

| Tabel 2: Stage-eisen onderzoeksafdelingen  |   |                                      |  |                            |   |                     |               |
|--|---|--------------------------------------|--|----------------------------|---|---------------------|---------------|
| Per onderzoeksafdeling is de vereiste voorkennis aangegeven (max 12 ec op niveau 3)                    |   |                                      |  |                            |   |                     |               |
| Daarbij is aangegeven welke vakken op niveau 2 hiervoor als relevante voorkennis dienen.               |   |                                      |  |                            |   |                     |               |
| (2/2) = 2 van de 2 vakken verplicht  |   |                                      |  |                            |   |                     |               |
| (2/4) = combinatie van 2 uit 4 verplicht   |   |                                      |  |                            |   |                     |               |
| Er is een aparte tabel met voorkennis per vak  |   |                                      |  |                            |   |                     |               |
| Er zijn diverse vakken die elkaar kunnen vervangen (bv Quantummechanica 1-2 en Kwantummechanica 1A-1B) |   |                                      |  |                            |   |                     |               |
| Afdelingen Biowetenschappen  | Niveau 3  | code                                 | Niveau 2 (niveau1)   | code                       | Voorkennis                                      | Voorkennis          | Voorkennis    |
| Moleculaire Biologie<br>(Stunnenberg)  | (2/2) Biochem.Mol.Biol 2 (6ec)<br>(2/2) Functional Genomics (6ec)   | BB017C<br>BB064B                     | (2/2) Algemene fysiologie (3 ec)<br>(2/2) DNA-technologie  | MOL036<br>MOL027           | prop. Science<br>prop. Science                  |                     |               |
| Moleculaire Ontwikkelingsbiologie<br>(Veenstra)  | (2/2) Biochem.Mol.Biol 2 (6ec)<br>(2/2) Functional Genomics (6ec)   | BB017C<br>BB064B                     | (2/2) Algemene fysiologie (3 ec)<br>(2/2) DNA-technologie  | MOL036<br>MOL027           | prop. Science<br>prop. Science                  |                     |               |
| Celbiologie<br>(van Zoelen)  | (2/2) Celbiologie-der-Dieren (6ec)<br>(2/2) Medische Biotechnologie (6ec)   | BB023B<br>BB031B                     | (2/2) Biochemie levende cel (3 ec)<br>(of) Algemene Fysiologie (3ec)<br>(2/2) DNA-technologie        | MOL031<br>MOL036<br>MOL027 | prop. Science<br>prop. Science<br>prop. Science |                     |               |
| Moleculaire Dierfysiologie<br>(Martens)  | (2/4) Neurodevelopment (6ec)<br>(2/4) Neurobiologie (6ec)<br>(2/4) Celbiologie-der-Dieren (6ec)<br>(2/4) Biochem.Mol.Biol 2 (6ec) | BB039C<br>BB034B<br>BB023B<br>BB017B | (2/2) Algemene Fysiologie (3 ec)<br>(of) Human Embryology & Developm. (6ec)<br>(2/2) DNA-technologie | MOL036<br>BB047C<br>MOL027 | prop. Science<br>MOL036<br>prop. Science        | Algemene fysiologie | prop. Science |
| Neurofysiologie<br>(Celikel)   | (1/1) Neurobiologie (6ec)   | BB034B                               | (1/2) Dierfysiologie (6ec)<br>(1/2) Algemene fysiologie (3 ec)<br>(en) Celbiofysica (6 ec)           | BB005B<br>MOL036<br>MOL021 | prop. Science<br>prop. Science<br>prop. Science |                     |               |
| Organismale Dierfysiologie<br>(Flik)   | (1/2) Adaptatiefysiologie (6ec)<br>(1/2) Endocrinologie (6ec)   | BB020B<br>BB048B                     | (1/1) Algemene fysiologie (3 ec)   | MOL036                     | prop. Science                                   |                     |               |
| Microbiologie - moleculaire richting<br>(Jetten)   | (1/1) Fysiologie van Micro-organismen (6ec)   | BB024B                               | (2/2) Biochemie-Moleculaire biologie II (6ec)<br>(2/2) Bioinformatica                                | BB017C<br>MOL029           | MOL036<br>prop. Science                         | Algemene fysiologie | prop. Science |
| Microbiologie - ecologische richting<br>(Jetten)   | (1/2) Ecologische Microbiologie (6ec)<br>(1/2) Biologie van Micro-organismen (6ec)  | BB027B<br>BB070B                     | (2/2) Biochemie-Moleculaire biologie II (6ec)<br>(2/2) Bioinformatica                                | BB017C<br>MOL029           | MOL036<br>prop. Science                         | Algemene fysiologie | prop. Science |
| Mol. Plantenfysiologie<br>(Mariani)  | (1/2) Biotechnologie van planten (6ec)<br>(1/2) Biochem.Mol.Biol 2 (6ec)  | BB032B<br>BB017C                     | (2/2) Algemene fysiologie (3ec)<br>(of) Plantenfysiologie (6ec)<br>(2/2) DNA-technologie (3ec)       | MOL036<br>BB069B<br>MOL027 | prop. Science<br>prop. Science<br>prop. Science |                     |               |
| Plantengenetica<br>(Gerats)  | (1/2) Genoomanalyse van planten (6ec)<br>(1/2) Biotechnologie van planten (6ec)   | BB043B<br>BB032B                     | (1/1) Genetica MLW (3ec)   | MOL038                     | -   |                     |               |
| Aquatische Ecologie<br>(en)Plant-ecofysiologie<br>(de Kroon)<br>(Roelofs)                              | (2/4) Ecofysiologie (6ec)<br>(2/4) Systeemecologie (6 ec)<br>(2/4) Toegepaste ecologie (6 ec)<br>(2/4) Dierreologie (6 ec)        | BB018B<br>BB022B<br>BB036B<br>BB060B | (1/2) Algemene fysiologie (3 ec)<br>(1/2) Plantenfysiologie (6ec)                                    | MOL036<br>BB069B           | prop. Science<br>prop. Science                  |                     |               |
| Ecogenomics<br>(van Dam)   | (1/3) Genoomanalyse van planten (6ec)<br>(1/3) Biotechnologie van planten (6ec)<br>(1/3) Biochem.Mol.Biol 2 (6ec)                 | BB043B<br>BB032B<br>BB017B           | (1/2) Algemene fysiologie (3 ec)<br>(1/2) Plantenfysiologie (6ec)                                    | MOL036<br>BB069B           | prop. Science<br>prop. Science                  |                     |               |
| Environmental Science<br>(Hendriks)  | (1/2) Water- en Natuurbeheer (6ec)<br>(1/2) Humane&Ecol. Risicobeoordeling (6ec)  | MB023B<br>MB024C                     |  |                            |   |                     |               |

| Afdelingen Mol. Wetenschappen                        |   |        |  |        |               |                    |               |                  |        |
|--|---|--------|--|--------|---------------|--------------------|---------------|------------------|--------|
| Theoretische Chemie<br>(Groenenboom)                 | (2/2) Quantumchemie (3ec)                           | MOL062 | (4/4) Lineaire algebra (3ec)           | MOL016 | prop. Science |                    |               |                  |        |
|  | (2/2) Statistische thermodynamica (6ec)             | MOL059 | (4/4) Quantummechanica 1 (3ec)         | MOL041 | MOL016        | Lineaire algebra   | prop. Science |                  |        |
|  |   |        | (4/4) Quantummechanica 2 (3ec)         | MOL046 | MOL041        | Quantummechanica 1 | MOL016        | prop. Science    |        |
|  |   |        | (4/4) Chemische binding (3ec)          | MOL056 | MOL046        | Quantummechanica 2 | MOL041        | Lineaire algebra | MOL016 |
| Analytische Chemie<br>(Buydens)                      | (1/1) Chemometrie 1 (6ec)                           | MOL065 | (1/1) Statistiek (3ec)                 | MOL028 | prop. Science |                    |               |                  |        |
|  | (1/1) nader in te vullen (6ec)                      |        |  |        |               |                    |               |                  |        |
| Biomoleculaire Chemie<br>(Prujin)                    | (2/2) Biochem.Mol.Biol 2 (6ec)                      | BB017C | (2/2) DNA-technologie (3 ec)           | MOL027 | prop. Science |                    |               |                  |        |
|  | (2/2) Celbiologie-der-Dieren (6ec)                  | BB023B | (2/2) Algemene fysiologie (3 ec)       | MOL036 | prop. Science |                    |               |                  |        |
| Biofysische Chemie<br>(Wijmenga)                     | (2/3) Magnetische resonantie (6ec)                  | MOL057 | (3/3) Lineaire algebra (3ec)           | MOL016 | prop. Science |                    |               |                  |        |
|  | (2/3) Structuur biomoleculen (3ec)                  | MOL067 | (3/3) Quantummechanica 1 (3ec)         | MOL041 | MOL016        | Lineaire algebra   | prop. Science |                  |        |
|  | (2/3) Single molecule studies (3ec)                 | MOL082 | (3/3) Quantummechanica 2 (3ec)         | MOL046 | MOL041        | Quantummechanica 1 | MOL016        | prop. Science    |        |
| Organische Chemie<br>(Rutjes, van Hest, Huck, Rowan) | (1/1) Organische Chemie (6ec)                       | MOL095 | (1/1) Synthese biomoleculen (3ec)      | MOL047 | prop. Science |                    |               |                  |        |
|  | (1/3) Metaalorganische chemie (3ec)                 | MOL096 |  |        | MOL030        | Coördinatiechemie  | prop. Science |                  |        |
|  | (1/3) Magnetische resonantie (6ec)                  | MOL057 |  |        | MOL046        | Quantummechanica 2 | MOL041        | Lineaire algebra | MOL016 |
|  | (1/3) Nanobiotechnologie (6ec)                      | MOL078 |  |        | prop. Science |                    |               |                  |        |
| Vaste Stof Chemie<br>(Vlieg)                         | (2/2) Gecondenseerde materie (3ec)                  | MOL050 | (2/2) Thermodynamica 2 (3ec)           | MOL042 | MOL016        | Lineaire algebra   | prop. Science |                  |        |
|  | (2/2) Kristalgroei (3ec)                            | MOL071 | (2/2) Kristalstructuur (3ec)           | MOL032 | MOL016        | Lineaire algebra   | prop. Science |                  |        |
| Vaste Stof NMR<br>(Kentgens)                         | (1/1) Magnetische resonantie (6ec)                  | MOL057 | (3/3) Lineaire algebra (3ec)           | MOL016 | prop. Science |                    |               |                  |        |
|  | (1/4) Organische Chemie (6ec)                       | MOL095 | (3/3) Quantummechanica 1 (3ec)         | MOL041 | MOL016        | Lineaire algebra   | prop. Science |                  |        |
|  | (1/4) Metaalorganische chemie (3ec)                 | MOL096 | (3/3) Quantummechanica 2 (3ec)         | MOL046 | MOL041        | Quantummechanica 1 | MOL016        | prop. Science    |        |
|  | (1/4) Gecondenseerde materie (3ec)                  | MOL050 |  |        |               |                    |               |                  |        |
|  | (1/4) Structuur der Materie: Vaste Stoffysica (3ec) | NB072B |  |        |               |                    |               |                  |        |
| CMBI (Bioinformatica)<br>(Vriend, Ritschel)          | (1/1) Structuur, Functie Bioinformatica (6 EC)      | MOL066 | (1/3) Bioinformatica (3 EC)            | MOL029 | prop. Science |                    |               |                  |        |
|  |   |        | (1/3) Bioinformatica A (3 EC)          | MOL075 | prop. Science |                    |               |                  |        |
|  |   |        | (1/3) Toegepaste Bioinformatica (6 EC) | BB051B | prop. Science |                    |               |                  |        |
| (Huynen)   | (1/1) Vergelijkende Genoom Analyse (3 EC)           | MOL073 | (1/3) Bioinformatica (3 EC)            | MOL029 | prop. Science |                    |               |                  |        |
|  |   |        | (1/3) Bioinformatica A (3 EC)          | MOL075 | prop. Science |                    |               |                  |        |
|  |   |        | (1/3) Toegepaste Bioinformatica (6 EC) | BB051B | prop. Science |                    |               |                  |        |

| Afdelingen Natuurkunde  |  |        |   |        |               |                                |               |                                |               |
|---|--|--------|---|--------|---------------|--------------------------------|---------------|--------------------------------|---------------|
| Expt. Hoge Energie Fysica<br>(N. de Groot, de Jong)   | (1/1) Structuur der Materie: Subatomaire Fysica (3ec)      | NB073B | (2/2) Speciale Relativiteitstheorie       | NP007B | -             |                                |               |                                |               |
|   | (1/1) Programmeren 2                                       | NB021C | (2/2) Analytische mechanica (3ec)         | NB001B | MOL026        | Wiskunde 4                     | MOL015        |                                |               |
|   | (1/1) Elektromagnetisme 2                                  | NB003B |   |        |               |                                |               |                                |               |
| Let op! Er zijn ook projecten mogelijk op basis van andere voorkennis (bijv. detectorontwikkeling op basis van vaste stoffysica en elektronica). Neem hiervoor contact op |  |        |   |        |               |                                |               |                                |               |
|   |  |        |   |        |               |                                |               |                                |               |
| Theor. Hoge Energie Fysica<br>(Kleis)   | (4/4) Structuur der Materie: Subatomaire Fysica (3ec)      | NB073B | (3/3) Analytische mechanica (3e)          | NB001B | MOL026        | Wiskunde 4                     | MOL015        |                                |               |
|   | (4/4) Kwantummechanica 3                                   | NB016B | (3/3) Speciale Relativiteitstheorie       | NP007B | -             |                                |               |                                |               |
|   | (4/4) Inleiding Algemene relativiteitstheorie              | NB032B | (3/3) Sensoren en toepassingen            | NB031B | NB001B        | Analytische Mechanica          | MOL026        | Wiskunde 3                     | MOL015        |
|   | (4/4) Elektromagnetisme 2                                  | NB003B |   |        |               |                                |               |                                |               |
| Sterrenkunde<br>(P. Groot)  | (2/2) Planetensystemen (3ec)                               | NB058C | (1/1) Sterrevolutie (3ec)                 | NB012B | prop. Science |                                |               |                                |               |
| (fenomenologisch)   | (2/2) Sterrenstelsels (3ec)                                | NB057B | (1/2) Newtoniaanse kosmologie (3ec)       | NP024B | prop. Science |                                |               |                                |               |
|   |  |        | (1/2) Observatoire Sterrenkunde (3ec)     | NP031C | -             |                                |               |                                |               |
| (theoretisch)   | (2/2) Inleiding Algemene relativiteitstheorie (3ec)        | NB032B | (4/4) Sensoren en toepassingen (3ec)      | NB031B | NB001B        | Analytische Mechanica          | MOL026        | Wiskunde 3                     | MOL015        |
|   | (2/2) Stralingsprocessen (3ec)                             | NB060A | (4/4) Speciale Relativiteitstheorie (3ec) | NP007B | -             |                                |               |                                |               |
|   |  |        | (4/4) Elektromagnetisme 2 (3ec)           | NB003B | NB002C        | Elektromagnetisme 1            | NP020B        | Elektriciteit en Magnetisme 1B | NP019B        |
|   |  |        | (4/4) Sterrevolutie (3ec)                 | NB012B | prop. Science |                                |               |                                |               |
| Exp. Vaste Stof Fysica<br>(Maan)  | (3/3) Atoom- en molecuulspectroscopie (3ec)                | MOL064 | (5/5) Lineaire algebra (3ec)              | MOL016 | prop. Science |                                |               |                                |               |
|   | (of) Structuur der Materie: Atoom en Molecuulfysica (3ec)  | NB071B | (5/5) Kwantummechanica 1a (3ec)           | NB013b | NB001B        | Analytische Mechanica          | MOL026        | Wiskunde 3                     | MOL015        |
|   | (3/3) Gecondenseerde materie (3ec)                         | MOL050 | (5/5) Kwantummechanica 1b (3ec)           | NB014b | NB013B        | Kwantummechanica 1a            | NB001B        | Wiskunde 4                     | MOL026        |
|   | (of) Structuur der Materie: Vaste Stoffysica (3ec)         | NB072B | (5/5) Analytische mechanica (3ec)         | NB001b | MOL026        | Wiskunde 4                     | MOL015        |                                |               |
|   | (3/3) Statistische thermodynamica (6ec)                    | MOL059 | (5/5) Thermodynamica (3ec)                | NB005b | NP008C        | Warme leer                     | -             |                                |               |
|   | (of) Statistische mechanica (6ec)                          | NB033C |   |        |               |                                |               |                                |               |
| Spectroscopy of Solids&Interfaces<br>(Rasing)   | (3/3) Atoom- en molecuulspectroscopie (3ec)                | MOL064 | (5/5) Lineaire algebra (3ec)              | MOL016 | prop. Science |                                |               |                                |               |
|   | (of) Structuur der Materie: Atoom en Molecuulfysica (3ec)  | NB071B | (5/5) Kwantummechanica 1a (3ec)           | NB013b | NB001B        | Analytische Mechanica          | MOL026        | Wiskunde 3                     | MOL015        |
|   | (3/3) Gecondenseerde materie (3ec)                         | MOL050 | (5/5) Kwantummechanica 1b (3ec)           | NB014b | NB013B        | Kwantummechanica 1a            | NB001B        | Wiskunde 4                     | MOL026        |
|   | (of) Structuur der Materie: Vaste Stoffysica (3ec)         | NB072B | (5/5) Analytische mechanica (3ec)         | NB001b | MOL026        | Wiskunde 4                     | MOL015        |                                |               |
|   | (3/3) Statistische thermodynamica (6ec)                    | MOL059 | (5/5) Thermodynamica (3ec)                | NB005b | NP008C        | Warme leer                     | -             |                                |               |
|   | (of) Statistische mechanica (6ec)                          | NB033C |   |        |               |                                |               |                                |               |
| Scanning Probe Microscopy<br>nanochemie (Elemans)   | (1/1) Organische Chemie (6ec)                              | MOL095 | (1/1) Synthese biomoleculen (3ec)         | MOL047 | prop. Science |                                |               |                                |               |
| Molec. Elektronica (Hendrikse)  | (3/3) Atoom- en molecuulspectroscopie (3ec)                | MOL064 | (4/4) Lineaire algebra (3ec)              | MOL016 | prop. Science |                                |               |                                |               |
|   | (of) Structuur der Materie: Atoom en Molecuulfysica (3ec)  | NB071B | (4/4) Kwantummechanica 1a (3ec)           | NB013b | NB001B        | Analytische Mechanica          | MOL026        | Wiskunde 3                     | MOL015        |
|   | (3/3) Gecondenseerde materie (3ec)                         | MOL050 | (4/4) Kwantummechanica 1b (3ec)           | NB014b | NB013B        | Kwantummechanica 1a            | NB001B        | Wiskunde 4                     | MOL026        |
|   | (of) Structuur der Materie: Vaste Stoffysica (3ec)         | NB072B | (4/4) Analytische mechanica (3ec)         | NB001b | MOL026        | Wiskunde 4                     | MOL015        |                                |               |
| Bioelektronische koppeling<br>(voorheen Speller, contact via Elemans)   | (3/3) Electromagnetisme B (3 ec)                           | MOL068 | (1/2) Electromagnetisme A (3 ec)          | MOL061 | MOL025        | Elektriciteit en magnetisme 2A | prop. Science |                                |               |
|   | of Elektromagnetisme 2 (3 ec)                              | NB003B | of Elektromagnetisme 1 (3 ec)             | NB002B | #N/A          |                                |               |                                |               |
|   | (3/3) Gecondenseerde materie (3ec)                         | MOL050 |   |        |               |                                |               |                                |               |
|   | (of) Structuur der Materie: Vaste Stoffysica (3ec)         | NB072B |   |        |               |                                |               |                                |               |
|   | (3/3) Neurobiologie (6ec)                                  | BB034B | Algemene fysiologie (6ec)                 | MOL036 | prop. Science |                                |               |                                |               |
|   | (of) Neurofysica 2 (3ec)                                   | NB074B |   |        |               |                                |               |                                |               |
|   | (of) Celbiologie der dieren (6 ec)                         | BB023B |   |        |               |                                |               |                                |               |
| Molecuul- en Laserfysica<br>(Parker)  | (1/2) Atoom- en molecuulspectroscopie (3ec)                | MOL064 | (4/4) Lineaire algebra (3ec)              | MOL016 | prop. Science |                                |               |                                |               |
|   | (1/2) Structuur der Materie: Atoom en Molecuulfysica (3ec) | NB071B | (4/4) Kwantummechanica 1 (3ec)            | MOL041 | MOL016        | Lineaire algebra               | prop. Science |                                |               |
|   |  |        | (4/4) Kwantummechanica 2 (3ec)            | MOL046 | MOL041        | Quantummechanica 1             | MOL016        |                                | prop. Science |
|   |  |        | (4/4) Chemische binding (3ec)             | MOL056 | MOL046        | Quantummechanica 2             | MOL041        | Lineaire algebra               | MOL016        |

