic

157
00:05:50,260 --> 00:05:47,719
connection to modern science especially

158
00:05:52,059 --> 00:05:50,270
through the use of you know presenting

159
00:05:53,320 --> 00:05:52,069
synthetic biology and all of the

160
00:05:55,269 --> 00:05:53,330
advances that we've made especially with

161
00:05:58,240 --> 00:05:55,279
the craig Venter Institute Institute and

162
00:06:00,219 --> 00:05:58,250
it was really a joy to see how the

163
00:06:02,320 --> 00:06:00,229

students took that information and then

164
00:06:05,290 --> 00:06:02,330
synthesized it into some of their actual

165
00:06:07,360 --> 00:06:05,300
final products throughout the class so

166
00:06:08,769 --> 00:06:07,370
it was a great experience for me to see

167
00:06:10,559 --> 00:06:08,779
these students learning how to be

168
00:06:14,399 --> 00:06:10,569
science communicators and how to connect

169
00:06:17,140 --> 00:06:14,409
kind of more comic popular literature

170
00:06:20,619 --> 00:06:17,150
with the scientific context and being

171
00:06:22,659 --> 00:06:20,629
able to communicate them Thanks kinda so

172
00:06:24,399 --> 00:06:22,669
because one of my colleagues Becky green

173
00:06:27,249 --> 00:06:24,409
couldn't be here I'm gonna talk about

174
00:06:28,899 --> 00:06:27,259
her class in her place that many of the

175
00:06:31,240 --> 00:06:28,909
classes I described are English 1102

176
00:06:33,399 --> 00:06:31,250
first year composition classes but her

177
00:06:34,900 --> 00:06:33,409
course is an upper-level course for

178
00:06:37,600 --> 00:06:34,910
juniors and seniors

179
00:06:39,340 --> 00:06:37,610
LMC 3403 technical communication which

180
00:06:41,140 --> 00:06:39,350
is organized in her case around central

181
00:06:43,450 --> 00:06:41,150
concepts of sustainability and community

182
00:06:45,160 --> 00:06:43,460
engagement technical communication

183
00:06:46,810 --> 00:06:45,170
offers students a chance to expand their

184
00:06:48,790 --> 00:06:46,820
knowledge of effective communication

185
00:06:51,210 --> 00:06:48,800
practices like rhetorical awareness

186
00:06:53,800 --> 00:06:51,220
multimodal design process and research

187
00:06:56,140 --> 00:06:53,810
but also their converting complex ideas

188
00:06:57,850 --> 00:06:56,150

into jargon free prose which can easily

189
00:07:00,100 --> 00:06:57,860
be understood by lay audiences which is

190
00:07:01,570 --> 00:07:00,110
a key goal there throughout the semester

191
00:07:03,610 --> 00:07:01,580
students prepared a wide variety of

192
00:07:05,470 --> 00:07:03,620
deliverables of model workplace genres

193
00:07:07,630 --> 00:07:05,480
like proposal memos fliers and

194
00:07:10,390 --> 00:07:07,640
structural manuals oral presentations

195
00:07:12,370 --> 00:07:10,400
and reports the final project in her

196
00:07:14,710 --> 00:07:12,380
course is a team-based feasibility study

197
00:07:17,290 --> 00:07:14,720
or the team's is pictured here we're

198
00:07:19,510 --> 00:07:17,300
closely examining the GT campus for the

199
00:07:21,760 --> 00:07:19,520
course client which is the center serve

200
00:07:23,320 --> 00:07:21,770
learn sustain and they wanted to explore

201
00:07:25,870 --> 00:07:23,330
ways that campus can become even more

202
00:07:28,740 --> 00:07:25,880
sustainable examining the three e's of

203
00:07:31,150 --> 00:07:28,750
equity economics and the environment

204
00:07:33,910 --> 00:07:31,160
having George in that class as an

205
00:07:35,530 --> 00:07:33,920
embedded scientist dr. green says will

206
00:07:38,080 --> 00:07:35,540
help students to do three things it will

207
00:07:39,310 --> 00:07:38,090
help them to first think more about the

208
00:07:40,930 --> 00:07:39,320
importance of overall resource

209
00:07:42,790 --> 00:07:40,940
distribution as students explore

210
00:07:45,160 --> 00:07:42,800
sustainability using what they learned

211
00:07:46,180 --> 00:07:45,170
about George's research fields secondly

212
00:07:48,160 --> 00:07:46,190
students will learn more about

213
00:07:49,420 --> 00:07:48,170

peer-reviewed publication process and

214
00:07:51,310 --> 00:07:49,430
develop stronger researched

215
00:07:53,290 --> 00:07:51,320
bibliographies for their proposals and

216
00:07:55,330 --> 00:07:53,300
thirdly they'll learn more about the

217
00:07:56,920 --> 00:07:55,340
important tool at the portent ethical

218
00:07:58,690 --> 00:07:56,930
and social responsibilities that

219
00:08:00,580 --> 00:07:58,700
scientists and technical communicators

220
00:08:03,190 --> 00:08:00,590
have when they report their work to

221
00:08:04,990 --> 00:08:03,200
diverse audiences so at this stage

222
00:08:06,640 --> 00:08:05,000
dr. green says having Georgian class has

223
00:08:08,620 --> 00:08:06,650
been crucial to the development of good

224
00:08:10,180 --> 00:08:08,630
technical communication which is a

225
00:08:11,800 --> 00:08:10,190
process that involves the description of

226
00:08:14,140 --> 00:08:11,810
products and the steps involved in

227
00:08:15,730 --> 00:08:14,150
reaching that process George has been

228
00:08:17,560 --> 00:08:15,740
very useful during a presentation

229
00:08:19,120 --> 00:08:17,570
project advising students to be more

230
00:08:21,190 --> 00:08:19,130
rigorous in their research questions

231
00:08:22,750 --> 00:08:21,200
that they were asking he's also been

232
00:08:24,070 --> 00:08:22,760
encouraging all of them to think more

233
00:08:26,409 --> 00:08:24,080
about the ways that individual

234
00:08:28,450 --> 00:08:26,419
scientific literacies can impact our

235
00:08:30,280 --> 00:08:28,460
reading practices the ways that we view

236
00:08:31,990 --> 00:08:30,290
the world around us and the things that

237
00:08:33,820 --> 00:08:32,000
we expect cities and campuses to have in

238
00:08:35,500 --> 00:08:33,830

the future so George's unique

239
00:08:37,120 --> 00:08:35,510
perspective and his willingness to share

240
00:08:38,950 --> 00:08:37,130
his expertise as a scientist and

241
00:08:40,870 --> 00:08:38,960
communicator with students has proven

242
00:08:43,029 --> 00:08:40,880
very effective over the past few weeks

243
00:08:44,770 --> 00:08:43,039
and on that note I'm going to turn it

244
00:08:46,090 --> 00:08:44,780
over to George so he can talk about his

245
00:08:47,799 --> 00:08:46,100
experience for

246
00:08:49,420 --> 00:08:47,809
she just have to know they have all the

247
00:08:53,590 --> 00:08:49,430
same they came out of my brain at night

248
00:08:58,150 --> 00:08:53,600
past midnight so I would simply say that

249
00:09:00,040 --> 00:08:58,160
you know curiosity is an inherent human

250
00:09:02,980 --> 00:09:00,050
trait that starts when you're born and

251
00:09:04,960 --> 00:09:02,990
continues for you know together learning

252
00:09:09,069 --> 00:09:04,970
continues for as long as you feed it

253
00:09:10,749 --> 00:09:09,079
right the students that we teach are the

254
00:09:12,939 --> 00:09:10,759
ones that are learning are coming here

255
00:09:16,480 --> 00:09:12,949
to learn how to build the future their

256
00:09:20,559 --> 00:09:16,490
future and our future so my role is an

257
00:09:25,439 --> 00:09:20,569
embedded scientist I see it as a is to

258
00:09:29,710 --> 00:09:25,449
kind of provide him a model a

259
00:09:32,949 --> 00:09:29,720
cooperative model and to make sure that

260
00:09:37,780 --> 00:09:32,959
they can distinguish fiction from

261
00:09:39,699 --> 00:09:37,790
science and also to to make them see how

262
00:09:42,660 --> 00:09:39,709
to kill how to combine the scientific

263
00:09:45,280 --> 00:09:42,670

approach to achieving knowledge with the

264
00:09:49,269 --> 00:09:45,290
humanitarian art of communication that

265
00:09:51,850 --> 00:09:49,279
kind of knowledge in a way that they can

266
00:09:54,460 --> 00:09:51,860
communicate better more inspiring ways

267
00:09:57,939 --> 00:09:54,470
to the water to the wider society either

268
00:10:00,579 --> 00:09:57,949
to their products I did companies

269
00:10:02,619 --> 00:10:00,589
whatever they're going to create to

270
00:10:07,210 --> 00:10:02,629
their science if some of them they're

271
00:10:09,999 --> 00:10:07,220
gonna become scientists and in ways a

272
00:10:15,819 --> 00:10:10,009
bit better that are gonna help better

273
00:10:17,410 --> 00:10:15,829
shape our our future thanks George so we

274
00:10:19,179 --> 00:10:17,420
hope that hearing from various members

275
00:10:20,590 --> 00:10:19,189
of our team the others who couldn't be

276
00:10:22,299 --> 00:10:20,600
here their posters are on display so

277
00:10:23,769 --> 00:10:22,309
please look at them we hope we've

278
00:10:25,540 --> 00:10:23,779
provided you some insight into how we

279
00:10:27,759 --> 00:10:25,550
work to achieve our outcomes related to

280
00:10:29,919 --> 00:10:27,769
pedagogy interdisciplinary and science

281
00:10:31,569 --> 00:10:29,929
communication so far students have

282
00:10:33,730 --> 00:10:31,579
responded really positively to our

283
00:10:36,280 --> 00:10:33,740
program as eighty-three point three

284
00:10:37,629 --> 00:10:36,290
percent of our fall 2017 students said

285
00:10:39,970 --> 00:10:37,639
that they felt the class significantly

286
00:10:41,559 --> 00:10:39,980
connected the humanities with Sciences

287
00:10:42,669 --> 00:10:41,569
and our goal is to continue to build

288
00:10:44,379 --> 00:10:42,679

these connections between our

289
00:10:46,749 --> 00:10:44,389
disciplines through co.design courses

290
00:10:48,669 --> 00:10:46,759
and co-taught courses and we welcome

291
00:10:50,230 --> 00:10:48,679
your comments and questions about other

292
00:10:52,239 --> 00:10:50,240
ways that we can bridge the humanities

293
00:10:54,780 --> 00:10:52,249
and Sciences in the classroom because as

294
00:10:57,699 --> 00:10:54,790
dr. Lehmann reminded us in his plenary