

# Introduction to Multi-level Models

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## 1 Introduction to multi-level models for correlated data

For more, see:

- David Rocke<sup>1</sup>'s materials from the 2021 edition of this course<sup>2</sup>
  - May 25 - June 1 lectures
- Other UC Davis courses:
  - EVE 225<sup>3</sup>: “Linear Mixed Modeling in Ecology & Evolution”
    - \* usually taught every other winter or spring by Kate Laskowski<sup>4</sup>
    - \* materials, including syllabus and lecture videos: <https://laskowskilab.faculty.ucdavis.edu/teaching-2/>
  - STA/BST 224<sup>5</sup>: “Analysis of Longitudinal Data”
    - \* usually taught every spring by Shuai Chen<sup>6</sup>
    - \* should be accessible after completing Epi 204
  - EPI 226<sup>7</sup>: “Methods for Longitudinal & Repeated Measurement Data”
    - \* usually taught by Heejung Bang<sup>8</sup>
  - PSC 205D<sup>9</sup>: “Multilevel Models”
  - PSC 205G<sup>10</sup>: “Applied Longitudinal Data Analysis”
  - STA 101<sup>11</sup>: “Advanced Applied Statistics for the Biological Sciences”
  - STA 207<sup>12</sup>: “Statistical Methods for Research II”
  - STA 232B<sup>13</sup>: “Applied Statistics II”
    - \* usually taught every winter by Jiming Jiang<sup>14</sup>
  - PLS 207<sup>15</sup>: “Applied Statistical Modeling for the Environmental Sciences”
  - EDU 236<sup>16</sup>: “Application of Hierarchical Linear Models in Education Research”
  - HDE 205<sup>17</sup>: “Longitudinal Data Analysis”
- Books:
  - Dobson and Barnett (2018) Chapter 11<sup>18</sup>

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<sup>1</sup><https://dmrocke.ucdavis.edu/>

<sup>2</sup><https://dmrocke.ucdavis.edu/Class/EPI204-Spring-2021/EPI204-Spring-2021.html>

<sup>3</sup><https://catalog.ucdavis.edu/search/?q=EVE+225>

<sup>4</sup><https://eve.ucdavis.edu/people/kate-laskowski>

<sup>5</sup><https://catalog.ucdavis.edu/search/?P=BST%20224>

<sup>6</sup><https://shuaichen.weebly.com/>

<sup>7</sup><https://catalog.ucdavis.edu/search/?P=EPI+226>

<sup>8</sup><https://biostat.ucdavis.edu/people/heejung-bang>

<sup>9</sup><https://catalog.ucdavis.edu/search/?q=PSC+205D>

<sup>10</sup><https://catalog.ucdavis.edu/search/?q=PSC+205G>

<sup>11</sup><https://catalog.ucdavis.edu/search/?q=STA+101>

<sup>12</sup><https://catalog.ucdavis.edu/search/?q=STA+207>

<sup>13</sup><https://www.stat.ucdavis.edu/~jiang/sta232b.html>

<sup>14</sup><https://www.stat.ucdavis.edu/~jiang/>

<sup>15</sup><https://catalog.ucdavis.edu/search/?q=PLS+207>

<sup>16</sup><https://catalog.ucdavis.edu/search/?q=EDU+236>

<sup>17</sup><https://catalog.ucdavis.edu/search/?q=HDE+205>

<sup>18</sup><https://www.taylorfrancis.com/chapters/mono/10.1201/9781315182780-11/clustered-longitudinal-data-annette-dobson-adrian-barnett?context=ubx&refId=95f6c50e-093a-4488-a042-92a9f151a4b5>

- Vittinghoff et al. (2012) Chapter 7<sup>19</sup>
- Gelman and Hill (2007)
- Jiang and Nguyen (2021)
  - \* by UC Davis Statistics Professor and GGE faculty member Jiming Jiang<sup>20</sup>
- Faraway (2016)
- McCulloch, Searle, and Neuhaus (2008)
- Hedeker and Gibbons (2006)
- Wakefield (2013)
- Zuur (2009)
- Diggle et al. (2013)
- Fitzmaurice, Laird, and Ware (2012)
- Fitzmaurice et al. (2009)
- Gałecki and Burzykowski (2013)
- Congdon (2020)
- Molenberghs and Verbeke (2005)
- Verbeke and Molenberghs (2000)
- Jewell and Hubbard (2016)
  - \* by UC Berkeley professors

- Congdon, Peter D. 2020. *Bayesian Hierarchical Models: With Applications Using R, Second Edition*. 2nd edition. Milton: CRC Press.
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<sup>19</sup>[https://link.springer.com/chapter/10.1007/978-1-4614-1353-0\\_7](https://link.springer.com/chapter/10.1007/978-1-4614-1353-0_7)

<sup>20</sup><https://www.stat.ucdavis.edu/~jiang/>

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