

|  |          | Republic of Iraq - Ministry of Higher Education and Scientific Research<br>Al-Muthanna University - College of Agriculture<br>Bachelor's degree in <b>Animal Production</b><br>Four years (Eight semesters) - 240 ECTS credits - <b>1 ECTS = 25 hr</b><br>Program Curriculum (2025 - 2026) |                             |                                      |                                      |                       | جمهورية العراق - وزارة التعليم العالي والبحث العلمي<br>جامعة المثنى - كلية الزراعة<br>بكالوريوس في الإنتاج الحيواني<br>اربع سنوات (ثمان فصول دراسية) - 240 وحدة اوروبية - كل وحدة اوروبية = ٢٥ ساعة<br>المنهاج الدراسي للعام 2025-2026 |             |             |            |            |             |             |             |              |              |  |             |                             |                             |
|---------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|------------|------------|-------------|-------------|-------------|--------------|--------------|------------------------------------------------------------------------------------|-------------|-----------------------------|-----------------------------|
| Level                                                                           | Semester | No.                                                                                                                                                                                                                                                                                        | Module Code                 | Module Name in English               | اسم المادة الدراسية                  | Language              | SSWL (hr/w)                                                                                                                                                                                                                            |             |             |            |            | Semn (hr/w) | Exam hr/sem | SSWL hr/sem | USSWL hr/sem | SWL hr/sem   | ECTS                                                                               | Module Type | Prerequisite Module(s) Code |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      |                                      |                       | CL (hr/w)                                                                                                                                                                                                                              | Lect (hr/w) | Lab (hr/w)  | Pr (hr/w)  | Tut (hr/w) |             |             |             |              |              |                                                                                    |             |                             |                             |
| First                                                                           | First    | 1                                                                                                                                                                                                                                                                                          | UNI-114                     | Computer 1                           | الحاسوب 1                            | Arabic                | 1                                                                                                                                                                                                                                      |             | 2           |            |            |             | 3           | 48          | 27           | 75           | 3                                                                                  | S           |                             |                             |
|                                                                                 |          | 2                                                                                                                                                                                                                                                                                          | UNI-116                     | Democracy and human rights           | الديمقراطية وحقوق الانسان            | Arabic                | 2                                                                                                                                                                                                                                      |             |             |            |            | 3           | 33          | 17          | 50           | 2            | S                                                                                  |             |                             |                             |
|                                                                                 |          | 3                                                                                                                                                                                                                                                                                          | AGR-112                     | Fundamentals of soil                 | اساسيات تربة                         | Arabic                | 2                                                                                                                                                                                                                                      |             |             | 3          |            | 3           | 78          | 72          | 150          | 6            | B                                                                                  |             |                             |                             |
|                                                                                 |          | 4                                                                                                                                                                                                                                                                                          | AGR-113                     | Fundamentals of Animal Production    | اساسيات انتاج حيواني                 | Arabic                | 2                                                                                                                                                                                                                                      |             |             | 3          |            | 3           | 78          | 72          | 150          | 6            | B                                                                                  |             |                             |                             |
|                                                                                 |          | 5                                                                                                                                                                                                                                                                                          | ANP-111                     | General Zoology                      | حيوان علم                            | Arabic                | 2                                                                                                                                                                                                                                      |             | 3           |            |            | 3           | 78          | 97          | 175          | 7            | C                                                                                  |             |                             |                             |
|                                                                                 |          | 6                                                                                                                                                                                                                                                                                          | ANP-112                     | Principles of Horticulture and Plant | مبادئ بستنة ونبات                    | Arabic                | 2                                                                                                                                                                                                                                      |             |             | 3          |            | 3           | 78          | 72          | 150          | 6            | S                                                                                  |             |                             |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      |                                      | Total                 | 11                                                                                                                                                                                                                                     |             | 5           | 9          |            | 18          | 393         | 357         | 750          | 30           |                                                                                    |             |                             |                             |
|                                                                                 | Second   | Semester                                                                                                                                                                                                                                                                                   | No.                         | Module Code                          | Module Name in English               | اسم المادة الدراسية   | Language                                                                                                                                                                                                                               | SSWL (hr/w) |             |            |            |             | Semn (hr/w) | Exam hr/sem | SSWL hr/sem  | USSWL hr/sem | SWL hr/sem                                                                         | ECTS        | Module Type                 | Prerequisite Module(s) Code |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      |                                      |                       |                                                                                                                                                                                                                                        | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w)  | Tut (hr/w)  |             |             |              |              |                                                                                    |             |                             |                             |
|                                                                                 |          | Second                                                                                                                                                                                                                                                                                     | 1                           | UNI-121                              | English Language 1                   | اللغة الانكليزية 1    | English                                                                                                                                                                                                                                | 2           |             |            |            |             |             | 3           | 33           | 17           | 50                                                                                 | 2           | S                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 2                           | UNI-123                              | Arabic Language 1                    | اللغة العربية 1       | Arabic                                                                                                                                                                                                                                 | 2           |             |            |            |             |             | 3           | 33           | 17           | 50                                                                                 | 2           | S                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 3                           | AGR-121                              | Fundamentals of field crops          | اساسيات محاصيل حقليّة | Arabic                                                                                                                                                                                                                                 | 2           |             |            | 3          |             |             | 3           | 78           | 72           | 150                                                                                | 6           | B                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 4                           | AGR-124                              | Fundamentals of Chemistry            | اساسيات كيمياء        | Arabic                                                                                                                                                                                                                                 | 2           |             | 3          |            |             |             | 3           | 78           | 72           | 150                                                                                | 6           | B                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 5                           | ANP-123                              | Principles of poultry                | مبادئ طيور داجنة      | Arabic                                                                                                                                                                                                                                 | 2           |             |            | 3          |             |             | 3           | 78           | 122          | 200                                                                                | 8           | C                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 6                           | ANP-124                              | Plane Surveying                      | مساحة مستوية          | Arabic                                                                                                                                                                                                                                 | 2           |             |            | 3          |             |             | 3           | 78           | 72           | 150                                                                                | 6           | S                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      | Total                                | 12                    | 0                                                                                                                                                                                                                                      | 3           | 9           | 0          | 0          | 18          | 378         | 372         | 750          | 30           |                                                                                    |             |                             |                             |
| Second                                                                          |          | First                                                                                                                                                                                                                                                                                      | 1                           | UNI-21                               | Arabic Language 2                    | اللغة العربية 2       | Arabic                                                                                                                                                                                                                                 | 2           |             |            |            |             |             | 3           | 33           | 17           | 50                                                                                 | 2           | S                           |                             |
|                                                                                 | 2        |                                                                                                                                                                                                                                                                                            | UNI-2110                    | The crimes of Baath Regime           | جرائم نظام البعث                     | Arabic                | 2                                                                                                                                                                                                                                      |             |             |            |            |             | 3           | 33          | 17           | 50           | 2                                                                                  | S           |                             |                             |
|                                                                                 | 3        |                                                                                                                                                                                                                                                                                            | AGR-215                     | Mathematics and Statistics           | الرياضيات والاحصاء                   | Arabic                | 2                                                                                                                                                                                                                                      |             |             | 3          |            |             | 3           | 78          | 47           | 125          | 5                                                                                  | B           |                             |                             |
|                                                                                 | 4        |                                                                                                                                                                                                                                                                                            | AGR-217                     | Principles of Microbiology           | مبادئ علم الاحياء المجهرية           | Arabic                | 2                                                                                                                                                                                                                                      |             | 3           |            |            |             | 3           | 78          | 72           | 150          | 6                                                                                  | B           |                             |                             |
|                                                                                 | 5        |                                                                                                                                                                                                                                                                                            | ANP-215                     | Fish Principles                      | مبادئ اسماك                          | Arabic                | 2                                                                                                                                                                                                                                      |             |             | 3          |            |             | 3           | 78          | 47           | 125          | 5                                                                                  | C           |                             |                             |
|                                                                                 | 6        |                                                                                                                                                                                                                                                                                            | ANP-216                     | Animal Products Hygiene              | صحة منتجات حيوانية                   | Arabic                | 2                                                                                                                                                                                                                                      |             | 3           |            |            |             | 3           | 78          | 47           | 125          | 5                                                                                  | S           |                             |                             |
|                                                                                 | 7        |                                                                                                                                                                                                                                                                                            | ANP-217                     | Principles of Dairy Science          | مبادئ علم الالبان                    | Arabic                | 2                                                                                                                                                                                                                                      |             | 3           |            |            |             | 3           | 78          | 47           | 125          | 5                                                                                  | S           |                             |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      | Total                                | 14                    | 0                                                                                                                                                                                                                                      | 6           | 6           | 0          | 0          | 21          | 456         | 294         | 750          | 30           |                                                                                    |             |                             |                             |
|                                                                                 | Second   | Semester                                                                                                                                                                                                                                                                                   | No.                         | Module Code                          | Module Name in English               | اسم المادة الدراسية   | Language                                                                                                                                                                                                                               | SSWL (hr/w) |             |            |            |             | Semn (hr/w) | Exam hr/sem | SSWL hr/sem  | USSWL hr/sem | SWL hr/sem                                                                         | ECTS        | Module Type                 | Prerequisite Module(s) Code |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      |                                      |                       |                                                                                                                                                                                                                                        | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w)  | Tut (hr/w)  |             |             |              |              |                                                                                    |             |                             |                             |
|                                                                                 |          | Second                                                                                                                                                                                                                                                                                     | 1                           | UNI-222                              | English Language 2                   | اللغة الانكليزية 2    | English                                                                                                                                                                                                                                | 2           |             |            |            |             |             | 3           | 33           | 17           | 50                                                                                 | 2           | S                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 2                           | UNI-225                              | Computer 2                           | حاسوب 2               | Arabic                                                                                                                                                                                                                                 | 1           |             | 2          |            |             |             | 3           | 48           | 27           | 75                                                                                 | 3           | S                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 3                           | AGR-226                              | Principles of Agricultural Extension | مبادئ الارشاد الزراعي | Arabic                                                                                                                                                                                                                                 | 2           |             |            |            |             |             | 3           | 33           | 42           | 75                                                                                 | 3           | B                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 4                           | ANP-228                              | Fish Breeding and Production         | تربية وانتاج اسماك    | Arabic                                                                                                                                                                                                                                 | 2           |             |            | 3          |             |             | 3           | 78           | 72           | 150                                                                                | 6           | C                           |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | 5                           | ANP-229                              | Genetics                             | علم الوراثة           | Arabic                                                                                                                                                                                                                                 | 2           |             |            | 3          |             |             | 3           | 78           | 72           | 150                                                                                | 6           | C                           |                             |
| 6                                                                               |          |                                                                                                                                                                                                                                                                                            | ANP-2210                    | Animal Production Mechanization      | مكننة انتاج حيواني                   | Arabic                | 2                                                                                                                                                                                                                                      |             |             | 3          |            |             | 3           | 78          | 47           | 125          | 5                                                                                  | S           |                             |                             |
| 7                                                                               | ANP-2211 | Forage Crops and Pasture Management                                                                                                                                                                                                                                                        | محاصيل العلف وادارة المراعي | Arabic                               | 2                                    |                       |                                                                                                                                                                                                                                        | 3           |             |            | 3          | 78          | 47          | 125         | 5            | B            |                                                                                    |             |                             |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            | Total                       | 13                                   | 0                                    | 2                     | 12                                                                                                                                                                                                                                     | 0           | 0           | 21         | 426        | 324         | 750         | 30.00       |              |              |                                                                                    |             |                             |                             |
| Level                                                                           | Semester | No.                                                                                                                                                                                                                                                                                        | Module Code                 | Module Name in English               | اسم المادة الدراسية                  | Language              | SSWL (hr/w)                                                                                                                                                                                                                            |             |             |            |            | Semn (hr/w) | Exam hr/sem | SSWL hr/sem | USSWL hr/sem | SWL hr/sem   | ECTS                                                                               | Module Type | Prerequisite Module(s) Code |                             |
|                                                                                 |          |                                                                                                                                                                                                                                                                                            |                             |                                      |                                      |                       | CL (hr/w)                                                                                                                                                                                                                              | Lect (hr/w) | Lab (hr/w)  | Pr (hr/w)  | Tut (hr/w) |             |             |             |              |              |                                                                                    |             |                             |                             |
|                                                                                 |          | 1                                                                                                                                                                                                                                                                                          | AGR-318                     | Agricultural Economics               | اقتصاد زراعي                         | Arabic                | 2                                                                                                                                                                                                                                      |             |             |            |            |             | 3           | 33          | 17           | 50           | 2.00                                                                               | B           |                             |                             |

|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|--------|----------|----------|----------------------------------|-------------------------------------------------|-------------------------------|----------|-------------|-------------|------------|-----------|------------|-------------|-------------|-------------|--------------|------------|-------|-------------|-----------------------------|
| Third  | First    | 2        | ANP-3112                         | Animal Physiology                               | فسلجة حيوان                   | Arabic   | 2           |             | 3          |           |            | 3           | 78          | 72          | 150          | 6.00       | C     |             |                             |
|        |          | 3        | ANP-3113                         | Design and analysis of Agricultural Experiments | تصميم وتحليل التجارب الزراعية | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 4        | ANP-3114                         | Animal Nutrition                                | تغذية حيوان                   | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 5        | ANP-3115                         | Hatching and Hatchery Management                | تفقيس وإدارة مفقس             | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 47           | 125        | 5.00  | C           |                             |
|        |          | 6        | ANP-3116                         | Animal Diseases                                 | امراض حيوان                   | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 47           | 125        | 5.00  | C           |                             |
|        |          |          |                                  |                                                 |                               | Total    | 12          | 0           | 3          | 12        | 0          | 0           | 18          | 423         | 327          | 750        | 30.00 |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
| Third  | Semester | No.      | Module Code                      | Module Name in English                          | اسم المادة الدراسية           | Language | SSWL (hr/w) |             |            |           |            |             | Exam hr/sem | SSWL hr/sem | USSWL hr/sem | SWL hr/sem | ECTS  | Module Type | Prerequisite Module(s) Code |
|        |          |          |                                  |                                                 |                               |          | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w) | Tut (hr/w) | Semn (hr/w) |             |             |              |            |       |             |                             |
|        | Second   | 1        | ANP-3217                         | Feed and Rations                                | اعلاف وعلائق                  | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 22           | 100        | 4.00  | C           |                             |
|        |          | 2        | ANP-3218                         | Poultry Physiology                              | فسلجة طيور داجنة              | Arabic   | 2           |             | 3          |           |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 3        | ANP-3119                         | Animal Breeding                                 | تربية وتحسين حيوان            | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 47           | 125        | 5.00  | C           |                             |
|        |          | 4        | ANP-3220                         | Technology of Poultry Products                  | تكنولوجيا منتجات طيور داجنة   | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 47           | 125        | 5.00  | C           |                             |
|        |          | 5        | ANP-3221                         | Animal Reproductive Physiology                  | فسلجة تناسل حيوان             | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
| 6      |          | ANP-3222 | Biochemistry                     | كيمياء حيوية                                    | Arabic                        | 2        |             | 3           |            |           |            | 3           | 78          | 22          | 100          | 4.00       | B     |             |                             |
|        |          |          |                                  | Total                                           | 12                            | 0        | 6           | 12          | 0          | 0         | 18         | 468         | 282         | 750         | 30.00        |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
| Fourth | Semester | No.      | Module Code                      | Module Name in English                          | اسم المادة الدراسية           | Language | SSWL (hr/w) |             |            |           |            |             | Exam hr/sem | SSWL hr/sem | USSWL hr/sem | SWL hr/sem | ECTS  | Module Type | Prerequisite Module(s) Code |
|        |          |          |                                  |                                                 |                               |          | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w) | Tut (hr/w) | Semn (hr/w) |             |             |              |            |       |             |                             |
|        | First    | 1        | ANP-4123                         | Poultry Nutrition                               | تغذية طيور داجنة              | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 2        | ANP-4124                         | Poultry Breeding                                | تربية وتحسين طيور داجنة       | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 3        | ANP-4125                         | Sheep and Goat Production                       | انتاج اغنام وماعز             | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 4        | ANP-4126                         | Meat Production                                 | الانتاج لحوم                  | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 47           | 125        | 5.00  | C           |                             |
|        |          | 5        | ANP-4127                         | Poultry Management and Production               | ادارة والنتاج طيور داجنة      | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 47           | 125        | 5.00  | C           |                             |
| 6      |          | ANP-4128 | Graduation research and Simenars | مشروع بحث وحلقات                                | Arabic                        | 2        |             |             |            |           |            | 3           | 33          | 17          | 50           | 2.00       | C     |             |                             |
|        |          |          |                                  | Total                                           | 12                            | 0        | 0           | 15          | 0          | 0         | 18         | 423         | 327         | 750         | 30.00        |            |       |             |                             |
| Fourth | Semester | No.      | Module Code                      | Module Name in English                          | اسم المادة الدراسية           | Language | SSWL (hr/w) |             |            |           |            |             | Exam hr/sem | SSWL hr/sem | USSWL hr/sem | SWL hr/sem | ECTS  | Module Type | Prerequisite Module(s) Code |
|        |          |          |                                  |                                                 |                               |          | CL (hr/w)   | Lect (hr/w) | Lab (hr/w) | Pr (hr/w) | Tut (hr/w) | Semn (hr/w) |             |             |              |            |       |             |                             |
|        | Second   | 1        | ANP-4229                         | Poultry Diseases                                | امراض طيور داجنة              | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 97           | 175        | 7.00  | C           |                             |
|        |          | 2        | ANP-4230                         | Meat Science                                    | علم اللحوم                    | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 72           | 150        | 6.00  | C           |                             |
|        |          | 3        | ANP-4231                         | Dairy Cattle Production                         | انتاج مائية حليب              | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 97           | 175        | 7.00  | C           |                             |
|        |          | 4        | ANP-4232                         | Moleacular Biology                              | علم الحياة الجزيئي            | Arabic   | 2           |             |            | 3         |            |             | 3           | 78          | 97           | 175        | 7.00  | C           |                             |
|        |          | 5        | ANP-4233                         | Graduation research                             | مشروع بحث                     | Arabic   | 2           |             |            |           |            |             | 3           | 33          | 17           | 50         | 2.00  | C           |                             |
| 6      |          | UNI-427  | Ethics                           | اخلاقيات مهنة                                   | Arabic                        | 1        |             |             |            |           |            | 3           | 18          | 7           | 25           | 1.00       | S     |             |                             |
|        |          |          |                                  | Total                                           | 11                            | 0        | 0           | 12          | 0          | 0         | 18         | 363         | 387         | 750         | 30.00        |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
|        |          |          |                                  |                                                 |                               |          |             |             |            |           |            |             |             |             |              |            |       |             |                             |
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